TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Linda C. Bridwell

Other Participating Employees: Robin Quinn, SSC Rates

Question:

72. Provide all ***Documents*** constituting, referencing, containing, relating to, responding to, or referring to any benchmarking studies or similar reports for ***TAWC***, ***AWWC***, ***AWWSC***, and any other subsidiary or affiliate of ***AWWC***, whether in draft or final form, with all associated documentation, including, but not limited to definitions, instructions, data inputs, and supplementary reports, that have been initiated or completed since January 1, 2008. The requested ***Documents*** include, without limitation, all ***Documents*** constituting, referencing, containing, relating to, responding to, or referring to internal analyses of these reports, including,without limitation, remediation plans, schedules, and progress reports associated with follow-up for this work.

Response:

TAW objected to this data request on July 10, 2012, and on July 16, 2012, notified the TRA that TAW and the City of Chattanooga had reached a mutually satisfactory resolution with regard to the objection. Without waiving TAW's objection to this data request, please see the attachment, a portion of which is confidential. The confidential portion of the attachment has been provided in a sealed envelope.

Assessment of Service Company Charges to Kentucky American Water Company

12-Months Ended July 31, 2008

Baryenbruch & Company, LLC

Kentucky American Water Company
Assessment of Service Company Charges
12-Months Ended July 31, 2008

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I - Introduction

Purpose Of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. ("Service Company") to Kentucky American Water Company ("KAWC"), each of which bears on the reasonableness of those charges as incurred during the 12 months ended July 31, 2008:

1. Was KAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during this test period?

2. Was the 12 months ended July 31, 2008 cost of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

3. Are the services KAWC receives from Service Company necessary?

4. Were the Service Company's charges to KAWC during the 12-months ended July 31, 2008 comparable to other utility service companies?

Study Results

Concerning question 1, the following conclusions can be drawn from this study:

- KAWC was charged the lower of cost or market for managerial and professional services during the 12-months ended July 31, 2008.

- On average, the hourly rates for outside service providers are 28% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by KAWC without careful supervision on the part of KAWC. If these services were contracted entirely to outside providers, KAWC would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12-months ended July 31, 2008, KAWC and its ratepayers would have incurred nearly $1,745,000 in additional expenses. This amount includes the higher cost of outside providers and the cost of an additional KAWC position needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to KAWC from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $1,745,000 cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week), then that work would have cost an estimated $80,000 in additional charges from outside providers.

- It would be difficult for KAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from KAWC ratepayers.

Concerning question 2, it was determined that the cost of the Service Company's customer accounts services, including those provided by the National Call Centers, is close to the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and KAWC. During the 12-months ended July 31, 2008, the customer accounts cost for KAWC customers was $28.07 compared to the 2007 average of $27.99 for neighboring electric utilities. The highest comparison group per customer cost was $39.81 and the lowest $13.71.

Concerning question 3, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if KAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to KAWC. For all of the services listed in Schedule 10, there was only one entity that was primarily responsible for the service.

Concerning question 4, the following conclusions were reached:

- The Service Company provides KAWC with services similar to those provided by other utility service companies. This determination was based on service company information included in the Form 60, which must be filed with the Federal Energy Regulatory Commission ("FERC") by electric and combination electric/gas utility holding companies.

- The Service Company's 12 months ended July 31, 2008 cost per KAWC customer was reasonable compared to cost per customer for electric and combination electric/gas service companies. During the 2008 test period, KAWC was charged an average of $60 per customer by the Service Company compared to an average of $121 per customer for service companies reporting to the FERC.

II - Background

Overview Of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common costs (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding its own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like KAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers: one in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of KAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include rates and revenues, engineering and operations.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois, and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to American Water's operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses can be directly charged and allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company number, if transaction is a direct charge
- Formula number if transaction is allocated
- Employee hours worked
- Account number for non-labor charges

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Operating company (for direct charge)
- Formula number (for allocation)
- Work order (where applicable)
- Authorization number (where applicable)

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times their hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 20% of American Water's Southeast Region's professional labor is assigned to KAWC during a month, then 20% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 20% of the Southeast Region's accumulated professional and support labor is charged to KAWC during the month, then 20% of that month's overhead expenses will be assigned to KAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to KAWC, then 2% of that office's office expenses would be assigned to KAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended July 31, 2008, the Service Company billed KAWC $8,347,528 in O&M-related charges, $486,878 in capital-related charges and $1,114 in other charges. Included in the O&M amount are certain non-recurring expenses and non-Southeast Region charges which are excluded from this market study. As calculated in the table below, net Service Company charges of $7,552,811 were subjected to a market cost comparison.

Reconciliation to Testable Service Company Charges		
Total Management Fees (O&M)	$	7,859,536
Non-Recurring Items:		
Business Change - Corporate	$	(23,400)
Business Change - Regions	$	(9,111)
Divestiture & SOX - Corp	$	(729,860)
Divestiture & SOX - Regions	$	17,854
Less: Non-Southeast Region Charges	$	(50,041)
Net Testable O&M	$	7,064,978
Total Capital	$	486,878
Total Other	$	1,114
Total Testable Svc Co Charges	**$**	**7,552,970**

For purposes of comparing these charges to outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology, and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total test period Service Company charges break down between management/professional services and customer account services as follows:

	12 Months Ended July 31, 2008	
	Amount	Hours
Management and Professional Services	$ 5,724,142	48,123
Customer Account Services	$ 1,828,827	43,730
Total Service Company Charges	$ 7,552,970	91,853

This study's first question—whether Service Company 12 months ended July 31, 2008 charges were charged at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to KAWC during the 12 months ended July 31, 2008. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

The second question—whether Service Company 12 months ended July 31, 2008 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing KAWC's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer

account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The third question—the necessity of Service Company services—was first investigated by determining the services provided to KAWC. A determination was then made as to whether these services would be required if KAWC were a stand-alone utility.

The fourth question—whether Service Company 12 months ended July 31, 2008 charges were reasonable by other comparative measures—was determined by comparing KAWC's net testable O&M Service Company charges per customer to those of electric and combination electric/gas utilities that file FERC Form 60 – Annual Report of Service Companies.

IV – Managerial And Professional Services Hourly Rate Comparison

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

The Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to KAWC during the 12 months ended July 31, 2008. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged KAWC during the 12 months ended December 31, 2008, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, then Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Schedule 1 (page 11) details the assignment of 12 months ended July 31, 2008 management and professional Service Company charges by outsider provider category. Schedule 2 (page 12) shows the same assignment for Service Company management and professional hours charged to KAWC during the 12 months ended July 31, 2008.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 2008 test period non-labor Service Company charges:

- Contract Services – 12 months ended July 31, 2008 Service Company charges to KAWC include over $383,000 in expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services). These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Computer Hardware and Software Expenses – Included in the 12 months ended July 31, 2008 Service Company charges to KAWC are charges for outside expenses related to leases and maintenance fees related to mainframe, server and network infrastructure, corporate business applications and the communications systems. An outside provider that would take over operation of a data center would recover these expenses over and above the labor necessary to operate the data center.

Schedule 3 (page 13) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Schedules 1 and 2 and the excludable items shown in Schedule 3, the Service Company's equivalent costs per hour for the 12 months ended July 31, 2008 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total testable management & professional charges	$ 291,662	$ 2,209,038	$ 2,416,857	$ 806,585	$ 5,724,142
Less:					
Contract services	$ 9,655	$ 116,547	$ 232,727	$ 24,523	$ 383,452
Travel expenses	$ -	$ 22,123	$ 54,548	$ 20,286	$ 96,958
Computer hardware/software	$ 3,387	$ 56,059	$ 43,833	$ 46,985	$ 150,264
Net Service Charges (A)	$ 278,619	$ 2,014,309	$ 2,085,749	$ 714,791	$ 5,093,468
Total Hours (B)	3,599	9,514	26,141	8,870	48,123
Average Hourly Rate (A / B)	**$ 77**	**$ 212**	**$ 80**	**$ 81**	

Exhibit PLB-1
Schedule 1

Kentucky American Water Company
Analysis of 12 Months Ended July 31, 2008 Service Company Charges By Location And Function

		12 Months Ended July 31, 2008 Service Company Charges				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 186,737	$ 186,737
Call Center	Human Resources		$ 33,855			$ 33,855
Corporate	Accounting			$ 336,339		$ 336,339
	Administration		$ 718,676			$ 718,676
	Audit			$ 48,650		$ 48,650
	Communications		$ 66,004			$ 66,004
	Engineering				$ 24,295	$ 24,295
	Finance			$ 137,954		$ 137,954
	Human Resources		$ 178,942			$ 178,942
	Legal	$ 67,808				$ 67,808
	Operations		$ 115,054		$ 189,616	$ 304,670
	Rates & Revenue			$ 16,035		$ 16,035
	Risk Management		$ 85,250			$ 85,250
	Water Quality				$ 49,779	$ 49,779
Regional Offices	Accounting			$ 25,276		$ 25,276
	Administration		$ 438,197			$ 438,197
	Communications		$ 95,236			$ 95,236
	Engineering				$ 95,059	$ 95,059
	Finance			$ 280,782		$ 280,782
	Human Resources		$ 193,549			$ 193,549
	Legal	$ 223,854				$ 223,854
	Operations		$ 118,985		$ 241,196	$ 360,181
	Risk Management		$ 39,935			$ 39,935
	Water Quality				$ 19,903	$ 19,903
Information Technology	Information Technology			$ 1,159,787		$ 1,159,787
Shared Services	Accounting			$ 342,329		$ 342,329
	Administration		$ 125,357			$ 125,357
	Finance			$ 43,125		$ 43,125
	Rates & Revenue			$ 26,580		$ 26,580
Total Dollars Charged		**$ 291,662**	**$ 2,209,038**	**$ 2,416,857**	**$ 806,585**	**$ 5,724,142**

Exhibit PLB-1
Schedule 2

Kentucky American Water Company
Analysis of 12 Months Ended July 31, 2008Service Company Hours By Location And Function

		12 Months Ended July 31, 2008 Service Company Hours				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				2,185	2,185
Call Center	Human Resources		430			430
Corporate	Accounting			3,786		3,786
	Administration		175			175
	Audit			401		401
	Communications		412			412
	Engineering				153	153
	Finance			1,070		1,070
	Human Resources		1,770			1,770
	Legal	286				286
	Operations		551		1,861	2,412
	Rates & Revenue			90		90
	Risk Management		439			439
	Water Quality				695	695
Regional Offices	Accounting			397		397
	Administration		86			86
	Communications		1,299			1,299
	Engineering				1,138	1,138
	Finance			2,246		2,246
	Human Resources		2,313			2,313
	Legal	3,313				3,313
	Operations		1,119		2,604	3,723
	Risk Management		423			423
	Water Quality				234	234
Information Technology	Information Technology			9,358		9,358
Shared Services	Accounting			7,301		7,301
	Administration		499			499
	Finance			1,180		1,180
	Rates & Revenue			312		312
Total Hours Charged		**3,599**	**9,514**	**26,141**	**8,870**	**48,123**

Exhibit PLB-1
Schedule 3

Kentucky American Water Company
12 Months Ended July 31, 2008 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	Computer HW/SW	Total	Outside Service Provider Category
Accounting	$ 103,793	$ 1,612	$ 10,773	$ 116,178	Certified Public Accountant
Administration	$ 38,800	$ 36	$ 6,738	$ 45,573	Management Consultant
Audit	$ 8,416	$ 27	$ 1,984	$ 10,427	Certified Public Accountant
Communications	$ 11,565	$ 143	$ 9,410	$ 21,119	Management Consultant
Engineering	$ (339)	$ 169	$ 1,892	$ 1,722	Professional Engineer
Finance	$ 44,540	$ 276	$ 10,732	$ 55,547	Certified Public Accountant
Human Resources	$ 45,503	$ 2,998	$ 15,490	$ 63,990	Management Consultant
Information Technology	$ 75,880	$ 52,634	$ 18,173	$ 146,686	Certified Public Accountant
Legal	$ 9,655		$ 3,387	$ 13,042	Attorney
Operations	$ 16,214	$ 12,932	$ 53,636	$ 82,783	Management Consultant, Professional Engineer
Rates & Revenue	$ 99		$ 2,171	$ 2,271	Certified Public Accountant
Risk Management	$ 19,739	$ 15,537	$ 8,828	$ 44,104	Management Consultant
Water Quality	$ 9,588	$ 10,596	$ 7,048	$ 27,233	Professional Engineer
Total	**$ 383,452**	**$ 96,958**	**$ 150,264**	**$ 630,674**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	Computer HW/SW	Total
Attorney	$ 9,655	$ -	$ 3,387	$ 13,042
Management Consultant	$ 116,547	$ 22,123	$ 56,059	$ 194,730
Certified Public Accountant	$ 232,727	$ 54,548	$ 43,833	$ 331,108
Professional Engineer	$ 24,523	$ 20,286	$ 46,985	$ 91,794
Total	**$ 383,452**	**$ 96,958**	**$ 150,264**	**$ 630,674**

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs below.

It should be noted that professionals working for 3 of the 4 outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among certified public accounting firms within Kentucky's regions, only more experienced staff are predominantly CPAs, as shown in the table below. Some employees of the Service Company also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

	Firm Size		
Position	Small	Medium	Large
Partners/Owners	97.8%	96.6%	98.1%
Directors (over 10 years experience)	na	72.7%	78.0%
Managers (6-10 years experience)	na	50.0%	91.9%
Sr Associates (4-5 years experience)	100.0%	20.0%	72.2%
Associates (1-3 years experience)	na	40.0%	31.4%
New Professionals	na	0.0%	15.0%

Attorneys

The Kentucky Bar Association does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for Kentucky attorneys. Therefore, an estimate of Kentucky attorney rates was developed from a survey of Michigan lawyers conducted annually by the Michigan Lawyers Weekly. As presented in Schedule 4, the average rate for each Michigan firm respondent was adjusted for the cost of living differential between their location and Lexington, Kentucky. The survey includes rates that were in effect during 2007.

Management Consultants

The cost per hour for management consultants was developed from the 2007 annual survey performed by the Association of Management Consulting Firms, an industry trade organization. The first step in the calculation, presented in Schedule 5, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. This survey includes rates that were in effect during 2006 for firms in the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison. The survey 2006 average rate was escalated to January 31, 2008—the midpoint of the 12 months ended July 31, 2008.

Certified Public Accountants

The average hourly rate for Kentucky certified public accountants was developed from a 2006 survey performed by the American Institute of Certified Public Accountants (AICPA). Hourly rates in the AICPA survey are the average of firms in Kentucky's region. The average hourly rate was calculated for a set of typical accountant positions, as shown in Schedule 6. Based on a typical staff assignment by each accountant position, a weighted average hourly rate was calculated. This survey covered hourly rates in effect during 2005. Thus, the 2005 average rate was escalated to January 31, 2008, the midpoint of the 12 months ended July 31, 2008.

Professional Engineers

The Service Company provided hourly rate information for outside engineering firms that could have been used by KAWC in 2007 and 2008. As presented in Schedule 7, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit PLB-1
Schedule 4

Kentucky American Water Company
Estimated Billing Rates For Kentucky Attorneys Based On
Michigan Attorney Billing Rates

Billing rates as of December 31, 2007 (Note A)									
		Number	Billing Rate Range					Cost of Living	
	Michigan	Of Mich	Associate		Partner			Adjust	Adjusted
Firm	Location	Lawyers	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright PLLC	Detroit	229	$ 170	$ 275	$ 260	$ 530	$ 309	86%	$ 361
Dykema	Detroit	222	$ 185	$ 390	$ 245	$ 625	$ 361	86%	$ 422
Butzel Long	Detroit	209	$ 165	$ 400	$ 220	$ 550	$ 334	86%	$ 390
Bodman LLP	Detroit	128	$ 125	$ 215	$ 210	$ 495	$ 261	86%	$ 305
Jaffe Raitt Heuer & Weiss, PC	Southfield	100	$ 165	$ 225	$ 225	$ 500	$ 279	98%	$ 285
Trott & Trott, PC	Bingham Farms	64	$ 170	$ 170	$ 235	$ 235	$ 203	127%	$ 160
Brooks Kushman PC	Southfield	52	$ 160	$ 275	$ 250	$ 505	$ 298	98%	$ 304
Kemp, Klein, Umphrey, Edelman & May PC	Troy	36	$ 150	$ 190	$ 200	$ 340	$ 220	112%	$ 196
Pepper Hamilton LLP	Detroit	33	$ 200	$ 315	$ 340	$ 615	$ 368	86%	$ 430
Hertz, Schram & Saretsky, PC	Bloomfield Hills	29	$ 175	$ 260	$ 275	$ 400	$ 278	140%	$ 198
Strobl & Sharp, PC	Bloomfield Hills	28	$ 110	$ 210	$ 200	$ 300	$ 205	140%	$ 146
Kupelian Ormond & Magy, PC	Southfield	25	$ 165	$ 195	$ 235	$ 320	$ 229	98%	$ 234
Rader, Fishman & Grauer, PLLC	Bloomfield Hills	25	$ 130	$ 250	$ 275	$ 495	$ 288	140%	$ 205
McShane & Bowie PLC	Grand Rapids	22	$ 160	$ 275	$ 250	$ 375	$ 265	97%	$ 273
							Overall Average 2007 Billing Rate		$ 279

Note A: Source is Michigan Lawyers Weekly, April 2008
Note B: Source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
Note C: Source is Sperling's Best Places (http://www.bestplaces.net/col/col.aspx). This number represents the cost of living difference between the Michigan city and Lexington, Ky. A number over 100% indicates the Michigan city's cost of living is higher than Lexington. A number less than 100% indicates Lexington's cost of living is higher.

Exhibit PLB-1
Schedule 5

Kentucky American Water Company
Billing Rates of U.S. Management Consultants

A. Calculation of Average Hourly Billing Rate by Consultant Position
Survey billing rates were those in effect in 2006 (Note A)

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 142	$ 187	$ 235	$ 306	$ 358

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 142	$187	$235	$306	$358	
Typical Percent of Time Spent on a Consulting Project	30%	30%	20%	10%	10%	Weighted Average
	$ 43	$ 56	$ 47	$ 31	$ 36	**$ 212**

Escalation to Midpoint of July 31, 2008 Test Period (Note B)

CPI at December 31, 2006	201.8
CPI at January 31, 2008	211.1
Inflation/Escalation	4.6%
Average Hourly Billing Rate For Management Consultants At January 31, 2008	**$ 222**

Note A: source: "Operating Ratios For Management Consulting Firms, 2007 Edition" Association of Management Consulting Firms
Note B: source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit PLB-1
Schedule 6

Kentucky American Water Company
Billing Rates Of Kentucky Certified Public Accountants

A. Calculation of Average Hourly Billing Rate by Public Accounting Position
Survey billing rates were those in effect in 2005 (Note A)

	Average Hourly Billing Rate (Note A)			
Type of Firm	Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 65	$ 77	$ 112	$ 150

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 65	$ 77	$ 112	$ 150	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 20	$ 23	$ 22	$ 30	**$ 95**

CPI at December 31, 2005	196.8
CPI at January 31, 2008	211.1
Inflation/Escalation	7.3%
Average Hourly Billing Rate For CPAs At January 31, 2008	**$ 102**

Note A: Source is AICPA's 2006 National PCPS/TSCPA Management of an Accounting Practice Survey
Note B: source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit PLB-1
Schedule 7

Kentucky American Water Company
Billing Rates Of Kentucky Engineers

Note: Billing rates were those in effect in 2007 and 2008

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
Name of Firm	Technician Senior Technician	Engineer Design Engineer Project Engineer	Project Manager Sr. Mgr. Engineer	Officer Principal Engineer
Firm #1	$73	$85	$136	$175
Firm #2	$76	$84	$134	$164
Firm #3	$80	$102	$162	$207
Firm #4	$60	$80	$127	$162
Firm #5	$70	$73	$112	$160
Firm #6	$55	$86	$139	$190

B. Calculation of Overall Average Engineering Hourly Billing Rate

	CAD Drafter Engineer Tech	Engineer Design Engineer Project Engineer Elect Proj Engineer	Project Manager Project Associate Sr. Mgr. Engineer	Officer Principal Engineer	
Average Hourly Billing Rate (From Above)	$69	$85	$135	$176	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$21	$30	$34	$18	**$102**

Source: Information provided by American Water Works Service Company

Service Company Versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended July 31, 2008		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 77	$ 279	$ (202)
Management Consultant	$ 212	$ 222	$ (10)
Certified Public Accountant	$ 80	$ 102	$ (22)
Professional Engineer	$ 81	$ 102	$ (21)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to KAWC during the 12-months ended July 31, 2008, outside service providers would have cost $1,595,514 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 28% higher than those of the Service Company ($1,595,514 / $5,724,142).

	12 Months Ended July 31, 2008		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (202)	3,599	$ (726,242)
Management Consultant	$ (10)	9,514	$ (98,587)
Certified Public Accountant	$ (22)	26,141	$ (583,251)
Professional Engineer	$ (21)	8,870	$ (187,433)
Service Company Less Than Outside Providers			$ (1,595,514)

If KAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform 48,123 hours of work (around 32 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing KAWC management team. Thus, it would be necessary for KAWC to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individual that would fill this position would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add another $149,400 per year to KAWC's personnel expenses.

Cost of Adding a Professional Position To KAWC's Staff

	Total
New Position's Salary	$ 100,000
Benefits (49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Total Cost of Full Time Position	$ 149,400

Thus, the total effect on the ratepayers of KAWC of contracting all services now provided by the Service Company would be an increase in their costs of $1,744,914 ($1,595,514 + $149,400).

Based on the results of this comparison, it is possible to conclude that the Service Company charged KAWC at the lower of cost or market for services provided during the 12 months ended July 31, 2008.

Other Cost Comparisons

Every year, the Belleville Lab conducts a comparison of its cost for performing major tests to the cost of using outside testing laboratories. Over the past several years, these surveys have shown the following results been as follows:

Year	Number of Major Tests Surveyed	Percent Belleville Lower Than Outside Labs
2000	26	15%
2001	25	19%
2002	24	16%
2003	23	10%
2004	24	9%
2005	24	25%
2006	24	31%

These studies provide additional evidence that the Service Company arrangement is the lowest-cost alternative for KAWC.

V – Customer Account Services Cost Comparison

Background

It is difficult to compare the cost of American Water's National Call Centers with outside providers of the same call center-related services. Call center survey data is proprietary and expensive to obtain. For this reason, KAWC's National Call Center costs are compared to those of neighboring electric utilities because the data necessary to make this comparison is readily available to the public.

Electric utility cost information comes from the FERC Form 1 that each must file. FERC's chart of accounts is defined in chapter 18, part 101 of Code of Federal Regulations. FERC accounts that contain call center-related expenses and are used in this study's comparison are:

- Account 903 Customer Accounts Expense – Records and Collection Expense
- Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense.

In addition, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905.

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA).

Schedule 8 provides FERC's description of what should be charged to these accounts. In questioning the controller of a large Southeastern electric utility, it was determined that expenses of the activities described below are recorded in the designated FERC accounts.

903 Records and Collection Expense

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing and mailing
- Remittance processing – processing of customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

905 Miscellaneous Customer Accounts Expense

- Customer Information System IT – maintenance and support of the customer information system

This study assumes the FERC accounts for other electric and gas utilities contain expenses for the same activities.

Kentucky American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Kentucky American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses
This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.
Labor
1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses
3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 shows amounts for accounts 903 and 905.

Kentucky	• Duke Energy – Kentucky • Kentucky Power	• Kentucky Utilities • Louisville Gas & Electric
West Virginia	• Wheeling Power	
Virginia	• Appalachian Power	• Virginia Electric Power
Ohio	• Cleveland Electric • Columbus Southern Power • Dayton Power & Light • Duke Energy – Ohio	• Ohio Edison • Ohio Power • Toledo Edison
Missouri	• Aquila • Kansas City Power & Light	• Union Electric
Indiana	• Duke Energy – Indiana • Indiana Michigan Power	• Indianapolis Power & Light • NIPSCo
Illinois	• Central Illinois Light • Central Illinois Public Service • Commonwealth Edison	• Illinois Power • Interstate Power & Light • MidAmerica Energy
Tennessee	• Kingsport Power	

Comparison Approach

The basis for this comparison is customer account services expenses per customer. KAWC's cost pool was developed to include the same expenses included in electric utility's FERC accounts 903 and 905. As shown in the graphic below, KAWC's resultant cost pool contains the expenses of Service Company locations and certain operating company expenses.

American Water
Service Company
Pensacola & Alton Call Centers
a. Customer contact
b. Customer order processing
c. Billing information processing
d. Collections
e. Correspondence processing
f. Customer payment processing
Operating Company
a. Postage and forms

Electric Utilities
FERC Acct 903 - Records and Collection Expense and FERC Acct 905 - Misc Customer Accounts Expense
a. Customer contact
b. Customer order processing
c. Bill preparation and mailing
d. Collections
e. Payment processing
f. Correspondence processing

KAWC Cost Per Customer

In order to make a valid comparison to neighboring electric utilities, certain adjustments had to be made to the applicable Service Company charges to KAWC. It was necessary to adjust the National Call Center call handling charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.33 calls per customer. Thus, National Call Center call handling charges had to be increased for comparison purposes, to reflect its costs at a 2.50 calls per customer level. As shown below, KAWC's adjusted annual expense per customer is $28.07—the number that can be compared to neighboring electric utilities' expenses. KAWC's 12 months ended July 31, 2008 unadjusted annual expense per customer is $23.22.

Kentucky-American Cost Per Customer		Year Ended 7/31/2008 Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Cost Component					
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 1,648,336	$ 567,707	$ 2,216,043	
Regional Offices		$ 180,491		$ 180,491	
Operating Company	Customer payment processing			$ 166,689	Note B
Operating Company	Postage & forms			$ 724,532	
			Cost Pool Total	$ 3,287,755	
			Total Customers	117,119	
	12 Months Ended July 31, 2008 Cost Per KAWC Customer			**$ 28.07**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 643,808
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.33	
Percent different	88%	88%
Total Adjustment		$ 567,707

Note B: Estimated customer payment processing expenses

Number of customers	117,119
Number of payments/customer/year	12
Total payments processed/year	1,405,428
Bank charge per item	$ 0.1186
Total estimated annual expense	$ 166,689

Electric Utility Group Cost Per Customer

Schedule 9 shows the actual 2007 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data were taken from each utility's FERC Form 1.

Summary Of Results

As shown in the table below, KAWC's cost per customer is close to the average of the neighboring electric utility comparison group. It can therefore be concluded that KAWC's 12 months ended July 31, 2008 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to KAWC are reasonable compared to those of other utilities.

Average Customer Accounts Expense Per Customer		
Louisville Gas & Electric	$	13.71
Interstate Power & Light	$	15.86
Virginia Electric Power	$	15.89
Ohio Edison	$	19.04
Dayton Power & Light	$	19.15
Illinois Power	$	19.83
Indianapolis Power & Light	$	20.62
Cleveland Electric Illuminating	$	21.33
Union Electric	$	23.46
Aquila	$	23.72
Kansas City Power & Light	$	25.09
Toledo Edison	$	25.77
Kentucky Utilities	$	25.91
Central Illinois Public Service	$	26.50
MidAmerican Energy	$	27.50
Comparison Group Average	**$**	**27.99**
Kentucky American Water	**$**	**28.07**
Wheeling Power	$	28.08
Northern Indiana Public Serice	$	28.32
Indiana Michigan Power	$	31.74
Duke Energy Indiana	$	32.14
Kingsport Power	$	32.31
Central Illinois Light	$	34.22
Duke Energy Kentucky	$	34.88
Appalachian Power	$	34.99
Ohio Power	$	35.00
Duke Energy Ohio	$	36.10
Kentucky Power	$	37.59
Columbus & Southern Power	$	38.57
Commonwealth Edison	$	39.81

It should be noted that comparison group per customer costs at the low end are unusually low given the nature of Customer Accounts expenses. For instance, the annual cost of forms and postage alone is around $6.20 per customer for KAWC. It would be expected that this cost would be the same for every utility in the comparison group because all likely mail customer bills monthly. Thus, for a low-end cost utility like Louisville Gas & Electric, that leaves only $7.51 ($13.71-$6.20) to cover labor and information technology expenses that Customer Accounts services require. It is possible that the very low end cost utilities record the cost of supporting their customer information systems to an A&G FERC account rather than to a Customer Accounts FERC account (903).

Exhibit PLB-1
Schedule 9
Page 1 of 4

Kentucky American Water Company
Comparison Group 2007 Actual Customer Accounts Expense Per Customer

		Kentucky				West Virginia	Virginia	
		Duke Energy Kentucky	Kentucky Power	Kentucky Utilities	Louisville Gas & Electric	Wheeling Power	Appalachian Power	Virginia Electric Power
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 3,247,759	$ 6,205,360	$ 11,681,015	$ 4,642,565	$ 1,083,477	$ 31,314,061	$ 32,253,336
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 75,852	$ 2,888	$ 173,641	$ 215,534	$ 1,480	$ 18,238	$ -
Subtotal		$ 3,323,611	$ 6,208,248	$ 11,854,656	$ 4,858,099	$ 1,084,957	$ 31,332,299	$ 32,253,336
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,080,370	$ 285,983	$ 1,738,946	$ 542,390	$ 55,868	$ 1,429,385	$ 3,831,664
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 264,982	$ 111,009	$ 230,888	$ 94,002	$ 19,665	$ 534,319	$ 1,451,975
Total Cost Pool		**$ 4,668,963**	**$ 6,605,240**	**$ 13,824,490**	**$ 5,494,491**	**$ 1,160,489**	**$ 33,296,003**	**$ 37,536,975**
Total Customers (page 304, line 43)		133,868	175,705	533,512	400,703	41,332	951,693	2,362,318
Customer Account Services Expense per Customer		**$ 34.88**	**$ 37.59**	**$ 25.91**	**$ 13.71**	**$ 28.08**	**$ 34.99**	**$ 15.89**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 9,725,767	$ 4,466,809	$ 22,618,725	$ 20,138,689	$ 369,460	$ 21,499,955	$ 120,865,073
Total O&M Payroll (page 355, line 65)		$ 31,182,162	$ 22,664,819	$ 39,257,367	$ 45,624,056	$ 1,699,949	$ 105,057,647	$ 598,702,458
Benefits as Percent of Payroll		31.2%	19.7%	57.6%	44.1%	21.7%	20.5%	20.2%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 1,323,882	$ 1,702,053	$ 4,110,913	$ 960,068	$ 357,852	$ 8,227,618	$ 25,945,148
Gas (page 354, line 37)		$ 3,112,805			$ 771,056			
Total Payroll Charged to Customer Accounts		$ 4,436,687	$ 1,702,053	$ 4,110,913	$ 1,731,124	$ 357,852	$ 8,227,618	$ 25,945,148
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 3,247,759	$ 6,205,360	$ 11,681,015	$ 4,642,565	$ 1,083,477	$ 31,314,061	$ 32,253,336
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 75,852	$ 2,888	$ 173,641	$ 215,534	$ 1,480	$ 18,238	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 3,323,611	$ 6,208,248	$ 11,854,656	$ 4,858,099	$ 1,084,957	$ 31,332,299	$ 32,253,336
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 933,492	$ 1,073,679	$ 4,292,201	$ 1,986,061	$ 425,426	$ 5,576,254	$ 11,835,960
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 4,257,103	$ 7,281,927	$ 16,146,857	$ 6,844,160	$ 1,510,383	$ 36,908,553	$ 44,089,296
Percent Applicable to Customer Accounts Services (903 and 905)		78.1%	85.3%	73.4%	71.0%	71.8%	84.9%	73.2%
Customer Account Services Portion of Total Payroll		$ 3,463,816	$ 1,451,095	$ 3,018,139	$ 1,228,781	$ 257,057	$ 6,984,565	$ 18,980,062
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,080,370	$ 285,983	$ 1,738,946	$ 542,390	$ 55,868	$ 1,429,385	$ 3,831,664
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 3,463,816	$ 1,451,095	$ 3,018,139	$ 1,228,781	$ 257,057	$ 6,984,565	$ 18,980,062
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 264,982	$ 111,009	$ 230,888	$ 94,002	$ 19,665	$ 534,319	$ 1,451,975

Exhibit PLB-1
Schedule 9
Page 2 of 4

Kentucky American Water Company
Comparison Group 2007 Actual Customer Accounts Expense Per Customer

		Ohio						
		Cleveland Electric Illum.	Columbus Southern Pwr	Dayton Power & Light	Duke Energy - Ohio	Ohio Edison	Ohio Power	Toledo Edison
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 14,571,985	$ 27,013,658	$ 8,528,580	$ 18,251,514	$ 20,280,096	$ 23,346,691	$ 6,786,566
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 493,177	$ 30,647	$ -	$ 7,279	$ 507,437	$ 36,717	$ 156,298
Subtotal		$ 15,065,162	$ 27,044,305	$ 8,528,580	$ 18,258,793	$ 20,787,533	$ 23,383,408	$ 6,942,864
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 836,948	$ 1,264,559	$ 991,292	$ 5,237,196	$ (1,424,285)	$ 1,098,295	$ 982,446
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 274,236	$ 428,016	$ 333,191	$ 1,290,860	$ 450,184	$ 418,833	$ 150,795
Total Cost Pool		**$ 16,176,347**	**$ 28,736,880**	**$ 9,853,063**	**$ 24,786,849**	**$ 19,813,432**	**$ 24,900,536**	**$ 8,076,105**
Total Customers (page 304, line 43)		758,319	745,133	514,405	686,578	1,040,662	711,406	313,413
Customer Account Services Expense per Customer		**$ 21.33**	**$ 38.57**	**$ 19.15**	**$ 36.10**	**$ 19.04**	**$ 35.00**	**$ 25.77**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 7,650,920	$ 11,597,859	$ 18,464,446	$ 52,482,158	$ (11,505,519)	$ 22,732,455	$ 7,749,820
Total O&M Payroll (page 355, line 65)		$ 32,770,179	$ 51,314,234	$ 81,127,271	$ 169,094,889	$ 47,537,720	$ 113,320,078	$ 15,549,239
Benefits as Percent of Payroll		23.3%	22.6%	22.8%	31.0%	-24.2%	20.1%	49.8%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 4,890,691	$ 6,589,685	$ 6,193,463	$ 8,774,665	$ 8,447,511	$ 6,727,321	$ 2,640,178
Gas (page 354, line 37)					$ 13,561,352			
Total Payroll Charged to Customer Accounts		$ 4,890,691	$ 6,589,685	$ 6,193,463	$ 22,336,017	$ 8,447,511	$ 6,727,321	$ 2,640,178
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 14,571,985	$ 27,013,658	$ 8,528,580	$ 18,251,514	$ 20,280,096	$ 23,346,691	$ 6,786,566
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 493,177	$ 30,647	$ -	$ 7,279	$ 507,437	$ 36,717	$ 156,298
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 15,065,162	$ 27,044,305	$ 8,528,580	$ 18,258,793	$ 20,787,533	$ 23,383,408	$ 6,942,864
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,488,077	$ 4,808,046	$ 3,599,111	$ 5,910,289	$ 9,052,734	$ 5,348,894	$ 2,356,336
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 20,553,239	$ 31,852,351	$ 12,127,691	$ 24,169,082	$ 29,840,267	$ 28,732,302	$ 9,299,200
Percent Applicable to Customer Accounts Services (903 and 905)		73.3%	84.9%	70.3%	75.5%	69.7%	81.4%	74.7%
Customer Account Services Portion of Total Payroll		$ 3,584,790	$ 5,594,986	$ 4,355,441	$ 16,873,984	$ 5,884,763	$ 5,474,942	$ 1,971,180
Pension & Benefits Pertaining to Customer Accounts Services		$ 836,948	$ 1,264,559	$ 991,292	$ 5,237,196	$ (1,424,285)	$ 1,098,295	$ 982,446
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 3,584,790	$ 5,594,986	$ 4,355,441	$ 16,873,984	$ 5,884,763	$ 5,474,942	$ 1,971,180
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 274,236	$ 428,016	$ 333,191	$ 1,290,860	$ 450,184	$ 418,833	$ 150,795

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Kentucky American Water Company
Comparison Group 2007 Actual Customer Accounts Expense Per Customer

		Missouri			Indiana			
		Aquila	Kansas City Power & Light	Union Electric	Duke Energy Indiana	Indiana Mich Power	Indianapolis Power & Light	NIPSCo
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,864,226	$ 10,445,176	$ 23,559,069	$ 20,424,866	$ 17,077,474	$ 7,808,040	$ 7,640,560
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 3,970	$ 6,055	$ 393,593	$ 71,323	$ 101,472	$ 67,688	$ 148,310
Subtotal		$ 7,868,196	$ 10,451,231	$ 23,952,662	$ 20,496,189	$ 17,178,946	$ 7,875,728	$ 7,788,870
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,740,462	$ 2,054,257	$ 2,890,852	$ 3,670,837	$ 927,402	$ 1,466,355	$ 3,921,459
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 531,626	$ 393,973	$ 833,653	$ 710,258	$ 360,378	$ 306,353	$ 1,159,163
Total Cost Pool		**$ 11,140,285**	**$ 12,899,461**	**$ 27,677,167**	**$ 24,877,285**	**$ 18,466,726**	**$ 9,648,436**	**$ 12,869,492**
Total Customers (page 304, line 43)		469,707	514,210	1,179,789	773,954	581,882	467,864	454,471
Customer Account Services Expense per Customer		**$ 23.72**	**$ 25.09**	**$ 23.46**	**$ 32.14**	**$ 31.74**	**$ 20.62**	**$ 28.32**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 36,497,609	$ 60,859,546	$ 84,255,317	$ 64,187,707	$ 31,214,137	$ 35,834,278	$ 29,700,994
Total O&M Payroll (page 355, line 65)		$ 92,551,964	$ 152,573,359	$ 317,610,780	$ 162,345,980	$ 158,555,087	$ 97,863,363	$ 114,764,234
Benefits as Percent of Payroll		39.4%	39.9%	26.5%	39.5%	19.7%	36.6%	25.9%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 6,278,707	$ 6,966,789	$ 15,228,065	$ 12,278,547	$ 5,707,798	$ 6,869,864	$ 7,923,830
Gas (page 354, line 37)		$ 4,539,711		$ 3,584,281				$ 12,737,067
Total Payroll Charged to Customer Accounts		$ 10,818,418	$ 6,966,789	$ 18,812,346	$ 12,278,547	$ 5,707,798	$ 6,869,864	$ 20,660,897
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,864,226	$ 10,445,176	$ 23,559,069	$ 20,424,866	$ 17,077,474	$ 7,808,040	$ 7,640,560
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 3,970	$ 6,055	$ 393,593	$ 71,323	$ 101,472	$ 67,688	$ 148,310
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 7,868,196	$ 10,451,231	$ 23,952,662	$ 20,496,189	$ 17,178,946	$ 7,875,728	$ 7,788,870
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,380,613	$ 3,687,007	$ 17,397,091	$ 6,609,800	$ 3,635,670	$ 5,634,982	$ 2,831,519
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 12,248,809	$ 14,138,238	$ 41,349,753	$ 27,105,989	$ 20,814,616	$ 13,510,710	$ 10,620,389
Percent Applicable to Customer Accounts Services (903 and 905)		64.2%	73.9%	57.9%	75.6%	82.5%	58.3%	73.3%
Customer Account Services Portion of Total Payroll		$ 6,949,364	$ 5,149,971	$ 10,897,423	$ 9,284,421	$ 4,710,822	$ 4,004,614	$ 15,152,462
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,740,462	$ 2,054,257	$ 2,890,852	$ 3,670,837	$ 927,402	$ 1,466,355	$ 3,921,459
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,949,364	$ 5,149,971	$ 10,897,423	$ 9,284,421	$ 4,710,822	$ 4,004,614	$ 15,152,462
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 531,626	$ 393,973	$ 833,653	$ 710,258	$ 360,378	$ 306,353	$ 1,159,163

Exhibit PLB-1
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Kentucky American Water Company
Comparison Group 2007 Actual Customer Accounts Expense Per Customer

		Illinois						Tennessee	
		Central Illinois Light	Central Illinois Pub Service	Commonwealth Edison	Illinois Power	Interstate Power & Light	MidAmerica Energy	Kingsport Power	
Customer Account Services Cost Pool									
FERC Account Balances:									
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 5,596,991	$ 8,716,470	$ 120,610,588	$ 10,989,619	$ 6,841,367	$ 14,254,909	$ 1,473,454	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 223,985	$ 302,592		$ 568,738	$ 28,667	$ 309,674	$ 401	
Subtotal		$ 5,820,976	$ 9,019,062	$ 120,610,588	$ 11,558,357	$ 6,870,034	$ 14,564,583	$ 1,473,855	
Add: Employee Benefits & Employer FICA (not included in above amounts)									
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,037,533	$ 812,658	$ 25,649,317	$ 69,710	$ 1,133,450	$ 3,583,729	$ 44,764	
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 334,233	$ 442,805	$ 5,100,185	$ 541,271	$ 372,012	$ 1,552,522	$ 20,029	**Group Average**
Total Cost Pool		**$ 7,192,743**	**$ 10,274,525**	**$ 151,360,089**	**$ 12,169,339**	**$ 8,375,496**	**$ 19,700,834**	**$ 1,538,648**	**$ 563,120,389**
Total Customers (page 304, line 43)		210,178	387,776	3,802,140	613,536	528,093	716,315	47,624	20,116,586
Customer Account Services Expense per Customer		**$ 34.22**	**$ 26.50**	**$ 39.81**	**$ 19.83**	**$ 15.86**	**$ 27.50**	**$ 32.31**	**$ 27.99**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt									
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 8,354,060	$ 8,570,858	$ 115,712,143	$ 870,134	$ 23,724,694	$ 38,097,558	$ 234,574	
Total O&M Payroll (page 355, line 65)		$ 35,179,031	$ 61,047,440	$ 300,765,220	$ 88,316,487	$ 101,787,427	$ 215,743,804	$ 1,371,988	
Benefits as Percent of Payroll		23.7%	14.0%	38.5%	1.0%	23.3%	17.7%	17.1%	
Payroll Applicable to Customer Account Services									
Total Payroll Charged to Customer Accounts Function									
Electric (page 354, line 7)		$ 3,140,575	$ 5,666,365	$ 85,366,508	$ 7,085,972	$ 6,582,592	$ 16,414,627	$ 297,440	
Gas (page 354, line 37)		$ 2,647,376	$ 2,677,418		$ 4,384,260	$ 2,494,279	$ 14,720,361		
Total Payroll Charged to Customer Accounts		$ 5,787,951	$ 8,343,783	$ 85,366,508	$ 11,470,232	$ 9,076,871	$ 31,134,988	$ 297,440	
Percent Applicable to Customer Accounts Services (903 and 905):									
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 5,596,991	$ 8,716,470	$ 120,610,588	$ 10,989,619	$ 6,841,367	$ 14,254,909	$ 1,473,454	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 223,985	$ 302,592	$ -	$ 568,738	$ 28,667	$ 309,674	$ 401	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 5,820,976	$ 9,019,062	$ 120,610,588	$ 11,558,357	$ 6,870,034	$ 14,564,583	$ 1,473,855	
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 1,890,408	$ 3,981,834	$ 33,825,388	$ 7,179,283	$ 5,953,252	$ 7,779,904	$ 200,527	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 7,711,384	$ 13,000,896	$ 154,435,976	$ 18,737,640	$ 12,823,286	$ 22,344,487	$ 1,674,382	
Percent Applicable to Customer Accounts Services (903 and 905)		75.5%	69.4%	78.1%	61.7%	53.6%	65.2%	88.0%	
Customer Account Services Portion of Total Payroll		$ 4,369,063	$ 5,788,301	$ 66,669,082	$ 7,075,439	$ 4,862,904	$ 20,294,407	$ 261,818	
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,037,533	$ 812,658	$ 25,649,317	$ 69,710	$ 1,133,450	$ 3,583,729	$ 44,764	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services									
Customer Account Services Portion of Total Payroll		$ 4,369,063	$ 5,788,301	$ 66,669,082	$ 7,075,439	$ 4,862,904	$ 20,294,407	$ 261,818	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	
Estimated Employer's Portion of FICA		$ 334,233	$ 442,805	$ 5,100,185	$ 541,271	$ 372,012	$ 1,552,522	$ 20,029	

VI - Need For Service Company Services

Analysis Of Services

The third aspect of this study was an assessment of whether the services that are provided to KAWC by the Service Company would be necessary if KAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for KAWC. Based on Baryenbruch & Company, LLC's experience working with the Service Company and information from Service Company personnel, the matrix in Schedule 10 was created showing which entity—KAWC or a Service Company location—is responsible for each of the functions KAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Schedule 10, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if KAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to KAWC. For all of the services listed in Schedule 10, there was only one entity that was primarily responsible for the service.

Kentucky American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	KAWC	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Engineering and Construction Management							
CPS Preparation	P				S		
Five-Year System Planning	P				S		
Engineering Standards & Policies Development					P		
Project Design							
Major Projects (e.g., new treatment plant)	P				S		
Special Projects	P				S		
Minor Projects (e.g., pipelines)	P						
Construction Project Management							
Major Projects	P				S		
Special Projects	P				S		
Minor Projects	P						
Hydraulics Review	P				S		
Developers Extensions	P						
Tank Painting	P						
Water Quality and Purification							
Water Quality Standards Development			S		S		P
Research Studies	S				S		P
Water Quality Program Implementation	P				S		
Water Treatment Operations & Maintenance	P				S		
Compliance Tracking and Chemical Testing	P						S
Sample Collection and Other Testing	S				S		P
Transmission and Distribution							
Preventive Maintenance Program Development	P						
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	P		S		S		
Customer Contact	S	P					
Call Processing		P					
Service Order Creation	S	P	S				
Service Order Processing	P	S					
Customer Credit		P					
Meter Reading	P					S	
Customer Bill Preparation		S				P	
Bill Collection	S	P				S	
Customer Payment Processing	S			P			
Meter Standards Development	S				P		
Meter Testing, Maintenance & Replacement	P						

Kentucky American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	KAWC	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Financial Management							
Financial Planning	S		P		S		
Financings—Equity	S		P		S		
Financings--Long Term Debt & Preferred (A)	S		P				
Short Term Lines of Credit Arrangements (A)	S				P		
Investor Relations			S		P		
Insurance Program Administration	S				P		
Loss Control/Safety Program Administration	P				S		
Pension Fund Asset Management					P		
Cash Management/Disbursements				P			
Internal Auditing					P		
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions					P		
Regional Guidelines & Instructions			P				
Budget Preparation							
Revenue	P		S				
O&M	P		S				
Depreciation and Interest Expense	S		S	P			
Budget Preparation--Service Company Charges	S	S	P	S	S	S	S
Capital Budget Preparation—Projects	P						
Capital Budget Preparation—Non-Project Work	P						
Prepare Monthly Budget Variance Report ("Budget/Plan Analysis")	P						
Prepare Capital Project Budget Status Report	P						
Year-End Projections (A)	P						
Accounting and Taxes							
Accounts Payable Accounting	S			P			
Payroll Accounting	S			P			
Work Order Accounting	S			P			
Fixed Asset Accounting	S			P			
Journal Entry Preparation--Billing Corrections	S			P			
Journal Entry Preparation--All Others	S			P			
Financial Statement Preparation	S			P			
State Commission Reporting	S		S	P			
Income Taxes—State				P			
Income Taxes—Federal				P			
Property Taxes	S		S	P			
Gross Receipts Taxes	S		S	P			

Note A: Financings and lines of credit are the responsibility of American Capital Corporation

Kentucky American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	KAWC	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	S		P				
Rate Case Planning and Preparation	S		P				
Rate Case Administration	S		P				
Commission Inquiry Response	S		P				
Legal			P		S		
Purchasing and Materials Management							
Specification Development	S		S	S	P		
Bid Solicitation	S			P			
Contract Administration	S			P			
Ordering	P						
Inventory Management	P			S			
Human Resources Management							
Benefit Program Development					P		
Benefits Program Administration	S		P				
Management Compensation Administration					P		
Wage & Salary Program Design					P		
Wage & Salary Administration	P		S				
Labor Negotiations--Wages	P		S				
Labor Negotiations--Benefits					P		
Labor Negotiations--Work Rules	S		P				
Training Program Development	S		S		P		
Training--Course Delivery	P						
Affirmative Action/EEO--Plan Development	P						
Affirmative Action/EEO--Implementation	P						
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance						P	
Software Maintenance						P	
Network Administration			P			S	
PC Acquisition & Support			P			S	
Help Desk			S			P	

Governance Practices Associated With Service Company Charges

There are several ways by which KAWC exercises control over Service Company services and charges. The most important of these are described below.

- **President of Regulated Operations Oversight** – The President of Regulated Operations is on the Executive Management Team (EMT) of American Water. This position is responsible for the overall performance of each operating company in American Water. As part of the EMT, the President of Regulated Operations has equal say with other EMT members in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending. The President of Regulated Operations also has dialogue with each operating company president to address local concerns.

- **Regional Vice President & Treasurer** – The Regional Vice President and Treasurer of the southeast states is responsible for the financial reporting, performance and internal controls of each of the operating companies in the region. The Vice President and Treasurer monitors the performance and reporting from the Service Company and follows up on instances where the quality and timeliness of services are not as expected. The operating company interacts with the Regional VP & Treasurer to discuss any concerns with billings, etc.

- **Operating Company Board Oversight** – KAWC board of directors includes members of American Water's EMT, members of the regional management team and business and community leaders from outside the Company. KAWC's president is Chairman of the KAWC board. This helps ensure that KAWC's needs are a factor in the delivery of Service Company services.

- **Service Company Budget Review/Approval** – The President of Regulated Operations sits on the Service Company board and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors. KAWC's president also sits on the Service Company board.

- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the President of Regulated Operations. With input from the local presidents and Regional Vice President & Treasurer, they have the ability to impact all new initiatives and projects before they are authorized.

- **Service Company Bill Scrutiny** – Southeast Region Finance personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. KAWC's financial analyst has dialogue with regional office personnel concerning the monthly bill and any mistakes or overcharges are credited on a subsequent billing. The Southeast Region Finance unit prepares an actual to budget comparison of management fees each month for use in identifying unusual variances. Service Company actual to budget comparison is included in the monthly FRP. Unusual variances are researched, explanations are provided and any corrections are made, as necessary.

- **Service Company Budget Variance Reporting** – Each month, a summary variance analysis is prepared that explains differences between budgeted and actual Service Company spending. In addition, a more detailed monthly variance report, called the "Statement of Expenses and Billed Charges," is produced by Service Company location and shows actual spending for the month.

- **Operating Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly, has a line item for Management Fees (i.e., Service Company charges). In this way, Service Company budget versus actual charges can be monitored for the month and year-to-date. Additional information exists that allows more detailed analysis of "Regional" and "Corporate" Management Fees.

- **Capital Investment Management ("CIM") –** CIM is one of American Water's primary business planning processes. It covers capital and asset planning and is employed throughout American Water. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:

  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable, and
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment. The process is managed at two levels for all American Water companies, including all KAWC Operating Units. Monthly meetings of the CIM are held to review capital spending compared to plan, review new project requests, and review updates or modifications to existing projects. The President of KAWC, VP Finance, and others participate as necessary (e.g. KAWC operations managers and Rates Manager) and provide the data used in the monthly review schedules.

VII – Other Comparative Measures Of Reasonableness Of Service Company Charges

KAWC's Service Company Cost Per Customer

During the 12 months ended July 31, 2008, KAWC was charged $60 per customer in O&M expenses by the Service Company. As shown in the table below, this calculation is based on net testable O&M, which eliminates certain O&M items for which KAWC has not requested cost recovery.

	12 Months Ended July 31, 2008
Net Testable Service Company O&M Expenses	$ 7,064,978
KAWC American Customers (12/31/07)	117,119
KAWC American Cost Per Customer	$ 60

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

Twenty-three utility holding companies filed a Form 60 for 2007. All but two were included in the comparison group. The service company for PNM Resources, Inc. was excluded because its 2007 service company cost per regulated utility customer was clearly an anomaly as a negative number. This result is likely due to the unique manner by which PNM's service company expenses are reported on Form 60. Duke Energy was also excluded from the comparison group because one of its two service companies did not provide numbers for its Form 60. Thus, it was not possible to develop Duke's consolidated service company cost per customer for 2007.

Schedule 11 compares the services provided by American Water's Service Company to the services provided by comparison group service companies. In general, the types of services provided by American Water's Service Company are similar to those provided by comparison group service companies.

O&M expenses charged to utility affiliates for the comparison group service companies were obtained from Schedule XVII – Schedule of Expense Distribution by Department or Service Function (p. 305 to 305c) of each entity's FERC Form 60. This schedule shows charges by category of service (e.g., accounting, information technology) and type of cost (e.g., labor, benefits, outside services). The following were eliminated from the comparison group's total expenses because they are not in American Water Service Company's 2007 charges to KAWC:

- All electric- and gas-specific services
- Income taxes (account 409), provision for deferred income taxes (account 410), provision for deferred income taxes – credit (account 411) and investment tax credit (account 411.5).
- Donations (account 426.1)
- Interest on long-term debt (account 427), interest on debt to associate companies (account 430) and other interest expense (account 431)

Comparison group service company 2007 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

Schedule 12 shows KAWC's 12 months ended July 31, 2008 Service Company cost per customer of $60 to be considerably lower than the average of $121 per customer for the comparison group service companies. Only 3 of 21 comparison group service companies had a lower 2007 cost per customer than KAWC. These results further support the conclusion that the Service Company's 2007 charges to KAWC were reasonable.

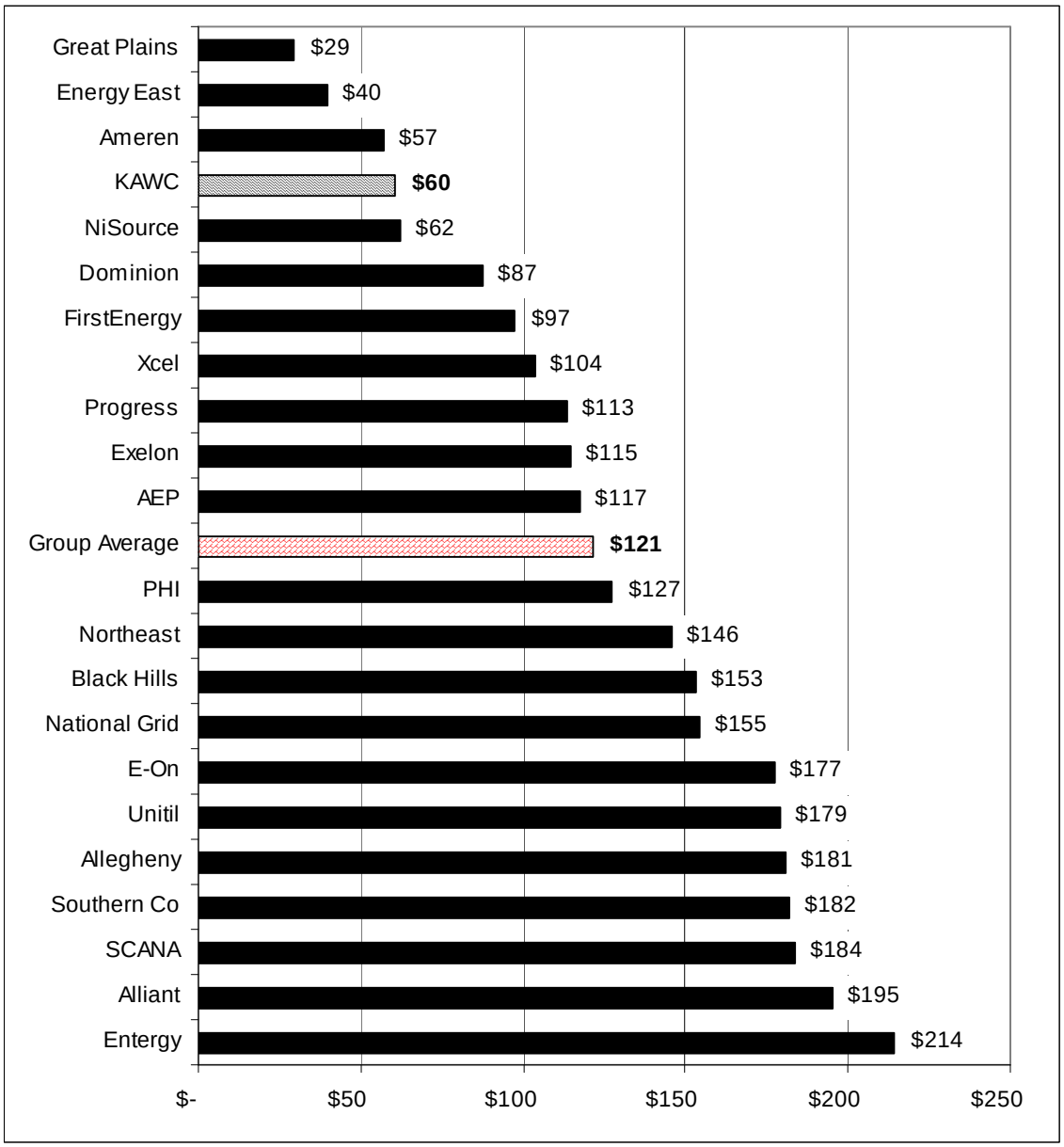
Exhibit PLB-1
Schedule 11

Kentucky American Water Company
Analysis of Service Company Services

Service Category	American Water	AEP	Allegheny	Alliant	Ameren	Black Hills	Dominion	Energy East	Entergy	E-On	Exelon	First Energy	Great Plains	KeySpan	NiSource	Northeast	PHI	Progress	SCANA	Southern Co	Unitil	Xcel
Accounting	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X			X	X
Audit Services	X	X	X	X		X	X	X		X		X	X	X	X			X		X		X
Corporate Planning	X	X	X		X	X	X			X		X		X	X	X		X	X			X
Customer Service	X	X	X	X		X	X			X	X	X		X	X	X	X		X		X	X
Engineering	X	X		X										X	X					X	X	X
Environmental		X		X	X	X	X			X		X		X	X		X		X	X		
Executive	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
External Affairs	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Facilities Management				X							X	X		X					X			X
Finance	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Human Resources	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Information Technology	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X
Investor Relations	X	X		X		X	X					X			X			X	X			X
Legal	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X
Operations	X													X	X							
Regulatory Services	X	X	X	X	X	X	X	X		X	X	X		X	X			X	X		X	X
Risk Management	X	X	X			X	X	X		X		X		X	X							X
Security			X							X	X											
Service Co Overhead		X			X	X	X			X	X		X	X	X		X					
Shared Services	X	X			X	X	X			X	X			X	X	X		X				
Supply Chain	X	X	X	X	X		X	X		X	X	X		X	X		X		X	X		X
Transportation Services				X						X												X
Treasury	X		X		X		X			X		X		X	X			X				
Total Services	18	18	15	16	14	16	17	11	6	19	14	17	8	20	20	8	10	13	13	10	7	17

Exhibit PLB-1
Schedule 12

Kentucky American Water Company
Comparison of Service Company Annual Costs Per Customer



Market Cost Comparison of Service Company Charges to Kentucky American Water Company

12-Months Ended September 30, 2009

Baryenbruch & Company, LLC

Kentucky American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended September 30, 2009

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to Kentucky American Water Company (KAWC):

1. Were the Service Company's charges to KAWC during the 12 months ended September 30, 2009 reasonable?

2. Was KAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during the 12 months ended September 30, 2009?

3. Were the 12 months ended September 30, 2009 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services KAWC receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 12 months ended September 30, 2009 cost per KAWC customer was very reasonable compared to cost per customer for electric and combination electric/gas service companies. During the 12 months ended September 30, 2009, KAWC was charged $55 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $109 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 3 of the 24 utility service companies that filed a FERC Form 60 for 2008 had a lower per customer A&G cost than KAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- KAWC was charged the lower of cost or market for managerial and professional services during the 12 months ended September 30, 2009.

- On average, the hourly rates for outside service providers are 21% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by KAWC without careful supervision on the part of KAWC. If these services were contracted entirely to outside providers, KAWC would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended September 30, 2009, KAWC and its ratepayers would have incurred more than $1,500,000 in additional expenses. This amount includes the higher cost of outside providers and the cost of one KAWC positions needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to KAWC from its use of the Service Company. Outside service providers generally bill

for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $1,500,000 cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week), then that work would have cost an estimated $70,000 in additional charges from outside providers.

- It would be difficult for KAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from KAWC ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is within a reasonable range of the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and KAWC. During the 12-months ended September 30, 2009, the customer accounts cost for KAWC customers was $28.35 compared to the 2008 average of $27.07 for neighboring electric utilities. The highest comparison group per customer cost was $39.29 and the lowest $15.67.

Concerning question 4, the following conclusions were drawn:

- The services that the Service Company provides are necessary and would be required even if KAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to KAWC. For all of the services listed in Exhibit 11, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like KAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of KAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include rates and revenues, engineering, operations and field resource coordination.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times his/her hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 20% of American Water's Eastern Region's professional labor is assigned to KAWC during a month, then 20% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 20% of the Eastern Region's accumulated professional and support labor is charged to KAWC during the month, then 20% of that month's overhead expenses will be assigned to KAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to KAWC, then 2% of that office's office expenses would be assigned to KAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended September 30, 2009, the Service Company billed KAWC $7,892,467 in O&M-related charges and $891,627 in capital-related charges. Included in the O&M amount are certain non-recurring expenses which are excluded from this market study. As calculated in the table below, net testable Service Company charges of $8,798,773 were subjected to a market cost comparison.

	12 Months Ended September 30, 2009
Mgmt Fee Expense (O&M)	$ 7,892,467
Add(Subtract): Non-Recurring Items	
Sarbanes-Oxley	$ 14,679
Net O&M Expenses	$ 7,907,146
Mgmt Fees - Capital	$ 891,627
Total Testable AWWSC Charges	**$ 8,798,773**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into three categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology and engineering.
- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.
- Field Resource Coordination Services – Includes the dispatching and oversight of work to operating company field crews.

Total test period Service Company charges break down between management/professional services, customer account services and field resource coordination as follows:

	12 Months Ended Sep 30, 2009	
	Amount	Hours
Management and Professional Services	$ 6,816,711	52,690
Customer Account Services	$ 1,728,850	47,924
Field Resource Coordination	$ 253,212	5,049
Total Service Company Charges	**$ 8,798,773**	**105,663**

This study's first question—whether Service Company 12 months ended September 30, 2009 charges were reasonable—was determined by comparing KAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 12 months ended September 3, 2009 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to KAWC during the 12 months ended September 30, 2009. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 12 months ended September 30, 2009 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing KAWC's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to KAWC and determining if these services would be required if KAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

KAWC's Service Company Cost per Customer

During the 12 months ended September 30, 2009, KAWC was charged $55 per customer by the Service Company for A&G/O&M-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	12 Months ended Sep 30, 2009 AWWSC Charges
Testable Service Company charges	$ 8,798,773
Less: Capital charges	$ (891,627)
Less: Non-A&G function O&M charges	
Engineering	$ (11,031)
Operations	$ (1,073,526)
Water Quality	$ (260,216)
Net A&G/O&M-related charges	$ 6,562,374
KAWC customers	118,279
KAWC Cost Per Customer	**$ 55**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2008, a Form 60 was filed by 24 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G/O&M-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

O&M expenses charged to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2008 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

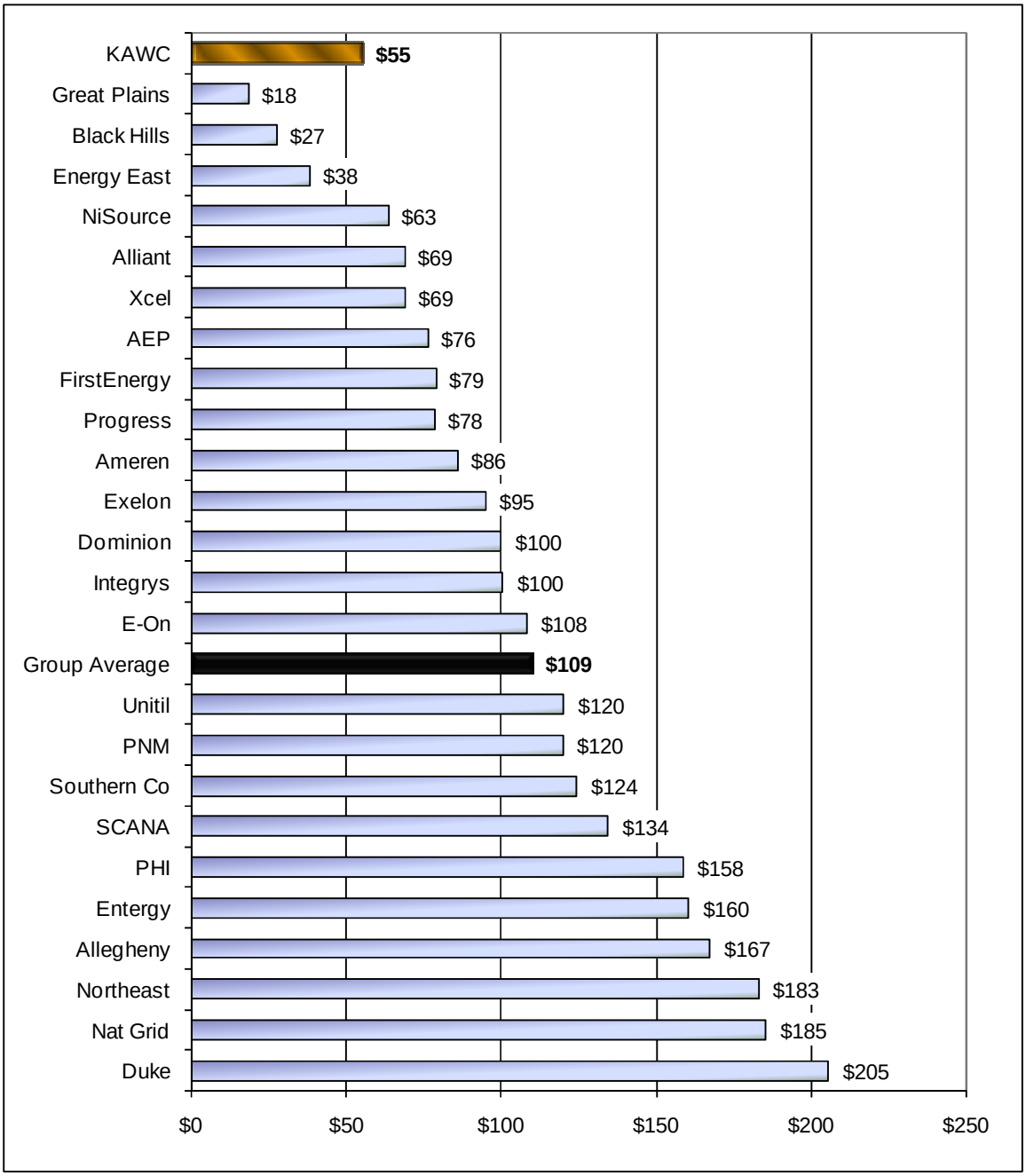
A&G expenses per regulated utility customer for the 24 utility companies that file Form 60 for 2008 are calculated below.

Utility Company	2008 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$396,340,118	5,213,000	$ 76
Allegheny	$263,588,707	1,577,873	$ 167
Alliant	$205,754,832	3,000,000	$ 69
Ameren	$291,684,710	3,400,000	$ 86
Black Hills	$20,763,828	759,400	$ 27
Dominion	$357,718,046	3,588,500	$ 100
Duke	$923,936,645	4,500,000	$ 205
Energy East	$113,714,789	2,989,800	$ 38
Entergy	$432,575,683	2,700,000	$ 160
E-On	$136,276,177	1,263,000	$ 108
Exelon	$558,687,014	5,885,000	$ 95
FirstEnergy	$354,028,109	4,499,000	$ 79
Great Plains	$15,000,708	820,000	$ 18
Integrys	$216,364,166	2,157,000	$ 100
Nat Grid	$1,240,706,398	6,700,000	$ 185
NiSource	$237,380,009	3,750,000	$ 63
Northeast	$302,138,730	1,654,000	$ 183
PHI	$302,463,412	1,910,000	$ 158
Progress	$242,677,256	3,100,000	$ 78
PNM	$102,688,385	859,000	$ 120
SCANA	$191,207,825	1,424,300	$ 134
Southern Co	$546,498,605	4,402,000	$ 124
Unitil	$20,341,422	169,600	$ 120
Xcel	$367,626,617	5,345,000	$ 69
Group Total	**$7,840,162,191**	**71,666,473**	**$ 109**

Exhibit 1 shows KAWC's 12 months ended September 30, 2009 Service Company cost per customer of $58 to be considerably lower than the average of $109 per customer for the comparison group service companies. Only 3 of 24 comparison group service companies had a lower cost per customer than KAWC. Based on this result, it is possible to conclude that the Service Company's 12 months ended September 30, 2009 charges to KAWC were reasonable.

Exhibit 1

Kentucky-American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to KAWC during the 12 months ended September 30, 2009. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged KAWC during the 12 months ended September 30, 2009, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended September 30, 2009 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to KAWC during the 12 months ended September 30, 2009.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. The three categories of adjustments are:

- Contract Services – 12 months ended September 30, 2009 Service Company charges to KAWC include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services).

These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 12 months ended September 30, 2009 Service Company charges to KAWC are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended September 30, 2009 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total management, professional & technical services charges	$ 334,249	$ 1,710,026	$ 3,561,408	$ 1,211,028	$ 6,816,711
Less:					
Contract services	$ 20,484	$ 95,374	$ 467,125	$ 14,259	$ 597,241
Travel expenses	$ 2,520	$ 43,997	$ 45,186	$ 73,938	$ 165,640
IT infrastructure expenses	$ 5,573	$ 243,378	$ 217,932	$ 47,913	$ 514,795
Net Service Charges (A)	$ 305,672	$ 1,327,278	$ 2,831,166	$ 1,074,919	$ 5,539,035
Total Hours (B)	4,166	7,038	29,356	12,130	52,690
Average Hourly Rate (A / B)	**$ 73**	**$ 189**	**$ 96**	**$ 89**	

Exhibit 2

Kentucky-American Water Company
Analysis of 12 Months Ended September 30, 2009 Service Company Charges By Location And Function

		12 Months Ended September 30, 2009 Service Company Charges				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 203,790	$ 203,790
Call Center	Human Resources		$ 38,322			$ 38,322
Corporate	Accounting			$ 497,590		$ 497,590
	Administration		$ 322,790			$ 322,790
	Audit			$ 52,782		$ 52,782
	Communications		$ 93,321			$ 93,321
	Finance			$ 281,839		$ 281,839
	Human Resources		$ 275,961			$ 275,961
	Information Technology			$ 6,583		$ 6,583
	Legal	$ 97,417				$ 97,417
	Operations		$ 163,589		$ 724,909	$ 888,499
	Rates & Revenue			$ 75,655		$ 75,655
	Risk Management		$ 47,419			$ 47,419
	Water Quality				$ 91,789	$ 91,789
Regional Offices	Accounting			$ 29,285		$ 29,285
	Administration		$ 254,002			$ 254,002
	Communications		$ 167,071			$ 167,071
	Engineering				$ 13,044	$ 13,044
	Finance			$ 642,225		$ 642,225
	Human Resources		$ 61,873			$ 61,873
	Legal	$ 236,832				$ 236,832
	Operations		$ 161,223		$ 173,907	$ 335,129
	Risk Management		$ 21,941			$ 21,941
	Water Quality				$ 3,589	$ 3,589
Information Technology	Information Technology			$ 1,424,145		$ 1,424,145
Shared Services	Accounting			$ 410,795		$ 410,795
	Administration		$ 102,514			$ 102,514
	Finance			$ 64,120		$ 64,120
	Rates & Revenue			$ 76,388		$ 76,388
Total Dollars Charged		**$ 334,249**	**$ 1,710,026**	**$ 3,561,408**	**$ 1,211,028**	**$ 6,816,711**

Exhibit 3

Kentucky-American Water Company
Analysis of 12 Months Ended September 30, 2009 Service Company Hours By Location And Function

		12 Months Ended September 30, 2009 Service Company Hours				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				2,664	2,664
Call Center	Human Resources		493			493
Corporate	Accounting			3,725		3,725
	Administration		269			269
	Audit			254		254
	Communications		156			156
	Finance			827		827
	Human Resources		1,744			1,744
	Information Technology			18		18
	Legal	425				425
	Operations		471		6,534	7,005
	Rates & Revenue			174		174
	Risk Management		337			337
	Water Quality				787	787
Regional Offices	Accounting			123		123
	Administration		-			-
	Communications		1,348			1,348
	Engineering				16	16
	Finance			5,859		5,859
	Human Resources		166			166
	Legal	3,741				3,741
	Operations		1,501		2,095	3,596
	Risk Management		297			297
	Water Quality				32	32
Information Technology	Information Technology			8,783		8,783
Shared Services	Accounting			7,180		7,180
	Administration		255			255
	Finance			1,382		1,382
	Rates & Revenue			1,030		1,030
Total Hours Charged		**4,166**	**7,038**	**29,356**	**12,130**	**52,690**

Exhibit 4

Kentucky-American Water Company
12 Months Ended September 30, 2009 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total	Outside Service Provider Category
Accounting	$ 168,888	$ 5,552	$ 6,239	$ 180,679	Certified Public Accountant
Administration	$ 28,652	$ 6,822	$ 225,416	$ 260,891	Management Consultant
Audit	$ 3,552	$ 1,389	$ 483	$ 5,424	Certified Public Accountant
Communications	$ 17,791	$ 9,265	$ 1,579	$ 28,635	Management Consultant
Engineering	$ -	$ 200	$ 122	$ 322	Professional Engineer
Finance	$ 177,832	$ 16,245	$ 11,516	$ 205,593	Certified Public Accountant
Human Resources	$ 43,909	$ 12,075	$ 5,135	$ 61,119	Management Consultant
Information Technology	$ 106,168	$ 18,146	$ 197,015	$ 321,329	Certified Public Accountant
Legal	$ 20,484	$ 2,520	$ 5,573	$ 28,577	Attorney
Operations	$ 19,019	$ 82,351	$ 21,224	$ 122,593	Management Consultant, Professional Engineer
Rates & Revenue	$ 10,685	$ 3,854	$ 2,679	$ 17,217	Certified Public Accountant
Risk Management	$ 1,312	$ 3,204	$ 4,049	$ 8,564	Management Consultant
Water Quality	$ (1,050)	$ 4,017	$ 33,766	$ 36,733	Professional Engineer
Total	**$ 597,241**	**$ 165,640**	**$ 514,795**	**$ 1,277,676**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total
Attorney	$ 20,484	$ 2,520	$ 5,573	$ 28,577
Management Consultant	$ 95,374	$ 43,997	$ 243,378	$ 382,748
Certified Public Accountant	$ 467,125	$ 45,186	$ 217,932	$ 730,242
Professional Engineer	$ 14,259	$ 73,938	$ 47,913	$ 136,109
Total	**$ 597,241**	**$ 165,640**	**$ 514,795**	**$ 1,277,676**

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among Kentucky certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

	Firm Size		
Position	Small	Medium	Large
Partners/Owners	97%	98%	99%
Directors (11+ years experience)	na	100%	86%
Managers (6-10 years experience)	na	72%	88%
Sr Associates (4-5 years experience)	na	25%	69%
Associates (1-3 years experience)	na	0%	24%
New Professionals	na	8%	1%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2008)

Attorneys

The Kentucky State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for Kentucky attorneys. Therefore, an estimate of Kentucky attorney rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5, the average rate for each firm was adjusted for the cost of living differential between its location and Lexington, Kentucky. The Lawyers Weekly surveys included rates in effect at December 31, 2007. Thus, the 2007 average rate was escalated to March 31, 2009—the midpoint of the test year ended September 30, 2009.

Management Consultants

The cost per hour for management consultants was developed from a 2009 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2008 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2008 average rate was escalated to March 31, 2009—the midpoint of the 12 months ended September 30, 2009.

Certified Public Accountants

The average hourly rate for Kentucky CPAs was developed from a 2008 survey performed by the American Institute of Certified Public Accountants (AICPA). The Kentucky version of this survey was used to develop hourly rates for member firms in Kentucky.

As shown in Exhibit 7, a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2007. Thus, the data had to be escalated to March 31, 2009—the test year's midpoint.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by KAWC in 2009. As presented in Exhibit 8, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

Kentucky-American Water Company
Estimated Billing Rates For Kentucky Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates as of December 31, 2007 (Note A)									
		Number	Billing Rate Range					Cost of Living	
		Of	Associate		Partner			Adjust	Adjusted
Firm	Location	Lawyers	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright PLLC	Detroit, Mi	229	$ 170	$ 275	$ 260	$ 530	$ 309	86%	$ 361
Dykema	Detroit, Mi	222	$ 185	$ 390	$ 245	$ 625	$ 361	86%	$ 422
Butzel Long	Detroit, Mi	209	$ 165	$ 400	$ 220	$ 550	$ 334	86%	$ 390
Bodman LLP	Detroit, Mi	128	$ 125	$ 215	$ 210	$ 495	$ 261	86%	$ 305
Jaffe Raitt Heuer & Weiss, PC	Southfield, Mi	100	$ 165	$ 225	$ 225	$ 500	$ 279	98%	$ 285
Trott & Trott, PC	Bingham Farms, Mi	64	$ 170	$ 170	$ 235	$ 235	$ 203	127%	$ 160
Brooks Kushman PC	Southfield, Mi	52	$ 160	$ 275	$ 250	$ 505	$ 298	98%	$ 304
Kemp, Klein, Umphrey, Edelman & May PC	Troy, Mi	36	$ 150	$ 190	$ 200	$ 340	$ 220	112%	$ 196
Pepper Hamilton LLP	Detroit, Mi	33	$ 200	$ 315	$ 340	$ 615	$ 368	86%	$ 430
Hertz, Schram & Saretsky, PC	Bloomfield Hills, Mi	29	$ 175	$ 260	$ 275	$ 400	$ 278	140%	$ 198
Strobl & Sharp, PC	Bloomfield Hills, Mi	28	$ 110	$ 210	$ 200	$ 300	$ 205	140%	$ 146
Kupelian Ormond & Magy, PC	Southfield, Mi	25	$ 165	$ 195	$ 235	$ 320	$ 229	98%	$ 234
Rader, Fishman & Grauer, PLLC	Bloomfield Hills, Mi	25	$ 130	$ 250	$ 275	$ 495	$ 288	140%	$ 205
McShane & Bowie PLC	Grand Rapids, Mi	22	$ 160	$ 275	$ 250	$ 375	$ 265	97%	$ 273
Edwards Angel Palmer & Dodge	Boston, Ma	259	$ 144	$ 321	$ 474	$ 474	$ 353	149%	$ 238
Sullivan & Worcester	Boston, Ma	137	$ 245	$ 530	$ 415	$ 700	$ 473	149%	$ 318
Burns & Levinson	Boston, Ma	112	$ 210	$ 350	$ 375	$ 475	$ 353	149%	$ 237
Bowditch & Dewey	Worcester, Ma	64	$ 150	$ 300	$ 280	$ 550	$ 320	117%	$ 274
Mirick O'Connell	Worcester, Ma	60	$ 160	$ 250	$ 280	$ 400	$ 273	117%	$ 233
Hinckley, Allen & Snyder	Boston, Ma	58	$ 200	$ 330	$ 300	$ 480	$ 328	149%	$ 220
Prince Lobel Glovsky & Tye	Boston, Ma	52	$ 175	$ 265	$ 275	$ 475	$ 298	149%	$ 200
Robinson & Cole	Boston, Ma	48	$ 220	$ 375	$ 340	$ 490	$ 356	149%	$ 240
Bromberg & Sunstein	Boston, Ma	42	$ 250	$ 450	$ 500	$ 725	$ 481	149%	$ 324
Lawson & Weitzen	Boston, Ma	35	$ 125	$ 225	$ 225	$ 400	$ 244	149%	$ 164
Murtha Cullina	Boston, Ma	34	$ 165	$ 290	$ 250	$ 500	$ 301	149%	$ 203
Marcus Errico Emmer & Brooks	Braintree, Ma	28	$ 250	$ 250	$ 300	$ 360	$ 290	139%	$ 208
Rich May	Boston, Ma	25	$ 150	$ 300	$ 300	$ 400	$ 288	149%	$ 194
Keegan Werlin	Boston, Ma	22	$ 150	$ 275	$ 325	$ 475	$ 306	149%	$ 206
Barron & Stadfeld	Boston, Ma	21	$ 160	$ 230	$ 250	$ 350	$ 248	149%	$ 167
Cain Hibbard Myers & Cook	Pittsfield, Ma	19	$ 150	$ 200	$ 210	$ 235	$ 199	118%	$ 169
							Overall Average 2007 Billing Rate		$ 250

Escalation to Test Year's Mid-Point - March 31, 2009 (Note B)	
CPI at December 31, 2007	210.0
CPI at March 31, 2009	212.7
Inflation/Escalation	1.3%
Average Billing Rate At March 31, 2009	**$ 253**

Note A: Source is Michigan Lawyers Weekly (April 2008) and Massachusetts Lawyers Weekly (April 2008)
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
Note C: Source is Sperling's Best Places (http://www.bestplaces.net/col/col.aspx). This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Lexington, Kentucky. A number over 100% indicates the Michigan or Massachusetts city's cost of living is higher than Lexington. A number less than 100 % indicates Lexington's cost of living is higher.

Exhibit 6

Kentucky-American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2008 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 147	$ 196	$ 268	$ 295	$ 384

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 147	$196	$268	$295	$384	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 44	$ 59	$ 54	$ 29	$ 38	**$ 224**

Escalation to Test Year's Mid-Point - March 31, 2009 (Note B)

CPI at December 31, 2008	210.2
CPI at March 31, 2009	212.7
Inflation/Escalation	1.2%
Average Hourly Billing Rate For Management Consultants At March 31, 2009	**$ 227**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2009 Edition," Association of Management Consulting Firms

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

Kentucky-American Water Company
Estimated Billing Rates Of Kentucky Certified Public Accountants

Survey billing rates were those in effect in 2007 (Note A)

	Average Hourly Billing Rate (Note A)			
Type of Firm	Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 71	$ 90	$ 120	$ 146

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 71	$ 90	$ 120	$ 146	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 21	$ 27	$ 24	$ 29	**$ 101**

Escalation to Midpoint of March 31, 2009 Test Period (Note B)	
CPI at December 31, 2007	210.0
CPI at March 31, 2009	212.7
Inflation/Escalation	1.3%
Average Hourly Billing Rate For CPAs At March 31, 2009	**$ 103**

Note A: Source is AICPA's 2008 National PCPS/TSCPA Management of an Accounting Practice Survey (Kentucky edition)
Note B: source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.t

Exhibit 8

Kentucky-American Water Company
Estimated Billing Rates Of Kentucky Engineers

A. Calculation of Average Hourly Rate by Engineer Position

Name of Firm	Average Hourly Billing Rates: Technician / Senior Technician	Engineer / Design Engineer / Project Engineer	Project Manager / Sr. Mgr. Engineer	Officer / Principal Engineer
Firm #1	$77	$86	$108	$175
Firm #2	$76	$84	$136	$164
Firm #3	$80	$102	$162	$207
Firm #4	$55	$86	$139	$190

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician / Senior Technician	Engineer / Design Engineer / Project Engineer	Project Manager / Sr. Mgr. Engineer	Officer / Principal Engineer	
Average Hourly Billing Rate (From Above)	$72	$89	$136	$184	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$22	$31	$34	$18	**$105**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended September 30, 2009		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 73	$ 253	$ (180)
Management Consultant	$ 189	$ 227	$ (38)
Certified Public Accountant	$ 96	$ 103	$ (7)
Professional Engineer	$ 89	$ 105	$ (16)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to KAWC during the 12-months ended September 30, 2009, outside service providers would have cost $1,409,800 more than the Service Company (see table below). Thus, on average, outside providers' hourly rates are 21% higher than those of the Service Company ($1,409,800 / $6,816,711).

	12 Months Ended September 30, 2009		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (180)	4,166	$ (748,260)
Management Consultant	$ (38)	7,038	$ (270,282)
Certified Public Accountant	$ (7)	29,356	$ (192,538)
Professional Engineer	$ (16)	12,130	$ (198,720)
Service Company Less Than Outside Providers			$ (1,409,800)

It should be noted that the cost differential associated with using outside providers is even greater because Service Company personnel do not charge for more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. If, for instance, Service Company personnel worked 5% overtime (2 hours) per week on KAWC's behalf, that would have amounted to over 2,600 additional hours of work during the 12 months ended September 30, 2009. Based on the hourly rate differentials above, this overtime would have added another $70,000 to the cost of using outside providers.

If KAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform over 52,000 hours of work (more than 35 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing KAWC management team. Thus, it would be necessary for KAWC to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individual that would fill this position would need a good understanding of each profession being managed. He/she must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $150,000 per year to KAWC's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding 1 Professional Position To KAWC's Staff

	Total
New Position's Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Cost of One Position	$ 149,400

Thus, the total effect on the ratepayers of KAWC of contracting all services now provided by Service Company would be an increase in their costs of $1,559,200 ($1,409,800 + $149,400). Based on the results of this comparison, it is possible to conclude that the Service Company charged KAWC at the lower of cost or market for services provided during the 12 months ended September 30, 2009.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to KAWC with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, KAWC's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

Kentucky	• Duke Energy – Kentucky • Kentucky Power	• Kentucky Utilities • Louisville Gas & Electric
West Virginia	• Wheeling Power	
Virginia	• Appalachian Power	• Virginia Electric Power
Ohio	• Cleveland Electric • Columbus Southern Power • Dayton Power & Light • Duke Energy – Ohio	• Ohio Edison • Ohio Power • Toledo Edison
Missouri	• Aquila • Kansas City Power & Light	• Union Electric
Indiana	• Duke Energy – Indiana • Indiana Michigan Power	• Indianapolis Power & Light • NIPSCo
Illinois	• Central Illinois Light • Central Illinois Public Service • Commonwealth Edison	• Illinois Power • Interstate Power & Light • MidAmerica Energy
Tennessee	• Kingsport Power	

Kentucky-American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Kentucky-American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

KAWC Cost per Customer

As calculated below, KAWC's 12 months ended September 30, 2009 customer account services expense per customer was $28.35. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by KAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

Kentucky American Cost Per Customer		Year Ended 9/30/2009 Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 1,728,850	$ 688,295	$ 2,417,145	
Operating Company	Customer payment processing			$ 151,772	Note B
Operating Company	Postage & forms			$ 784,459	
			Cost Pool Total	$ 3,353,376	
			Total Customers	118,279	
	12 Months Ended September 30, 2009 Cost Per KAWC Customer			**$ 28.35**	

Note A: Adjustment for American Water's fewer calls per customer
This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 765,328
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.32	
Percent different	90%	90%
Total Adjustment		$ 688,295

Note B: Estimated customer payment processing expenses

Number of customers	118,279
Number of payments/customer/year	12
Total payments processed/year	1,419,348
Bank charge per item	$ 0.1069
Total estimated annual expense	$ 151,772

Electric Utility Group Cost per Customer

Exhibit 10 shows the actual 2008 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, KAWC's cost per customer within a reasonable range of the average cost of the neighboring electric utility comparison group. It can therefore be concluded that KAWC's 12 months ended September 30, 2009 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to KAWC were comparable to those of other utilities.

Average Customer Accounts Expense Per Customer		
Louisville Gas & Electric	$	15.67
Interstate Power & Light	$	15.79
Virginia Electric Power	$	16.15
Monongahela Power	$	16.17
Dayton Power & Light	$	18.51
Ohio Edison	$	19.13
Cleveland Electric Illuminating	$	20.60
Indianapolis Power & Light	$	21.64
Union Electric	$	22.95
Illinois Power	$	23.26
Aquila	$	24.53
Toledo Edison	$	24.81
Central Illinois Public Service	$	25.71
Wheeling Power	$	26.12
Duke Energy Indiana	$	26.22
Comparison Group Average	**$**	**27.07**
Kansas City Power & Light	$	27.15
MidAmerican Energy	$	27.66
Kentucky American Water	**$**	**28.35**
Kentucky Utilities	$	28.42
Indiana Michigan Power	$	29.17
Duke Energy Kentucky	$	29.65
Central Illinois Light	$	30.33
Northern Indiana Public Service	$	30.72
Duke Energy Ohio	$	31.20
Ohio Power	$	31.70
Appalachian Power	$	32.57
Kingsport Power	$	32.60
Columbus Southern Power	$	35.11
Kentucky Power	$	36.02
Commonwealth Edison	$	39.29

Exhibit 10
Page 1 of 5

Kentucky-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Kentucky				Virginia	
		Duke Energy Kentucky	Kentucky Power	Kentucky Utilities	Louisville Gas & Electric	Appalachian Power	Virginia Electric Power
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 3,221,753	$ 5,948,209	$ 12,515,610	$ 4,626,491	$ 29,231,353	$ 32,985,338
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ (46,234)	$ 4,229	$ 334,960	$ 336,884	$ 1,894	$ -
Subtotal		$ 3,175,519	$ 5,952,438	$ 12,850,570	$ 4,963,375	$ 29,233,247	$ 32,985,338
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 574,297	$ 268,710	$ 1,972,749	$ 1,054,370	$ 1,415,185	$ 3,978,170
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 243,542	$ 105,032	$ 424,973	$ 262,847	$ 548,440	$ 1,573,799
Total Cost Pool		**$ 3,993,358**	**$ 6,326,180**	**$ 15,248,292**	**$ 6,280,591**	**$ 31,196,872**	**$ 38,537,306**
Total Customers (page 304, line 43)		134,703	175,646	536,441	400,699	957,875	2,386,208
Customer Account Services Expense per Customer		**$ 29.65**	**$ 36.02**	**$ 28.42**	**$ 15.67**	**$ 32.57**	**$ 16.15**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 6,333,174	$ 4,765,373	$ 24,119,043	$ 22,418,737	$ 23,000,789	$124,252,946
Total O&M Payroll (page 355, line 65)		$ 35,107,273	$ 24,348,550	$ 67,918,514	$ 73,056,617	$116,519,186	$642,556,137
Benefits as Percent of Payroll		18.0%	19.6%	35.5%	30.7%	19.7%	19.3%
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 2,613,424	$ 1,602,234	$ 7,181,104	$ 2,668,667	$ 8,480,076	$ 27,320,711
Gas (page 354, line 37)		$ 1,559,494	$ -	$ -	$ 2,175,749	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 4,172,918	$ 1,602,234	$ 7,181,104	$ 4,844,416	$ 8,480,076	$ 27,320,711
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 3,221,753	$ 5,948,209	$ 12,515,610	$ 4,626,491	$ 29,231,353	$ 32,985,338
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ (46,234)	$ 4,229	$ 334,960	$ 336,884	$ 1,894	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 3,175,519	$ 5,952,438	$ 12,850,570	$ 4,963,375	$ 29,233,247	$ 32,985,338
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 986,864	$ 993,970	$ 3,761,113	$ 2,034,678	$ 5,345,473	$ 10,819,819
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 4,162,383	$ 6,946,408	$ 16,611,683	$ 6,998,053	$ 34,578,720	$ 43,805,157
Percent Applicable to Customer Accounts Services (903 and 905)		76.3%	85.7%	77.4%	70.9%	84.5%	75.3%
Customer Account Services Portion of Total Payroll		$ 3,183,556	$ 1,372,968	$ 5,555,204	$ 3,435,906	$ 7,169,154	$ 20,572,530
Pension & Benefits Pertaining to Customer Accounts Services		$ 574,297	$ 268,710	$ 1,972,749	$ 1,054,370	$ 1,415,185	$ 3,978,170
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 3,183,556	$ 1,372,968	$ 5,555,204	$ 3,435,906	$ 7,169,154	$ 20,572,530
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 243,542	$ 105,032	$ 424,973	$ 262,847	$ 548,440	$ 1,573,799

Kentucky-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Ohio						
		Cleveland Electric Illum.	Columbus Southern Pwr	Dayton Power & Light	Duke Energy - Ohio	Ohio Edison	Ohio Power	Toledo Edison
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 14,516,027	$ 24,640,129	$ 8,648,983	$ 17,655,073	$ 20,713,551	$ 21,137,257	$ 6,909,201
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 531,238	$ 15,947	$ -	$ (256,106)	$ 579,775	$ 19,561	$ 213,136
Subtotal		$ 15,047,265	$ 24,656,076	$ 8,648,983	$ 17,398,967	$ 21,293,326	$ 21,156,818	$ 7,122,337
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 243,960	$ 1,169,753	$ 547,426	$ 2,836,968	$ (1,852,176)	$ 1,008,466	$ 482,226
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 280,555	$ 401,794	$ 333,017	$ 1,229,505	$ 468,076	$ 387,630	$ 152,465
Total Cost Pool		**$ 15,571,780**	**$ 26,227,624**	**$ 9,529,426**	**$ 21,465,440**	**$ 19,909,226**	**$ 22,552,914**	**$ 7,757,028**
Total Customers (page 304, line 43)		755,807	747,099	514,882	687,930	1,040,518	711,447	312,642
Customer Account Services Expense per Customer		**$ 20.60**	**$ 35.11**	**$ 18.51**	**$ 31.20**	**$ 19.13**	**$ 31.70**	**$ 24.81**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 2,546,911	$ 13,054,219	$ 11,936,626	$ 34,365,193	$ (15,395,255)	$ 25,630,628	$ 4,035,809
Total O&M Payroll (page 355, line 65)		$ 38,286,937	$ 58,613,682	$ 94,920,691	$194,685,375	$ 50,858,052	$128,781,829	$ 16,679,734
Benefits as Percent of Payroll		6.7%	22.3%	12.6%	17.7%	-30.3%	19.9%	24.2%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 5,037,050	$ 6,281,750	$ 6,306,396	$ 14,312,049	$ 8,765,466	$ 6,394,108	$ 2,665,076
Gas (page 354, line 37)		$ -	$ -	$ -	$ 7,113,829	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 5,037,050	$ 6,281,750	$ 6,306,396	$ 21,425,878	$ 8,765,466	$ 6,394,108	$ 2,665,076
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 14,516,027	$ 24,640,129	$ 8,648,983	$ 17,655,073	$ 20,713,551	$ 21,137,257	$ 6,909,201
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 531,238	$ 15,947	$ -	$ (256,106)	$ 579,775	$ 19,561	$ 213,136
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 15,047,265	$ 24,656,076	$ 8,648,983	$ 17,398,967	$ 21,293,326	$ 21,156,818	$ 7,122,337
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,619,752	$ 4,833,074	$ 3,880,743	$ 5,795,966	$ 9,211,147	$ 5,540,885	$ 2,401,739
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 20,667,017	$ 29,489,150	$ 12,529,726	$ 23,194,933	$ 30,504,473	$ 26,697,703	$ 9,524,076
Percent Applicable to Customer Accounts Services (903 and 905)		72.8%	83.6%	69.0%	75.0%	69.8%	79.2%	74.8%
Customer Account Services Portion of Total Payroll		$ 3,667,381	$ 5,252,213	$ 4,353,161	$ 16,071,965	$ 6,118,641	$ 5,067,064	$ 1,993,009
Pension & Benefits Pertaining to Customer Accounts Services		$ 243,960	$ 1,169,753	$ 547,426	$ 2,836,968	$ (1,852,176)	$ 1,008,466	$ 482,226
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 3,667,381	$ 5,252,213	$ 4,353,161	$ 16,071,965	$ 6,118,641	$ 5,067,064	$ 1,993,009
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 280,555	$ 401,794	$ 333,017	$ 1,229,505	$ 468,076	$ 387,630	$ 152,465

Exhibit 10
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Kentucky-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Missouri			Indiana			
		Aquila	Kansas City Power & Light	Union Electric	Duke Energy Indiana	Indiana Mich Power	Indianapolis Power & Light	NIPSCo
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,452,019	$ 11,197,895	$ 23,468,942	$ 17,986,550	$ 15,734,787	$ 8,284,813	$ 9,129,615
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 2,347	$ 4,657	$ 308,130	$ (233,182)	$ 142,897	$ 157,521	$ 158,834
Subtotal		$ 7,454,366	$ 11,202,552	$ 23,777,072	$ 17,753,368	$ 15,877,684	$ 8,442,334	$ 9,288,449
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,977,597	$ 2,386,936	$ 2,869,858	$ 2,046,539	$ 799,163	$ 1,360,502	$ 3,381,340
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 475,084	$ 448,997	$ 799,714	$ 560,144	$ 323,764	$ 329,537	$ 1,347,966
Total Cost Pool		**$ 9,907,047**	**$ 14,038,485**	**$ 27,446,644**	**$ 20,360,051**	**$ 17,000,611**	**$ 10,132,373**	**$ 14,017,755**
Total Customers (page 304, line 43)		403,879	516,978	1,196,119	776,647	582,769	468,203	456,302
Customer Account Services Expense per Customer		**$ 24.53**	**$ 27.15**	**$ 22.95**	**$ 26.22**	**$ 29.17**	**$ 21.64**	**$ 30.72**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 25,845,865	$ 63,342,544	$ 96,460,926	$ 49,637,989	$ 31,291,702	$ 33,892,398	$ 22,891,873
Total O&M Payroll (page 355, line 65)		$ 81,163,764	$155,753,238	$ 351,369,910	$177,595,604	$165,714,630	$107,311,441	$ 119,291,633
Benefits as Percent of Payroll		31.8%	40.7%	27.5%	28.0%	18.9%	31.6%	19.2%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 6,887,814	$ 8,022,470	$ 14,643,835	$ 10,335,603	$ 5,125,654	$ 7,218,568	$ 8,921,614
Gas (page 354, line 37)		$ 2,645,654	$ -	$ 3,496,597	$ -	$ -	$ -	$ 14,203,890
Total Payroll Charged to Customer Accounts		$ 9,533,468	$ 8,022,470	$ 18,140,432	$ 10,335,603	$ 5,125,654	$ 7,218,568	$ 23,125,504
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,452,019	$ 11,197,895	$ 23,468,942	$ 17,986,550	$ 15,734,787	$ 8,284,813	$ 9,129,615
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 2,347	$ 4,657	$ 308,130	$ (233,182)	$ 142,897	$ 157,521	$ 158,834
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 7,454,366	$ 11,202,552	$ 23,777,072	$ 17,753,368	$ 15,877,684	$ 8,442,334	$ 9,288,449
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 3,988,972	$ 4,109,830	$ 17,483,238	$ 7,306,480	$ 3,351,882	$ 5,704,871	$ 2,901,921
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 11,443,338	$ 15,312,382	$ 41,260,310	$ 25,059,848	$ 19,229,566	$ 14,147,205	$ 12,190,370
Percent Applicable to Customer Accounts Services (903 and 905)		65.1%	73.2%	57.6%	70.8%	82.6%	59.7%	76.2%
Customer Account Services Portion of Total Payroll		$ 6,210,247	$ 5,869,246	$ 10,453,784	$ 7,322,142	$ 4,232,208	$ 4,307,675	$ 17,620,471
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,977,597	$ 2,386,936	$ 2,869,858	$ 2,046,539	$ 799,163	$ 1,360,502	$ 3,381,340
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,210,247	$ 5,869,246	$ 10,453,784	$ 7,322,142	$ 4,232,208	$ 4,307,675	$ 17,620,471
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 475,084	$ 448,997	$ 799,714	$ 560,144	$ 323,764	$ 329,537	$ 1,347,966

Exhibit 10
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Kentucky-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Illinois					
		Central Illinois Light	Central Illinois Pub Service	Commonwealth Edison	Illinois Power	Interstate Power & Light	MidAmerican Energy
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 5,468,977	$ 8,826,365	$ 118,395,856	$ 12,193,518	$ 6,845,375	$ 14,926,857
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 228,479	$ 207,236	$ -	$ 455,279	$ 30,036	$ 292,025
Subtotal		$ 5,697,456	$ 9,033,601	$ 118,395,856	$ 12,648,797	$ 6,875,411	$ 15,218,882
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 467,069	$ 654,814	$ 26,429,619	$ 1,416,112	$ 1,069,042	$ 3,112,472
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 337,546	$ 408,318	$ 5,341,307	$ 506,754	$ 369,305	$ 1,600,713
Total Cost Pool		**$ 6,502,071**	**$ 10,096,733**	**$ 150,166,782**	**$ 14,571,662**	**$ 8,313,758**	**$ 19,932,067**
Total Customers (page 304, line 43)		214,343	392,680	3,822,023	626,530	526,600	720,661
Customer Account Services Expense per Customer		**$ 30.33**	**$ 25.71**	**$ 39.29**	**$ 23.26**	**$ 15.79**	**$ 27.66**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 3,980,881	$ 7,991,993	$ 121,698,929	$ 20,079,443	$ 22,576,821	$ 33,240,956
Total O&M Payroll (page 355, line 65)		$ 37,607,070	$ 65,143,952	$ 321,500,723	$ 93,926,786	$101,951,019	$223,470,422
Benefits as Percent of Payroll		10.6%	12.3%	37.9%	21.4%	22.1%	14.9%
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 3,001,449	$ 5,415,977	$ 89,883,002	$ 6,938,167	$ 6,673,047	$ 16,132,340
Gas (page 354, line 37)		$ 2,899,863	$ 2,531,598	$ -	$ 4,147,119	$ 2,618,508	$ 14,617,265
Total Payroll Charged to Customer Accounts		$ 5,901,312	$ 7,947,575	$ 89,883,002	$ 11,085,286	$ 9,291,555	$ 30,749,605
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 5,468,977	$ 8,826,365	$ 118,395,856	$ 12,193,518	$ 6,845,375	$ 14,926,857
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 228,479	$ 207,236	$ -	$ 455,279	$ 30,036	$ 292,025
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 5,697,456	$ 9,033,601	$ 118,395,856	$ 12,648,797	$ 6,875,411	$ 15,218,882
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 1,922,600	$ 4,417,522	$ 34,019,237	$ 8,518,274	$ 6,357,744	$ 7,146,189
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 7,620,056	$ 13,451,123	$ 152,415,093	$ 21,167,071	$ 13,233,155	$ 22,365,071
Percent Applicable to Customer Accounts Services (903 and 905)		74.8%	67.2%	77.7%	59.8%	52.0%	68.0%
Customer Account Services Portion of Total Payroll		$ 4,412,365	$ 5,337,489	$ 69,821,005	$ 6,624,229	$ 4,827,515	$ 20,924,352
Pension & Benefits Pertaining to Customer Accounts Services		$ 467,069	$ 654,814	$ 26,429,619	$ 1,416,112	$ 1,069,042	$ 3,112,472
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 4,412,365	$ 5,337,489	$ 69,821,005	$ 6,624,229	$ 4,827,515	$ 20,924,352
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 337,546	$ 408,318	$ 5,341,307	$ 506,754	$ 369,305	$ 1,600,713

Exhibit 10
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Kentucky-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		West Virginia			Tennessee
		Appalachian Power	Monongahela Power	Wheeling Power	Kingsport Power
Customer Account Services Cost Pool					
FERC Account Balances:					
Acct 903 - Customer Records & Collection (page 322, line 161)			$ 5,020,473	$ 1,013,571	$ 1,473,158
Acct 905 - Misc Customer Accounts (page 322, line 163)			$ -	$ 286	$ 425
Subtotal			$ 5,020,473	$ 1,013,857	$ 1,473,583
Add: Employee Benefits & Employer FICA (not included in above amounts)					
Account 926 - Employee Pension & Benefits	**Note A**		$ 849,338	$ 46,865	$ 32,646
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**		$ 294,683	$ 18,802	$ 24,728
Total Cost Pool			**$ 6,164,494**	**$ 1,079,524**	**$ 1,530,957**
Total Customers (page 304, line 43)			381,193	41,334	46,961
Customer Account Services Expense per Customer		see Virginia	**$ 16.17**	**$ 26.12**	**$ 32.60**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt					
Account 926 - Employee Pension & Benefits (page 323, line 187)			$ 16,659,462	$ 402,736	$ 199,803
Total O&M Payroll (page 355, line 65)			$ 75,556,781	$ 2,112,138	$ 1,978,375
Benefits as Percent of Payroll			22.0%	19.1%	10.1%
Payroll Applicable to Customer Account Services					
Total Payroll Charged to Customer Accounts Function					
Electric (page 354, line 7)			$ 6,101,855	$ 339,964	$ 368,129
Gas (page 354, line 37)					$ -
Total Payroll Charged to Customer Accounts			$ 6,101,855	$ 339,964	$ 368,129
Percent Applicable to Customer Accounts Services (903 and 905):					
Acct 903 - Customer Records & Collection (page 322, line 161)			$ 5,020,473	$ 1,013,571	$ 1,473,158
Acct 905 - Misc Customer Accounts (page 322, line 163)			$ -	$ 286	$ 425
Subtotal - Total Charges Applicable to Customer Accounts Services			$ 5,020,473	$ 1,013,857	$ 1,473,583
Acct 902 - Meter Reading Expenses (page 322, line 160)			$ 2,932,203	$ 388,499	$ 204,604
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading			$ 7,952,676	$ 1,402,356	$ 1,678,187
Percent Applicable to Customer Accounts Services (903 and 905)			63.1%	72.3%	87.8%
Customer Account Services Portion of Total Payroll			$ 3,852,062	$ 245,783	$ 323,247
Pension & Benefits Pertaining to Customer Accounts Services			$ 849,338	$ 46,865	$ 32,646
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services					
Customer Account Services Portion of Total Payroll			$ 3,852,062	$ 245,783	$ 323,247
Employer's Portion of FICA (6.20%) and Medicare (1.45%)			7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA			$ 294,683	$ 18,802	$ 24,728

Group Average
$ 555,857,055
20,535,119
$ 27.07

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to KAWC by the Service Company would be necessary if KAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for KAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 11 was created showing which entity—KAWC or a Service Company location—is responsible for each of the functions KAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if KAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to KAWC. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Kentucky-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	KAWC	Customer Call Center	Divisional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Engineering and Construction Management							
CPS Preparation	P				S		
Five-Year System Planning	P				S		
Engineering Standards & Policies Development					P		
Project Design							
Major Projects (e.g., new treatment plant)	P				S		
Special Projects	P				S		
Minor Projects (e.g., pipelines)	P						
Construction Project Management							
Major Projects	P				S		
Special Projects	P				S		
Minor Projects	P						
Hydraulics Review	P				S		
Developers Extensions	P						
Tank Painting	P						
Water Quality and Purification							
Water Quality Standards Development					S		P
Research Studies	S				S		P
Water Quality Program Implementation	P				S		
Water Treatment Operations & Maintenance	P				S		
Compliance Tracking and Chemical Testing	P						S
Sample Collection and Other Testing	S				S		P
Transmission and Distribution							
Preventive Maintenance Program Development	P						
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	P		S		S		
Customer Contact	S		P				
Call Processing			P				
Service Order Creation	S		P				
Service Order Processing	P		S				
Customer Credit			P				
Meter Reading	P					S	
Customer Bill Preparation			S			P	
Bill Collection	S		P			S	
Customer Payment Processing	S			P			
Meter Standards Development	S				P		
Meter Testing, Maintenance & Replacement	P						

Note A: KAWC provides in-person customer contact while Service Company call centers provide customer phone contact

Kentucky-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	KAWC	Customer Call Center	Divisional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Financial Management							
Financial Planning	P		S		S		
Financings--Equity	S		P		S		
Financings--Long Term Debt & Preferred (A)	S		P				
Short Term Lines of Credit Arrangements (A)	S				P		
Investor Relations			S		P		
Insurance Program Administration	S				P		
Loss Control/Safety Program Administration	P				S		
Pension Fund Asset Management					P		
Cash Management/Disbursements				P			
Internal Auditing					P		
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions					P		
Regional Guidelines & Instructions			P				
Budget Preparation							
Revenue	P		S				
O&M	P		S		S		
Depreciation and Interest Expense	S		S	P			
Budget Preparation--Service Company Charges	S	S	S	S	P	S	S
Capital Budget Preparation—Projects	P						
Capital Budget Preparation—Non-Project Work	P						
Prepare Monthly Budget Variance Report ("Budget/Plan Analysis")	P						
Prepare Capital Project Budget Status Report	P						
Year-End Projections (A)	P						
Accounting and Taxes							
Accounts Payable Accounting	S			P			
Payroll Accounting	S			P			
Work Order Accounting	S			P			
Fixed Asset Accounting	S			P			
Journal Entry Preparation—Billing Corrections	S			P			
Journal Entry Preparation--All Others	S			P			
Financial Statement Preparation	S			P			
State Commission Reporting	S		S	P			
Income Taxes—State				P			
Income Taxes—Federal				P			
Property Taxes	S			P			
Gross Receipts Taxes	S			P			

Note A: Financings and lines of credit are the responsibility of American Capital Corporation

Kentucky-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	KAWC	Customer Call Center	Divisional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	S		P				
Rate Case Planning and Preparation	S		P				
Rate Case Administration	S		P				
Commission Inquiry Response	S		P				
Legal			P		S		
Purchasing and Materials Management							
Specification Development	S		S	S	P		
Bid Solicitation	S			P			
Contract Administration	S			P			
Ordering	P						
Inventory Management	P			S			
Human Resources Management							
Benefit Program Development					P		
Benefits Program Administration	S		P				
Management Compensation Administration					P		
Wage & Salary Program Design					P		
Wage & Salary Administration	P		S				
Labor Negotiations--Wages	P		S				
Labor Negotiations--Benefits					P		
Labor Negotiations-- Work Rules	S		P				
Training Program Development	S		S		P		
Training--Course Delivery	P						
Affirmative Action/EEO--Plan Development	P						
Affirmative Action/EEO--Implementation	P						
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance						P	
Software Maintenance						P	
Network Administration			P			S	
PC Acquisition & Support			P			S	
Help Desk			S			P	

VI - Question 4 – Need for Service Company Services

Governance Practices Associated With Service Company Charges

There are several ways by which KAWC exercises control over Service Company services and charges. The most important of these are described below.

- **President of Regulated Operations Oversight** – The President of Regulated Operations is on the Executive Management Team (EMT) of American Water. This position is responsible for the overall performance of each operating company in American Water. As part of the EMT, the President of Regulated Operations has equal say with other EMT members in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending. The President of Regulated Operations also has dialogue with each operating company president to address local concerns.
- **Divisional Vice President & Treasurer** – The Divisional Vice President and Treasurer of the Eastern Division states is responsible for the financial reporting, performance and internal controls of each of the operating companies in the division. The Vice President and Treasurer monitors the performance and reporting from the Service Company and follows up on instances where the quality and timeliness of services are not as expected. The operating company interacts with the Divisional VP & Treasurer to discuss any concerns with billings, etc.
- **Operating Company Board Oversight** – KAWC's board of directors includes members of American Water's EMT, members of the divisional management team and business and community leaders from outside the Company. KAWC's president is Chairman of the KAWC board. This helps ensure that KAWC's needs are a factor in the delivery of Service Company services.
- **Service Company Budget Review/Approval** – The President of Regulated Operations sits on the Service Company board and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors. KAWC's president also sits on the Service Company board.
- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the President of Regulated Operations. With input from the local presidents and Divisional Vice President & Treasurer, they have the ability to impact all new initiatives and projects before they are authorized.
- **Service Company Bill Scrutiny** – KAWC Finance personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. KAWC's financial manager has dialogue with Shared Services Center office personnel concerning the monthly bill and any mistakes or overcharges are credited on a subsequent billing. The KAWC Finance Manager prepares an actual to budget comparison of management fees each month for use in identifying unusual variances. Service Company actual to budget comparison is included in the monthly FRP. Unusual variances are researched, explanations are provided and any corrections are made, as necessary.
- **Service Company Budget Variance Reporting** – Each month, a summary variance analysis is prepared that explains differences between budgeted and actual Service Company spending. In addition, a more detailed monthly variance report, called the "Statement of Expenses and Billed Charges," is produced by Service Company location and shows actual spending for the month.
- **Operating Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly, has a line item for Management Fees (i.e., Service Company charges). In this way, Service Company budget versus actual charges can be monitored for the month and year-to-date. Additional information exists that allows more detailed analysis of "Divisional" and "Corporate" Management Fees.

- **Capital Investment Management ("CIM") –** CIM is one of American Water's primary business planning processes. It covers capital and asset planning and is employed throughout American Water. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable, and
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment. The process is managed at two levels for all American Water companies, including all KAWC Operating Units. Monthly meetings of the CIM are held to review capital spending compared to plan, review new project requests, and review updates or modifications to existing projects. The President of KAWC, VP Finance, and others participate as necessary (e.g. KAWC operations managers and Rates Manager) and provide the data used in the monthly review schedules.

Market Cost Comparison of Service Company Charges to Long Island American Water Company

12-Months Ended December 31, 2010

Long Island American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended December 31, 2010

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to Long Island American Water Company (LIAW):

1. Are the Service Company's charges to LIAW during 2010 reasonable?

2. Was LIAW charged the lower of cost or market for managerial and professional services provided by the Service Company during 2010?

3. Were 2010 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services LIAW receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 2010 cost per LIAW customer was reasonable compared to cost per customer for electric and combination electric/gas service companies. During 2010, LIAW was charged $55 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $95 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 2 of the 24 comparison group utility service companies filed a FERC Form 60 for 2009 had a lower per customer A&G cost than LIAW's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- LIAW was charged the lower of cost or market for managerial and professional services during 2010.

- On average, the hourly rates for outside service providers are 54% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by LIAW without careful supervision on the part of LIAW. If these services were contracted entirely to outside providers, LIAW would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during 2010, LIAW and its ratepayers would have incurred more than $2,500,000 in additional expenses. This amount includes the higher cost of outside providers and the cost of one LIAW position needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to LIAW from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If all overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service

Company would have had an even greater annual dollar advantage than the $2,500,000 cited above.

- It would be difficult for LIAW to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from LIAW ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is below the range of the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and LIAW. During 2010, the customer accounts cost for LIAW customers was $24.96 compared to the 2009 average of $45.57 for neighboring electric utilities. The highest comparison group per customer cost was $94.95 and the lowest $12.90.

Concerning question 4, the following conclusions were drawn:

- The services that the Service Company provides are necessary and would be required even if LIAW were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to LIAW. For all of the services listed in Exhibit 12, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like LIAW, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of LIAW, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Divisional Offices – Divisional offices provide operating companies with certain support services that can be performed more effectively on a divisional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of divisional office services include rates and revenues, engineering, operations and field resource coordination.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the divisional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times his/her hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 20% of American Water's Eastern Division's professional labor is assigned to LIAW during a month, then 20% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 20% of the Eastern Division's accumulated professional and support labor is charged to LIAW during the month, then 20% of that month's overhead expenses will be assigned to LIAW.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to LIAW, then 2% of that office's office expenses would be assigned to LIAW. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a divisional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During 2010, the Service Company billed LIAW $4,590,695 in O&M-related charges and $864,628 in capital-related charges. These total charges of $5,455,323 were subjected to a market cost comparison.

	12 Months Ended Dec 30, 2010
Mgmt Fee Expense - O&M	$ 4,590,695
Mgmt Fees - Capital	$ 864,628
Total Testable AWWSC Charges	**$ 5,455,323**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total test period Service Company charges break down between management/professional services, customer account services and field resource coordination as follows:

	12 Months Ended December 31, 2010	
	Amount	Hours
Management and Professional Services	$ 4,407,221	31,982
Customer Account Services	$ 1,048,102	20,646
Total Service Company Charges	**$ 5,455,323**	**52,628**

This study's first question—whether Service Company 2010 charges are reasonable—was determined by comparing LIAW's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during 2010 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to LIAW during 2010. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 2010 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing LIAW's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to LIAW and determining if these services would be required if LIAW were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

LIAW's Service Company Cost per Customer

During 2010, LIAW was charged $55 per customer by the Service Company for A&G-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	2010 AWWSC Charges
Total Service Company charges	$ 5,455,323
Less: Capital charges	$ (864,628)
Less: Non-A&G function O&M charges	
Engineering	$ (5,548)
Operations	$ (402,414)
Water Quality	$ (144,595)
Net A&G/O&M-related charges	$ 4,038,138
LIAW customers	74,007
LIAW Cost Per Customer	**$ 55**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2009, a Form 60 was filed by service companies that are part of 25 utility holding companies that own utilities providing regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of these service companies' costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G-related charges recorded in the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	928 – Regulatory commission expenses
907 – Supervision	930.2 – Miscellaneous general expenses
910 – Misc customer service and info expenses	931 – Rents
911 – Supervision	935 – Maintenance of structures and equipment
920 - Administrative and general salaries	

Charges to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2009 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

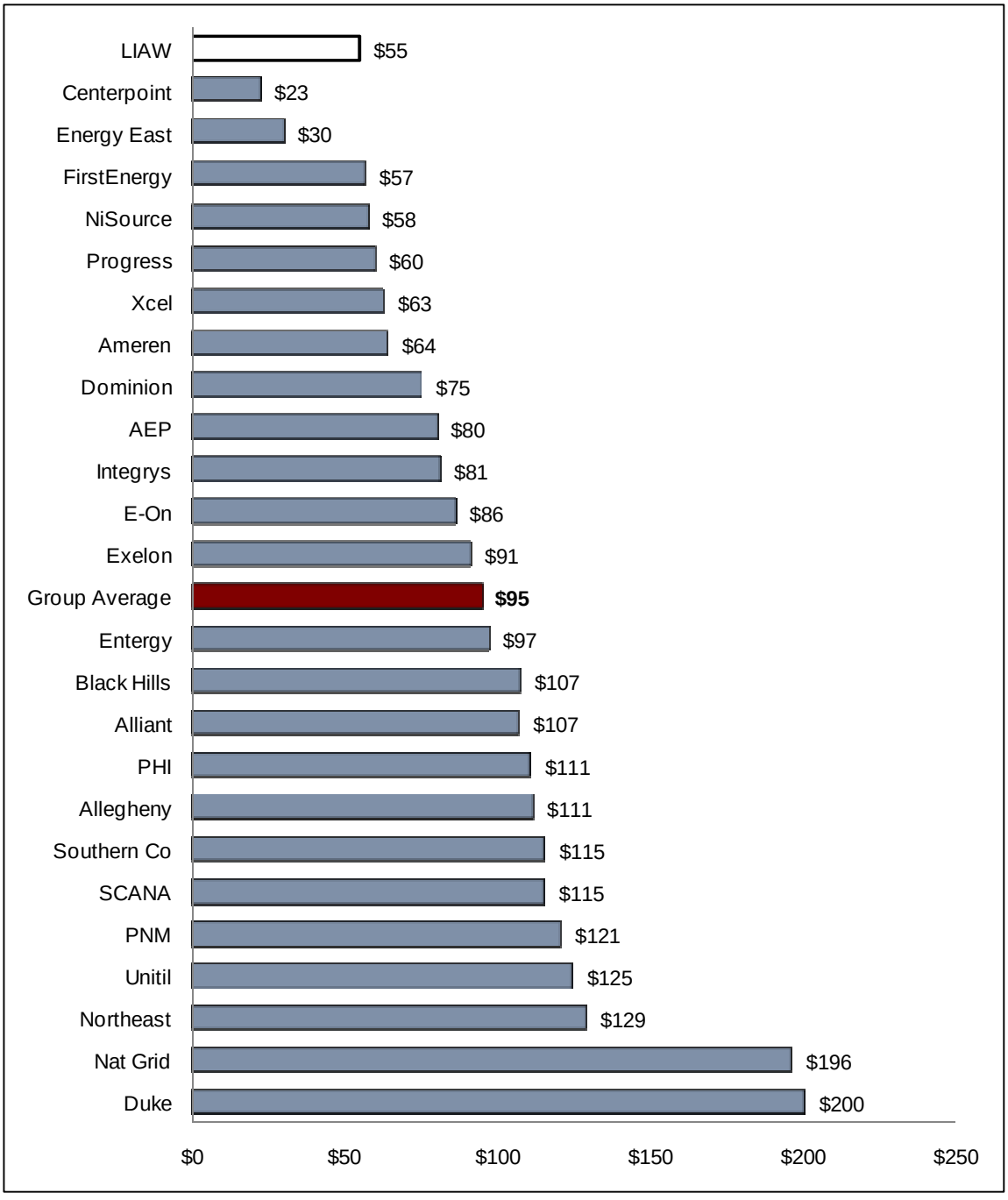
One service company that filed a Form 60 was excluded from the comparison group because its Form 60 contained no data for 2009. That service company, Great Plains Energy Services Incorporated, became inactive in 2009 and had no charges to its regulated utility affiliate. The A&G expenses per regulated utility customer for the other 24 utility companies that filed a Form 60 for 2009 are calculated below.

Utility Company	2009 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$418,484,117	5,213,000	$ 80
Allegheny	$176,685,245	1,585,700	$ 111
Alliant	$149,116,475	1,395,189	$ 107
Ameren	$212,036,412	3,300,000	$ 64
Black Hills	$81,484,333	759,400	$ 107
Centerpoint	$119,304,604	5,300,000	$ 23
Dominion	$279,128,940	3,700,000	$ 75
Duke	$901,762,388	4,500,000	$ 200
Energy East	$89,580,962	2,973,000	$ 30
Entergy	$262,596,172	2,700,000	$ 97
E-On	$105,893,093	1,226,000	$ 86
Exelon	$537,633,122	5,886,000	$ 91
FirstEnergy	$255,874,712	4,500,000	$ 57
Integrys	$175,423,352	2,157,700	$ 81
Nat Grid	$1,314,902,105	6,700,000	$ 196
NiSource	$216,480,637	3,750,000	$ 58
Northeast	$269,948,801	2,095,000	$ 129
PHI	$215,465,623	1,946,000	$ 111
Progress	$186,256,921	3,100,000	$ 60
PNM	$87,998,259	729,700	$ 121
SCANA	$166,555,883	1,445,000	$ 115
Southern Co	$508,130,523	4,402,000	$ 115
Unitil	$21,115,280	169,600	$ 125
Xcel	$333,389,459	5,300,000	$ 63
Group Total	**$7,085,247,416**	**74,833,289**	**$ 95**

Exhibit 1 (page 11) shows LIAW's 2010 Service Company cost per customer of $55 to be considerably lower than the average of $95 per customer for the comparison group service companies. Only 2 of 24 comparison group service companies had a lower cost per customer than LIAW. Based on this result, it is possible to conclude that the Service Company's 2010 charges to LIAW were reasonable.

Exhibit 1

Long Island American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial and rates and revenues services
- IT Professionals – information technology services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the five outside service provider categories, based on the dollars and hours charged to LIAW during 2010. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged LIAW during 2010, its hourly rates are actually overstated because some Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If all overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 2010 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to LIAW during 2010.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 2010 test period non-labor Service Company charges:

- Contract Services – 2010 Service Company charges to LIAW include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services). These professional fees are

excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in 2010 Service Company charges to LIAW are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the five outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for 2010 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Total management, professional & technical services charges	$ 128,600	$ 1,453,755	$ 1,122,849	$ 1,158,727	$ 543,287	$ 4,407,218
Less:						
Contract services	$ 10,780	$ 272,958	$ 108,025	$ 124,493	$ (5,892)	$ 510,364
Travel expenses	$ 2,277	$ 26,643	$ 14,262	$ 15,045	$ 17,159	$ 75,386
IT infrastructure expenses	$ 3,248	$ 430,185	$ 10,674	$ 214,432	$ 21,038	$ 679,577
Net Service Charges (A)	$ 112,295	$ 723,969	$ 989,888	$ 804,757	$ 510,982	$ 3,141,891
Total Hours (B)	511	4,765	13,276	5,480	7,949	31,982
Average Hourly Rate (A / B)	**$ 220**	**$ 152**	**$ 75**	**$ 147**	**$ 64**	

Exhibit 2

Long Island American Water Company
Analysis of 2010 Service Company Charges By Location And Function

		12 Months Ended December 31, 2009 Service Company Charges					
Location	Function	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Belleville Lab	Water Quality					$ 118,814	$ 118,814
Call Center	Human Resources		$ 26,036				$ 26,036
Corporate	Accounting			$ 290,163			$ 290,163
	Administration		$ 284,643				$ 284,643
	Audit			$ 36,489			$ 36,489
	Communications		$ 69,385				$ 69,385
	Finance		$ 531,407	$ 205,647			$ 737,054
	Human Resources		$ 213,544				$ 213,544
	Information Technology				$ 39,529		$ 39,529
	Legal	$ 77,599					$ 77,599
	Operations		$ 113,979			$ 384,416	$ 498,395
	Rates & Revenue			$ 51,353			$ 51,353
	Risk Management		$ 26,803				$ 26,803
	Water Quality					$ 1,962	$ 1,962
Regional Offices	Accounting			$ 12,288			$ 12,288
	Administration		$ 40,362				$ 40,362
	Communications		$ 48,202				$ 48,202
	Engineering					$ 5,761	$ 5,761
	Finance			$ 79,130			$ 79,130
	Human Resources		$ -				$ -
	Legal	$ 51,001					$ 51,001
	Operations		$ 4,266			$ 31,863	$ 36,129
	Risk Management		$ 37,015				$ 37,015
	Water Quality					$ 471	$ 471
Information Technology	Information Technology				$ 1,119,198		$ 1,119,198
Shared Services	Accounting			$ 320,121			$ 320,121
	Administration		$ 58,113				$ 58,113
	Finance			$ 1,480			$ 1,480
	Rates & Revenue			$ 126,178			$ 126,178
Total Dollars Charged		**$ 128,600**	**$ 1,453,755**	**$ 1,122,849**	**$ 1,158,727**	**$ 543,287**	**$ 4,407,218**

Exhibit 3

Long Island American Water Company
Analysis of 2010 Service Company Hours By Location And Function

		12 Months Ended December 31, 2009 Service Company Hours					
Location	Function	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Belleville Lab	Water Quality					1,149	1,149
Call Center	Human Resources		287				287
Corporate	Accounting			2,536			2,536
	Administration		518				518
	Audit			252			252
	Communications		282				282
	Finance		505	1,611			2,115
	Human Resources		1,317				1,317
	Information Technology				307		307
	Legal	255					255
	Operations		263			6,629	6,893
	Rates & Revenue			277			277
	Risk Management		163				163
	Water Quality					-	-
Regional Offices	Accounting			126			126
	Administration		-				-
	Communications		349				349
	Engineering					-	-
	Finance			417			417
	Human Resources		(1)				(1)
	Legal	256					256
	Operations		6			170	176
	Risk Management		821				821
	Water Quality					-	-
Information Technology	Information Technology				5,173		5,173
Shared Services	Accounting			5,879			5,879
	Administration		255				255
	Finance						-
	Rates & Revenue			2,179			2,179
Total Hours Charged		**511**	**4,765**	**13,276**	**5,480**	**7,949**	**31,982**

Exhibit 4

Long Island American Water Company
2010 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total	Outside Service Provider Category
Accounting	$ 86,634	$ 5,630	$ 4,126	$ 96,390	Certified Public Accountant
Administration	$ 21,984	$ 3,604	$ 152,015	$ 177,603	Management Consultant
Audit	$ 4,241	$ 431	$ 710	$ 5,382	Certified Public Accountant
Communications	$ 11,182	$ 5,449	$ 1,346	$ 17,977	Management Consultant
Engineering		$ (4)	$ 105	$ 101	Professional Engineer
Finance	$ 204,857	$ 11,153	$ 272,911	$ 488,921	Management Consultant Certified Public Accountant
Human Resources	$ 38,936	$ 8,166	$ 3,312	$ 50,414	Management Consultant
Information Technology	$ 124,493	$ 15,045	$ 214,432	$ 353,970	IT Professional
Legal	$ 10,780	$ 2,277	$ 3,248	$ 16,305	Attorney
Operations	$ 3,373	$ 18,908	$ 8,705	$ 30,986	Management Consultant, Professional Engineer
Rates & Revenue	$ 11,928	$ 2,698	$ 1,404	$ 16,030	Certified Public Accountant
Risk Management	$ 986	$ 1,655	$ 1,411	$ 4,052	Management Consultant
Water Quality	$ (9,030)	$ 370	$ 15,957	$ 7,297	Professional Engineer
Total	**$ 510,364**	**$ 75,382**	**$ 679,682**	**$ 1,265,428**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total
Attorney	$ 10,780	$ 2,277	$ 3,248	$ 16,305
Management Consultant	$ 272,958	$ 26,643	$ 430,185	$ 729,786
Certified Public Accountant	$ 108,025	$ 14,262	$ 10,674	$ 132,961
IT Professional	$ 124,493	$ 15,045	$ 214,432	$ 353,970
Professional Engineer	$ (5,892)	$ 17,159	$ 21,038	$ 32,305
Total	**$ 510,364**	**$ 75,386**	**$ 679,577**	**$ 1,265,327**

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among New York certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	New York Average
Partners/Owners	94%
Directors (11+ years experience)	87%
Managers (6-10 years experience)	80%
Sr Associates (4-5 years experience)	39%
Associates (1-3 years experience)	13%
New Professionals	0%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2010)

Attorneys

The New York State Bar does not survey its members as to their hourly billing rates. As a result, an estimate of New York hourly rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5 (page 19), the average rate for each firm in these surveys was adjusted for the cost of living differential between their locations and Lynbrook, New York. The cost of living indices utilized in this analysis were obtained from the Council for Community and Economic Research, a membership organization created in 1961 to develop high quality regional economic data and analytical methods. The Lawyers Weekly surveys included rates in effect at December 31, 2009. Thus, the 2009 average rate was escalated to June 30, 2010—the midpoint of 2010.

Management Consultants

The cost per hour for management consultants was developed from a 2010 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2009 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6 (page 20), was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2009 average rate was escalated to June 30, 2010—the midpoint of 2010.

Certified Public Accountants

The average hourly rate for New York CPAs was developed from a 2010 survey performed by the American Institute of Certified Public Accountants (AICPA). The New York version of this survey was used to develop hourly rates for member firms in New York.

As shown in Exhibit 7 (page 21), a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2009. Thus, the data had to be escalated to June 30, 2010—the midpoint of 2010.

Information Technology Professionals

The average hourly rate for information technology consultants and contractors was developed from Baryenbruch & Company, LLC IT industry hourly billing rate data. As shown in Exhibit 8 (page 22), that data was compiled and a weighted average was calculated based on a percent of time that is typically applied to an IT consulting assignment based on Baryenbruch & Company, LLC's experience.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by LIAW in 2010. As presented in Exhibit 9 (page 23), an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

Long Island American Water Company
Estimated Billing Rates For New York Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates during 2009		Billing Rate Range (A)					Cost of Living	
		Associate		Partner			Adjust	Adjusted
Firm	Location	Low	High	Low	High	Average	(B)	Rate
Dickinson Wright	Detroit, Mi	$ 195	$ 275	$ 355	$ 575	$ 350	87%	$ 400
Dykema	Detroit, Mi	$ 185	$ 425	$ 295	$ 615	$ 380	87%	$ 435
Butzel Long	Detroit, Mi	$ 175	$ 325	$ 260	$ 600	$ 340	87%	$ 389
Jaffe Raitt Heuer & Weiss	Southfield, Mi	$ 175	$ 250	$ 225	$ 550	$ 300	87%	$ 343
Brooks Kushman	Southfield, Mi	$ 180	$ 275	$ 300	$ 425	$ 295	87%	$ 338
Kemp, Klein, Umphrey, Edelman	Troy, Mi	$ 145	$ 260	$ 200	$ 350	$ 239	87%	$ 273
Rader, Fishman & Grauer	Bloomfield Hills, Mi	$ 130	$ 250	$ 275	$ 550	$ 301	87%	$ 345
Williams, Williams, Rattner & Plunket	Birmingham, Mi	$ 150	$ 250	$ 275	$ 450	$ 281	87%	$ 322
Abbott, Nicholson, Quilter, Esshaki,	Detroit, Mi	$ 150	$ 220	$ 300	$ 375	$ 261	87%	$ 299
Parmenter O'Toole	Muskegon, Mi			$ 125	$ 275	$ 200	79%	$ 254
Lipson, Neilson, Cole, Seltzer & Garir	Bloomfield Hills, Mi	$ 185	$ 235	$ 225	$ 300	$ 236	87%	$ 270
Burns & Levinson	Boston, Ma	$ 210	$ 350	$ 375	$ 525	$ 365	112%	$ 327
Sullivan & Worcester	Boston, Ma	$ 290	$ 535	$ 475	$ 830	$ 533	112%	$ 477
Holland & Knight	Boston, Ma	$ 215	$ 450	$ 445	$ 800	$ 478	112%	$ 428
Seyfarth Shaw	Boston, Ma	$ 327	$ 327	$ 511	$ 511	$ 419	112%	$ 375
Bowditch & Dewey	Worcester, Ma	$ 125	$ 220	$ 250	$ 550	$ 286	112%	$ 256
Prince Lobel	Boston, Ma	$ 195	$ 325	$ 325	$ 525	$ 343	112%	$ 307
Hinckley, Allen & Snyder	Boston, Ma	$ 205	$ 395	$ 360	$ 645	$ 401	112%	$ 359
Mirick O'Connell	Worcester, Ma	$ 220	$ 220	$ 350	$ 350	$ 285	112%	$ 255
Lawson & Weitzen	Boston, Ma	$ 125	$ 225	$ 225	$ 450	$ 256	112%	$ 229
Sunstein Kann Murphy Timbers	Boston, Ma	$ 285	$ 535	$ 575	$ 825	$ 555	112%	$ 497
Keegan Werlin	Boston, Ma	$ 200	$ 300	$ 300	$ 475	$ 319	112%	$ 285
Rich May	Boston, Ma	$ 150	$ 325	$ 295	$ 400	$ 293	112%	$ 262
Anderson Kreiger	Cambridge, Ma	$ 285	$ 285	$ 450	$ 450	$ 368	112%	$ 329
Bernkopf Goodman	Boston, Ma	$ 205	$ 395	$ 375	$ 550	$ 381	112%	$ 341
Tarlow Breed Hart & Rodgers	Boston, Ma	$ 225	$ 365	$ 375	$ 495	$ 365	112%	$ 327
Donoghue Barrett & Singal	Boston, Ma	$ 225	$ 390	$ 350	$ 450	$ 354	112%	$ 317
Cesari and McKenna	Boston, Ma	$ 150	$ 400	$ 425	$ 525	$ 375	112%	$ 336
						Overall Average 2009 Billing Rate		$ 335

Escalation to Test Period Midpoint (June 30, 2010) (Note B)	
CPI at December 31, 2009	216.0
CPI at June 30, 2010	218.0
Inflation/Escalation	0.9%
Average Hourly Billing Rate For Attorneys At June 30, 2010	**$ 338**

Note A: Source is Michigan Lawyers Weekly and Massachusetts Lawyers Weekly

Note B: Source is Council for Community and Economic Research. This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Lynbrook, New York. A number over 100% indicates the Michigan or Massachusetts city's cost of living is higher than Lynbrook. A number less than 100% indicates Lynbrook's cost of living is higher.

Exhibit 6

Long Island American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2009 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 155	$ 215	$ 279	$ 328	$ 413

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 155	$215	$279	$328	$413	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 46	$ 64	$ 56	$ 33	$ 41	**$ 240**

Escalation to Test Period Midpoint (June 30, 2010) (Note B)

CPI at December 31, 2009	216.0
CPI at June 30, 2010	218.0
Inflation/Escalation	0.9%
Average Hourly Billing Rate For CPAs At June 30, 2010	**$ 243**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2010 Edition," Association of Management Consulting Firms

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

Long Island American Water Company
Billing Rates Of New York Certified Public Accountants

Survey billing rates were those in effect in 2009 (Note A)

Type of Firm	Average Hourly Billing Rate (Note A) Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 101	$ 151	$ 220	$ 275

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 101	$ 151	$ 220	$ 275	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 30	$ 45	$ 44	$ 55	**$ 175**

Escalation to Test Period Midpoint (June 30, 2010) (Note B)	
CPI at December 31, 2009	216.0
CPI at June 30, 2010	218.0
Inflation/Escalation	0.9%
Average Hourly Billing Rate For CPAs At June 30, 2010	**$ 176**

Note A: Source is AICPA's 2010 National PCPS/TSCPA Management of an Accounting Practice Survey (New York edition)
Note B: Source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 8

Long Island American Water Company
Billing Rates of Information Technology Professionals

IT Resource Level	2010 Hourly Rate (A)
Consultant Positions	
Senior Manager/Partner Consultant	$ 350
Staff/Manager Consultant	$ 245
Contractor Positions	
Senior Contractor	$ 145
Contractor	$ 63

Overall Average	2010 Rate	% of Project/Assignment	
Senior Manager/Partner Consultant	$ 350	10%	$ 35
Staff/Manager Consultant	$ 245	30%	$ 73
Senior Contractor	$ 145	30%	$ 44
Contractor	$ 63	30%	$ 19
		Weighted Average	**$ 171**

Note A: Source is Baryenbruch & Company, LLC

Exhibit 9

Long Island American Water Company
Billing Rates Of New York Engineers

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
	Technician	Engineer Design Engineer	Project Manager	Officer
Name of Firm	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer
Firm #1	$73	$101	$130	$155
Firm #2	$67	$81	$127	$162
Firm #3	$78	$100	$123	$163
Firm #4	$73	$72	$127	$165
Firm #5	$58	$73	$132	$171
Firm #6	$68	$95	$136	$173
Firm #7	$80	$98	$149	$182
Firm #8	$94	$87	$141	$184
Firm #9	$73	$70	$141	$185
Firm #10	$87	$112	$168	$190
Firm #11	$78	$97	$148	$199
Firm #12	$85	$90	$144	$200
Firm #13	$93	$109	$144	$200
Firm #14	$77	$109	$146	$205
Firm #15	$108	$126	$168	$208
Firm #16	$68	$96	$153	$208
Firm #17	$76	$118	$167	$209
Firm #18	$95	$115	$176	$210
Firm #19	$91	$126	$184	$217
Firm #20	$114	$154	$203	$225
Firm #21	$85	$122	$193	$225
Firm #22	$60	$83	$95	NA
Firm #23	$78	$95	$165	NA
Firm #24	$91	$119	$177	$195

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician	Engineer Design Engineer	Project Manager	Officer	
	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer	
Average Hourly Billing Rate (From Above)	$81	$102	$151	$192	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$24	$36	$38	$19	**$117**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended December 31, 2010		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 220	$ 338	$ (118)
Management Consultant	$ 152	$ 243	$ (91)
Certified Public Accountant	$ 75	$ 176	$ (102)
IT Professional	$ 147	$ 171	$ (24)
Professional Engineer	$ 64	$ 117	$ (53)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to LIAW during 2010, outside service providers would have cost $2,391,733 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 54% higher than those of the Service Company ($2,391,733 / $4,407,221).

	12 Months Ended December 31, 2010		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (118)	511	$ (60,256)
Management Consultant	$ (91)	4,765	$ (432,764)
Certified Public Accountant	$ (102)	13,276	$ (1,348,508)
IT Professional	$ (24)	5,480	$ (130,667)
Professional Engineer	$ (53)	7,949	$ (419,538)
Service Company Less Than Outside Providers			$ (2,391,733)

It should be noted that the cost differential associated with using outside providers is even greater because exempt Service Company personnel do not charge more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. Thus, LIAW would have been charged by outside providers for overtime worked by Service Company personnel who are not paid for that time.

If LIAW were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform almost 32,000 hours of work (more than 21 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing LIAW management team. Thus, it would be necessary for LIAW to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill this position would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $165,000 per year to LIAW's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding 1 Professional Position To LIAW's St		Total
New Positions' Salary	$	100,000
Benefits (at 49.4%)	$	49,400
Office Expenses (15.2%)	$	15,200
Total Cost of One Position	$	164,600

Thus, the total effect on the ratepayers of LIAW of contracting all services now provided by Service Company would be an increase in their costs of $2,556,333 ($2,391,733 + $164,600). Based on the results of this comparison, it is possible to conclude that the Service Company charged LIAW at the lower of cost or market for services provided during 2010.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to LIAW with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, LIAW's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the 2009 FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 10 (pages 27-28) provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

New York	• Central Hudson Gas & Elect • Consolidated Edison • New York State Gas & Elect	• Niagra Mohawk Power • Orange & Rockland Utilities • Rochester Gas & Elect
Pennsylvania	• Duquesne Light • Metropolitan Edison • PECO Energy • Pennsylvania Electric	• Pennsylvania Power • PPL Electric Utilities • West Penn Power
New Jersey	• Atlantic City Electric • Jersey Central Power	• Public Service Elect & Gas
Connecticut	• Connecticut Light & Power	• United Illuminating
Massachusetts	• Fitchburg Gas & Electric • Massachusetts Electric	• Western Mass Electric
Vermont	• Central Vermont Pub Svc	• Green Mountain Power

Long Island American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Long Island American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

LIAW Cost per Customer

As calculated below, LIAW's 2010 customer account services expense per customer was $24.96. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by LIAW. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.54 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

Long Island American Cost Per Customer		Year Ended 12/31/2010 Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Cost Component					
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 1,041,448	$ 280,193	$ 1,321,642	
Regional Offices		$ 6,653		$ 6,653	
Operating Company	Customer payment processing			$ 95,025	Note B
Operating Company	Postage & forms			$ 423,805	
			Cost Pool Total	$ 1,847,125	
			Total Customers	74,007	
	12 Months Ended December 31, 2010 Cost Per LIAW Customer			**$ 24.96**	

Note A: Adjustment for American Water's fewer calls per customer
This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 450,139
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.54	
Percent different	62%	62%
Total Adjustment		$ 280,193

Note B: Estimated customer payment processing expenses

Number of customers	74,007
Number of payments/customer/year	12
Total payments processed/year	888,084
Bank charge per item	$ 0.1070
Total estimated annual expense	$ 95,025

Electric Utility Group Cost per Customer

Exhibit 11 (pages 31-34) shows the actual 2009 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was obtained from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, LIAW's cost per customer is below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that LIAW's 2010 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to LIAW were comparable to those of other utilities.

Average Customer Accounts Expense Per Customer	
West Penn Power	$ 12.90
Pennsylvania Electric	$ 15.59
Pennsylvania Power	$ 16.65
Duquesne Light	$ 16.83
Metropolitan Edison	$ 16.98
Jersey Central Power	$ 17.66
Central Vermont Pub Service	$ 18.54
Green Mountain Power	$ 22.76
Long Island American Water	**$ 24.96**
PPL Electric Utilities	$ 29.30
Rochester Gas & Electric	$ 31.61
Niagra Mohawk Power	$ 32.06
Western Mass Electric	$ 33.67
Connecticut Light & Power	$ 38.08
New York State Electric & Gas	$ 40.86
Massachusetts Electric	$ 41.63
Comparison Group Average	**$ 45.57**
Fitchburg Gas & Electric	$ 46.25
Central Hudson Gas & Electric	$ 49.98
United Illuminating	$ 52.78
Consolidated Edison	$ 54.53
Orange & Rockland Utilities	$ 58.04
PECO Energy	$ 60.99
Atlantic City Electric	$ 73.00
Public Service Electric & Gas	$ 94.95

Exhibit 11
Page 1 of 4

Long Island American Water Company
Comparison Group 2009 Customer Accounts Expense Per Customer

		New York					
		Central Hudson Gas & Electric	Consolidated Edison	New York State Electric & Gas	Niagra Mohawk Power	Orange & Rockland Utilities	Rochester Gas & Electric
Customer Account Management Cost Pool							
FERC Account Balances:							
Account 903 - Customer Records & Collection (page 322, line 161)		$ 7,473,794	$ 116,295,568	$ 33,086,419	$ 39,838,790	$ 8,445,381	$ 11,789,265
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 2,442,189	$ 355,012	$ 389,911	$ 1,069,573	$ 88,789	$ 83,465
Subtotal		$ 9,915,983	$ 116,650,580	$ 33,476,330	$ 40,908,363	$ 8,534,170	$ 11,872,730
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 3,628,517	$ 54,133,608	$ 248,623	$ 2,224,149	$ 3,785,341	$ (1,131,464)
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 553,629	$ 7,968,797	$ 2,037,841	$ 360,402	$ 642,347	$ 717,653
Total Cost Pool		**$ 14,098,128**	**$ 178,752,985**	**$ 35,762,794**	**$ 43,492,914**	**$ 12,961,858**	**$ 11,458,919**
Total Customers (page 304, line 43)		282,069	3,277,855	875,290	1,356,403	223,336	362,510
Customer Account Services Expense per Customer		**$ 49.98**	**$ 54.53**	**$ 40.86**	**$ 32.06**	**$ 58.04**	**$ 31.61**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 28,917,048	$ 309,686,425	$ 1,320,903	$ 94,953,663	$ 28,030,935	$ (6,292,595)
Total O&M Payroll (page 355, line 65)		$ 57,674,266	$ 595,918,020	$ 141,526,577	$ 201,128,526	$ 62,178,617	$ 52,172,554
Benefits as Percent of Payroll		50.1%	52.0%	0.9%	47.2%	45.1%	-12.1%
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 7,822,289	$ 108,428,498	$ 27,562,426	$ -	$ 7,755,378	$ 6,783,478
Gas (page 354, line 37)		$ 1,384,435	$ 23,801,394	$ 5,087,185	$ 5,241,609	$ 3,468,065	$ 4,569,391
Total Payroll Charged to Customer Accounts		$ 9,206,724	$ 132,229,892	$ 32,649,611	$ 5,241,609	$ 11,223,443	$ 11,352,869
Percent Applicable to Customer Accounts Services (903 and 905):							
Account 903 - Customer Records & Collection (page 322, line 161)		$ 7,473,794	$ 116,295,568	$ 33,086,419	$ 39,838,790	$ 8,445,381	$ 11,789,265
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 2,442,189	$ 355,012	$ 389,911	$ 1,069,573	$ 88,789	$ 83,465
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 9,915,983	$ 116,650,580	$ 33,476,330	$ 40,908,363	$ 8,534,170	$ 11,872,730
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 2,698,913	$ 31,425,607	$ 7,554,188	$ 4,606,263	$ 2,873,026	$ 2,495,495
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 12,614,896	$ 148,076,187	$ 41,030,518	$ 45,514,626	$ 11,407,196	$ 14,368,225
Percent Applicable to Customer Accounts Services (903 and 905)		78.6%	78.8%	81.6%	89.9%	74.8%	82.6%
Customer Account Services Portion of Total Payroll		$ 7,236,978	$ 104,167,280	$ 26,638,444	$ 4,711,137	$ 8,396,697	$ 9,381,086
Pension & Benefits Pertaining to Customer Accounts Services		$ 3,628,517	$ 54,133,608	$ 248,623	$ 2,224,149	$ 3,785,341	$ (1,131,464)
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 7,236,978	$ 104,167,280	$ 26,638,444	$ 4,711,137	$ 8,396,697	$ 9,381,086
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 553,629	$ 7,968,797	$ 2,037,841	$ 360,402	$ 642,347	$ 717,653

Long Island American Water Company
Comparison Group 2009 Customer Accounts Expense Per Customer

		Pennsylvania						
		Duquesne Light	Metropolitan Edison	PECO Energy	Pennsylvania Electric	Pennsylvania Power	PPL Electric Utilities	West Penn Power
Customer Account Management Cost Pool								
FERC Account Balances:								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 7,251,333	$ 8,147,866	$ 54,108,164	$ 8,285,931	$ 2,345,167	$ 29,834,173	$ 7,062,895
Account 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 190,699	$ 31,454,063	$ 318,212	$ 62,195	$ 1,237,553	$ -
Subtotal		$ 7,251,333	$ 8,338,565	$ 85,562,227	$ 8,604,143	$ 2,407,362	$ 31,071,726	$ 7,062,895
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,344,537	$ 760,872	$ 7,908,524	$ 306,665	$ 180,088	$ 8,438,577	$ 1,791,804
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 484,798	$ 234,290	$ 1,945,506	$ 276,430	$ 69,299	$ 1,445,946	$ 369,311
Total Cost Pool		**$ 10,080,668**	**$ 9,333,728**	**$ 95,416,257**	**$ 9,187,238**	**$ 2,656,750**	**$ 40,956,249**	**$ 9,224,010**
Total Customers (page 304, line 43)		598,969	549,818	1,564,433	589,201	159,558	1,397,730	714,966
Customer Account Services Expense per Customer		**$ 16.83**	**$ 16.98**	**$ 60.99**	**$ 15.59**	**$ 16.65**	**$ 29.30**	**$ 12.90**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 19,609,439	$ 7,369,188	$ 43,788,734	$ 2,761,682	$ 1,285,130	$ 40,413,365	$ 17,716,168
Total O&M Payroll (page 355, line 65)		$ 53,003,877	$ 29,662,034	$ 140,811,506	$ 32,541,096	$ 6,464,412	$ 90,520,382	$ 47,732,099
Benefits as Percent of Payroll		37.0%	24.8%	31.1%	8.5%	19.9%	44.6%	37.1%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 9,501,076	$ 5,050,243	$ 24,534,887	$ 6,047,880	$ 1,444,650	$ 20,125,865	$ 8,201,891
Gas (page 354, line 37)		$ -	$ -	$ 5,390,281	$ -	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 9,501,076	$ 5,050,243	$ 29,925,168	$ 6,047,880	$ 1,444,650	$ 20,125,865	$ 8,201,891
Percent Applicable to Customer Accounts Services (903 and 905):								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 7,251,333	$ 8,147,866	$ 54,108,164	$ 8,285,931	$ 2,345,167	$ 29,834,173	$ 7,062,895
Account 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 190,699	$ 31,454,063	$ 318,212	$ 62,195	$ 1,237,553	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 7,251,333	$ 8,338,565	$ 85,562,227	$ 8,604,143	$ 2,407,362	$ 31,071,726	$ 7,062,895
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 3,620,208	$ 5,411,680	$ 15,118,763	$ 5,796,694	$ 1,431,801	$ 2,013,136	$ 4,936,672
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 10,871,541	$ 13,750,245	$ 100,680,990	$ 14,400,837	$ 3,839,163	$ 33,084,862	$ 11,999,567
Percent Applicable to Customer Accounts Services (903 and 905)		66.7%	60.6%	85.0%	59.7%	62.7%	93.9%	58.9%
Customer Account Services Portion of Total Payroll		$ 6,337,231	$ 3,062,620	$ 25,431,455	$ 3,613,458	$ 905,873	$ 18,901,253	$ 4,827,599
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,344,537	$ 760,872	$ 7,908,524	$ 306,665	$ 180,088	$ 8,438,577	$ 1,791,804
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,337,231	$ 3,062,620	$ 25,431,455	$ 3,613,458	$ 905,873	$ 18,901,253	$ 4,827,599
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 484,798	$ 234,290	$ 1,945,506	$ 276,430	$ 69,299	$ 1,445,946	$ 369,311

Long Island American Water Company
Comparison Group 2009 Customer Accounts Expense Per Customer

	New Jersey				Connecticut	
	Atlantic City Electric	Jersey Central Power	Public Service Electric & Gas	Rockland Electric	Connecticut Light & Power	United Illuminating
Customer Account Management Cost Pool						
FERC Account Balances:						
Account 903 - Customer Records & Collection (page 322, line 161)	$ 38,294,686	$ 15,780,845	$ 59,788,911		$ 38,399,035	$ 13,961,033
Account 905 - Misc Customer Accounts (page 322, line 163)	$ 34,267	$ 439,305	$ 111,203,742		$ 7,027,977	$ -
Subtotal	$ 38,328,953	$ 16,220,150	$ 170,992,653		$ 45,427,012	$ 13,961,033
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits **Note A**	$ 1,358,237	$ 2,528,439	$ 28,017,852		$ 290,623	$ 2,698,280
Account 408 - Taxes Other Than Income (Employer's Portion of FICA) **Note B**	$ 189,708	$ 572,212	$ 6,309,076		$ 118,428	$ 486,853
Total Cost Pool	**$ 39,876,898**	**$ 19,320,801**	**$ 205,319,581**		**$ 45,836,064**	**$ 17,146,166**
Total Customers (page 304, line 43)	546,236	1,093,885	2,162,345		1,203,701	324,865
Customer Account Services Expense per Customer	**$ 73.00**	**$ 17.66**	**$ 94.95**	See New York	**$ 38.08**	**$ 52.78**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)	$ 12,246,672	$ 21,925,388	$ 113,984,286		$ 18,329,558	$ 31,896,803
Total O&M Payroll (page 355, line 65)	$ 22,359,783	$ 64,861,990	$ 335,516,951		$ 97,637,292	$ 75,230,872
Benefits as Percent of Payroll	54.8%	33.8%	34.0%		18.8%	42.4%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)	$ 2,772,357	$ 12,317,288	$ 49,701,550		$ 1,653,342	$ 8,955,597
Gas (page 354, line 37)	$ -	$ -	$ 41,062,287		$ -	$ -
Total Payroll Charged to Customer Accounts	$ 2,772,357	$ 12,317,288	$ 90,763,837		$ 1,653,342	$ 8,955,597
Percent Applicable to Customer Accounts Services (903 and 905):						
Account 903 - Customer Records & Collection (page 322, line 161)	$ 38,294,686	$ 15,780,845	$ 59,788,911		$ 38,399,035	$ 13,961,033
Account 905 - Misc Customer Accounts (page 322, line 163)	$ 34,267	$ 439,305	$ 111,203,742		$ 7,027,977	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services	$ 38,328,953	$ 16,220,150	$ 170,992,653		$ 45,427,012	$ 13,961,033
Account 902 - Meter Reading Expenses (page 322, line 160)	$ 4,521,071	$ 10,489,885	$ 17,192,771		$ 3,088,717	$ 5,685,056
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading	$ 42,850,024	$ 26,710,035	$ 188,185,424		$ 48,515,729	$ 19,646,089
Percent Applicable to Customer Accounts Services (903 and 905)	89.4%	60.7%	90.9%		93.6%	71.1%
Customer Account Services Portion of Total Payroll	$ 2,479,848	$ 7,479,895	$ 82,471,580		$ 1,548,083	$ 6,364,085
Pension & Benefits Pertaining to Customer Accounts Services	$ 1,358,237	$ 2,528,439	$ 28,017,852		$ 290,623	$ 2,698,280
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll	$ 2,479,848	$ 7,479,895	$ 82,471,580		$ 1,548,083	$ 6,364,085
Employer's Portion of FICA (6.20%) and Medicare (1.45%)	7.65%	7.65%	7.65%		7.65%	7.65%
Estimated Employer's Portion of FICA	$ 189,708	$ 572,212	$ 6,309,076		$ 118,428	$ 486,853

Long Island American Water Company
Comparison Group 2009 Customer Accounts Expense Per Customer

		Massachusetts			Vermont		
		Fitchburg Gas & Electric	Massachusetts Electric	Western Mass Electric	Central Vermont Pub Service	Green Mountain Pow er	Group Average
Customer Account Management Cost Pool							
FERC Account Balances:							
Account 903 - Customer Records & Collection (page 322, line 161)		$ 1,204,356	$ 34,482,297	$ 6,374,384	$ 2,620,312	$ 1,701,897	
Account 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 1,447,984	$ 366,238	$ 98,578	$ 348,693	
Subtotal		$ 1,204,356	$ 35,930,281	$ 6,740,622	$ 2,718,890	$ 2,050,590	
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 100,571	$ 3,850,028	$ 46,817	$ 470,634	$ 111,738	
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 11,943	$ 327,365	$ 88,741	$ 132,178	$ 72,528	
Total Cost Pool		**$ 1,316,870**	**$ 40,107,674**	**$ 6,876,179**	**$ 3,321,702**	**$ 2,234,856**	**$ 854,739,290**
Total Customers (page 304, line 43)		28,472	963,390	204,220	179,140	98,190	18,756,582
Customer Account Services Expense per Customer		**$ 46.25**	**$ 41.63**	**$ 33.67**	**$ 18.54**	**$ 22.76**	**$ 45.57**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 1,578,312	$ 54,012,798	$ 712,100	$ 10,033,014	$ 1,368,699	
Total O&M Payroll (page 355, line 65)		$ 2,450,086	$ 60,034,828	$ 17,644,084	$ 36,833,880	$ 11,613,281	
Benefits as Percent of Payroll		64.4%	90.0%	4.0%	27.2%	11.8%	
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 97,713	$ 4,783,315	$ 1,307,170	$ 3,467,597	$ 1,254,212	
Gas (page 354, line 37)		$ 63,138	$ -	$ -	$ -	$ -	
Total Payroll Charged to Customer Accounts		$ 160,851	$ 4,783,315	$ 1,307,170	$ 3,467,597	$ 1,254,212	
Percent Applicable to Customer Accounts Services (903 and 905):							
Account 903 - Customer Records & Collection (page 322, line 161)		$ 1,204,356	$ 34,482,297	$ 6,374,384	$ 2,620,312	$ 1,701,897	
Account 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 1,447,984	$ 366,238	$ 98,578	$ 348,693	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 1,204,356	$ 35,930,281	$ 6,740,622	$ 2,718,890	$ 2,050,590	
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 36,488	$ 4,232,067	$ 855,140	$ 2,737,697	$ 662,122	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 1,240,844	$ 40,162,348	$ 7,595,762	$ 5,456,587	$ 2,712,712	
Percent Applicable to Customer Accounts Services (903 and 905)		97.1%	89.5%	88.7%	49.8%	75.6%	
Customer Account Services Portion of Total Payroll		$ 156,121	$ 4,279,278	$ 1,160,007	$ 1,727,823	$ 948,082	
Pension & Benefits Pertaining to Customer Accounts Services		$ 100,571	$ 3,850,028	$ 46,817	$ 470,634	$ 111,738	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 156,121	$ 4,279,278	$ 1,160,007	$ 1,727,823	$ 948,082	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	
Estimated Employer's Portion of FICA		$ 11,943	$ 327,365	$ 88,741	$ 132,178	$ 72,528	

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to LIAW by the Service Company would be necessary if LIAW were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for LIAW. Based on discussions with Service Company personnel, the matrix in Exhibit 12 (pages 36-38) was created showing which entity—LIAW or a Service Company location—is responsible for each of the functions LIAW requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if LIAW were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to LIAW. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Long Island American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:								
		American Water Service Company							
Water Company Function	LIAW	Customer Call Center	Eastern Division	Shared Services	Central Services	IT Service Centers	Supply Chain	Belleville Lab
Engineering and Construction Management									
CPS Preparation	S				P			
Five-Year System Planning	P		S					
Engineering Standards & Policies Development					P			
Project Design								
Major Projects (e.g., new treatment plant)	P				S			
Special Projects	P		S		S			
Minor Projects (e.g., pipelines)	P							
Construction Project Management								
Major Projects	P		S					
Special Projects	P		S					
Minor Projects	P							
Hydraulics Review	P		S					
Developers Extensions	P							
Tank Painting	P		S					
Water Quality and Purification								
Water Quality Standards Development			S		P			S
Research Studies	S		S		P			S
Water Quality Program Implementation	P		S		S			
Water Treatment Operations & Maintenance	P		S					
Compliance Sampling	P		S					S
Testing/Other Sampling	S		S					P
Transmission and Distribution									
Preventive Maintenance Program Development	P							
System Maintenance	P							
Leak Detection	S		P					
Customer Service									
Community Relations	P		S		S			
Customer Contact	S	P						
Call Processing		P						
Service Order Processing	S	P						
Customer Credit		P						
Meter Reading	P							
Customer Bill Preparation						P		
Bill Collection	S	P						
Customer Payment Processing	S			P				
Meter Standards Development			S		P			
Meter Testing, Maintenance & Replacement	P							

Long Island American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:							
		American Water Service Company						
Water Company Function	LIAW	Customer Call Center	Eastern Division	Shared Services	Central Services	IT Service Centers	Supply Chain	Belleville Lab
Financial Management								
Financial Planning	P		S		S			
Financings--Equity	S				S			
Financings--Long Term Debt & Preferred (Note A)	S		S					
Short Term Lines of Credit Arrangements(Note A)	S		S					
Investor Relations					P			
Insurance Program Administration			S		P			
Loss Control/Safety Program Administration	S		P		S			
Pension Fund Asset Management					P			
Cash Management/Disbursements				P				
Internal Auditing					P			
Budgeting and Variance Reporting								
Corporate Guidelines & Instructions					P			
Regional Guidelines & Instructions			P					
Budget Preparation								
Revenue and O&M	P							
Depreciation and Interest Expense	P		S	S				
Budget Preparation--Service Company Charges		S	S	S	S	S	S	S
Capital Budget Preparation—Projects	P		S					
Capital Budget Preparation—Non-Project Work	P		S					
Prepare Monthly Budget Variance Report	P		S					
("Budget/Plan Analysis")								
Prepare Capital Project Budget Status Report	P		S					
Year-End Projections	P		S					
Accounting and Taxes								
Accounts Payable Accounting	S			P				
Payroll Accounting	S			P				
Work Order Accounting	S		S	P				
Fixed Asset Accounting	S		S	P				
Journal Entry Preparations--Billing Corrections	S		S	P				
Journal Entry Preparation--All Others	S		S	P				
Financial Statement Preparation	S		S	P				
State Commission Reporting	S		S	P				
Income Taxes--State				P				
Income Taxes--Federal				P				
Property Taxes			S	P				
Gross Receipts (Town) Taxes	S		S	P				

Note A: Lines of credit are the responsibility of American Water Capital Corporation ("AWCC"). AWCC is also responsible for Corporate financings which may be distributed to the regulated subsidiaries.

Long Island American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:							
		American Water Service Company						
Water Company Function	LIAW	Customer Call Center	Eastern Division	Shared Services	Central Services	IT Service Centers	Supply Chain	Belleville Lab
Rates								
Rate Studies & Tariff Change Administration	S		P	S				
Rate Case Planning and Preparation	S		P	S				
Rate Case Administration	S		P					
Commission Inquiry Response	S		P					
Legal			P		S			
Purchasing and Materials Management – National (pipe, chemicals, meters, etc.)								
Specification Development	S		S		P		S	
Bid Solicitation	S						P	
Contract Administration	S						P	
Purchasing and Materials Management – State (state supplier service agreements)								
Specification Development	P		S					
Bid Solicitation	P							
Contract Administration	P							
Ordering	P							
Inventory Management	P							
Human Resources Management								
Benefit Program Development			S		P			
Benefits Program Administration			P	S				
Management Compensation Administration			P		S			
Wage & Salary Program Design			S		P			
Wage & Salary Administration			P		S			
Labor Negotiations--Wages	P		S					
Labor Negotiations--Benefits	P		S		S			
Labor Negotiations-- Work Rules	P		S					
Training Program Development			P		S			
Training--Course Delivery			P					
Affirmative Action/EEO--Plan Development			P					
Affirmative Action/EEO--Implementation			P					
Information Systems Services								
Service Company Data Centers								
System Operations & Maintenance						P		
Software Maintenance						P		
Network Administration						P		
PC Acquisition & Support	S					P		
Help Desk						P		

Governance Practices Associated With Service Company Charges

There are several ways by which LIAW exercises control over Service Company services and charges. The most important of these are described below.

- **LIAW Company Board Oversight** – The LIAW board of directors includes the Senior Vice President of Eastern Division, the Vice President of Finance for the Eastern Division, a member of the LIAW management team and an external business and community leader. This diverse board ensures that LIAW's needs are a factor in the delivery of Service Company services. The LIAW Board meets at a minimum of four times each year and at every meeting financial and operational reports and issues are discussed at length.
- **LIAW President Oversight** – The LIAW President is responsible for the overall performance of LIAW, including services and charges received from the American Water Service Company. The President of LIAW has previously served as a board member on the service company's board of directors (see the section for Service Company Board Oversight below for further discussion). In addition, as part of the overall management team of American Water through the President of Regulated Operations and the Senior Vice President of Eastern Division, LIAW's President has a significant voice in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending as LIAW's President is one of seven direct reports to the Senior Vice President of Eastern Division.
- **LIAW Vice President and Treasurer** – The Vice President and Treasurer is responsible for the financial reporting, performance and regulatory matters of the LIAW. The Vice President and Treasurer monitors the performance, expense and reporting from the Service Company and verifies and validates the cost of services received. In addition, the Vice President and Treasurer through the Financial Planning and Analysis staff reviews the monthly charges and investigates whenever the amount, quality and/or services are appropriate.
- **Service Company Board Oversight** – The Service Company Board of Directors is comprised of 16 members, of which the President of the Eastern Division is on it. They typically meet four times a year to provide governance on the activities and bylaws of Service Company. Their primary responsibilities include:
  - Approve the Business Plan and Operating Budget
  - Review Financial Performance of the Service Center
  - Review performance metrics of certain functional groups
  - Approve policy, procedures and practices of AW as it relates to Service Company.
- **Service Company Budget Review/Approval** – Several state regulated water utility presidents serve on the Service Company board of directors and that board must formally approve the budget for Service Company charges for the next year. State presidents serve on a rotational basis and LIAW president served as a board member in 2009. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the individual operating company's board of directors (e.g., LIAW).
- **Major Project Review And Approval –** Major non-capital projects undertaken by the Service Company must first be reviewed by American Water's Executive Leadership Team, which includes the President of Regulated Operations. The President of Regulated Operations, with significant input from his direct reports (including the Senior Vice President of Eastern Division), has the ability to impact all new initiatives and projects before they are authorized. Major non-capital projects and initiatives for the Service Company are approved through the Business Plan. All significant business

initiatives (capital or non-capital) are required to be submitted to the "BATT" (Business and Technology Team) committee for final approval. The "BATT" team is comprised of C-level executive members (CEO, CFO, etc.).

- **Capital Investment Management** (CIM) – CIM covers capital and asset planning and is employed throughout American Water, including the Service Company. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment.

- **Accounting and Financial Reporting** – Similar to the states, the Service Company follows the same accounting and financial reporting processes. During the month accounting transactions are recorded. At month end, the SSC and Service Company Finance teams review all transactions. Variance analyses are performed based on month to month actual as well as actual to budget to ensure accuracy. Once completed, the service company bill is run and the actuals are "pushed down" based on direct charges and allocations to the states based on predetermined formulas. A conference call is schedule before the operating companies close their books each month to discuss Service Company performance. This is based at a functional level with explanation reported for those expense variances that meet or exceed certain thresholds. At this time, the operating companies may question expenses and spending for better understanding of results. LIAW Financial Performance and Analysis (FP&A) personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. Any mistakes or overcharges are credited on a subsequent billing.

- **LIAW Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly by each operating company, has line items for Management Fees and Shared Service Expense (i.e., IT, Call Center, etc.). In this way, Service Company budget versus actual charges as charged to the operating company can be monitored and reviewed for the month and year-to-date as compared to prior year, plan and reforecast.

Market Cost Comparison of Service Company Charges to New Jersey American Water Company

12-Months Ended June 30, 2009

Baryenbruch & Company, LLC

New Jersey American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended June 30, 2009

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to New Jersey American Water Company (NJAWC):

1. Were the Service Company's charges to NJAWC during the 12 months ended June 30, 2009 reasonable?

2. Was NJAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during the 12 months ended June 30, 2009?

3. Were the 12 months ended June 30, 2009 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services NJAWC receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 12 months ended June 30, 2009 cost per NJAWC customer was very reasonable compared to cost per customer for electric and combination electric/gas service companies. During the 12 months ended June 30, 2009, NJAWC was charged $49 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $109 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 3 of the 24 utility service companies that filed a FERC Form 60 for 2008 had a lower per customer A&G cost than NJAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- NJAWC was charged the lower of cost or market for managerial and professional services during the 12 months ended June 30, 2009.

- On average, the hourly rates for outside service providers are 75% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by NJAWC without careful supervision on the part of NJAWC. If these services were contracted entirely to outside providers, NJAWC would have to add at least two positions to manage activities of outside firms. These positions would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended June 30, 2009, NJAWC and its ratepayers would have incurred more than $20.6 million in additional expenses. This amount includes the higher cost of outside providers and the cost of two NJAWC positions needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to NJAWC from its use of the Service Company. Outside service providers generally bill

for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $20.6 million cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week), then that work would have cost an estimated $1.0 million in additional charges from outside providers.

- It would be difficult for NJAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from NJAWC ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Centers, is well below the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and NJAWC. During the 12-months ended June 30, 2009, the customer accounts cost for NJAWC customers was $26.33 compared to the 2008 average of $43.23 for neighboring electric utilities. The highest comparison group per customer cost was $83.88 and the lowest $12.54.

Concerning question 4, the following conclusions was drawn:

- The services that the Service Company provides are necessary and would be required even if NJAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to NJAWC. For all of the services listed in Exhibit 11, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like NJAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of NJAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include legal, communication, human resources and maintenance.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times their hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 10% of American Water's Shared Services' professional labor is assigned to NJAWC during a month, then 10% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 10% of the Shared Services' accumulated professional and support labor is charged to NJAWC during the month, then 10% of that month's overhead expenses will be assigned to NJAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to NJAWC, then 2% of that office's office expenses would be assigned to NJAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended June 30, 2009, the Service Company billed NJAWC $34,094,415 in O&M-related charges and $2,541,741 in capital-related charges. Included in the O&M amount are certain non-recurring expenses which are excluded from this market study because NJAWC is not seeking their recovery. As calculated in the table below, net testable Service Company charges of $36,550,356 were subjected to a market cost comparison.

	12 Months Ended June 30, 2009	
Mgmt Fee Expense (O&M)	$	34,094,415
Add/Subtract: Non-Recurring Items		
Sarbanes-Oxley	$	9,117
Divestiture Support	$	19,012
Business Change	$	(113,929)
Net O&M Expenses	$	34,008,615
Mgmt Fees - Capital	$	2,541,741
Total Testable AWWSC Charges	**$**	**36,550,356**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology, and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total test period Service Company charges break down between management/professional services and customer account services as follows:

	12 Months Ended June 30, 2009		
		Amount	Hours
Management and Professional Services	$	26,876,116	261,863
Customer Account Services	$	9,674,240	278,715
Total	$	36,550,356	540,578

This study's first question—whether Service Company 12 months ended June 30, 2009 charges were reasonable—was determined by comparing NJAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 12 months ended June 30, 2009 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to NJAWC during the 12 months ended June 30, 2009. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

The third question—whether Service Company's 12 months ended June 30, 2009 customer account services charges, including National Call Center costs, were comparable to other utilities—was addressed by comparing NJAWC's customer accounts services expenses to those of neighboring investor owned electric utilities. This utility comparison group was selected because the cost of outside providers of customer accounts services is proprietary and not publicly available. Comparison to electric utilities is appropriate because all utilities, regardless of service type, must perform customer account services activities, including updating customer records for meter reads, printing and mailing bills, and the collection and processing of customer payments. Electric utility costs are available from the Federal Energy Regulatory Commission (FERC) Form 1, thus there is appropriate data transparency. The selection of electric utilities from New Jersey and neighboring states provides a sufficiently sized comparison group.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to NJAWC and determining if these services would be required if NJAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

NJAWC's Service Company Cost per Customer

During the 12 months ended June 30, 2009, NJAWC was charged $49 per customer by the Service Company for A&G/O&M-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	12 Months ended Jun 30, 2009 AWWSC Charges
Testable Service Company charges	$ 36,550,356
Less: Capital charges	$ (2,541,741)
Less: Non-A&G function O&M charges	
Engineering	$ (4,153)
Operations	$ (1,232,226)
Water Quality	$ (1,277,188)
Net A&G/O&M-related charges	$ 31,495,047
NJAWC customers	638,458
NJAWC Cost Per Customer	**$ 49**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system subject to regulation by the FERC must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2008, a Form 60 was filed by 24 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

O&M expenses charged to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2008 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

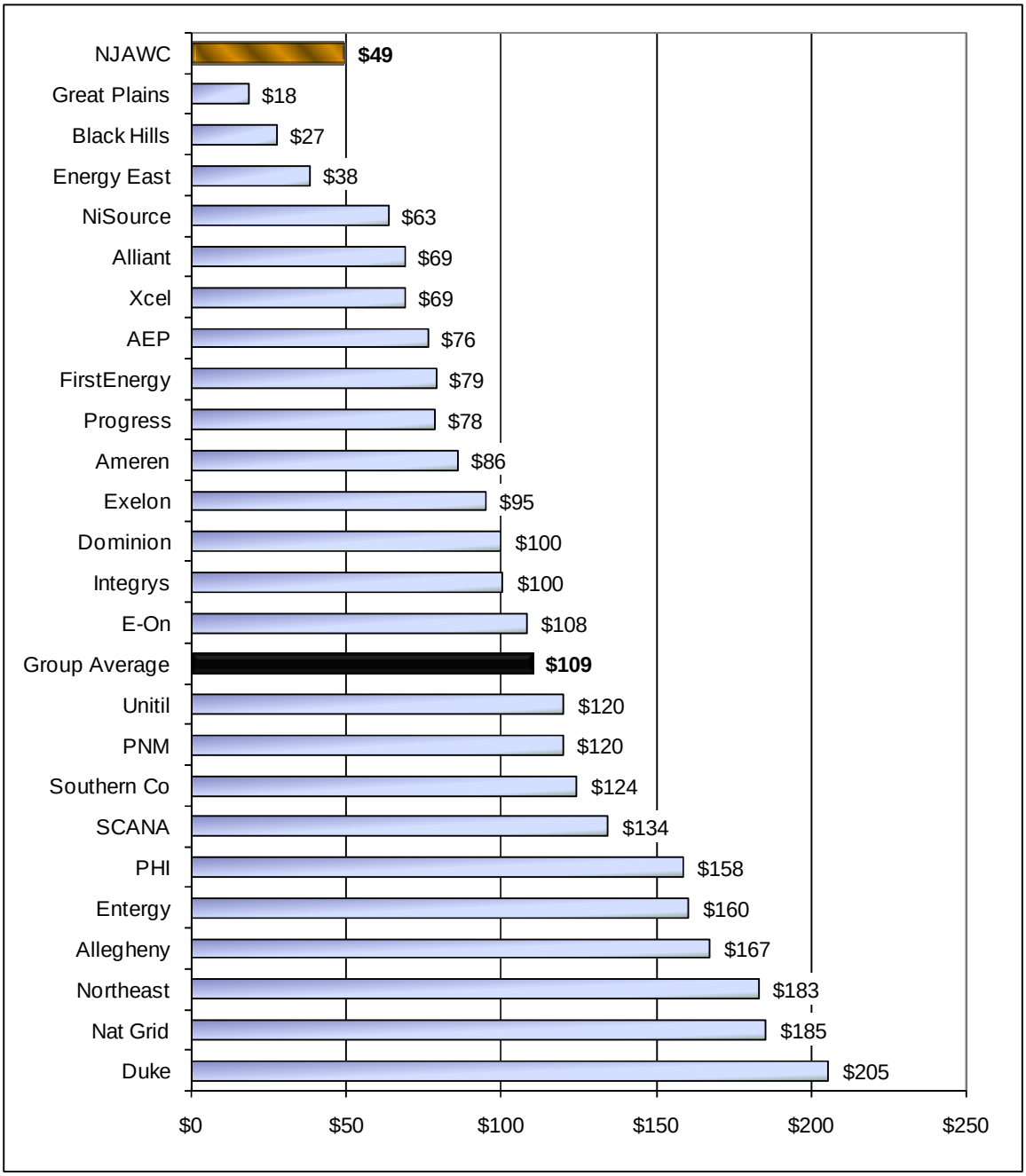
A&G expenses per regulated utility customer for the 24 utility companies that file Form 60 for 2008 are calculated below.

Utility Company	2008 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$396,340,118	5,213,000	$ 76
Allegheny	$263,588,707	1,577,873	$ 167
Alliant	$205,754,832	3,000,000	$ 69
Ameren	$291,684,710	3,400,000	$ 86
Black Hills	$20,763,828	759,400	$ 27
Dominion	$357,718,046	3,588,500	$ 100
Duke	$923,936,645	4,500,000	$ 205
Energy East	$113,714,789	2,989,800	$ 38
Entergy	$432,575,683	2,700,000	$ 160
E-On	$136,276,177	1,263,000	$ 108
Exelon	$558,687,014	5,885,000	$ 95
FirstEnergy	$354,028,109	4,499,000	$ 79
Great Plains	$15,000,708	820,000	$ 18
Integrys	$216,364,166	2,157,000	$ 100
Nat Grid	$1,240,706,398	6,700,000	$ 185
NiSource	$237,380,009	3,750,000	$ 63
Northeast	$302,138,730	1,654,000	$ 183
PHI	$302,463,412	1,910,000	$ 158
Progress	$242,677,256	3,100,000	$ 78
PNM	$102,688,385	859,000	$ 120
SCANA	$191,207,825	1,424,300	$ 134
Southern Co	$546,498,605	4,402,000	$ 124
Unitil	$20,341,422	169,600	$ 120
Xcel	$367,626,617	5,345,000	$ 69
Group Total	**$7,840,162,191**	**71,666,473**	**$ 109**

Exhibit 1 shows NJAWC's 12 months ended June 30, 2009 Service Company cost per customer of $49 to be considerably lower than the average of $109 per customer for the comparison group service companies. Only 3 of 24 comparison group service companies had a lower cost per customer than NJAWC. Based on this result, it is possible to conclude that the Service Company's 12 months ended June 30, 2009 charges to NJAWC were reasonable.

Exhibit 1

New Jersey American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to NJAWC during the 12 months ended June 30, 2009. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged NJAWC during the 12 months ended June 30, 2009, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended June 30, 2009 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to NJAWC during the 12 months ended June 30, 2009.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following the 12 months ended June 30, 2009 test period non-labor Service Company charges:

- Contract Services – 12 months ended June 30, 2009 Service Company charges to NJAWC include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services).

These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 12 months ended June 30, 2009 Service Company charges to NJAWC are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended June 30, 2009 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total management, professional & technical services charges	$ 1,289,713	$ 6,715,215	$ 15,836,670	$ 3,034,517	$ 26,876,116
Less:					
Contract services	$ 103,830	$ 603,363	$ 2,308,124	$ 45,772	$ 3,061,089
Travel expenses	$ 16,222	$ 180,663	$ 229,293	$ 69,761	$ 495,939
IT infrastructure expenses	$ 29,263	$ 1,138,413	$ 1,154,115	$ 271,414	$ 2,593,205
Net Service Charges (A)	$ 1,140,398	$ 4,792,776	$ 12,145,138	$ 2,647,570	$ 20,725,882
Total Hours (B)	11,798	43,874	170,127	36,064	261,863
Average Hourly Rate (A / B)	**$ 97**	**$ 109**	**$ 71**	**$ 73**	

Exhibit 2

New Jersey American Water Company
Analysis of 12 Months Ended June 30, 2009 Service Company Charges By Location And Function

		12 Months Ended June 30, 2009 Service Company Charges				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 1,045,491	$ 1,045,491
Call Center	Human Resources		$ 219,676			$ 219,676
Corporate	Accounting			$ 2,722,924		$ 2,722,924
	Administration		$ 1,802,739			$ 1,802,739
	Audit			$ 267,702		$ 267,702
	Communications		$ 452,662			$ 452,662
	Finance			$ 1,176,087		$ 1,176,087
	Human Resources		$ 1,141,750			$ 1,141,750
	Information Technology			$ 32,293		$ 32,293
	Legal	$ 500,439				$ 500,439
	Operations		$ 626,699		$ 1,197,574	$ 1,824,273
	Rates & Revenue			$ 380,077		$ 380,077
	Risk Management		$ 364,964			$ 364,964
	Water Quality				$ 402,465	$ 402,465
Regional Offices	Accounting			$ 87,173		$ 87,173
	Administration		$ 392,698			$ 392,698
	Communications		$ 193,179			$ 193,179
	Engineering				$ 4,446	$ 4,446
	Finance			$ 2,023,612		$ 2,023,612
	Human Resources		$ 435,930			$ 435,930
	Legal	$ 789,274				$ 789,274
	Operations		$ 2,163		$ 382,216	$ 384,379
	Risk Management		$ 519,317			$ 519,317
	Water Quality				$ 2,324	$ 2,324
Information Technology	Information Technology			$ 6,811,780		$ 6,811,780
Shared Services	Accounting			$ 1,874,588		$ 1,874,588
	Administration		$ 563,438			$ 563,438
	Finance			$ 274,526		$ 274,526
	Rates & Revenue			$ 185,908		$ 185,908
Total Dollars Charged		**$ 1,289,713**	**$ 6,715,215**	**$ 15,836,670**	**$ 3,034,517**	**$ 26,876,116**

Exhibit 3

New Jersey American Water Company
Analysis of 12 Months Ended June 30, 2009Service Company Hours By Location And Function

		12 Months Ended June 30, 2009 Service Company Hours				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				14,164	14,164
Call Center	Human Resources		3,054			3,054
Corporate	Accounting			25,945		25,945
	Administration		2,910			2,910
	Audit			3,049		3,049
	Communications		2,494			2,494
	Finance			7,857		7,857
	Human Resources		11,425			11,425
	Information Technology			129		129
	Legal	2,572				2,572
	Operations		3,040		13,508	16,548
	Rates & Revenue			2,659		2,659
	Risk Management		3,812			3,812
	Water Quality				5,756	5,756
Regional Offices	Accounting			1,942		1,942
	Administration		-			-
	Communications		2,429			2,429
	Engineering				1	1
	Finance			22,334		22,334
	Human Resources		3,557			3,557
	Legal	9,226				9,226
	Operations		-		2,600	2,600
	Risk Management		8,353			8,353
	Water Quality				35	35
Information Technology	Information Technology			54,406		54,406
Shared Services	Accounting			41,990		41,990
	Administration		2,798			2,798
	Finance			7,334		7,334
	Rates & Revenue			2,484		2,484
Total Hours Charged		**11,798**	**43,874**	**170,127**	**36,064**	**261,863**

Exhibit 4

New Jersey American Water Company
12 Months Ended June 30, 2009 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total	Outside Service Provider Category
Accounting	$ 1,278,626	$ 34,534	$ 36,330	$ 1,349,490	Certified Public Accountant
Administration	$ 174,667	$ 32,716	$ 1,031,167	$ 1,238,550	Management Consultant
Audit	$ 15,915	$ 7,738	$ 3,614	$ 27,267	Certified Public Accountant
Communications	$ 86,761	$ 26,828	$ 7,684	$ 121,273	Management Consultant
Engineering	$ -		$ 92	$ 92	Professional Engineer
Finance	$ 480,276	$ 55,290	$ 37,588	$ 573,154	Certified Public Accountant
Human Resources	$ 290,659	$ 59,085	$ 29,823	$ 379,567	Management Consultant
Information Technology	$ 464,626	$ 111,153	$ 1,062,871	$ 1,638,650	Certified Public Accountant
Legal	$ 103,830	$ 16,222	$ 29,263	$ 149,315	Attorney
Operations	$ 59,999	$ 76,965	$ 119,584	$ 256,548	Management Consultant, Professional Engineer
Rates & Revenue	$ 68,681	$ 20,578	$ 13,712	$ 102,971	Certified Public Accountant
Risk Management	$ 37,246	$ 32,848	$ 37,738	$ 107,832	Management Consultant
Water Quality	$ (198)	$ 21,983	$ 183,740	$ 205,524	Professional Engineer
Total	**$ 3,061,089**	**$ 495,939**	**$ 2,593,205**	**$ 6,150,234**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total
Attorney	$ 103,830	$ 16,222	$ 29,263	$ 149,315
Management Consultant	$ 603,363	$ 180,663	$ 1,138,413	$ 1,922,440
Certified Public Accountant	$ 2,308,124	$ 229,293	$ 1,154,115	$ 3,691,532
Professional Engineer	$ 45,772	$ 69,761	$ 271,414	$ 386,947
Total	**$ 3,061,089**	**$ 495,939**	**$ 2,593,205**	**$ 6,150,234**

V – Question 2 – Provision of Services at the Lower of Cost or Market

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among New Jersey certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	New Jersey Average
Partners/Owners	97%
Directors (11+ years experience)	73%
Managers (6-10 years experience)	97%
Sr Associates (4-5 years experience)	59%
Associates (1-3 years experience)	26%
New Professionals	na

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2008)

Attorneys

The New Jersey State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for New Jersey attorneys. Therefore, an estimate of New Jersey attorney rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5, the average rate for each firm was adjusted for the cost of living differential between its location and Trenton, New Jersey. The Lawyers Weekly surveys included rates in effect at December 31, 2007. Thus, the 2007 average rate was escalated to December 31, 2008—the midpoint of the test year ended June 30, 2009.

Management Consultants

The cost per hour for management consultants was developed from a 2009 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2008 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level.

Certified Public Accountants

The average hourly rate for New Jersey CPAs was developed from a 2008 survey performed by the American Institute of Certified Public Accountants (AICPA). The New Jersey version of this survey was used to develop hourly rates for member firms in New Jersey.

As shown in Exhibit 7, a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2007. Thus, the data had to be escalated to December 31, 2008—the midpoint of the test year ended June 30, 2009.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by NJAWC in 2009. As presented in Exhibit 8, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

New Jersey American Water Company
Estimated Billing Rates For New Jersey Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates as of December 31, 2007 (Note A)									
		Number	Billing Rate Range					Cost of Living	
		Of	Associate		Partner			Adjust	Adjusted
Firm	Location	Lawyers	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright PLLC	Detroit, Mi	229	$ 170	$ 275	$ 260	$ 530	$ 309	80%	$ 384
Dykema	Detroit, Mi	222	$ 185	$ 390	$ 245	$ 625	$ 361	80%	$ 450
Butzel Long	Detroit, Mi	209	$ 165	$ 400	$ 220	$ 550	$ 334	80%	$ 415
Bodman LLP	Detroit, Mi	128	$ 125	$ 215	$ 210	$ 495	$ 261	80%	$ 325
Jaffe Raitt Heuer & Weiss, PC	Southfield, Mi	100	$ 165	$ 225	$ 225	$ 500	$ 279	92%	$ 304
Trott & Trott, PC	Bingham Farms, Mi	64	$ 170	$ 170	$ 235	$ 235	$ 203	119%	$ 170
Brooks Kushman PC	Southfield, Mi	52	$ 160	$ 275	$ 250	$ 505	$ 298	92%	$ 324
Kemp, Klein, Umphrey, Edelman & May PC	Troy, Mi	36	$ 150	$ 190	$ 200	$ 340	$ 220	106%	$ 208
Pepper Hamilton LLP	Detroit, Mi	33	$ 200	$ 315	$ 340	$ 615	$ 368	80%	$ 457
Hertz, Schram & Saretsky, PC	Bloomfield Hills, Mi	29	$ 175	$ 260	$ 275	$ 400	$ 278	132%	$ 211
Strobl & Sharp, PC	Bloomfield Hills, Mi	28	$ 110	$ 210	$ 200	$ 300	$ 205	132%	$ 156
Kupelian Ormond & Magy, PC	Southfield, Mi	25	$ 165	$ 195	$ 235	$ 320	$ 229	92%	$ 249
Rader, Fishman & Grauer, PLLC	Bloomfield Hills, Mi	25	$ 130	$ 250	$ 275	$ 495	$ 288	132%	$ 218
McShane & Bowie PLC	Grand Rapids, Mi	22	$ 160	$ 275	$ 250	$ 375	$ 265	91%	$ 291
Edwards Angel Palmer & Dodge	Boston, Ma	259	$ 144	$ 321	$ 474	$ 474	$ 353	139%	$ 253
Sullivan & Worcester	Boston, Ma	137	$ 245	$ 530	$ 415	$ 700	$ 473	139%	$ 339
Burns & Levinson	Boston, Ma	112	$ 210	$ 350	$ 375	$ 475	$ 353	139%	$ 253
Bowditch & Dewey	Worcester, Ma	64	$ 150	$ 300	$ 280	$ 550	$ 320	110%	$ 292
Mirick O'Connell	Worcester, Ma	60	$ 160	$ 250	$ 280	$ 400	$ 273	110%	$ 249
Hinckley, Allen & Snyder	Boston, Ma	58	$ 200	$ 330	$ 300	$ 480	$ 328	139%	$ 235
Prince Lobel Glovsky & Tye	Boston, Ma	52	$ 175	$ 265	$ 275	$ 475	$ 298	139%	$ 213
Robinson & Cole	Boston, Ma	48	$ 220	$ 375	$ 340	$ 490	$ 356	139%	$ 255
Bromberg & Sunstein	Boston, Ma	42	$ 250	$ 450	$ 500	$ 725	$ 481	139%	$ 345
Lawson & Weitzen	Boston, Ma	35	$ 125	$ 225	$ 225	$ 400	$ 244	139%	$ 175
Murtha Cullina	Boston, Ma	34	$ 165	$ 290	$ 250	$ 500	$ 301	139%	$ 216
Marcus Errico Emmer & Brooks	Braintree, Ma	28	$ 250	$ 250	$ 300	$ 360	$ 290	131%	$ 222
Rich May	Boston, Ma	25	$ 150	$ 300	$ 300	$ 400	$ 288	139%	$ 206
Keegan Werlin	Boston, Ma	22	$ 150	$ 275	$ 325	$ 475	$ 306	139%	$ 220
Barron & Stadfeld	Boston, Ma	21	$ 160	$ 230	$ 250	$ 350	$ 248	139%	$ 177
Cain Hibbard Myers & Cook	Pittsfield, Ma	19	$ 150	$ 200	$ 210	$ 235	$ 199	111%	$ 180
							Overall Average 2007 Billing Rate		$ 266

Escalation to the Test Year's Mid-Point (December 31, 2008) (Note B)	
CPI at December 31, 2007	210.0
CPI at December 31, 2008	210.0
Inflation/Escalation	0.0%
Average Billing Rate At December 31, 2008	**$ 266**

Note A: Source is Michigan Lawyers Weekly (April 2008) and Massachusetts Lawyers Weekly (April 2008)
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
Note C: Source is Sperling's Best Places (http://www.bestplaces.net/col/col.aspx). This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Trenton, New Jersey. A number over 100% indicates the Michigan or Massachusetts city's cost of living is higher than Trenton. A number less than 100 % indicates Trenton's cost of living is higher.

Exhibit 6

New Jersey American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2008 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 147	$ 196	$ 268	$ 295	$ 384

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 147	$196	$268	$295	$384	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 44	$ 59	$ 54	$ 29	$ 38	**$ 224**

Avg Hourly Rate For Management Consultants At December 31, 2008 (test year mid-point) **$ 224**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2009 Edition," Association of Management Consulting Firms

Exhibit 7

New Jersey American Water Company
Estimated Billing Rates Of New Jersey Certified Public Accountants

Survey billing rates in effect in 2007 (Note A)

Type of Firm	Average Hourly Billing Rate (Note A) Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 96	$ 133	$ 177	$ 194

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 96	$ 133	$ 177	$ 194	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 29	$ 40	$ 35	$ 39	**$ 143**

Escalation to the Test Year's Mid-Point (December 31, 2008) (Note B)

CPI at December 31, 2007	210.0
CPI at December 31, 2008	210.0
Inflation/Escalation	0.0%
Average Hourly Billing Rate For CPAs At December 31, 2008	**$ 143**

Note A: Source is AICPA's 2008 National PCPS/TSCPA Management of an Accounting Practice Survey (New Jersey edition)
Note B: Source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 8

New Jersey American Water Company
Estimated Billing Rates Of New Jersey Engineers

Billing rates in effect in 2009

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
	Technician	Engineer Design Engineer	Project Manager	Officer
Name of Firm	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer
Firm #1	$67	$81	$122	$162
Firm #2	$56	$70	$126	$163
Firm #3	$65	$93	$152	$200
Firm #4	$71	$89	$140	$175
Firm #5	$85	$98	$133	$200
Firm #6	$64	$86	$126	$175

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician	Engineer Design Engineer	Project Manager	Officer	
	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer	
Average Hourly Billing Rate (From Above)	$68	$86	$133	$179	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$20	$30	$33	$18	**$102**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended June 30, 2009		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 97	$ 266	$ (170)
Management Consultant	$ 109	$ 224	$ (115)
Certified Public Accountant	$ 71	$ 143	$ (72)
Professional Engineer	$ 73	$ 102	$ (28)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to NJAWC during the 12-months ended June 30, 2009, outside service providers would have cost $20,240,390 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 75% higher than those of the Service Company ($20,240,390 / $26,876,116).

	12 Months Ended June 30, 2009		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (170)	11,798	$ (2,002,519)
Management Consultant	$ (115)	43,874	$ (5,055,494)
Certified Public Accountant	$ (72)	170,127	$(12,165,996)
Professional Engineer	$ (28)	36,064	$ (1,016,381)
Service Company Less Than Outside Providers			$(20,240,390)

It should be noted that the cost differential associated with using outside providers is even greater because Service Company personnel do not charge for more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. If, for instance, Service Company personnel worked 5% overtime (2 hours) per week on NJAWC's behalf, that would have amounted to over 13,000 additional hours of work during the 12 months ended June 30, 2009. Based on the hourly rate differentials above, this overtime would have added another $1,012,000 to the cost of using outside provider.

If NJAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform over 264,000 hours of work (more than 176 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing NJAWC management team. Thus, it would be necessary for NJAWC to add at least two positions to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill these positions would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add more than $300,000 per year to NJAWC's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding 2 Professional Positions To NJAWC's Staff

		Total
New Positions' Salary	$	100,000
Benefits (at 49.4%)	$	49,400
Office Expenses (15.2%)	$	15,200
Cost per Position	$	164,600
Number of Positions		2
Total Cost of Two Positions	$	329,200

Thus, the total effect on the ratepayers of NJAWC of contracting all services now provided by Service Company would be an increase in their costs of $20,569,590 ($20,240,390 + $329,200). Based on the results of this comparison, it is possible to conclude that the Service Company charged NJAWC at the lower of cost or market for services provided during the 12 months ended June 30, 2009.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services involve the processes that occur from the time meter read data is recorded in the customer information system through the printing and mailing of bills through the collection and processing of customer payments. Customer Accounts Services are accomplished by the following utility functions:

- Customer Call Center Operations – customer calls/contact, credit, order taking/disposition, bill collection efforts and outage calls
- Customer Call Center Maintenance – support of phone banks, voice recognition units, call center software applications and telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – processing customer payments at locations where customers can pay their bills in person

Neighboring electric utility cost information comes from the FERC Form 1 that each utility that is subject to FERC regulation, must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

New York	• Central Hudson Gas & Elect • Consolidated Edison • New York State Elect & Gas	• Niagra Mohawk Power • Orange & Rockland Utilities • Rochester Gas & Electric
Pennsylvania	• Duquesne Light • Metropolitan Edison • PECO Energy • Pennsylvania Electric	• Pennsylvania Power • PPL Electric Utilities • West Penn Power
New Jersey	• Atlantic City Electric • Jersey Central Power	• Public Service Electric & Gas
Maryland	• Delmarva Power & Light	

New Jersey American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

New Jersey American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

NJAWC Cost per Customer

As calculated below, NJAWC's 12 months ended June 30, 2009 customer account services expense per customer was $26.33. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by NJAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

New Jersey American Water Company

Cost Component		Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 9,663,854	$ 3,513,016	$13,176,870	
Regional Offices		$ 10,386		$ 10,386	
Service Company	Customer payment processing			$ 819,780	(B)
Operating Company	Postage & forms			$ 2,806,407	
			Cost Pool Total	$16,813,442	
			Total Customers	638,458	
Year Ended June 30, 2009 Cost Per New Jersey American Customer				**$ 26.33**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 3,906,184
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.32	
Percent different	90%	90%
Total Adjustment		$ 3,513,016

Note B: Estimated customer payment processing expenses

Number of customer bills	7,661,496
Bank charge per item	$ 0.1070
Total estimated annual expense	$ 819,780

Electric Utility Group Cost per Customer

Exhibit 10 shows the actual 2008 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, NJAWC's cost per customer is well below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that NJAWC's 12 months ended June 30, 2009 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to NJAWC were comparable to those of other utilities.

Customer Account Services Expenses Per Customer	
West Penn Power Company	$12.54
Pennsylvania Electric Company	$14.28
Pennsylvania Power Company	$15.69
Metropolitan Edison Company	$15.79
Jersey Central Power & Light Company	$15.99
Duquesne Light Company	$17.17
New Jersey American Water	**$26.33**
Rochester Gas & Electric Corporation	$26.62
PPL Electric Utilities Corporation	$28.02
Niagra Mohawk Power Corporation	$31.14
New York State Electric & Gas Corporation	$33.75
Comparison Group Average	**$43.23**
Central Hudson Gas & Electric Company	$43.79
Consolidated Edison Company	$46.64
Orange & Rockland Utilities, Inc.	$56.57
PECO Energy Company	$60.18
Delmarva Power & Light Company	$69.08
Atlantic City Electric Company	$70.72
Public Service Electric & Gas Company	$83.88

Exhibit 10
Page 1 of 3

New Jersey American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		New York					
		Central Hudson Gas & Electric	Consolidated Edison	New York State Electric & Gas	Niagra Mohawk Power	Orange & Rockland	Rochester Gas & Electric
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 6,778,169	$ 114,032,729	$ 28,066,820	$ 39,200,043	$ 8,465,643	$ 9,741,613
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 2,520,777	$ 344,426	$ 135,082	$ 929,964	$ 66,274	$ 1,855
Subtotal		$ 9,298,946	$ 114,377,155	$ 28,201,902	$ 40,130,007	$ 8,531,917	$ 9,743,468
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,815,515	$ 30,169,769	$ (632,835)	$ 2,686,451	$ 3,422,645	$ (753,034)
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 507,967	$ 7,584,800	$ 1,916,606	$ 403,817	$ 622,497	$ 619,283
Total Cost Pool		**$ 12,622,428**	**$ 152,131,724**	**$ 29,485,673**	**$ 43,220,275**	**$ 12,577,059**	**$ 9,609,717**
Total Customers (page 304, line 43)		288,252	3,261,502	873,738	1,387,729	222,340	360,987
Customer Account Services Expense per Customer		**$ 43.79**	**$ 46.64**	**$ 33.75**	**$ 31.14**	**$ 56.57**	**$ 26.62**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 23,649,061	$ 171,421,764	$ (3,779,369)	$ 105,135,887	$ 26,239,707	$ (5,487,845)
Total O&M Payroll (page 355, line 65)		$ 55,773,767	$ 563,347,904	$ 149,623,715	$ 206,583,051	$ 62,383,976	$ 58,994,943
Benefits as Percent of Payroll		42.4%	30.4%	-2.5%	50.9%	42.1%	-9.3%
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 7,303,699	$ 102,691,785	$ 26,157,611	$ -	$ 7,521,305	$ 5,776,605
Gas (page 354, line 37)		$ 1,300,052	$ 22,542,147	$ 4,815,257	$ 6,012,948	$ 3,284,938	$ 4,309,646
Total Payroll Charged to Customer Accounts		$ 8,603,751	$ 125,233,932	$ 30,972,868	$ 6,012,948	$ 10,806,243	$ 10,086,251
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 6,778,169	$ 114,032,729	$ 28,066,820	$ 39,200,043	$ 8,465,643	$ 9,741,613
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 2,520,777	$ 344,426	$ 135,082	$ 929,964	$ 66,274	$ 1,855
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 9,298,946	$ 114,377,155	$ 28,201,902	$ 40,130,007	$ 8,531,917	$ 9,743,468
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 2,749,960	$ 30,093,154	$ 6,662,993	$ 5,582,389	$ 2,798,488	$ 2,396,447
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 12,048,906	$ 144,470,309	$ 34,864,895	$ 45,712,396	$ 11,330,405	$ 12,139,915
Percent Applicable to Customer Accounts Services (903 and 905)		77.2%	79.2%	80.9%	87.8%	75.3%	80.3%
Customer Account Services Portion of Total Payroll		$ 6,640,090	$ 99,147,714	$ 25,053,676	$ 5,278,648	$ 8,137,217	$ 8,095,202
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,815,515	$ 30,169,769	$ (632,835)	$ 2,686,451	$ 3,422,645	$ (753,034)
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 6,640,090	$ 99,147,714	$ 25,053,676	$ 5,278,648	$ 8,137,217	$ 8,095,202
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 507,967	$ 7,584,800	$ 1,916,606	$ 403,817	$ 622,497	$ 619,283

New Jersey American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Pennsylvania						
		Duquesne Light	Metropolitan Edison	PECO Energy	Pennsylvania Electric	Pennsylvania Power	PPL Electric Utilities	West Penn Power
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,479,961	$ 10,122,140	$ 53,673,664	$ 10,592,384	$ 2,928,197	$ 30,220,945	$ 6,946,910
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 136,228	$ 32,549,592	$ 194,662	$ 82,458	$ 1,100,131	$ -
Subtotal		$ 7,479,961	$ 10,258,368	$ 86,223,256	$ 10,787,046	$ 3,010,655	$ 31,321,076	$ 6,946,910
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,022,069	$ (1,860,051)	$ 6,418,193	$ (2,677,607)	$ (590,677)	$ 6,256,579	$ 1,594,105
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 498,724	$ 250,220	$ 1,865,596	$ 299,011	$ 79,412	$ 1,437,663	$ 402,847
Total Cost Pool		**$ 10,000,754**	**$ 8,648,537**	**$ 94,507,045**	**$ 8,408,450**	**$ 2,499,390**	**$ 39,015,318**	**$ 8,943,861**
Total Customers (page 304, line 43)		582,474	547,557	1,570,294	589,017	159,346	1,392,441	713,401
Customer Account Services Expense per Customer		**$ 17.17**	**$ 15.79**	**$ 60.18**	**$ 14.28**	**$ 15.69**	**$ 28.02**	**$ 12.54**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 16,461,810	$ (18,462,242)	$ 34,870,872	$ (24,103,475)	$ (4,532,561)	$ 28,423,183	$ 16,475,935
Total O&M Payroll (page 355, line 65)		$ 53,073,862	$ 32,465,349	$ 132,497,079	$ 35,185,122	$ 7,965,617	$ 85,375,132	$ 54,426,651
Benefits as Percent of Payroll		31.0%	-56.9%	26.3%	-68.5%	-56.9%	33.3%	30.3%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 9,676,251	$ 5,316,403	$ 23,554,469	$ 6,561,812	$ 1,624,429	$ 20,085,492	$ 8,766,657
Gas (page 354, line 37)		$ -	$ -	$ 5,036,945	$ -	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 9,676,251	$ 5,316,403	$ 28,591,414	$ 6,561,812	$ 1,624,429	$ 20,085,492	$ 8,766,657
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,479,961	$ 10,122,140	$ 53,673,664	$ 10,592,384	$ 2,928,197	$ 30,220,945	$ 6,946,910
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 136,228	$ 32,549,592	$ 194,662	$ 82,458	$ 1,100,131	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 7,479,961	$ 10,258,368	$ 86,223,256	$ 10,787,046	$ 3,010,655	$ 31,321,076	$ 6,946,910
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 3,622,199	$ 6,415,472	$ 14,865,724	$ 7,322,187	$ 1,700,593	$ 2,154,152	$ 4,618,134
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 11,102,160	$ 16,673,840	$ 101,088,980	$ 18,109,233	$ 4,711,248	$ 33,475,228	$ 11,565,044
Percent Applicable to Customer Accounts Services (903 and 905)		67.4%	61.5%	85.3%	59.6%	63.9%	93.6%	60.1%
Customer Account Services Portion of Total Payroll		$ 6,519,270	$ 3,270,849	$ 24,386,880	$ 3,908,645	$ 1,038,068	$ 18,792,978	$ 5,265,970
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,022,069	$ (1,860,051)	$ 6,418,193	$ (2,677,607)	$ (590,677)	$ 6,256,579	$ 1,594,105
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,519,270	$ 3,270,849	$ 24,386,880	$ 3,908,645	$ 1,038,068	$ 18,792,978	$ 5,265,970
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 498,724	$ 250,220	$ 1,865,596	$ 299,011	$ 79,412	$ 1,437,663	$ 402,847

New Jersey American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		New Jersey				Maryland	
		Atlantic City Electric	Jersey Central Power	Public Service Electric & Gas	Rockland Electric	Delmarva Power & Light	Group Average
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 37,383,789	$ 19,051,474	$ 58,917,046		$ 32,574,788	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 237,995	$ 364,803	$ 90,240,911		$ -	
Subtotal		$ 37,621,784	$ 19,416,277	$ 149,157,957	$ -	$ 32,574,788	
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 757,867	$ (2,610,530)	$ 23,726,309		$ 1,184,741	
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 165,569	$ 622,147	$ 6,037,109		$ 551,639	
Total Cost Pool		**$ 38,545,220**	**$ 17,427,894**	**$ 178,921,376**		**$ 34,311,168**	**$ 700,875,889**
Total Customers (page 304, line 43)		545,011	1,089,980	2,133,003		496,682	16,213,754
Customer Account Services Expense per Customer		**$ 70.72**	**$ 15.99**	**$ 83.88**	see New York	**$ 69.08**	**$ 43.23**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 7,169,358	$ (23,911,321)	$ 97,803,439		$ 6,458,817	
Total O&M Payroll (page 355, line 65)		$ 20,474,113	$ 74,491,459	$ 325,305,600		$ 39,311,821	
Benefits as Percent of Payroll		35.0%	-32.1%	30.1%		16.4%	
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 2,394,886	$ 13,387,647	$ 49,463,253		$ 7,184,790	
Gas (page 354, line 37)		$ -	$ -	$ 39,016,786		$ 1,796,197	
Total Payroll Charged to Customer Accounts		$ 2,394,886	$ 13,387,647	$ 88,480,039		$ 8,980,987	
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 37,383,789	$ 19,051,474	$ 58,917,046		$ 32,574,788	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 237,995	$ 364,803	$ 90,240,911		$ -	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 37,621,784	$ 19,416,277	$ 149,157,957		$ 32,574,788	
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,008,199	$ 12,546,067	$ 18,075,870		$ 7,995,878	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 41,629,983	$ 31,962,344	$ 167,233,827		$ 40,570,666	
Percent Applicable to Customer Accounts Services (903 and 905)		90.4%	60.7%	89.2%		80.3%	
Customer Account Services Portion of Total Payroll		$ 2,164,303	$ 8,132,641	$ 78,916,461		$ 7,210,967	
Pension & Benefits Pertaining to Customer Accounts Services		$ 757,867	$ (2,610,530)	$ 23,726,309		$ 1,184,741	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 2,164,303	$ 8,132,641	$ 78,916,461		$ 7,210,967	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%		7.65%	
Estimated Employer's Portion of FICA		$ 165,569	$ 622,147	$ 6,037,109		$ 551,639	

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to NJAWC by the Service Company would be necessary if NJAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for NJAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 11 was created showing which entity—NJAWC or a Service Company location—is responsible for each of the functions NJAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if NJAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to NJAWC. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Exhibit 11
Page 1 of 3

New Jersey American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company				
Water Company Function	NJAWC	Customer Call Center	Shared Services	Central Services	IT Service Centers	Belleville Lab
Engineering and Construction Management						
CPS Preparation	P			S		
Five-Year System Planning	P					
Engineering Standards & Policies Development	S			P		
Project Design						
Major Projects (e.g., new treatment plant)	P			S		
Special Projects	P			S		
Minor Projects (e.g., pipelines)	P					
Construction Project Management						
Major Projects	P			S		
Special Projects	P			S		
Minor Projects	P					
Hydraulics Review	P					
Developers Extensions	P					
Tank Painting	P					
Water Quality and Purification						
Water Quality Standards Development	P			S		S
Research Studies	S			P		S
Water Quality Program Implementation	P			S		
Water Treatment Operations & Maintenance	P			S		
Compliance Sampling	P					S
Testing/Other Sampling	P (Note A)			S		P (Note A)
Transmission and Distribution						
Preventive Maintenance Program Development	P					
System Maintenance	P					
Leak Detection	P					
Customer Service						
Community Relations	P			S		
Customer Contact	S	P				
Call Processing		P				
Service Order Processing	P	S				
Customer Credit	S	P				
Meter Reading	P					
Customer Bill Preparation	S	P			S	
Bill Collection		P				
Customer Payment Processing	S		P			
Meter Standards Development	S			P		
Meter Testing, Maintenance & Replacement	P					

Note A: NJAWC and the Belleville Lab are primarily responsible for different studies

Exhibit 11
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New Jersey American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company				
Water Company Function	NJAWC	Customer Call Center	Shared Services	Central Services	IT Service Centers	Belleville Lab
Financial Management						
Financial Planning	P			S		
Financings--Equity				S		
Financings--Long Term Debt & Preferred (Note A)	P					
Short Term Lines of Credit Arrangements(Note A)	P					
Investor Relations				P		
Insurance Program Administration				P		
Loss Control/Safety Program Administration	P			S		
Pension Fund Asset Management				P		
Cash Management/Disbursements			P			
Internal Auditing				P		
Budgeting and Variance Reporting						
Corporate Guidelines & Instructions				P		
Regional Guidelines & Instructions	P					
Budget Preparation						
Revenue and O&M	P					
Depreciation and Interest Expense	P		S	S		
Budget Preparation--Service Company Charges	P	S	S	S	S	S
Capital Budget Preparation—Projects	P					
Capital Budget Preparation—Non-Project Work	P					
Prepare Monthly Budget Variance Report	P					
("Budget/Plan Analysis")						
Prepare Capital Project Budget Status Report	P					
Year-End Projections	P					
Accounting and Taxes						
Accounts Payable Accounting	S		P			
Payroll Accounting	S		P			
Work Order Accounting	S		P			
Fixed Asset Accounting	S		P			
Journal Entry Preparations--Billing Corrections	S		P			
Journal Entry Preparation--All Others	S		P			
Financial Statement Preparation	S		P			
State Commission Reporting	S		P			
Income Taxes--State			P			
Income Taxes--Federal			P			
Property Taxes	S		P			
Gross Receipts Taxes	S		P			

Note A: Lines of credit are the responsibility of American Water Capital Corporation ("AWCC"). AWCC is also responsible for Corporate financings which may be distributed to the regulated subsidiaries. NJAWC has its own credit ratin and has the ability to do its own financings, in 2009 NJAWC did two such financings.

Exhibit 11
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New Jersey American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company				
Water Company Function	NJAWC	Customer Call Center	Shared Services	Central Services	IT Service Centers	Belleville Lab
Rates						
Rate Studies & Tariff Change Administration	P		S			
Rate Case Planning and Preparation	P		S			
Rate Case Administration	P					
Commission Inquiry Response	P					
Legal	P			S		
Purchasing and Materials Management – National (pipe, chemicals, meters, etc.)						
Specification Development	S		S	P		
Bid Solicitation	S		P			
Contract Administration	S		P			
Purchasing and Materials Management – State (state supplier service agreements)						
Specification Development	P		S			
Bid Solicitation	P		S			
Contract Administration	P		S			
Ordering	P					
Inventory Management	P		S			
Human Resources Management						
Benefit Program Development	S			P		
Benefits Program Administration	S		P			
Management Compensation Administration	S			P		
Wage & Salary Program Design	S			P		
Wage & Salary Administration	P			S		
Labor Negotiations--Wages	P					
Labor Negotiations--Benefits	S			P		
Labor Negotiations-- Work Rules	P					
Training Program Development	P			S		
Training--Course Delivery	P					
Affirmative Action/EEO--Plan Development	P					
Affirmative Action/EEO--Implementation	P					
Information Systems Services						
Service Company Data Centers						
System Operations & Maintenance					P	
Software Maintenance					P	
Network Administration					P	
PC Acquisition & Support	S				P	
Help Desk					P	

Governance Practices Associated With Service Company Charges

There are several ways by which NJAWC exercises control over Service Company services and charges. The most important of these are described below.

- **NJAWC Company Board Oversight** – The NJAWC board of directors includes members of American Water's Executive Management Team, members of the NJAWC management team and external business and community leaders. This diverse board ensures that NJAWC's needs are a factor in the delivery of Service Company services. The NJAWC Board meets at a minimum of four times each year and at every meeting financial and operational reports and issues are discussed at length.
- **NJAWC President Oversight** – The NJAWC President is responsible for the overall performance of NJAWC, including services and charges received from the American Water Service Company. The President of NJAW is also a board member on the Service Company's Board of Directors (see below for further discussion). In addition, as part of the overall management team of American Water through the President of Regulated Operations, NJAWC's President has a significant voice in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending as NJAWC's President is one of five direct reports to the President of Regulated Operations.
- **NJAWC Vice President and Treasurer** – The Vice President and Treasurer is responsible for the financial reporting, performance and internal controls of the NJAWC. The Vice President and Treasurer monitors the performance, expense and reporting from the Service Company and verifies and validates the cost of services received. In addition, the Vice President and Treasurer through the Financial Planning and Analysis staff reviews the monthly charges and investigates whenever the amount, quality and/or services are appropriate.
- **Service Company Board Oversight** – The Service Company Board of Directors is comprised of 16 members, of which NJAWC President is one of the members. They typically meet four times a year to provide governance on the activities and bylaws of Service Company. Their primary responsibilities include:
  - Approve the Business Plan and Operating Budget
  - Review Financial Performance of the Service Center
  - Review performance metrics of certain functional groups
  - Approve policy, procedures and practices of AW as it relates to Service Company.
- **Service Company Budget Review/Approval** – the NJAWC president and several other state regulated water utility presidents serve on the Service Company board of directors and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the individual operating company's board of directors (e.g., NJAWC).
- **Major Project Review And Approval –** Major non-capital projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the President of Regulated Operations. The President of Regulated Operations, with significant input from his direct reports (including the NJAWC president), has the ability to impact all new initiatives and projects before they are authorized. Major non-capital projects and initiatives for the Service Company are approved through the Business Plan. All significant business initiatives (capital or non-capital) are required to be submitted to the "BATT" (Business and Technology Team) committee for final approval. The "BATT" team is comprised of C-level executive members (CEO, CFO, etc.).

- **Capital Investment Management** (CIM) – CIM covers capital and asset planning and is employed throughout American Water, including the Service Company. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment.
- **Accounting and Financial Reporting** – Similar to the states, the Service Company follows the same accounting and financial reporting processes. During the month accounting transactions are recorded. At month end, the SSC and Service Company Finance teams review all transactions. Variance analyses are performed based on month to month actual as well as actual to budget to ensure accuracy. Once completed, the service company bill is run and the actuals are "pushed down" and allocated to the states based on predetermined formulas. A conference call is schedule before the operating companies close their books each month to discuss Service Company performance. This is based at a functional level with explanation reported for those expense variances that meet or exceed certain thresholds. At this time, the operating companies may question expenses and spending for better understanding of results. NJAWC Financial Performance and Analysis (FP&A) personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. Any mistakes or overcharges are credited on a subsequent billing.
- **NJAWC Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly by each operating company, has line items for Management Fees and Shared Service Expense (i.e., IT, Call Center, etc.). In this way, Service Company budget versus actual charges as charged to the operating company can be monitored and reviewed for the month and year-to-date as compared to prior year, plan and reforecast.

Market Cost Comparison of Service Company Charges to New Jersey American Water Company

12-Months Ended December 31, 2010

New Jersey American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended December 31, 2010

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to New Jersey American Water Company (NJAWC):

1. Were the Service Company's charges to NJAWC during the 2010 reasonable?

2. Was NJAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during the 2010?

3. Were the 2010 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services NJAWC receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 2010 cost per NJAWC customer is reasonable compared to cost per customer for electric and combination electric/gas service companies. During the 2010, NJAWC was charged $48 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $111 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 2 of the 24 utility service companies that filed a FERC Form 60 for 2010 had a lower per customer A&G cost than NJAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- NJAWC was charged the lower of cost or market for managerial and professional services during the 2010.

- On average, the hourly rates for outside service providers are 45% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by NJAWC without careful supervision on the part of NJAWC. If these services were contracted entirely to outside providers, NJAWC would have to add at least two positions to manage activities of outside firms. These positions would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 2010, NJAWC and its ratepayers would have incurred more than $14.3 million in additional expenses. This amount includes the higher cost of outside providers and the cost of two NJAWC positions needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to NJAWC from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If all overtime hours of

Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $14.3 cited above.

- It would be difficult for NJAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from NJAWC ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Centers, is well below the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and NJAWC. During 2010, the customer accounts cost for NJAWC customers was $24.32 compared to the 2010 average of $50.51 for neighboring electric utilities. The highest comparison group per customer cost was $97.07 and the lowest $13.30.

Concerning question 4, the following conclusions was drawn:

- The services that the Service Company provides are necessary and would be required even if NJAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to NJAWC. For all of the services listed in Exhibit 12, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like NJAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of NJAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include legal, communication, human resources and maintenance.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial

services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times their hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 10% of American Water's Shared Services' professional labor is assigned to NJAWC during a month, then 10% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 10% of the Shared Services' accumulated professional and support labor is charged to NJAWC during the month, then 10% of that month's overhead expenses will be assigned to NJAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to NJAWC, then 2% of that office's office expenses would be assigned to NJAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 2010, the Service Company billed NJAWC a total of $40.8 million, as shown in the table below. These charges were subjected to a market cost comparison.

	2010
Management Fees - O&M	$ 33,228,943
Management Fees - Capital	$ 7,583,315
Total AWSC Charges	**$ 40,812,258**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology, and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total 2010 Service Company charges break down between management/professional services and customer account services as follows:

	2010	
	Amount	Hours
Management and Professional Services	$ 31,703,175	191,382
Customer Account Services	$ 9,109,084	177,965
Total Service Company Charges	**$ 40,812,258**	**369,347**

This study's first question—whether Service Company 2010 charges were reasonable—was determined by comparing NJAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 2010 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to NJAWC during the 2010. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 2010 customer account services charges, including National Call Center costs, were comparable to other utilities—was addressed by comparing NJAWC's customer accounts services expenses to those of neighboring investor owned electric utilities. This utility comparison group was selected because the cost of outside providers of customer accounts services is proprietary and not publicly available. Comparison to electric utilities is appropriate because all utilities, regardless of service type, must perform customer account services activities, including updating customer records for meter reads, printing and mailing bills, and the collection and processing of customer payments. Electric utility costs are available from the Federal Energy Regulatory Commission (FERC) Form 1, thus there is appropriate data transparency. The selection of electric utilities from New Jersey and neighboring states provides a sufficiently sized comparison group.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to NJAWC and determining if these services would be required if NJAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

NJAWC's Service Company Cost per Customer

During the 2010, NJAWC was charged $48 per customer by the Service Company for A&G-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	2010
Testable Service Company charges	$ 40,812,258
Less: Capital charges	$ (7,583,315)
Less: Non-A&G function charges	
Engineering	$ (15,785)
Operations	$ (1,555,590)
Water Quality	$ (1,295,307)
Net A&G-related charges	$ 30,362,261
NJAWC customers	638,458
NJAWC Cost Per Customer	**$ 48**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system subject to regulation by the FERC must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2010, a Form 60 was filed by 25 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

Charges to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2010 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

One service company that filed a Form 60 was excluded from the comparison group because its Form 60 contained no data for 2010. That service company, Great Plains Energy Services Incorporated, became inactive in 2010 and had no charges to its regulated utility affiliate. The

IV – Question 1 – Reasonableness of Service Company Charges

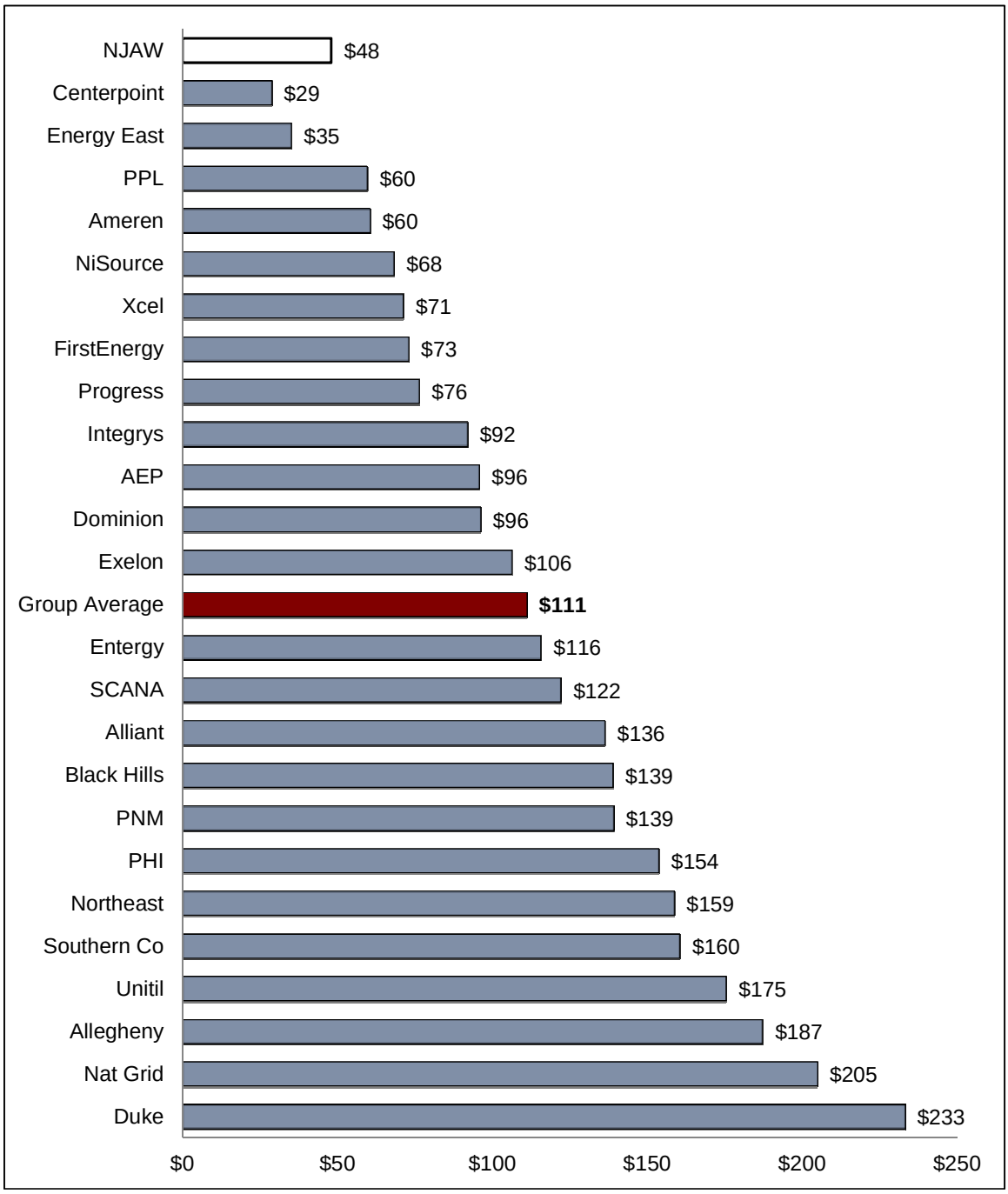
A&G expenses per regulated utility customer for the other 24 utility companies that filed a Form 60 for 2010 are calculated below.

Utility Company	2010 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$504,470,290	5,270,000	$ 96
Allegheny	$280,648,832	1,500,000	$ 187
Alliant	$190,279,242	1,397,000	$ 136
Ameren	$199,214,264	3,300,000	$ 60
Black Hills	$101,069,342	728,000	$ 139
Centerpoint	$154,637,102	5,400,000	$ 29
Dominion	$355,526,659	3,700,000	$ 96
Duke	$1,050,793,575	4,510,000	$ 233
Energy East	$104,272,025	2,973,000	$ 35
Entergy	$312,275,947	2,700,000	$ 116
Exelon	$625,208,791	5,890,000	$ 106
FirstEnergy	$328,067,979	4,500,000	$ 73
Integrys	$201,979,742	2,200,000	$ 92
Nat Grid	$1,412,608,875	6,900,000	$ 205
NiSource	$255,900,005	3,755,000	$ 68
Northeast	$332,151,577	2,095,000	$ 159
PHI	$298,918,585	1,946,000	$ 154
Progress	$236,500,882	3,100,000	$ 76
PNM	$101,288,510	728,700	$ 139
PPL	$158,366,212	2,659,000	$ 60
SCANA	$177,720,204	1,457,000	$ 122
Southern Co	$708,564,089	4,417,000	$ 160
Unitil	$30,113,132	171,700	$ 175
Xcel	$376,977,165	5,300,000	$ 71
Group Total	**$8,497,553,025**	**76,597,400**	**$ 111**

Exhibit 1 (page 11) shows NJAWC's 2010 Service Company cost per customer of $48 to be considerably lower than the average of $111 per customer for the comparison group service companies. Only 2 of 24 comparison group service companies had a lower cost per customer than NJAWC. Based on this result, it is possible to conclude that the Service Company's 2010 charges to NJAWC were reasonable.

Exhibit 1

New Jersey American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial and rates and revenues services
- IT Professionals – information technology services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the five outside service provider categories, based on the dollars and hours charged to NJAWC during the 2010. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged NJAWC during 2010, its hourly rates are actually overstated because some Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If all overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 2010 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to NJAWC during the 2010.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following the 2010 test period non-labor Service Company charges:

- Contract Services – 2010 Service Company charges to NJAWC include expenses associated with the use of outside professional firms to perform certain corporate-wide

services (e.g., legal, financial audit, actuarial services). These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 2010 Service Company charges to NJAWC are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 2010 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Total management, professional & technical services charges	$ 962,056	$ 9,665,151	$ 7,119,857	$ 10,080,984	$ 3,875,127	$ 31,703,175
Less:						
Contract services	$ 91,664	$ 2,232,640	$ 805,626	$ 1,077,821	$ 416,537	$ 4,624,289
Travel expenses	$ 18,636	$ 176,334	$ 53,903	$ 124,852	$ 62,389	$ 436,114
IT infrastructure expenses	$ 22,375	$ 3,444,466	$ 42,925	$ 2,107,067	$ 205,063	$ 5,821,896
Net Service Charges (A)	$ 829,382	$ 3,811,711	$ 6,217,403	$ 6,771,243	$ 3,191,138	$ 20,820,876
Total Hours (B)	4,031	29,032	76,795	48,078	33,446	191,382
Average Hourly Rate (A / B)	**$ 206**	**$ 131**	**$ 81**	**$ 141**	**$ 95**	

Exhibit 2

New Jersey American Water Company
Analysis of 2010 Service Company Charges By Location And Function

		12 Months Ended December 31, 2010 Service Company Charges					
Location	Function	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Belleville Lab	Water Quality					$ 999,007	$ 999,007
Call Center	Human Resources		$ 227,134				$ 227,134
Corporate	Accounting			$ 2,216,971			$ 2,216,971
	Administration		$ 1,065,502				$ 1,065,502
	Audit			$ 324,283			$ 324,283
	Communications		$ 536,069				$ 536,069
	Finance		$ 4,601,241	$ 1,499,826			$ 6,101,067
	Human Resources		$ 1,408,031				$ 1,408,031
	Information Technology				$ 342,472		$ 342,472
	Legal	$ 600,727					$ 600,727
	Operations		$ 774,707			$ 2,153,544	$ 2,928,251
	Rates & Revenue			$ 406,814			$ 406,814
	Risk Management		$ 288,781				$ 288,781
	Water Quality					$ 503,006	$ 503,006
Regional Offices	Accounting			$ 21,949			$ 21,949
	Administration		$ 70,436				$ 70,436
	Communications		$ 214,358				$ 214,358
	Engineering					$ 17,100	$ 17,100
	Finance			$ 328,154			$ 328,154
	Human Resources		$ 0				$ 0
	Legal	$ 361,328					$ 361,328
	Operations		$ 5,259			$ 200,125	$ 205,384
	Risk Management		$ 12,640				$ 12,640
	Water Quality					$ 2,345	$ 2,345
Information Technology	Information Technology				$ 9,738,511		$ 9,738,511
Shared Services	Accounting			$ 2,052,418			$ 2,052,418
	Administration		$ 460,994				$ 460,994
	Finance			$ 16,930			$ 16,930
	Rates & Revenue			$ 252,513			$ 252,513
Total Dollars Charged		**$ 962,056**	**$ 9,665,151**	**$ 7,119,857**	**$ 10,080,984**	**$ 3,875,127**	**$ 31,703,175**

Exhibit 3

New Jersey American Water Company
Analysis of 2010Service Company Hours By Location And Function

Location	Function	12 Months Ended December 31, 2010 Service Company Hours					
		Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Belleville Lab	Water Quality					9,487	9,487
Call Center	Human Resources		2,480				2,480
Corporate	Accounting			17,857			17,857
	Administration		601				601
	Audit			2,507			2,507
	Communications		2,159				2,159
	Finance		4,370	12,804			17,175
	Human Resources		10,060				10,060
	Information Technology				2,662		2,662
	Legal	2,335					2,335
	Operations		2,254			18,053	20,308
	Rates & Revenue			2,400			2,400
	Risk Management		3,098				3,098
	Water Quality					4,795	4,795
Regional Offices	Accounting			232			232
	Administration		-				-
	Communications		1,790				1,790
	Engineering					-	-
	Finance			3,845			3,845
	Human Resources		(7)				(7)
	Legal	1,696					1,696
	Operations		-			1,111	1,111
	Risk Management		-				-
	Water Quality					-	-
Information Technology	Information Technology				45,417		45,417
Shared Services	Accounting			34,662			34,662
	Administration		2,226				2,226
	Finance						-
	Rates & Revenue			2,487			2,487
Total Hours Charged		**4,031**	**29,032**	**76,795**	**48,078**	**33,446**	**191,382**

Exhibit 4

New Jersey American Water Company
2010 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total	Outside Service Provider Category
Accounting	$ 665,652	$ 31,874	$ 29,451	$ 726,977	Certified Public Accountant
Administration	$ 33,560	$ 12,817	$ 1,025,594	$ 1,071,970	Management Consultant
Audit	$ 36,703	$ 3,755	$ 4,915	$ 45,373	Certified Public Accountant
Communications	$ 96,563	$ 19,412	$ 9,086	$ 125,062	Management Consultant
Engineering			$ 366	$ 366	Professional Engineer
Finance	$ 1,779,093	$ 69,251	$ 2,347,589	$ 4,195,934	Management Consultant Certified Public Accountant
Human Resources	$ 312,852	$ 44,300	$ 26,018	$ 383,170	Management Consultant
Information Technology	$ 1,077,821	$ 124,852	$ 2,107,067	$ 3,309,740	IT Professional
Legal	$ 91,664	$ 18,636	$ 22,375	$ 132,674	Attorney
Operations	$ 425,392	$ 57,939	$ 69,170	$ 552,500	Management Consultant, Professional Engineer
Rates & Revenue	$ 103,271	$ 18,274	$ 8,559	$ 130,104	Certified Public Accountant
Risk Management	$ 8,534	$ 13,625	$ 10,089	$ 32,248	Management Consultant
Water Quality	$ (6,817)	$ 21,380	$ 161,616	$ 176,179	Professional Engineer
Total	**$ 4,624,289**	**$ 436,114**	**$ 5,821,896**	**$ 10,882,299**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total
Attorney	$ 91,664	$ 18,636	$ 22,375	$ 132,674
Management Consultant	$ 2,232,640	$ 176,334	$ 3,444,466	$ 5,853,441
Certified Public Accountant	$ 805,626	$ 53,903	$ 42,925	$ 902,454
IT Professional	$ 1,077,821	$ 124,852	$ 2,107,067	$ 3,309,740
Professional Engineer	$ 416,537	$ 62,389	$ 205,063	$ 683,989
Total	**$ 4,624,289**	**$ 436,114**	**$ 5,821,896**	**$ 10,882,299**

V – Question 2 – Provision of Services at the Lower of Cost or Market

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among New Jersey certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	New Jersey Average
Partners/Owners	100%
Directors (11+ years experience)	82%
Managers (6-10 years experience)	70%
Sr Associates (4-5 years experience)	36%
Associates (1-3 years experience)	9%
New Professionals	7%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2010)

Attorneys

The New Jersey State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for New Jersey attorneys. Therefore, an estimate of New Jersey attorney rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5 (page 19), the average rate for each firm was adjusted for the cost of living differential between its location and Trenton, New Jersey. The Lawyers Weekly surveys included rates in effect at December 31, 2009. Thus, the 2009 average rate was escalated to June 30, 2010—the midpoint of the test year ended December 31, 2010.

Management Consultants

The cost per hour for management consultants was developed from a 2010 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2009 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6 (page 20), was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level.

Certified Public Accountants

The average hourly rate for New Jersey CPAs was developed from a 2010 survey performed by the American Institute of Certified Public Accountants (AICPA). The New Jersey version of this survey was used to develop hourly rates for member firms in New Jersey.

As shown in Exhibit 7 (page 21), a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2009. Thus, the data had to be escalated to June 30, 2010—the midpoint of the test year ended December 31, 2010.

Information Technology Professionals

The average hourly rate for information technology consultants and contractors was developed from Baryenbruch & Company, LLC IT industry hourly billing rate data. As shown in Exhibit 8 (page 22), that data was compiled and a weighted average was calculated based on a percent of time that is typically applied to an IT consulting assignment based on Baryenbruch & Company, LLC's experience.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by NJAWC in 2010. As presented in Exhibit 9 (page 23), an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

New Jersey American Water Company
Estimated Billing Rates For New Jersey Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates during 2009		Billing Rate Range (A)					Cost of Living Adjust (B)	Adjusted Rate
		Associate		Partner				
Firm	Location	Low	High	Low	High	Average		
Dickinson Wright	Detroit, Mi	$ 195	$ 275	$ 355	$ 575	$ 350	83%	$ 423
Dykema	Detroit, Mi	$ 185	$ 425	$ 295	$ 615	$ 380	83%	$ 460
Butzel Long	Detroit, Mi	$ 175	$ 325	$ 260	$ 600	$ 340	83%	$ 411
Jaffe Raitt Heuer & Weiss	Southfield, Mi	$ 175	$ 250	$ 225	$ 550	$ 300	83%	$ 363
Brooks Kushman	Southfield, Mi	$ 180	$ 275	$ 300	$ 425	$ 295	83%	$ 357
Kemp, Klein, Umphrey, Edelman	Troy, Mi	$ 145	$ 260	$ 200	$ 350	$ 239	83%	$ 289
Rader, Fishman & Grauer	Bloomfield Hills, Mi	$ 130	$ 250	$ 275	$ 550	$ 301	83%	$ 364
Williams, Williams, Rattner & Plunket	Birmingham, Mi	$ 150	$ 250	$ 275	$ 450	$ 281	83%	$ 340
Abbott, Nicholson, Quilter, Esshaki,	Detroit, Mi	$ 150	$ 220	$ 300	$ 375	$ 261	83%	$ 316
Parmenter O'Toole	Muskegon, Mi			$ 125	$ 275	$ 200	75%	$ 268
Lipson, Neilson, Cole, Seltzer & Garir	Bloomfield Hills, Mi	$ 185	$ 235	$ 225	$ 300	$ 236	83%	$ 286
Burns & Levinson	Boston, Ma	$ 210	$ 350	$ 375	$ 525	$ 365	106%	$ 346
Sullivan & Worcester	Boston, Ma	$ 290	$ 535	$ 475	$ 830	$ 533	106%	$ 504
Holland & Knight	Boston, Ma	$ 215	$ 450	$ 445	$ 800	$ 478	106%	$ 452
Seyfarth Shaw	Boston, Ma	$ 327	$ 327	$ 511	$ 511	$ 419	106%	$ 397
Bowditch & Dewey	Worcester, Ma	$ 125	$ 220	$ 250	$ 550	$ 286	106%	$ 271
Prince Lobel	Boston, Ma	$ 195	$ 325	$ 325	$ 525	$ 343	106%	$ 324
Hinckley, Allen & Snyder	Boston, Ma	$ 205	$ 395	$ 360	$ 645	$ 401	106%	$ 380
Mirick O'Connell	Worcester, Ma	$ 220	$ 220	$ 350	$ 350	$ 285	106%	$ 270
Lawson & Weitzen	Boston, Ma	$ 125	$ 225	$ 225	$ 450	$ 256	106%	$ 243
Sunstein Kann Murphy Timbers	Boston, Ma	$ 285	$ 535	$ 575	$ 825	$ 555	106%	$ 525
Keegan Werlin	Boston, Ma	$ 200	$ 300	$ 300	$ 475	$ 319	106%	$ 302
Rich May	Boston, Ma	$ 150	$ 325	$ 295	$ 400	$ 293	106%	$ 277
Anderson Kreiger	Cambridge, Ma	$ 285	$ 285	$ 450	$ 450	$ 368	106%	$ 348
Bernkopf Goodman	Boston, Ma	$ 205	$ 395	$ 375	$ 550	$ 381	106%	$ 361
Tarlow Breed Hart & Rodgers	Boston, Ma	$ 225	$ 365	$ 375	$ 495	$ 365	106%	$ 346
Donoghue Barrett & Singal	Boston, Ma	$ 225	$ 390	$ 350	$ 450	$ 354	106%	$ 335
Cesari and McKenna	Boston, Ma	$ 150	$ 400	$ 425	$ 525	$ 375	106%	$ 355
						Overall Average 2009 Billing Rate		$ 354

Escalation to Test Period Midpoint (June 30, 2010) (Note B)	
CPI at December 31, 2009	216.0
CPI at June 30, 2010	218.0
Inflation/Escalation	0.9%
Average Hourly Billing Rate For Attorneys At June 30, 2010	**$ 357**

Note A: Source is Michigan Lawyers Weekly and Massachusetts Lawyers Weekly

Note B: Source is Council for Community and Economic Research. This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Trenton, New Jersey. A number over 100% indicates the Michigan or Massachusetts city's cost of living is higher than New Jersey. A number less than 100% indicates Trenton's cost of living is higher.

Exhibit 6

New Jersey American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2009 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 155	$ 215	$ 279	$ 328	$ 413

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 155	$215	$279	$328	$413	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 46	$ 64	$ 56	$ 33	$ 41	**$ 240**

Escalation to Test Period Midpoint (June 30, 2010) (Note B)

CPI at December 31, 2009	216.0
CPI at June 30, 2010	218.0
Inflation/Escalation	0.9%
Average Hourly Billing Rate For CPAs At June 30, 2010	**$ 243**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2010 Edition," Association of Management Consulting Firms

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

New Jersey American Water Company
Billing Rates Of New Jersey Certified Public Accountants

Survey billing rates were those in effect in 2009 (Note A)

	Average Hourly Billing Rate (Note A)			
Type of Firm	Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 121	$ 150	$ 249	$ 280

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 121	$ 150	$ 249	$ 280	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 36	$ 45	$ 50	$ 56	**$ 187**

Escalation to Test Period Midpoint (June 30, 2010) (Note B)	
CPI at December 31, 2009	216.0
CPI at June 30, 2010	218.0
Inflation/Escalation	0.9%
Average Hourly Billing Rate For CPAs At June 30, 2010	**$ 189**

Note A: Source is AICPA's 2010 National PCPS/TSCPA Management of an Accounting Practice Survey (New Jersey edition)
Note B: Source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 8

New Jersey American Water Company
Billing Rates of Information Technology Professionals

IT Resource Level	2010 Hourly Rate (A)
Consultant Positions	
Senior Manager/Partner Consultant	$ 350
Staff/Manager Consultant	$ 245
Contractor Positions	
Senior Contractor	$ 145
Contractor	$ 66

Overall Average	2010 Rate	% of Project/Assignment	
Senior Manager/Partner Consultant	$ 350	10%	$ 35
Staff/Manager Consultant	$ 245	30%	$ 73
Senior Contractor	$ 145	30%	$ 44
Contractor	$ 66	30%	$ 20
		Weighted Average	**$ 172**

Note A: Source is Baryenbruch & Company, LLC

Exhibit 9

New Jersey American Water Company
Billing Rates Of New Jersey Engineers

A. Calculation of Average Hourly Rate by Engineer Position

Name of Firm	Average Hourly Billing Rates: Technician / Senior Technician	Engineer / Design Engineer / Project Engineer	Project Manager / Sr. Mgr. Engineer	Officer / Principal Engineer
Firm #1	$73	$101	$130	$155
Firm #2	$67	$81	$127	$162
Firm #3	$78	$100	$123	$163
Firm #4	$73	$72	$127	$165
Firm #5	$58	$73	$132	$171
Firm #6	$68	$95	$136	$173
Firm #7	$80	$98	$149	$182
Firm #8	$94	$87	$141	$184
Firm #9	$73	$70	$141	$185
Firm #10	$87	$112	$168	$190
Firm #11	$78	$97	$148	$199
Firm #12	$85	$90	$144	$200
Firm #13	$93	$109	$144	$200
Firm #14	$77	$109	$146	$205
Firm #15	$108	$126	$168	$208
Firm #16	$68	$96	$153	$208
Firm #17	$76	$118	$167	$209
Firm #18	$95	$115	$176	$210
Firm #19	$91	$126	$184	$217
Firm #20	$114	$154	$203	$225
Firm #21	$85	$122	$193	$225
Firm #22	$60	$83	$95	NA
Firm #23	$78	$95	$165	NA
Firm #24	$91	$119	$177	$195

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician / Senior Technician	Engineer / Design Engineer / Project Engineer	Project Manager / Sr. Mgr. Engineer	Officer / Principal Engineer	
Average Hourly Billing Rate (From Above)	$81	$102	$151	$192	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$24	$36	$38	$19	**$117**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended December 31, 2010		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 206	$ 357	$ (152)
Management Consultant	$ 131	$ 243	$ (111)
Certified Public Accountant	$ 81	$ 189	$ (108)
IT Professional	$ 141	$ 172	$ (31)
Professional Engineer	$ 95	$ 117	$ (22)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to NJAWC during 2010, outside service providers would have cost $14,337,415 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 45% higher than those of the Service Company ($14,337,415 / $31,703,175).

	12 Months Ended December 31, 2010		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (152)	4,031	$ (610,703)
Management Consultant	$ (111)	29,032	$ (3,235,351)
Certified Public Accountant	$ (108)	76,795	$ (8,285,355)
IT Professional	$ (31)	48,078	$ (1,481,950)
Professional Engineer	$ (22)	33,446	$ (724,055)
Service Company Less Than Outside Providers			$(14,337,415)

It should be noted that the cost differential associated with using outside providers is even greater because exempt Service Company personnel do not charge more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. Thus, NJAWC would have been charged by outside providers for overtime worked by Service Company personnel who are not paid for that time.

If NJAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform over 191,300 hours of work (more than 128 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing NJAWC management team. Thus, it would be necessary for NJAWC to add at least two positions to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill these positions would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As

calculated in the table below, this position would add more than $300,000 per year to NJAWC's personnel expenses.

Cost of Adding 2 Professional Positions To NJAWC's Staff

	Total
New Positions' Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Cost per Position	$ 164,600
Number of Positions	2
Total Cost of Two Positions	$ 329,200

Thus, the total effect on the ratepayers of NJAWC of contracting all services now provided by Service Company would be an increase in their costs of $14,337,415 ($14,337,415 + $329,200). Based on the results of this comparison, it is possible to conclude that the Service Company charged NJAWC at the lower of cost or market for services provided during the 2010.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services involve the processes that occur from the time meter read data is recorded in the customer information system through the printing and mailing of bills through the collection and processing of customer payments. Customer Accounts Services are accomplished by the following utility functions:

- Customer Call Center Operations – customer calls/contact, credit, order taking/disposition, bill collection efforts and outage calls
- Customer Call Center Maintenance – support of phone banks, voice recognition units, call center software applications and telecommunications
- Customer billing – bill printing, stuffing and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – processing customer payments at locations where customers can pay their bills in person

Neighboring electric utility cost information comes from the FERC Form 1 that each utility that is subject to FERC regulation, must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

New York	• Central Hudson Gas & Elect • Consolidated Edison • New York State Elect & Gas	• Niagra Mohawk Power • Orange & Rockland Utilities • Rochester Gas & Electric
Pennsylvania	• Duquesne Light • Metropolitan Edison • PECO Energy • Pennsylvania Electric	• Pennsylvania Power • PPL Electric Utilities • West Penn Power
New Jersey	• Atlantic City Electric • Jersey Central Power	• Public Svc Electric & Gas • Rockland Electric
Maryland	• Baltimore Gas & Electric • Delmarva Power & Light	• Potomac Electric

New Jersey American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

New Jersey American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

NJAWC Cost per Customer

As calculated below, NJAWC's 2010 customer account services expense per customer was $24.32. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by NJAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.57 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

New Jersey American Water Company		Year Ended 12/31/2010 Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Cost Component					
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 9,074,719	$ 2,287,706	$11,362,425	
Regional Offices		$ 34,364		$ 34,364	
Service Company	Customer payment processing			$ 829,386	(B)
Operating Company	Postage & forms			$ 3,483,087	
			Cost Pool Total	$15,709,262	
			Total Customers	645,939	
	Year Ended 2010 Cost Per New Jersey American Customer			**$ 24.32**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 3,892,201
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.57	
Percent different	59%	59%
Total Adjustment		$ 2,287,706

Note B: Estimated customer payment processing expenses

Number of customer bills	7,751,268
Bank charge per item	$ 0.1070
Total estimated annual expense	$ 829,386

Electric Utility Group Cost per Customer

Exhibit 11 (page 31) shows the actual 2010 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, NJAWC's cost per customer is well below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that NJAWC's 2010 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to NJAWC were comparable to those of other utilities.

Customer Account Services Expenses Per Customer	
Pennsylvania Power Company	$ 13.30
Metropolitan Edison Company	$ 13.75
Pennsylvania Electric Company	$ 13.81
West Penn Power Company	$ 16.01
Jersey Central Power & Light Company	$ 16.51
Duquesne Light Company	$ 17.08
New Jersey American Water	**$ 24.32**
Rochester Gas & Electric Corporation	$ 29.35
PPL Electric Utilities Corporation	$ 32.92
New York State Electric & Gas Corporation	$ 34.77
Baltimore Gas & Electric	$ 36.73
Comparison Group Average	**$ 50.51**
Central Hudson Gas & Electric Company	$ 56.40
Consolidated Edison Company	$ 57.77
Orange & Rockland Electric	$ 61.68
PECO Energy Company	$ 61.76
Atlantic City Electric Company	$ 73.16
Rockland Electric	$ 74.16
Delmarva Power & Light Company	$ 74.83
Potomac Electric	$ 75.43
Public Service Electric & Gas Company	$ 97.07

Exhibit 11
Page 1 of 3

New Jersey American Water Company
Comparison Group 2010 Actual Customer Accounts Expense Per Customer

		New Jersey				Maryland		
		Atlantic City Electric	Jersey Central Power	Public Service Electric & Gas	Rockland Electric	Baltimore Gas & Electric	Delmarva Power & Light	Potomac Electric
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 38,379,348	$ 14,942,282	$ 68,135,796	$ 2,649,743	$ 32,124,609	$ 33,731,176	$ 51,028,163
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 9,340	$ 476,375	$ 107,541,888	$ 612,165	$ 3,467,467	$ 2,228	$ -
Subtotal		$ 38,388,688	$ 15,418,657	$ 175,677,684	$ 3,261,908	$ 35,592,076	$ 33,733,404	$ 51,028,163
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,469,412	$ 2,130,763	$ 28,557,338	$ 1,971,077	$ 7,175,643	$ 3,138,929	$ 7,139,118
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 190,294	$ 564,585	$ 7,333,964	$ 139,022	$ 2,664,148	$ 517,430	$ 900,454
Total Cost Pool		**$ 40,048,394**	**$ 18,114,005**	**$ 211,568,986**	**$ 5,372,007**	**$ 45,431,866**	**$ 37,389,763**	**$ 59,067,735**
Total Customers (page 304, line 43)		547,400	1,097,078	2,179,559	72,438	1,236,939	499,689	783,069
Customer Account Services Expense per Customer		**$ 73.16**	**$ 16.51**	**$ 97.07**	$ 74.16	**$ 36.73**	**$ 74.83**	$ 75.43
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 14,418,942	$ 17,857,493	$ 99,708,453	$ 12,251,432	$ 41,908,186	$ 19,690,595	$ 37,396,545
Total O&M Payroll (page 355, line 65)		$ 24,409,204	$ 61,851,963	$ 334,727,675	$ 11,295,502	$ 203,392,492	$ 42,429,484	$ 61,657,632
Benefits as Percent of Payroll		59.1%	28.9%	29.8%	108.5%	20.6%	46.4%	60.7%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 2,781,655	$ 12,091,884	$ 57,901,535	$ 2,308,846	$ 26,762,799	$ 6,765,452	$ 13,188,369
Gas (page 354, line 37)		$ -	$ -	$ 47,299,045	$ -	$ 13,788,328	$ 1,485,099	
Total Payroll Charged to Customer Accounts		$ 2,781,655	$ 12,091,884	$ 105,200,580	$ 2,308,846	$ 40,551,127	$ 8,250,551	$ 13,188,369
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 38,379,348	$ 14,942,282	$ 68,135,796	$ 2,649,743	$ 32,124,609	$ 33,731,176	$ 51,028,163
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 9,340	$ 476,375	$ 107,541,888	$ 612,165	$ 3,467,467	$ 2,228	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 38,388,688	$ 15,418,657	$ 175,677,684	$ 3,261,908	$ 35,592,076	$ 33,733,404	$ 51,028,163
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,539,521	$ 9,843,616	$ 17,100,273	$ 882,327	$ 5,851,707	$ 7,414,978	$ 6,146,168
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 42,928,209	$ 25,262,273	$ 192,777,957	$ 4,144,235	$ 41,443,783	$ 41,148,382	$ 57,174,331
Percent Applicable to Customer Accounts Services (903 and 905)		89.4%	61.0%	91.1%	78.7%	85.9%	82.0%	89.3%
Customer Account Services Portion of Total Payroll		$ 2,487,504	$ 7,380,199	$ 95,868,815	$ 1,817,282	$ 34,825,460	$ 6,763,794	$ 11,770,636
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,469,412	$ 2,130,763	$ 28,557,338	$ 1,971,077	$ 7,175,643	$ 3,138,929	$ 7,139,118
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 2,487,504	$ 7,380,199	$ 95,868,815	$ 1,817,282	$ 34,825,460	$ 6,763,794	$ 11,770,636
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 190,294	$ 564,585	$ 7,333,964	$ 139,022	$ 2,664,148	$ 517,430	$ 900,454

Exhibit 11
Page 2 of 3

New Jersey American Water Company
Comparison Group 2010 Actual Customer Accounts Expense Per Customer

		Pennsylvania						
		Duquesne Light	Metropolitan Edison	PECO Energy	Pennsylvania Electric	Pennsylvania Power	PPL Electric Utilities	West Penn Power
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,573,095	$ 7,151,817	$ 54,585,949	$ 7,379,259	$ 2,069,405	$ 36,293,334	$ 9,088,387
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 171,941	$ 32,815,230	$ 331,883	$ 62,212	$ 1,211,692	$ -
Subtotal		$ 7,573,095	$ 7,323,758	$ 87,401,179	$ 7,711,142	$ 2,131,617	$ 37,505,026	$ 9,088,387
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,220,422	$ 44,640	$ 7,355,053	$ 176,097	$ (70,362)	$ 7,060,753	$ 1,949,474
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 440,355	$ 218,171	$ 2,016,685	$ 258,047	$ 64,852	$ 1,576,323	$ 426,864
Total Cost Pool		**$ 10,233,872**	**$ 7,586,569**	**$ 96,772,917**	**$ 8,145,286**	**$ 2,126,107**	**$ 46,142,102**	**$ 11,464,725**
Total Customers (page 304, line 43)		599,126	551,776	1,566,871	589,851	159,886	1,401,657	716,108
Customer Account Services Expense per Customer		**$ 17.08**	**$ 13.75**	**$ 61.76**	**$ 13.81**	**$ 13.30**	**$ 32.92**	**$ 16.01**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 19,532,432	$ 446,289	$ 44,685,357	$ 1,284,530	$ (406,870)	$ 33,435,335	$ 19,719,782
Total O&M Payroll (page 355, line 65)		$ 50,636,301	$ 28,512,169	$ 160,160,748	$ 24,605,376	$ 4,902,070	$ 97,574,951	$ 56,443,368
Benefits as Percent of Payroll		38.6%	1.6%	27.9%	5.2%	-8.3%	34.3%	34.9%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 9,651,460	$ 5,022,929	$ 25,625,115	$ 5,783,973	$ 1,409,373	$ 21,778,786	$ 9,169,248
Gas (page 354, line 37)		$ -	$ -	$ 5,480,638	$ -	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 9,651,460	$ 5,022,929	$ 31,105,753	$ 5,783,973	$ 1,409,373	$ 21,778,786	$ 9,169,248
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 7,573,095	$ 7,151,817	$ 54,585,949	$ 7,379,259	$ 2,069,405	$ 36,293,334	$ 9,088,387
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 171,941	$ 32,815,230	$ 331,883	$ 62,212	$ 1,211,692	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 7,573,095	$ 7,323,758	$ 87,401,179	$ 7,711,142	$ 2,131,617	$ 37,505,026	$ 9,088,387
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,124,608	$ 5,575,227	$ 15,727,956	$ 5,511,174	$ 1,412,193	$ 2,135,502	$ 5,846,168
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 12,697,703	$ 12,898,985	$ 103,129,135	$ 13,222,316	$ 3,543,810	$ 39,640,528	$ 14,934,555
Percent Applicable to Customer Accounts Services (903 and 905)		59.6%	56.8%	84.7%	58.3%	60.2%	94.6%	60.9%
Customer Account Services Portion of Total Payroll		$ 5,756,271	$ 2,851,908	$ 26,361,896	$ 3,373,164	$ 847,744	$ 20,605,526	$ 5,579,923
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,220,422	$ 44,640	$ 7,355,053	$ 176,097	$ (70,362)	$ 7,060,753	$ 1,949,474
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 5,756,271	$ 2,851,908	$ 26,361,896	$ 3,373,164	$ 847,744	$ 20,605,526	$ 5,579,923
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 440,355	$ 218,171	$ 2,016,685	$ 258,047	$ 64,852	$ 1,576,323	$ 426,864

New Jersey American Water Company
Comparison Group 2010 Actual Customer Accounts Expense Per Customer

		New York				
		Central Hudson Gas & Electric	Consolidated Edison	New York State Electric & Gas	Orange & Rockland	Rochester Gas & Electric
Customer Account Services Cost Pool						
FERC Account Balances:						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 9,500,596	$ 120,832,854	$ 27,185,242	$ 9,083,492	$ 10,316,521
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 1,264,401	$ 361,418	$ 1,742,151	$ 222,681	$ 657,468
Subtotal		$ 10,764,997	$ 121,194,272	$ 28,927,393	$ 9,306,173	$ 10,973,989
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits	**Note A**	$ 4,301,254	$ 61,671,899	$ 102,455	$ 4,466,313	$ (848,630)
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 611,415	$ 8,255,557	$ 1,491,928	$ 655,974	$ 602,616
Total Cost Pool		**$ 15,677,666**	**$ 191,121,729**	**$ 30,521,776**	**$ 14,428,460**	**$ 10,727,976**
Total Customers (page 304, line 43)		277,980	3,308,063	877,739	233,908	365,466
Customer Account Services Expense per Customer		**$ 56.40**	**$ 57.77**	**$ 34.77**	**$ 61.68**	**$ 29.35**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 34,365,838	$ 347,425,002	$ 650,152	$ 34,853,649	$ (5,189,013)
Total O&M Payroll (page 355, line 65)		$ 63,856,664	$ 607,937,187	$ 123,756,812	$ 66,915,101	$ 48,166,598
Benefits as Percent of Payroll		53.8%	57.1%	0.5%	52.1%	-10.8%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)		$ 8,458,797	$ 111,519,584	$ 21,319,789	$ 7,894,041	$ 5,700,192
Gas (page 354, line 37)		$ 1,490,183	$ 24,479,908	$ 4,122,630	$ 3,513,048	$ 3,919,971
Total Payroll Charged to Customer Accounts		$ 9,948,980	$ 135,999,492	$ 25,442,419	$ 11,407,089	$ 9,620,163
Percent Applicable to Customer Accounts Services (903 and 905):						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 9,500,596	$ 120,832,854	$ 27,185,242	$ 9,083,492	$ 10,316,521
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 1,264,401	$ 361,418	$ 1,742,151	$ 222,681	$ 657,468
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 10,764,997	$ 121,194,272	$ 28,927,393	$ 9,306,173	$ 10,973,989
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 2,635,412	$ 31,539,267	$ 8,810,807	$ 3,073,835	$ 2,427,948
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 13,400,409	$ 152,733,539	$ 37,738,200	$ 12,380,008	$ 13,401,937
Percent Applicable to Customer Accounts Services (903 and 905)		80.3%	79.4%	76.7%	75.2%	81.9%
Customer Account Services Portion of Total Payroll		$ 7,992,349	$ 107,915,783	$ 19,502,331	$ 8,574,820	$ 7,877,336
Pension & Benefits Pertaining to Customer Accounts Services		$ 4,301,254	$ 61,671,899	$ 102,455	$ 4,466,313	$ (848,630)
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll		$ 7,992,349	$ 107,915,783	$ 19,502,331	$ 8,574,820	$ 7,877,336
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 611,415	$ 8,255,557	$ 1,491,928	$ 655,974	$ 602,616

Group Average
$ 861,941,940
17,064,603
$ 50.51

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to NJAWC by the Service Company would be necessary if NJAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for NJAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 12 (page 35) was created showing which entity—NJAWC or a Service Company location—is responsible for each of the functions NJAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if NJAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to NJAWC. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Exhibit 12
Page 1 of 3

New Jersey American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	NJAWC	Customer Call Center	Shared Services	Central Services	IT Service Centers	Supply Chain	Belleville Lab
Engineering and Construction Management							
CPS Preparation	P			S			
Five-Year System Planning	P						
Engineering Standards & Policies Development	S			P			
Project Design							
Major Projects (e.g., new treatment plant)	P			S			
Special Projects	P			S			
Minor Projects (e.g., pipelines)	P						
Construction Project Management							
Major Projects	P			S			
Special Projects	P			S			
Minor Projects	P						
Hydraulics Review	P						
Developers Extensions	P						
Tank Painting	P						
Water Quality and Purification							
Water Quality Standards Development	P			S			S
Research Studies	S			P			S
Water Quality Program Implementation	P			S			
Water Treatment Operations & Maintenance	P			S			
Compliance Sampling	P						S
Testing/Other Sampling	P(Note A)			S			P(Note A)
Transmission and Distribution							
Preventive Maintenance Program Development	P						
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	P			S			
Customer Contact	S	P					
Call Processing		P					
Service Order Processing	P	S					
Customer Credit	S	P					
Meter Reading	P						
Customer Bill Preparation	S	P			S		
Bill Collection		P					
Customer Payment Processing	S		P				
Meter Standards Development	S			P			
Meter Testing, Maintenance & Replacement	P						

Note A: NJAWC and the Belleville Lab are primarily responsible for different studies

Exhibit 12
Page 2 of 3

New Jersey American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	NJAWC	Customer Call Center	Shared Services	Central Services	IT Service Centers	Supply Chain	Belleville Lab
Financial Management							
Financial Planning	P			S			
Financings--Equity				S			
Financings--Long Term Debt & Preferred (Note A)	P						
Short Term Lines of Credit Arrangements(Note A)	P						
Investor Relations				P			
Insurance Program Administration				P			
Loss Control/Safety Program Administration	P			S			
Pension Fund Asset Management				P			
Cash Management/Disbursement Processing			P				
Internal Auditing				P			
SOX Compliance	P			S			
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions				P			
Regional Guidelines & Instructions	P						
Budget Preparation							
Revenue and O&M	P						
Depreciation and Interest Expense	P		S	S			
Budget Preparation--Service Company Charges	S	S	S	P	S	S	S
Capital Budget Preparation—Projects	P						
Capital Budget Preparation—Non-Project Work	P						
Prepare Monthly Budget Variance Report	P						
("Budget/Plan Analysis")							
Prepare Capital Project Budget Status Report	P						
Year-End Projections	P						
Accounting and Taxes							
Accounts Payable Accounting	S		P				
Payroll Accounting	S		P				
Work Order Accounting	S		P				
Fixed Asset Accounting	S		P				
Journal Entry Preparations--Billing Corrections	S		P				
Journal Entry Preparation--All Others	S		P				
Financial Statement Preparation	S		P				
State Commission Reporting	S		P				
Income Taxes--State - N/A							
Income Taxes--Federal			P				
Property Taxes	S		P				
Gross Receipts (Town) Taxes	S		P				

Note A: Lines of credit are the responsibility of American Water Capital Corporation ("AWCC"). AWCC is also responsible for Corporate financings which may be distributed to the regulated subsidiaries. NJAWC has its own credit ratin and has the ability to do its own financings, in 2009 NJAWC did two such financings.

Exhibit 12
Page 3 of 3

New Jersey American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	NJAWC	Customer Call Center	Shared Services	Central Services	IT Service Centers	Supply Chain	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	P		S				
Rate Case Planning and Preparation	P		S				
Rate Case Administration	P						
Commission Inquiry Response	P						
Legal	P			S			
Purchasing and Materials Management – National (pipe, chemicals, meters, etc.)							
Specification Development	S		S	S		S	
Bid Solicitation	S		S			P	
Contract Administration	S		S			P	
Purchasing and Materials Management – State (state supplier service agreements)							
Specification Development	P		S				
Bid Solicitation	P		S				
Contract Administration	P		S				
Ordering	P						
Inventory Management	P		S				
Human Resources Management							
Benefit Program Development	S			P			
Benefits Program Administration	S		P				
Management Compensation Administration	S			P			
Wage & Salary Program Design	S			P			
Wage & Salary Administration	P			S			
Labor Negotiations--Wages	P						
Labor Negotiations--Benefits	S			P			
Labor Negotiations-- Work Rules	P						
Training Program Development	P			S			
Training--Course Delivery	P						
Affirmative Action/EEO--Plan Development	P						
Affirmative Action/EEO--Implementation	P						
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance					P		
Software Maintenance					P		
Network Administration					P		
PC Acquisition & Support	S				P		
Help Desk					P		

Governance Practices Associated With Service Company Charges

There are several ways by which NJAWC exercises control over Service Company services and charges. The most important of these are described below.

- **NJAWC Company Board Oversight** – The NJAWC board of directors includes members of American Water's Executive Management Team, members of the NJAWC management team and external business and community leaders. This diverse board ensures that NJAWC's needs are a factor in the delivery of Service Company services. The NJAWC Board meets at a minimum of four times each year and at every meeting financial and operational reports and issues are discussed at length.
- **NJAWC President Oversight** – The NJAWC President is responsible for the overall performance of NJAWC, including services and charges received from the American Water Service Company. The President of NJAW is also a board member on the Service Company's Board of Directors (see below for further discussion). In addition, as part of the overall management team of American Water through the President of Regulated Operations, NJAWC's President has a significant voice in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending as NJAWC's President is one of five direct reports to the President of Regulated Operations.
- **NJAWC Vice President and Treasurer** – The Vice President and Treasurer is responsible for the financial reporting and performance, as well as the internal control performance of the NJAWC. The Vice President and Treasurer monitors the performance, expense and reporting from the Service Company and verifies and validates the cost of services received. In addition, the Vice President and Treasurer through the Financial Planning and Analysis staff reviews the monthly charges and investigates whenever the amount, quality and/or services are appropriate.
- **Service Company Board Oversight** – The Service Company Board of Directors is comprised of 17 members, of which NJAWC President is one of the members. They typically meet four times a year to provide governance on the activities and bylaws of Service Company. Their primary responsibilities include:
  - Approve the Business Plan and Operating Budget
  - Review Financial Performance of the Service Center
  - Review performance metrics of certain functional groups
  - Approve policy, procedures and practices of AW as it relates to Service Company.
- **Service Company Budget Review/Approval** – the NJAWC president and several other state regulated water utility presidents serve on the Service Company board of directors and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the individual operating company's board of directors (e.g., NJAWC).
- **Major Project Review And Approval –** Major non-capital projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the President of Regulated Operations. The President of Regulated Operations, with significant input from his direct reports (including the NJAWC president), has the ability to impact all new initiatives and projects before they are authorized. Major non-capital projects and initiatives for the Service Company are approved through the Business Plan. All significant business initiatives (capital or non-capital) are required to be submitted to the "BATT" (Business and Technology Team) committee for final approval. The "BATT" team is comprised of C-level executive members (CEO, CFO, etc.).

- **Capital Investment Management** (CIM) – CIM covers capital and asset planning and is employed throughout American Water, including the Service Company. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment.
- **Accounting and Financial Reporting** – Similar to the states, the Service Company follows the same accounting and financial reporting processes. During the month accounting transactions are recorded. At month end, the SSC and Service Company Finance teams review all transactions. Variance analyses are performed based on month to month actual as well as actual to budget to ensure accuracy. Once completed, the service company bill is run and the actuals are "pushed down" and allocated to the states based on predetermined formulas. A conference call is scheduled before the operating companies close their books each month to discuss Service Company performance. This is based at a functional level with explanation reported for those expense variances that meet or exceed certain thresholds. At this time, the operating companies may question expenses and spending for better understanding of results. NJAWC Financial Performance and Analysis (FP&A) personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. Any mistakes or overcharges are credited on a subsequent billing.
- **NJAWC Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly by each operating company, has line items for Management Fees and Shared Service Expense (i.e., IT, Call Center, etc.). In this way, Service Company budget versus actual charges as charged to the operating company can be monitored and reviewed for the month and year-to-date as compared to prior year, plan and reforecast.

Market Cost Comparison of Service Company Charges to Pennsylvania-American Water Company

12-Months Ended December 31, 2008

Baryenbruch & Company, LLC

Pennsylvania-American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended December 31, 2008

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to Pennsylvania-American Water Company (PAWC):

1. Were the Service Company's charges to PAWC during the 12 months ended December 31, 2008 reasonable?

2. Was PAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during 2008?

3. Were the 2008 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services PAWC receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 2008 cost per PAWC customer was very reasonable compared to cost per customer for electric and combination electric/gas service companies. During 2008, PAWC was charged $54 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $109 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 3 of the 24 utility service companies that filed a FERC Form 60 for 2008 had a lower per customer A&G cost than PAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- PAWC was charged the lower of cost or market for managerial and professional services during the 12 months ended December 31, 2008.

- On average, the hourly rates for outside service providers are 18% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by PAWC without careful supervision on the part of PAWC. If these services were contracted to outside providers, PAWC would have to add at least two positions to manage activities of outside firms. These positions would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended December 31, 2008, PAWC and its ratepayers would have incurred more than $5.5 million in additional expenses. This amount includes the higher cost of outside providers and the cost of two PAWC positions needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to PAWC from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of

Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $5.5 million cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week), then that work would have cost an estimated $0.25 million in additional charges from outside providers.

- It would be difficult for PAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from PAWC ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is well below the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and PAWC. During the 12-months ended December 31, 2008, the customer accounts cost for PAWC customers was $27.06 compared to the 2008 average of $38.97 for neighboring electric utilities. The highest comparison group per customer cost was $83.88 and the lowest $12.54.

Concerning question 4, the following conclusions was drawn:

- The services that the Service Company provides are necessary and would be required even if PAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to PAWC. For all of the services listed in Exhibit 11, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like PAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of PAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include rates and revenues, engineering, operations and field resource coordination.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times their hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 20% of American Water's Western Region's professional labor is assigned to PAWC during a month, then 20% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 20% of the Western Region's accumulated professional and support labor is charged to PAWC during the month, then 20% of that month's overhead expenses will be assigned to PAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to PAWC, then 2% of that office's office expenses would be assigned to PAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended December 31, 2008, the Service Company billed PAWC $40,008,443 in O&M-related charges, $2,010,948 in capital-related charges and $39 other charges. Included in the O&M amount are certain non-recurring expenses which are excluded from this market study. As calculated in the table below, net testable Service Company charges of $40,147,774 were subjected to a market cost comparison.

	12 Months Ended December 31, 2008
Mgmt Fee Expense (O&M)	$ 40,008,443
Less: Non-Recurring Items	
Sarbanes-Oxley	$ (1,730,784)
Divestiture Support	$ (140,872)
Net O&M Expenses	$ 38,136,786
Mgmt Fees - Capital	$ 2,010,948
Mgmt Fees - Other	$ 39
Total Testable AWWSC Charges	**$ 40,147,774**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology, and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total test period Service Company charges break down between management/professional services and customer account services as follows:

	12 Months Ended Dec. 31, 2008	
	Amount	Hours
Management and Professional Services	$ 28,707,056	230,685
Customer Account Services	$ 11,440,717	275,540
Total Service Company Charges	**$ 40,147,774**	**506,225**

This study's first question—whether Service Company 2008 charges were reasonable—was determined by comparing PAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether 2008 Service Company charges were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to PAWC during the 12 months ended December 31, 2008. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company 2008 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing PAWC's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to PAWC and determining if these services would be required if PAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

PAWC's Service Company Cost per Customer

During 2008, PAWC was charged $54 per customer by the Service Company for A&G-related services. As shown in the table below, this calculation is made using net testable O&M, which eliminates certain O&M items for which PAWC has not requested cost recovery.

	2008 AWWSC Charges
Testable AWWSC Charges	$ 40,147,774
Less: Non-A&G Charges:	
Engineering	$ (39,393)
Operations	$ (3,444,442)
Water Quality	$ (1,535,320)
Net A&G-Related Charges	$ 35,128,618
PAWC Customers (12/31/08)	648,953
PAWC Cost Per Customer	**$ 54**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2008, a Form 60 was filed by 24 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

O&M expenses charged to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2008 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

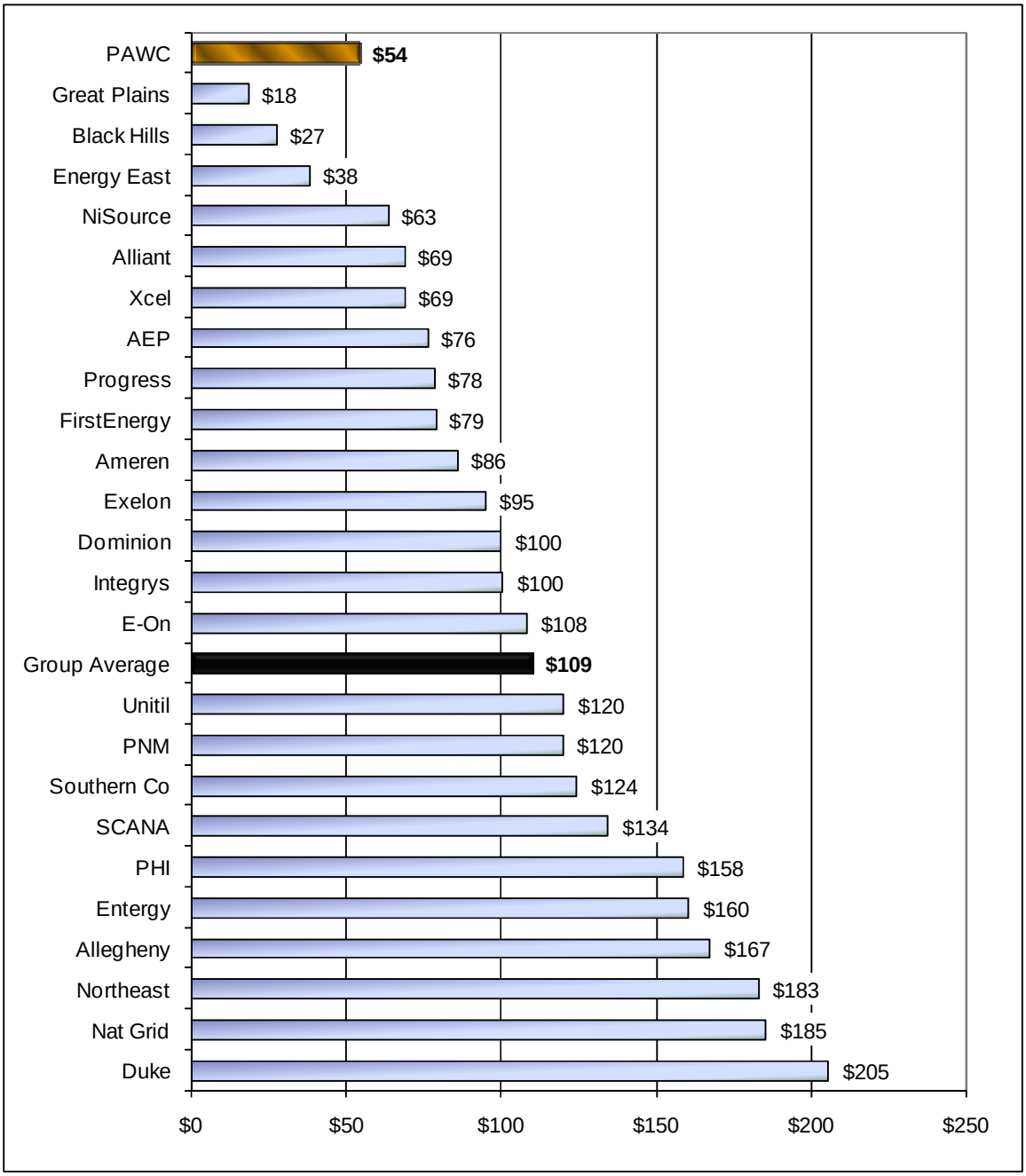
A&G expenses per regulated utility customer for the 24 utility companies that file Form 60 for 2008 are calculated below.

Utility Company	2008 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$396,340,118	5,213,000	$ 76
Allegheny	$263,588,707	1,577,873	$ 167
Alliant	$205,754,832	3,000,000	$ 69
Ameren	$291,684,710	3,400,000	$ 86
Black Hills	$20,763,828	759,400	$ 27
Dominion	$357,718,046	3,588,500	$ 100
Duke	$923,936,645	4,500,000	$ 205
Energy East	$113,714,789	2,989,800	$ 38
Entergy	$432,575,683	2,700,000	$ 160
E-On	$136,276,177	1,263,000	$ 108
Exelon	$558,687,014	5,885,000	$ 95
FirstEnergy	$354,028,109	4,499,000	$ 79
Great Plains	$15,000,708	820,000	$ 18
Integrys	$216,364,166	2,157,000	$ 100
Nat Grid	$1,240,706,398	6,700,000	$ 185
NiSource	$237,380,009	3,750,000	$ 63
Northeast	$302,138,730	1,654,000	$ 183
PHI	$302,463,412	1,910,000	$ 158
Progress	$242,677,256	3,100,000	$ 78
PNM	$102,688,385	859,000	$ 120
SCANA	$191,207,825	1,424,300	$ 134
Southern Co	$546,498,605	4,402,000	$ 124
Unitil	$20,341,422	169,600	$ 120
Xcel	$367,626,617	5,345,000	$ 69
Group Total	**$7,840,162,191**	**71,666,473**	**$ 109**

Exhibit 1 shows PAWC's 2008 Service Company cost per customer of $54 to be considerably lower than the average of $109 per customer for the comparison group service companies. Only 3 of 24 comparison group service companies had a lower 2008 cost per customer than PAWC. Based on this result, it is possible to conclude that the Service Company's 2008 charges to PAWC were reasonable.

Exhibit 1

Pennsylvania-American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to PAWC during the 12 months ended December 31, 2008. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged PAWC during 2008, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended December 31, 2008 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to PAWC during the 12 months ended December 31, 2008.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 2008 test period non-labor Service Company charges:

- Contract Services – 12 months ended December 31, 2008 Service Company charges to PAWC include almost $2,665,000 in expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services). These professional fees are excluded from the Service Company

hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Computer Hardware and Software Expenses – Included in the 12 months ended December 31, 2008 Service Company charges to PAWC are charges for outside expenses related to leases and maintenance fees related to mainframe, server and network infrastructure, corporate business applications and the communications systems. An outside provider that would take over operation of a data center would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended December 31, 2008 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total management, professional & technical services charges	$ 862,288	$ 7,833,805	$ 15,855,078	$ 4,155,862	$ 28,707,033
Less:					
Contract services	$ 80,381	$ 583,168	$ 1,858,877	$ 142,652	$ 2,665,078
Travel expenses	$ 24,401	$ 221,487	$ 249,834	$ 237,561	$ 733,283
Computer hardware/software	$ -	$ 84,853	$ 78,486	$ 94,156	$ 257,495
Net Service Charges (A)	$ 757,505	$ 6,944,297	$ 13,667,881	$ 3,681,493	$ 25,051,177
Total Hours (B)	5,189	38,558	147,824	39,115	230,685
Average Hourly Rate (A / B)	**$ 146**	**$ 180**	**$ 92**	**$ 94**	

Exhibit 2

Pennsylvania-American Water Company
Analysis of 12 Months Ended December 31, 2008 Service Company Charges By Location And Function

		12 Months Ended December 31, 2008 Service Company Charges				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 1,114,775	$ 1,114,775
Call Center	Human Resources		$ 249,650			$ 249,650
Corporate	Accounting			$ 2,312,012		$ 2,312,012
	Administration		$ 1,306,612			$ 1,306,612
	Audit			$ 276,833		$ 276,833
	Communications		$ 406,915			$ 406,915
	Finance			$ 870,167		$ 870,167
	Human Resources		$ 1,077,103			$ 1,077,103
	Legal	$ 412,106				$ 412,106
	Operations		$ 606,233		$ 974,158	$ 1,580,391
	Rates & Revenue			$ 382,584		$ 382,584
	Risk Management		$ 519,722			$ 519,722
	Water Quality				$ 361,709	$ 361,709
Regional Offices	Accounting			$ 134,163		$ 134,163
	Administration		$ 1,759,565			$ 1,759,565
	Communications		$ 169,537			$ 169,537
	Engineering				$ 39,393	$ 39,393
	Finance			$ 1,717,981		$ 1,717,981
	Human Resources		$ 578,886			$ 578,886
	Legal	$ 450,182				$ 450,182
	Operations		$ 257,060		$ 1,606,991	$ 1,864,051
	Risk Management		$ 184,367			$ 184,367
	Water Quality				$ 58,836	$ 58,836
Information Technology	Information Technology			$ 7,640,272		$ 7,640,272
Shared Services	Accounting			$ 2,119,476		$ 2,119,476
	Administration		$ 718,155			$ 718,155
	Finance			$ 228,466		$ 228,466
	Rates & Revenue			$ 173,124		$ 173,124
Total Dollars Charged		**$ 862,288**	**$ 7,833,805**	**$ 15,855,078**	**$ 4,155,862**	**$ 28,707,033**

Exhibit 3

Pennsylvania-American Water Company
Analysis of 12 Months Ended December 31, 2008Service Company Hours By Location And Function

		12 Months Ended December 31, 2008 Service Company Hours				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				11,873	11,873
Call Center	Human Resources		2,589			2,589
Corporate	Accounting			21,904		21,904
	Administration		4,622			4,622
	Audit			2,490		2,490
	Communications		2,093			2,093
	Finance			6,247		6,247
	Human Resources		9,567			9,567
	Legal	1,943				1,943
	Operations		2,696		7,038	9,734
	Rates & Revenue			1,796		1,796
	Risk Management		3,615			3,615
	Water Quality					-
Regional Offices	Accounting			2,192		2,192
	Administration		906			906
	Communications		1,340			1,340
	Engineering				273	273
	Finance			13,987		13,987
	Human Resources		4,154			4,154
	Legal	3,246				3,246
	Operations		2,930		18,867	21,797
	Risk Management		1,464			1,464
	Water Quality				1,063	1,063
Information Technology	Information Technology			51,608		51,608
Shared Services	Accounting			40,138		40,138
	Administration		2,582			2,582
	Finance			5,616		5,616
	Rates & Revenue			1,847		1,847
Total Hours Charged		**5,189**	**38,558**	**147,824**	**39,115**	**230,685**

Exhibit 4

Pennsylvania-American Water Company
12 Months Ended December 31, 2008 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation			
	Contract Services	Travel Expenses	Computer HW/SW	Total
Accounting	$ 1,019,281	$ 42,769	$ 22,149	$ 1,084,199
Administration	$ 94,728	$ 28,524	$ 6,997	$ 130,249
Audit	$ 7,842	$ 12,060	$ 156	$ 20,058
Communications	$ 82,186	$ 35,690	$ 782	$ 118,658
Engineering	$ 46	$ 5,842	$ 2,785	$ 8,674
Finance	$ 370,502	$ 67,052	$ 1,927	$ 439,481
Human Resources	$ 271,652	$ 71,092	$ 15,855	$ 358,599
Information Technology	$ 371,830	$ 107,223	$ 52,886	$ 531,939
Legal	$ 80,381	$ 24,401		$ 104,783
Operations	$ 124,686	$ 251,626	$ 51,880	$ 428,193
Rates & Revenue	$ 89,422	$ 20,730	$ 1,368	$ 111,520
Risk Management	$ 123,526	$ 39,491	$ 42,809	$ 205,826
Water Quality	$ 28,995	$ 26,783	$ 57,901	$ 113,679
Total	**$ 2,665,078**	**$ 733,283**	**$ 257,495**	**$ 3,655,856**

Outside Service Provider Category
Certified Public Accountant
Management Consultant
Certified Public Accountant
Management Consultant
Professional Engineer
Certified Public Accountant
Management Consultant
Certified Public Accountant
Attorney
Management Consultant, Professional Engineer
Certified Public Accountant
Management Consultant
Professional Engineer

Recap By Outside Provider	Exclusions From Hourly Rate Calculation			
	Contract Services	Travel Expenses	Computer HW/SW	Total
Attorney	$ 80,381	$ 24,401	$ -	$ 104,783
Management Consultant	$ 583,168	$ 221,487	$ 84,853	$ 889,508
Certified Public Accountant	$ 1,858,877	$ 249,834	$ 78,486	$ 2,187,196
Professional Engineer	$ 142,652	$ 237,561	$ 94,156	$ 474,369
Total	**$ 2,665,078**	**$ 733,283**	**$ 257,495**	**$ 3,655,856**

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among Pennsylvania certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	% In PA Who Are CPAs
Partners/Owners	100%
Directors (11+ years experience)	76%
Managers (6-10 years experience)	84%
Sr Associates (4-5 years experience)	53%
Associates (1-3 years experience)	10%
New Professionals	0%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2008)

Attorneys

The Pennsylvania State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for Pennsylvania attorneys. Therefore, an estimate of Pennsylvania attorney rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5, the average rate for each firm was adjusted for the cost of living differential between its location and Hershey, Pennsylvania. The Lawyers Weekly surveys included rates in effect at December 31, 2007. Thus, the 2008 average rate was escalated to June 30, 2008—the midpoint of the test year ended December 31, 2008.

Management Consultants

The cost per hour for management consultants was developed from a 2008 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2007 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2007 average rate was escalated to June 30, 2008—the midpoint of the 12 months ended December 31, 2008.

Certified Public Accountants

The average hourly rate for Pennsylvania CPAs was developed from a 2008 survey performed by the American Institute of Certified Public Accountants (AICPA). The Pennsylvania version of this survey was used to develop hourly rates for member firms in Pennsylvania.

As shown in Exhibit 7, a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2007. Thus, the data had to be escalated to June 30, 2008—the test year's midpoint.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by PAWC in 2008. As presented in Exhibit 8, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

Pennsylvania-American Water Company
Estimated Billing Rates For Pennsylvania Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates as of December 31, 2007 (Note A)									
		Number	Billing Rate Range					Cost of Living	
		Of	Associate		Partner			Adjust	Adjusted
Firm	Location	Lawyers	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright PLLC	Detroit, Mi	229	$ 170	$ 275	$ 260	$ 530	$ 309	80%	$ 385
Dykema	Detroit, Mi	222	$ 185	$ 390	$ 245	$ 625	$ 361	80%	$ 450
Butzel Long	Detroit, Mi	209	$ 165	$ 400	$ 220	$ 550	$ 334	80%	$ 416
Bodman LLP	Detroit, Mi	128	$ 125	$ 215	$ 210	$ 495	$ 261	80%	$ 326
Jaffe Raitt Heuer & Weiss, PC	Southfield, Mi	100	$ 165	$ 225	$ 225	$ 500	$ 279	92%	$ 304
Trott & Trott, PC	Bingham Farms, Mi	64	$ 170	$ 170	$ 235	$ 235	$ 203	119%	$ 170
Brooks Kushman PC	Southfield, Mi	52	$ 160	$ 275	$ 250	$ 505	$ 298	92%	$ 325
Kemp, Klein, Umphrey, Edelman & May PC	Troy, Mi	36	$ 150	$ 190	$ 200	$ 340	$ 220	105%	$ 209
Pepper Hamilton LLP	Detroit, Mi	33	$ 200	$ 315	$ 340	$ 615	$ 368	80%	$ 458
Hertz, Schram & Saretsky, PC	Bloomfield Hills, Mi	29	$ 175	$ 260	$ 275	$ 400	$ 278	131%	$ 211
Strobl & Sharp, PC	Bloomfield Hills, Mi	28	$ 110	$ 210	$ 200	$ 300	$ 205	131%	$ 156
Kupelian Ormond & Magy, PC	Southfield, Mi	25	$ 165	$ 195	$ 235	$ 320	$ 229	92%	$ 250
Rader, Fishman & Grauer, PLLC	Bloomfield Hills, Mi	25	$ 130	$ 250	$ 275	$ 495	$ 288	131%	$ 219
McShane & Bowie PLC	Grand Rapids, Mi	22	$ 160	$ 275	$ 250	$ 375	$ 265	91%	$ 292
Edwards Angel Palmer & Dodge	Boston, Ma	259	$ 144	$ 321	$ 474	$ 474	$ 353	139%	$ 254
Sullivan & Worcester	Boston, Ma	137	$ 245	$ 530	$ 415	$ 700	$ 473	139%	$ 339
Burns & Levinson	Boston, Ma	112	$ 210	$ 350	$ 375	$ 475	$ 353	139%	$ 253
Bowditch & Dewey	Worcester, Ma	64	$ 150	$ 300	$ 280	$ 550	$ 320	109%	$ 292
Mirick O'Connell	Worcester, Ma	60	$ 160	$ 250	$ 280	$ 400	$ 273	109%	$ 249
Hinckley, Allen & Snyder	Boston, Ma	58	$ 200	$ 330	$ 300	$ 480	$ 328	139%	$ 235
Prince Lobel Glovsky & Tye	Boston, Ma	52	$ 175	$ 265	$ 275	$ 475	$ 298	139%	$ 214
Robinson & Cole	Boston, Ma	48	$ 220	$ 375	$ 340	$ 490	$ 356	139%	$ 256
Bromberg & Sunstein	Boston, Ma	42	$ 250	$ 450	$ 500	$ 725	$ 481	139%	$ 346
Lawson & Weitzen	Boston, Ma	35	$ 125	$ 225	$ 225	$ 400	$ 244	139%	$ 175
Murtha Cullina	Boston, Ma	34	$ 165	$ 290	$ 250	$ 500	$ 301	139%	$ 216
Marcus Errico Emmer & Brooks	Braintree, Ma	28	$ 250	$ 250	$ 300	$ 360	$ 290	130%	$ 222
Rich May	Boston, Ma	25	$ 150	$ 300	$ 300	$ 400	$ 288	139%	$ 206
Keegan Werlin	Boston, Ma	22	$ 150	$ 275	$ 325	$ 475	$ 306	139%	$ 220
Barron & Stadfeld	Boston, Ma	21	$ 160	$ 230	$ 250	$ 350	$ 248	139%	$ 178
Cain Hibbard Myers & Cook	Pittsfield, Ma	19	$ 150	$ 200	$ 210	$ 235	$ 199	110%	$ 180
							Overall Average 2007 Billing Rate		$ 267

Escalation to Test Year's Mid-Point - June 30, 2008 (Note B)	
CPI at December 31, 2007	210.0
CPI at June 30, 2008	218.8
Inflation/Escalation	4.2%
Average Billing Rate At June 30, 2008	**$ 278**

Note A: Source is Michigan Lawyers Weekly (April 2008) and Massachusetts Lawyers Weekly (April 2008)
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
Note C: Source is Sperling's Best Places (http://www.bestplaces.net/col/col.aspx). This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Harrisburg, Pennsylvania. A number over 100% indicates the Michigan or Massachusetts city's cost of living is higher than Harrisburg. A number less than 100 % indicates Harrisburg's cost of living is higher.

Exhibit 6

Pennsylvania-American Water Company
Billing Rates of U.S. Management Consultants

A. Calculation of Average Hourly Billing Rate by Consultant Position
Survey billing rates were those in effect in 2007 (Note A)

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 142	$ 181	$ 236	$ 286	$ 333

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 142	$181	$236	$286	$333	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 42	$ 54	$ 47	$ 29	$ 33	**$ 206**

Escalation to Midpoint of December 31, 2008 Test Period (Note B)

CPI at December 31, 2007	210.0
CPI at June 30, 2008	218.8
Inflation/Escalation	4.2%
Average Hourly Billing Rate For Management Consultants At June 30, 2008	**$ 214**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2008 Edition," Association of Management Consulting Firms
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

Pennsylvania-American Water Company
Estimated Billing Rates Of Pennsylvania Certified Public Accountants

A. Calculation of Average Hourly Billing Rate by Public Accounting Position
Survey billing rates were those in effect in 2007 (Note A)

	Average Hourly Billing Rate (Note A)				
	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate by CPA Firm Position	$ 68	$ 100	$ 133	$ 154	
Percent of Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 20	$ 30	$ 27	$ 31	**$ 108**

Escalation to Midpoint of June 30, 2008 Test Period (Note B)	
CPI at December 31, 2007	210.0
CPI at June 30, 2008	218.8
Inflation/Escalation	4.2%
Average Hourly Billing Rate For CPAs At June 30, 2008	**$ 112**

Note A: Source is AICPA's 2008 National PCPS/TSCPA Management of an Accounting Practice Survey (Pennsylvania edition)
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 8

Pennsylvania-American Water Company
Estimated Billing Rates Of Pennsylvania Engineers

Note: Billing rates are the average for 2008

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
	Technician	Engineer Design Engineer	Project Manager	Officer
Name of Firm	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer
Firm #1	$71	$88	$140	$175
Firm #2	$56	$70	$126	$163
Firm #3	$80	$108	$168	$185
Firm #4	$48	$80	$122	$162

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician Senior Technician	Engineer Design Engineer Project Engineer	Project Manager Sr. Mgr. Engineer	Officer Principal Engineer	
Average Hourly Billing Rate (From Above)	$64	$86	$139	$171	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$19	$30	$35	$17	**$101**

Source: Information provided by Pennsylvania American Water Company. Firm names have not been disclosed to preserve the confidentiality of their hourly rates.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended December 31, 2008		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 146	$ 278	$ (132)
Management Consultant	$ 180	$ 214	$ (34)
Certified Public Accountant	$ 92	$ 112	$ (20)
Professional Engineer	$ 94	$ 101	$ (7)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to PAWC during the 12-months ended December 31, 2008, outside service providers would have cost $5,218,274 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 18% higher than those of the Service Company ($5,218,274 / $ 29,432,558).

	12 Months Ended December 31, 2008		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (132)	5,189	$ (685,112)
Management Consultant	$ (34)	38,558	$ (1,320,850)
Certified Public Accountant	$ (20)	147,824	$ (2,935,364)
Professional Engineer	$ (7)	39,115	$ (276,947)
Service Company Less Than Outside Providers			$ (5,218,274)

It should be noted that the cost differential associated with using outside providers is even greater because Service Company personnel do not charge for more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. If, for instance, Service Company personnel worked 5% overtime (2 hours) per week on PAWC's behalf, that would have amounted to over 14,000 additional hours of work during 2008. Based on the hourly rate differentials above, this overtime would have added another $716,000 to the cost of using outside provider.

If PAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform over 230,000 hours of work (more than 153 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing PAWC management team. Thus, it would be necessary for PAWC to add at least two positions to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill these positions would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $300,000 per year to PAWC's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding 2 Professional Positions To PAWC's Staff

	Total
New Positions' Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Total Cost of Full Time Position	$ 149,400
Number of Positions	2
Half Time Cost of Position	$ 298,800

Thus, the total effect on the ratepayers of PAWC of contracting all services now provided by Service Company would be an increase in their costs of $5,517,074 ($5,218,274 + $298,800). Based on the results of this comparison, it is possible to conclude that the Service Company charged PAWC at the lower of cost or market for services provided during 2008.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to PAWC with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, PAWC's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

Pennsylvania	• Duquesne Light • Metropolitan Edison • PECO Energy • Pennsylvania Electric	• Pennsylvania Power • PPL Electric Utilities • West Penn Power
New York	• Central Hudson Gas & Electric • Consolidated Edison • New York State Electric & Gas	• Niagara Mohawk Power • Orange & Rockland Utilities • Rochester Gas & Electric
Delaware	• Delmarva Power & Light	
Ohio	• Cleveland Electric Illuminating • Columbus Southern Power • Dayton Power & Light • Duke Energy Ohio	• Ohio Edison • Ohio Power • Toledo Edison
New Jersey	• Atlantic City Electric • Jersey Central Power	• Public Service Electric & Gas
Maryland	• Baltimore Gas & Electric • Delmarva Power & Light	• Potomac Edison • Potomac Electric
West Virginia	• Appalachian Power • Monongahela Power	• Wheeling Power

Pennsylvania-American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Pennsylvania-American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

PAWC Cost per Customer

As calculated below, PAWC's 2008 customer account services expense per customer was $27.06. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by PAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

Pennsylvania American Water Company			Adjustment Fewer Calls For		
Cost Component		Service Co Charges	Water Cos. (A)	Adjusted	
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 9,980,441	$ 1,553,373	$11,533,814	
Regional Offices		$ 1,460,276		$ 1,460,276	
Service Company	Customer payment processing			$ 754,603	(B)
Operating Company	Postage & forms			$ 3,811,233	
			Cost Pool Total	$17,559,926	
			Total Customers	648,953	
	2008 Cost Per Pennsylvania American Customer			**$ 27.06**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 1,727,223
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.32	
Percent different	90%	90%
Total Adjustment		$ 1,553,373

Note B: Estimated customer payment processing expenses

Number of customer bills	7,787,436
Bank charge per item	$ 0.0969
Total estimated annual expense	$ 754,603

Electric Utility Group Cost per Customer

Exhibit 10 shows the actual 2008 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, PAWC's cost per customer is well below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that PAWC's 2008 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to PAWC were comparable to those of other utilities.

Customer Account Services Expenses Per Customer		
West Penn Power Company	$	12.54
Potomac Electric Power Company	$	13.24
Pennsylvania Electric Company	$	14.28
Pennsylvania Power Company	$	15.69
Metropolitan Edison Company	$	15.79
Jersey Central Power & Light Company	$	15.99
Monongahela Power Company	$	16.17
Duquesne Light Company	$	17.17
Dayton Power and Light Company	$	18.51
Ohio Edison Company	$	19.13
Cleveland Electric Illuminating Company	$	20.60
Toledo Edison Company	$	24.81
Wheeling Power Company	$	26.12
Rochester Gas and Electric Corporation	$	26.62
Pennsylvania American Water	**$**	**27.06**
PPL Electric Utilities Corporation	$	28.02
Niagara Mohawk Power Corporation	$	31.14
Duke Energy-Ohio	$	31.20
Ohio Power Company	$	31.70
Appalachian Power Company	$	32.57
New York State Electric & Gas Corporation	$	33.75
Columbus Southern Power Company	$	35.11
Baltimore Gas and Electric Company	$	35.46
Comparison Group Weighted Average	**$**	**38.97**
Central Hudson Gas & Electric Company	$	43.79
Consolidated Edison Company	$	46.64
Orange and Rockland Utilities, Inc.	$	56.57
PECO Energy Company	$	60.18
Delmarva Power & Light Company	$	69.08
Atlantic City Electric Company	$	70.72
Public Service Electric and Gas Company	$	83.88

Exhibit 10
Page 1 of 5

Pennsylvania-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Pennsylvania						
		Duquesne Light	Metropolitan Edison	PECO Energy	Pennsylvania Electric	Pennsylvania Power	PPL Electric Utilities	West Penn Power
Customer Account Management Cost Pool								
FERC Account Balances:								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 7,479,961	$ 10,122,140	$ 53,673,664	$ 10,592,384	$ 2,928,197	$ 30,220,945	$ 6,946,910
Account 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 136,228	$ 32,549,592	$ 194,662	$ 82,458	$ 1,100,131	$ -
Subtotal		$ 7,479,961	$ 10,258,368	$ 86,223,256	$ 10,787,046	$ 3,010,655	$ 31,321,076	$ 6,946,910
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,022,069	$ (1,860,051)	$ 6,418,193	$ (2,677,607)	$ (590,677)	$ 6,256,579	$ 1,594,105
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 498,724	$ 250,220	$ 1,865,596	$ 299,011	$ 79,412	$ 1,437,663	$ 402,847
Total Cost Pool		**$ 10,000,754**	**$ 8,648,537**	**$ 94,507,045**	**$ 8,408,450**	**$ 2,499,390**	**$ 39,015,318**	**$ 8,943,861**
Total Customers (page 304, line 43)		582,474	547,557	1,570,291	589,017	159,346	1,392,441	713,401
Customer Account Services Expense per Customer		**$ 17.17**	**$ 15.79**	**$ 60.18**	**$ 14.28**	**$ 15.69**	**$ 28.02**	**$ 12.54**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 16,461,810	$ (18,462,242)	$ 34,870,872	$ (24,103,475)	$ (4,532,561)	$ 28,423,183	$ 16,475,935
Total O&M Payroll (page 355, line 65)		$ 53,073,862	$ 32,465,349	$ 132,497,079	$ 35,185,122	$ 7,965,617	$ 85,375,132	$ 54,426,651
Benefits as Percent of Payroll		31.0%	-56.9%	26.3%	-68.5%	-56.9%	33.3%	30.3%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 9,676,251	$ 5,316,403	$ 23,554,469	$ 6,561,812	$ 1,624,429	$ 20,085,492	$ 8,766,657
Gas (page 354, line 37)				$ 5,036,945				
Total Payroll Charged to Customer Accounts		$ 9,676,251	$ 5,316,403	$ 28,591,414	$ 6,561,812	$ 1,624,429	$ 20,085,492	$ 8,766,657
Percent Applicable to Customer Accounts Services (903 and 905):								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 7,479,961	$ 10,122,140	$ 53,673,664	$ 10,592,384	$ 2,928,197	$ 30,220,945	$ 6,946,910
Account 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 136,228	$ 32,549,592	$ 194,662	$ 82,458	$ 1,100,131	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 7,479,961	$ 10,258,368	$ 86,223,256	$ 10,787,046	$ 3,010,655	$ 31,321,076	$ 6,946,910
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 3,622,199	$ 6,415,472	$ 14,865,724	$ 7,322,187	$ 1,700,593	$ 2,154,152	$ 4,618,134
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 11,102,160	$ 16,673,840	$ 101,088,980	$ 18,109,233	$ 4,711,248	$ 33,475,228	$ 11,565,044
Percent Applicable to Customer Accounts Services (903 and 905)		67.4%	61.5%	85.3%	59.6%	63.9%	93.6%	60.1%
Customer Account Services Portion of Total Payroll		$ 6,519,270	$ 3,270,849	$ 24,386,880	$ 3,908,645	$ 1,038,068	$ 18,792,978	$ 5,265,970
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,022,069	$ (1,860,051)	$ 6,418,193	$ (2,677,607)	$ (590,677)	$ 6,256,579	$ 1,594,105
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,519,270	$ 3,270,849	$ 24,386,880	$ 3,908,645	$ 1,038,068	$ 18,792,978	$ 5,265,970
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 498,724	$ 250,220	$ 1,865,596	$ 299,011	$ 79,412	$ 1,437,663	$ 402,847

Pennsylvania-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		New York						Delaware
		Central Hudson Gas & Electric	Consolidated Edison	New York State Electric & Gas	Niagra Mohawk Power	Orange & Rockland Utilities	Rochester Gas & Electric	Delmarva Power & Light
Customer Account Management Cost Pool								
FERC Account Balances:								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 6,778,169	$ 114,032,729	$ 28,066,820	$ 39,200,043	$ 8,465,643	$ 9,741,613	$ 32,574,788
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 2,520,777	$ 344,426	$ 135,082	$ 929,964	$ 66,274	$ 1,855	$ -
Subtotal		$ 9,298,946	$ 114,377,155	$ 28,201,902	$ 40,130,007	$ 8,531,917	$ 9,743,468	$ 32,574,788
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,815,515	$ 30,169,769	$ (632,835)	$ 2,686,451	$ 3,422,645	$ (753,034)	$ 1,184,741
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 507,967	$ 7,584,800	$ 1,916,606	$ 403,817	$ 622,497	$ 619,283	$ 551,639
Total Cost Pool		**$ 12,622,428**	**$ 152,131,724**	**$ 29,485,673**	**$ 43,220,275**	**$ 12,577,059**	**$ 9,609,717**	**$ 34,311,168**
Total Customers (page 304, line 43)		288,252	3,261,502	873,738	1,387,729	222,340	360,987	496,682
Customer Account Services Expense per Customer		**$ 43.79**	**$ 46.64**	**$ 33.75**	**$ 31.14**	**$ 56.57**	**$ 26.62**	**$ 69.08**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 23,649,061	$ 171,421,764	$ (3,779,369)	$ 105,135,887	$ 26,239,707	$ (5,487,845)	$ 6,458,817
Total O&M Payroll (page 355, line 65)		$ 55,773,767	$ 563,347,904	$ 149,623,715	$ 206,583,051	$ 62,383,976	$ 58,994,943	$ 39,311,821
Benefits as Percent of Payroll		42.4%	30.4%	-2.5%	50.9%	42.1%	-9.3%	16.4%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 7,303,699	$ 102,691,785	$ 26,157,611		$ 7,521,305	$ 5,776,605	$ 7,184,790
Gas (page 354, line 37)		$ 1,300,052	$ 22,542,147	$ 4,815,257	$ 6,012,948	$ 3,284,938	$ 4,309,646	$ 1,796,197
Total Payroll Charged to Customer Accounts		$ 8,603,751	$ 125,233,932	$ 30,972,868	$ 6,012,948	$ 10,806,243	$ 10,086,251	$ 8,980,987
Percent Applicable to Customer Accounts Services (903 and 905):								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 6,778,169	$ 114,032,729	$ 28,066,820	$ 39,200,043	$ 8,465,643	$ 9,741,613	$ 32,574,788
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 2,520,777	$ 344,426	$ 135,082	$ 929,964	$ 66,274	$ 1,855	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 9,298,946	$ 114,377,155	$ 28,201,902	$ 40,130,007	$ 8,531,917	$ 9,743,468	$ 32,574,788
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 2,749,960	$ 30,093,154	$ 6,662,993	$ 5,582,389	$ 2,798,488	$ 2,396,447	$ 7,995,878
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 12,048,906	$ 144,470,309	$ 34,864,895	$ 45,712,396	$ 11,330,405	$ 12,139,915	$ 40,570,666
Percent Applicable to Customer Accounts Services (903 and 905)		77.2%	79.2%	80.9%	87.8%	75.3%	80.3%	80.3%
Customer Account Services Portion of Total Payroll		$ 6,640,090	$ 99,147,714	$ 25,053,676	$ 5,278,648	$ 8,137,217	$ 8,095,202	$ 7,210,967
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,815,515	$ 30,169,769	$ (632,835)	$ 2,686,451	$ 3,422,645	$ (753,034)	$ 1,184,741
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,640,090	$ 99,147,714	$ 25,053,676	$ 5,278,648	$ 8,137,217	$ 8,095,202	$ 7,210,967
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 507,967	$ 7,584,800	$ 1,916,606	$ 403,817	$ 622,497	$ 619,283	$ 551,639

Pennsylvania-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Ohio						
		Cleveland Electric Illum.	Columbus Southern Power	Dayton Power & Light	Duke Energy Ohio	Ohio Edison	Ohio Power	Toledo Edison
Customer Account Management Cost Pool								
FERC Account Balances:								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 14,516,027	$ 24,640,129	$ 8,648,983	$ 17,655,073	$ 20,713,551	$ 21,137,257	$ 6,909,201
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 531,238	$ 15,947	$ -	$ (256,106)	$ 579,775	$ 19,561	$ 213,136
Subtotal		$ 15,047,265	$ 24,656,076	$ 8,648,983	$ 17,398,967	$ 21,293,326	$ 21,156,818	$ 7,122,337
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 243,960	$ 1,169,753	$ 547,426	$ 2,836,968	$ (1,852,176)	$ 1,008,466	$ 482,226
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 280,555	$ 401,794	$ 333,017	$ 1,229,505	$ 468,076	$ 387,630	$ 152,465
Total Cost Pool		**$ 15,571,780**	**$ 26,227,624**	**$ 9,529,426**	**$ 21,465,440**	**$ 19,909,226**	**$ 22,552,914**	**$ 7,757,028**
Total Customers (page 304, line 43)		755,807	747,099	514,882	687,903	1,040,518	711,447	312,642
Customer Account Services Expense per Customer		**$ 20.60**	**$ 35.11**	**$ 18.51**	**$ 31.20**	**$ 19.13**	**$ 31.70**	**$ 24.81**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 2,546,911	$ 13,054,219	$ 11,936,626	$ 34,365,193	$ (15,395,255)	$ 25,630,628	$ 4,035,809
Total O&M Payroll (page 355, line 65)		$ 38,286,937	$ 58,613,682	$ 94,920,691	$ 194,685,375	$ 50,858,052	$ 128,781,829	$ 16,679,734
Benefits as Percent of Payroll		6.7%	22.3%	12.6%	17.7%	-30.3%	19.9%	24.2%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 5,037,050	$ 6,281,750	$ 6,306,396	$ 14,312,049	$ 8,765,466	$ 6,394,108	$ 2,665,076
Gas (page 354, line 37)					$ 7,113,829			
Total Payroll Charged to Customer Accounts		$ 5,037,050	$ 6,281,750	$ 6,306,396	$ 21,425,878	$ 8,765,466	$ 6,394,108	$ 2,665,076
Percent Applicable to Customer Accounts Services (903 and 905):								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 14,516,027	$ 24,640,129	$ 8,648,983	$ 17,655,073	$ 20,713,551	$ 21,137,257	$ 6,909,201
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 531,238	$ 15,947	$ -	$ (256,106)	$ 579,775	$ 19,561	$ 213,136
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 15,047,265	$ 24,656,076	$ 8,648,983	$ 17,398,967	$ 21,293,326	$ 21,156,818	$ 7,122,337
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 5,619,752	$ 4,833,074	$ 3,880,743	$ 5,795,966	$ 9,211,147	$ 5,540,885	$ 2,401,739
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 20,667,017	$ 29,489,150	$ 12,529,726	$ 23,194,933	$ 30,504,473	$ 26,697,703	$ 9,524,076
Percent Applicable to Customer Accounts Services (903 and 905)		72.8%	83.6%	69.0%	75.0%	69.8%	79.2%	74.8%
Customer Account Services Portion of Total Payroll		$ 3,667,381	$ 5,252,213	$ 4,353,161	$ 16,071,965	$ 6,118,641	$ 5,067,064	$ 1,993,009
Pension & Benefits Pertaining to Customer Accounts Services		$ 243,960	$ 1,169,753	$ 547,426	$ 2,836,968	$ (1,852,176)	$ 1,008,466	$ 482,226
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 3,667,381	$ 5,252,213	$ 4,353,161	$ 16,071,965	$ 6,118,641	$ 5,067,064	$ 1,993,009
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 280,555	$ 401,794	$ 333,017	$ 1,229,505	$ 468,076	$ 387,630	$ 152,465

Pennsylvania-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		New Jersey			Maryland			
		Atlantic City Electric	Jersey Central Power	Public Service Electric & Gas	Baltimore Gas & Electric	Delmarva Power & Light	Potomac Edison	Potomac Electric
Customer Account Management Cost Pool								
FERC Account Balances:								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 37,383,789	$ 19,051,474	$ 58,917,046	$ 28,731,040		$ 5,031,476	$ 51,049,711
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 237,995	$ 364,803	$ 90,240,911	$ 4,115,795		$ -	$ -
Subtotal		$ 37,621,784	$ 19,416,277	$ 149,157,957	$ 32,846,835		$ 5,031,476	$ 51,049,711
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 757,867	$ (2,610,530)	$ 23,726,309	$ 8,208,844		$ 1,036,653	$ 6,217,334
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 165,569	$ 622,147	$ 6,037,109	$ 2,528,394		$ 290,778	$ 1,009,884
Total Cost Pool		**$ 38,545,220**	**$ 17,427,894**	**$ 178,921,376**	**$ 43,584,072**		**$ 6,358,906**	**$ 58,276,929**
Total Customers (page 304, line 43)		545,011	1,089,980	2,133,003	1,229,181		480,214	762,094
Customer Account Services Expense per Customer		**$ 70.72**	**$ 15.99**	**$ 83.88**	**$ 35.46**	see Delaware	**$ 13.24**	**$ 76.47**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 7,169,358	$ (23,911,321)	$ 97,803,439	$ 45,202,255		$ 11,006,243	$ 25,000,866
Total O&M Payroll (page 355, line 65)		$ 20,474,113	$ 74,491,459	$ 325,305,600	$ 181,995,810		$ 40,355,725	$ 53,083,661
Benefits as Percent of Payroll		35.0%	-32.1%	30.1%	24.8%		27.3%	47.1%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 2,394,886	$ 13,387,647	$ 49,463,253	$ 25,480,677		$ 6,108,096	$ 13,534,519
Gas (page 354, line 37)				$ 39,016,786	$ 13,071,562			
Total Payroll Charged to Customer Accounts		$ 2,394,886	$ 13,387,647	$ 88,480,039	$ 38,552,239		$ 6,108,096	$ 13,534,519
Percent Applicable to Customer Accounts Services (903 and 905):								
Account 903 - Customer Records & Collection (page 322, line 161)		$ 37,383,789	$ 19,051,474	$ 58,917,046	$ 28,731,040		$ 5,031,476	$ 51,049,711
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 237,995	$ 364,803	$ 90,240,911	$ 4,115,795		$ -	$ -
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 37,621,784	$ 19,416,277	$ 149,157,957	$ 32,846,835		$ 5,031,476	$ 51,049,711
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 4,008,199	$ 12,546,067	$ 18,075,870	$ 5,467,374		$ 3,053,931	$ 1,289,369
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 41,629,983	$ 31,962,344	$ 167,233,827	$ 38,314,209		$ 8,085,407	$ 52,339,080
Percent Applicable to Customer Accounts Services (903 and 905)		90.4%	60.7%	89.2%	85.7%		62.2%	97.5%
Customer Account Services Portion of Total Payroll		$ 2,164,303	$ 8,132,641	$ 78,916,461	$ 33,050,899		$ 3,801,013	$ 13,201,097
Pension & Benefits Pertaining to Customer Accounts Services		$ 757,867	$ (2,610,530)	$ 23,726,309	$ 8,208,844		$ 1,036,653	$ 6,217,334
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 2,164,303	$ 8,132,641	$ 78,916,461	$ 33,050,899		$ 3,801,013	$ 13,201,097
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%		7.65%	7.65%
Estimated Employer's Portion of FICA		$ 165,569	$ 622,147	$ 6,037,109	$ 2,528,394		$ 290,778	$ 1,009,884

Pennsylvania-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		West Virginia				Group Average
		Appalachian Power	Monongahela Power	Potomac Edison	Wheeling Power	
Customer Account Services Cost Pool						
FERC Account Balances:						
Account 903 - Customer Records & Collection (page 322, line 161)		$ 29,231,353	$ 5,020,473		$ 1,013,571	$ 710,474,160
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 1,894	$ -		$ 286	$ 134,126,684
Subtotal		$ 29,233,247	$ 5,020,473		$ 1,013,857	$ 844,600,844
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,415,185	$ 849,338		$ 46,865	$ 91,132,965
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 548,440	$ 294,683		$ 18,802	$ 32,217,874
Total Cost Pool		**$ 31,196,872**	**$ 6,164,494**		**$ 1,079,524**	**$ 967,951,683**
Total Customers (page 304, line 43)		957,875	381,193		41,334	24,835,940
Customer Account Services Expense per Customer		**$ 32.57**	**$ 16.17**	see Maryland	**$ 26.12**	**$ 38.97**
Note A: Calculation of Pension & Benefits Pertaining to Customer Account Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 23,000,789	$ 16,659,462		$ 402,736	$ 651,279,502
Total O&M Payroll (page 355, line 65)		$ 116,519,186	$ 75,556,781		$ 2,112,138	$ 3,009,728,762
Benefits as Percent of Payroll		19.7%	22.0%		19.1%	21.6%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)		$ 8,480,076	$ 6,101,855		$ 339,964	$ 407,274,176
Gas (page 354, line 37)						$ 108,300,307
Total Payroll Charged to Customer Accounts		$ 8,480,076	$ 6,101,855		$ 339,964	$ 515,574,483
Percent Applicable to Customer Accounts Services (903 and 905):						
Account 903 - Customer Records & Collection (page 322, line 161)		$ 29,231,353	$ 5,020,473		$ 1,013,571	$ 710,474,160
Account 905 - Misc Customer Accounts (page 322, line 163)		$ 1,894	$ -		$ 286	$ 134,126,684
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 29,233,247	$ 5,020,473		$ 1,013,857	$ 844,600,844
Account 902 - Meter Reading Expenses (page 322, line 160)		$ 5,345,473	$ 2,932,203		$ 388,499	$ 189,368,061
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 34,578,720	$ 7,952,676		$ 1,402,356	$ 1,033,968,905
Percent Applicable to Customer Accounts Services (903 and 905)		84.5%	63.1%		72.3%	81.7%
Customer Account Services Portion of Total Payroll		$ 7,169,154	$ 3,852,062		$ 245,783	$ 421,148,684
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,415,185	$ 849,338		$ 46,865	$ 91,132,965
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll		$ 7,169,154	$ 3,852,062		$ 245,783	$ 421,148,684
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%		7.65%	7.65%
Estimated Employer's Portion of FICA		$ 548,440	$ 294,683		$ 18,802	$ 32,217,874

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to PAWC by the Service Company would be necessary if PAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for PAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 11 was created showing which entity—PAWC or a Service Company location—is responsible for each of the functions PAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if PAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to PAWC. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Pennsylvania-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	PAWC	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Engineering and Construction Management							
CPS Preparation	P				S		
Five-Year System Planning	P						
Engineering Standards & Policies Development					P		
Project Design							
Major Projects (e.g., new treatment plant)	P				S		
Special Projects	P				S		
Minor Projects (e.g., pipelines)	P						
Construction Project Management	P				S		
Special Projects	P						
Minor Projects	P						
Hydraulics Review	P						
Developers Extensions	P						
Tank Painting	P						
Water Quality and Purification							
Water Quality Standards Development	S				P		S
Research Studies	S				P		S
Water Quality Program Implementation	P				S		
Water Treatment Operations & Maintenance	P				S		
Compliance Tracking and Chemical Testing	P				S		S
Sample Collection and Other Testing	P						S
Transmission and Distribution							
Preventive Maintenance Program Development	S		P		S		
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	P				S		
Customer Contact	P (A)	P (A)	S				
Call Processing		P	S				
Service Order Creation	S	P	S				
Service Order Processing	P	S	S				
Customer Credit		P	S				
Meter Reading	P		S			S	
Customer Bill Preparation		S				P	
Bill Collection	S	P	S			S	
Customer Payment Processing	S			P		S	
Meter Standards Development	S		S		P		
Meter Testing, Maintenance & Replacement	P		S				

Note A: PAWC provide in-person customer contact while Service Company call centers provide customer phone contact

Pennsylvania-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	PAWC	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Financial Management							
Financial Planning	S		P		S		
Financings--Equity			P		S		
Financings--Long Term Debt & Preferred (A)			P		S		
Short Term Lines of Credit Arrangements (A)			P		S		
Investor Relations			S		P		
Insurance Program Administration					P		
Loss Control/Safety Program Administration	S		P		S		
Pension Fund Asset Management					P		
Cash Management/Disbursements				S	P		
Internal Auditing					P		
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions					P		
Regional Guidelines & Instructions			P				
Budget Preparation							
Revenue	S		P				
O&M	S		P				
Depreciation and Interest Expense	S		P				
Budget Preparation--Service Company Charges		S	S	S	P	S	S
Capital Budget Preparation—Projects	P		S				
Capital Budget Preparation—Non-Project Work	P		S				
Prepare Monthly Budget Variance Report ("Budget/Plan Analysis")	S		P				
Prepare Capital Project Budget Status Report	P		S				
Year-End Projections (A)	S		P				
Accounting and Taxes							
Accounts Payable Accounting	S		S	P			
Payroll Accounting	S		S	P			
Work Order Accounting	S		S	P			
Fixed Asset Accounting	S		S	P			
Journal Entry Preparation--All Others	S		S	P			
Financial Statement Preparation	S		S	P			
State Commission Reporting	S		S	P			
Income Taxes—State				P			
Income Taxes—Federal					P		
Property Taxes	S		S		P		
Gross Receipts Taxes	S		S	P			

Note A: Financings and lines of credit are the responsibility of American Capital Corporation

Pennsylvania-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	PAWC	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	S		P	S			
Rate Case Planning and Preparation	S		P	S			
Rate Case Administration	S		P	S			
Commission Inquiry Response	S		P	S			
Legal	S		P		S		
Purchasing and Materials Management							
Specification Development	S		S		P		
Bid Solicitation	S				P		
Contract Administration	P (A)		P (A)		P (A)		
Ordering	P				S		
Inventory Management	P		S				
Human Resources Management							
Benefit Program Development					P		
Benefits Program Administration					P		
Management Compensation Administration			S		P		
Wage & Salary Program Design					P		
Wage & Salary Administration	S		P				
Labor Negotiations--Wages	S		P				
Labor Negotiations--Benefits					P		
Labor Negotiations-- Work Rules	S		P				
Training Program Development	S		P				
Training--Course Delivery	S		P				
Affirmative Action/EEO--Plan Development	S		P	S			
Affirmative Action/EEO--Implementation	S		P				
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance						P	
Software Maintenance						P	
Network Administration						P	
PC Acquisition & Support						P	
Help Desk				S		P	

Note A: Where contracts are administered is based on the nature of the work and where that work originated

Governance Practices Associated With Service Company Charges

There are several ways by which PAWC exercises control over Service Company services and charges. The most important of these are described below.

- **Company President Oversight** – The Company President of the state utility is responsible for the overall performance of the each operating company or district in the state. The state President has a significant voice in major business decisions of American Water and has the ability to monitor Service Company quality and spending.
- **Vice President Finance** – The VP Finance is responsible for the financial reporting, performance and internal controls of PAWC. The VP Finance through designees monitors the performance and reporting from the Service Company. The VP Finance attends quarterly Business Performance Review sessions with the PAWC President and finance group to review actual results and address forecast modifications for the remainder of the year. The VP Finance reports on the quarterly financial results and forecast updates to PAWC's Board of Directors. The rates function reports to the VP Finance, who in conjunction with the State President reviews and authorizes the filing of PAWC rate cases and regularly monitors the status of cases.
- **Operating Company Board Oversight** – PAWC's board of directors includes members of American Water's senior executive team and the President of PAWC. This helps ensure that PA American's needs are a factor in the delivery of Service Company services.
- **Service Company Budget Review/Approval** – PAWC's President and members of the American Water's senior executive team sit on the Service Company board and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are combined with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors. PA American's president is also on the local board.
- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's senior executive team. American Water's senior executive team, with input from the President of PAWC has the ability to impact all new initiatives and projects before they are authorized.
- **Service Company Bill Scrutiny** – Finance personnel review the Service Company bill for accuracy and reasonableness on a monthly basis. The financial team has dialogue with regional and corporate office personnel concerning the monthly bill and any mistakes or overcharges are credited on a subsequent billing. The finance unit prepares an actual to budget comparison of service company fees each month for use in identifying unusual variances. Service Company actual to budget comparison is included in the monthly FRP. Unusual variances are researched, explanations are provided and any corrections are made, as necessary.
- **Service Company Budget Variance Reporting** – Each month, a summary variance analysis is prepared that explains differences between budgeted and actual Service Company spending. In addition, a more detailed monthly variance report is produced by Service Company location and shows actual spending for the month.
- **Operating Company Budget Variance Reporting** – The "Financial Review Package" produced monthly, has multiple line items for Service Company spending. In this way, Service Company budget versus actual charges can be monitored for the month and year-to-date. Additional information exists that allows more detailed analysis of "Regional" and "Corporate" Service Company Fees.

- **Capital Investment Management (CIM) –** CIMC is one of American Water's primary business planning processes. It covers capital and asset planning and is employed throughout American Water. CIMC provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIMC ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable, and
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIMC process was designed to optimize the effectiveness of asset investment. The process is managed at two levels for all PAWC Operating Units. Monthly meetings of the CIMC are held to review capital spending compared to plan, review new project requests, and review updates or modifications to existing projects. The President of PAWC, VP Finance, and others participate as necessary (e.g. VP Engineering and VP Operations) and provide the data used in the monthly review schedules.

Market Cost Comparison of Service Company Charges to Tennessee American Water Company

12-Months Ended March 31, 2010

Tennessee American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended March 31, 2010

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to Tennessee American Water Company (TAWC):

1. Are the Service Company's charges to TAWC during the 12 months ended March 31, 2010 reasonable?

2. Was TAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during the 12 months ended March 31, 2010?

3. Were the 12 months ended March 31, 2010 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services TAWC receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 12 months ended March 31, 2010 cost per TAWC customer was reasonable compared to cost per customer for electric and combination electric/gas service companies. During the 12 months ended March 31, 2010, TAWC was charged $59 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $95 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 4 of the 24 comparison group utility service companies filed a FERC Form 60 for 2009 had a lower per customer A&G cost than TAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- TAWC was charged the lower of cost or market for managerial and professional services during the 12 months ended March 31, 2010.

- On average, the hourly rates for outside service providers are 45% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by TAWC without careful supervision on the part of TAWC. If these services were contracted entirely to outside providers, TAWC would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended March 31, 2010, TAWC and its ratepayers would have incurred $2,000,000 in additional expenses. This amount includes the higher cost of outside providers and the cost of one TAWC position needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to TAWC from its use of the Service Company. Outside service providers generally bill

for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $2,000,000 cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week) then that work would have added more than $92,000 in charges from outside providers.

- It would be difficult for TAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from TAWC ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is below the range of the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and TAWC. During the 12-months ended March 31, 2010, the customer accounts cost for TAWC customers was $29.08 compared to the 2009 average of $32.01 for neighboring electric utilities. The highest comparison group per customer cost was $67.39 and the lowest $17.53.

Concerning question 4, the following conclusions were drawn:

- The services that the Service Company provides are necessary and would be required even if TAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to TAWC. For all of the services listed in Exhibit 11, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like TAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of TAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include rates and revenues, engineering, operations and field resource coordination.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times his/her hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 20% of American Water's Southeast Region's professional labor is assigned to TAWC during a month, then 20% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 20% of the Southeast Region's accumulated professional and support labor is charged to TAWC during the month, then 20% of that month's overhead expenses will be assigned to TAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to TAWC, then 2% of that office's office expenses would be assigned to TAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended March 31, 2010, the Service Company billed TAWC $5,008,401 in O&M-related charges and $311,927 in capital-related charges. These total charges of $5,320,328 were subjected to a market cost comparison.

Service Company Charges	12 Months Ended March 31, 2010
Management Fees - O&M	$ 5,008,401
Management Fees - Capital	$ 311,927
Total Testable SC Charges	**$ 5,320,328**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into three categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology and engineering.
- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.
- Field Resource Coordination Services – Includes the dispatching and oversight of work to operating company field crews.

Total test period Service Company charges break down between management/professional services, customer account services and field resource coordination as follows:

	12 Months Ended Mar. 31, 2010	
	Amount	Hours
Management and Professional Services	$ 4,099,018	39,973
Customer Account Services	$ 1,120,113	29,545
Field Resource Coordination	$ 101,197	1,640
Total Service Company Charges	**$ 5,320,328**	**71,158**

This study's first question—whether Service Company 12 months ended March 31, 2010 charges are reasonable—was determined by comparing TAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 12 months ended March 31, 2009 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to TAWC during the 12 months ended March 31, 2010. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 12 months ended March 31, 2010 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing TAWC's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to TAWC and determining if these services would be required if TAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

TAWC's Service Company Cost per Customer

During the 12 months ended March 31, 2010, TAWC was charged $59 per customer by the Service Company for A&G-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	12 Months ended Mar 31, 2010 Svc. Co. Charges
Testable Service Company charges	$ 5,320,328
Less: Capital charges	$ (311,927)
Less: Non-A&G function O&M charges	
Engineering	$ (10,568)
Operations	$ (541,144)
Water Quality	$ (97,262)
Net A&G/O&M-related charges	$ 4,359,427
TAWC customers	74,475
TAWC Cost Per Customer	**$ 59**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2009, a Form 60 was filed by service companies that are part of 25 utility holding companies that own utilities providing regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of these service companies' costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G-related charges recorded in the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	928 – Regulatory commission expenses
907 – Supervision	930.2 – Miscellaneous general expenses
910 – Misc customer service and info expenses	931 – Rents
911 – Supervision	935 – Maintenance of structures and equipment
920 - Administrative and general salaries	

Charges to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2009 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

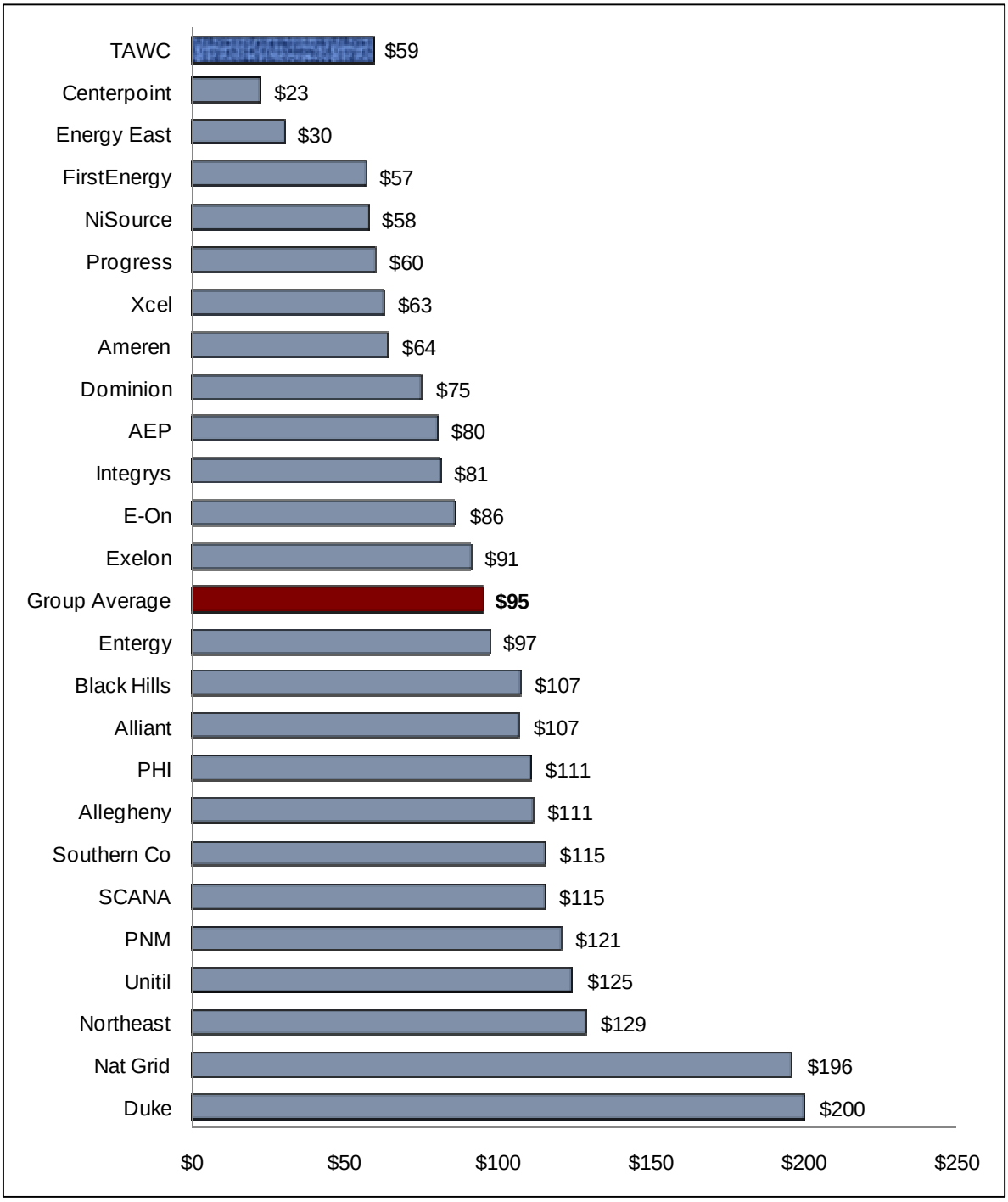
One service company that filed a Form 60 was excluded from the comparison group because its Form 60 contained no data for 2009. That service company, Great Plains Energy Services Incorporated, became inactive in 2009 and had no charges to its regulated utility affiliate. The A&G expenses per regulated utility customer for the other 24 utility companies that filed a Form 60 for 2009 are calculated below.

Utility Company	2009 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$418,484,117	5,213,000	$ 80
Allegheny	$176,685,245	1,585,700	$ 111
Alliant	$149,116,475	1,395,189	$ 107
Ameren	$212,036,412	3,300,000	$ 64
Black Hills	$81,484,333	759,400	$ 107
Centerpoint	$119,304,604	5,300,000	$ 23
Dominion	$279,128,940	3,700,000	$ 75
Duke	$901,762,388	4,500,000	$ 200
Energy East	$89,580,962	2,973,000	$ 30
Entergy	$262,596,172	2,700,000	$ 97
E-On	$105,893,093	1,226,000	$ 86
Exelon	$537,633,122	5,886,000	$ 91
FirstEnergy	$255,874,712	4,500,000	$ 57
Integrys	$175,423,352	2,157,700	$ 81
Nat Grid	$1,314,902,105	6,700,000	$ 196
NiSource	$216,480,637	3,750,000	$ 58
Northeast	$269,948,801	2,095,000	$ 129
PHI	$215,465,623	1,946,000	$ 111
Progress	$186,256,921	3,100,000	$ 60
PNM	$87,998,259	729,700	$ 121
SCANA	$166,555,883	1,445,000	$ 115
Southern Co	$508,130,523	4,402,000	$ 115
Unitil	$21,115,280	169,600	$ 125
Xcel	$333,389,459	5,300,000	$ 63
Group Total	**$7,085,247,416**	**74,833,289**	**$ 95**

Exhibit 1 shows TAWC's 12 months ended March 31, 2010 Service Company cost per customer of $59 to be considerably lower than the average of $95 per customer for the comparison group service companies. Only 4 of 24 comparison group service companies had a lower cost per customer than TAWC. Based on this result, it is possible to conclude that the Service Company's 12 months ended March 31, 2010 charges to TAWC were reasonable.

Exhibit 1

Tennessee American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to TAWC during the 12 months ended March 31, 2010. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged TAWC during the 12 months ended March 31, 2010, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended March 31, 2010 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to TAWC during the 12 months ended March 31, 2010.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 12 months ended March 31, 2010 test period non-labor Service Company charges:

- Contract Services – 12 months ended March 31, 2010 Service Company charges to TAWC include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services).

V – Question 2 – Provision of Services at the Lower of Cost or Market

These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 12 months ended March 31, 2010 Service Company charges to TAWC are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended March 31, 2010 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total management, professional & technical services charges	$ 132,906	$ 1,030,160	$ 2,395,210	$ 540,742	$ 4,099,018
Less:					
Contract services	$ 11,816	$ 62,591	$ 236,246	$ (8,429)	$ 302,224
Travel expenses	$ 1,529	$ 40,905	$ 28,441	$ 6,670	$ 77,545
Computer hardware/software	$ 3,397	$ 143,421	$ 156,874	$ 17,524	$ 321,216
Net Service Charges (A)	$ 116,164	$ 783,244	$ 1,973,648	$ 524,977	$ 3,398,033
Total Hours (B)	899	6,118	24,293	8,664	39,973
Average Hourly Rate (A / B)	**$ 129**	**$ 128**	**$ 81**	**$ 61**	

Exhibit 2

Tennessee American Water Company
Analysis of 12 Months Ended December 31, 2009 Service Company Charges By Location And Function

		12 Months Ended March 31, 2010 Service Company Charges				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 119,043	$ 119,043
Call Center	Human Resources		$ 25,146			$ 25,146
Corporate	Accounting			$ 262,142		$ 262,142
	Administration		$ 276,758			$ 276,758
	Audit			$ 42,398		$ 42,398
	Communications		$ 61,742			$ 61,742
	Engineering			$ 272,550		$ 272,550
	Finance		$ 204,431			$ 204,431
	Human Resources			$ 33,960		$ 33,960
	Legal	$ 68,672				$ 68,672
	Operations		$ 108,420		$ 283,716	$ 392,136
	Rates & Revenue			$ 47,325		$ 47,325
	Risk Management		$ 27,185			$ 27,185
	Water Quality				$ 2,099	$ 2,099
Regional Offices	Accounting			$ 16,440		$ 16,440
	Administration		$ 108,473			$ 108,473
	Communications		$ 87,832			$ 87,832
	Engineering				$ 10,497	$ 10,497
	Finance			$ 360,493		$ 360,493
	Human Resources		$ 2,480			$ 2,480
	Legal	$ 64,234				$ 64,234
	Operations		$ 49,366		$ 124,617	$ 173,984
	Risk Management		$ 21,326			$ 21,326
	Water Quality				$ 771	$ 771
Information Technology	Information Technology			$ 1,010,475		$ 1,010,475
Shared Services	Accounting			$ 306,809		$ 306,809
	Administration		$ 57,000			$ 57,000
	Finance			$ 2,263		$ 2,263
	Rates & Revenue			$ 40,355		$ 40,355
Total Dollars Charged		**$ 132,906**	**$ 1,030,160**	**$ 2,395,210**	**$ 540,742**	**$ 4,099,018**

Exhibit 3

Tennessee American Water Company
Analysis of 12 Months Ended December 31, 2009Service Company Hours By Location And Function

Location	Function	12 Months Ended March 31, 2010 Service Company Hours				
		Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				1,658	1,658
Call Center	Human Resources		309			309
Corporate	Accounting			3,268		3,268
	Administration		676			676
	Audit			372		372
	Communications		287			287
	Engineering			2,102		2,102
	Finance		1,689			1,689
	Human Resources			322		322
	Legal	300				300
	Operations		353		5,089	5,442
	Rates & Revenue			319		319
	Risk Management		256			256
	Water Quality				-	-
Regional Offices	Accounting			179		179
	Administration		-			-
	Communications		1,300			1,300
	Engineering				(1)	(1)
	Finance			4,507		4,507
	Human Resources		21			21
	Legal	599				599
	Operations		457		1,917	2,375
	Risk Management		449			449
	Water Quality				-	-
Information Technology	Information Technology			6,208		6,208
Shared Services	Accounting			6,489		6,489
	Administration		320			320
	Finance			-		-
	Rates & Revenue			527		527
Total Hours Charged		**899**	**6,118**	**24,293**	**8,664**	**39,973**

Exhibit 4

Tennessee American Water Company
12 Months Ended December 31, 2009 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	Computer HW/SW	Total	Outside Service Provider Category
Accounting	$ 49,641	$ 3,649	$ 2,646	$ 55,937	Certified Public Accountant
Administration	$ 9,743	$ 3,174	$ 130,234	$ 143,151	Management Consultant
Audit	$ 6,793	$ 652	$ 422	$ 7,868	Certified Public Accountant
Communications	$ 9,698	$ 4,581	$ 991	$ 15,270	Management Consultant
Engineering		$ 158	$ 135	$ 293	Professional Engineer
Finance	$ 56,928	$ 7,774	$ 7,058	$ 71,760	Certified Public Accountant
Human Resources	$ 35,576	$ 7,411	$ 4,696	$ 47,684	Management Consultant
Information Technology	$ 114,727	$ 14,041	$ 145,956	$ 274,724	Certified Public Accountant
Legal	$ 11,816	$ 1,529	$ 3,397	$ 16,742	Attorney
Operations	$ 8,629	$ 28,678	$ 10,947	$ 48,254	Management Consultant, Professional Engineer
Rates & Revenue	$ 8,157	$ 2,324	$ 791	$ 11,273	Certified Public Accountant
Risk Management	$ 651	$ 3,224	$ 804	$ 4,679	Management Consultant
Water Quality	$ (10,135)	$ 350	$ 13,137	$ 3,352	Professional Engineer
Total	**$ 302,224**	**$ 77,545**	**$ 321,216**	**$ 700,985**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	Computer HW/SW	Total
Attorney	$ 11,816	$ 1,529	$ 3,397	$ 16,742
Management Consultant	$ 62,591	$ 40,905	$ 143,421	$ 246,916
Certified Public Accountant	$ 236,246	$ 28,441	$ 156,874	$ 421,561
Professional Engineer	$ (8,429)	$ 6,670	$ 17,524	$ 15,765
Total	**$ 302,224**	**$ 77,545**	**$ 321,216**	**$ 700,985**

V – Question 2 – Provision of Services at the Lower of Cost or Market

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among Tennessee certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	Tennessee Average
Partners/Owners	97%
Managers (6+ years experience)	83%
Sr Associates (4-5 years experience)	60%
Associates (1-3 years experience)	19%
New Professionals	6%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey

Attorneys

The Tennessee State Bar does not survey its members as to their hourly billing rates. The Chattanooga Bar Association maintains a service called Chattanooga Lawyers Information Providers Service (CLIPS) to assist the public in finding a lawyer. CLIPS' website presents background information on a relatively small number of Chattanooga attorneys. Unfortunately, only 60% of the attorneys featured in CLIPS revealed their hourly billing rates. With this small sample size and incomplete hourly rate data, it was impossible to develop a valid set of Chattanooga attorney billing rates for comparison to the cost of the Service Company's legal services.

As a result, an estimate of Chattanooga hourly rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Missouri. The 2009 average rate for each firm in the surveys was adjusted for the cost of living differential between their locations and Chattanooga, Tennessee. The cost of living indices utilized in this analysis were obtained from the Council for Community and Economic Research, a membership organization created in 1961 to develop high quality regional economic data and analytical methods.

The resultant 2009 average hourly rate calculated in Exhibit 5 is in line with the few hourly billing rates shown on the CLIPS website. For instance, the following attorneys from the Chattanooga firm of Chambliss Bahner & Stophel were listed in the CLIP website. Their billing rates are relatively close to this study's cost-of-living-adjusted estimated average of $265 per hour for Chattanooga attorneys.

- Mr. Robert Addison - $260/hour
- Ms. Alicia Oliver - $250/hour

Management Consultants

The cost per hour for management consultants was developed from a 2009 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2008 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2008 average rate was escalated to September 30, 2010—the midpoint of the 12 months ended March 31, 2010.

Certified Public Accountants

The average hourly rate for Tennessee CPAs was developed from a 2008 survey performed by the American Institute of Certified Public Accountants (AICPA). The Tennessee version of this survey was used to develop hourly rates for member firms in Tennessee.

As shown in Exhibit 7, a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2007. Thus, the data had to be escalated to September 30, 2009—the test year's midpoint.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by TAWC in 2009. As presented in Exhibit 8, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

Tennessee American Water Company
Estimated Billing Rates For Tennessee Attorneys Based On Michigan and Missouri Attorney Billing Rates

Billing rates during 2009		Billing Rate Range (A)					Cost of Living	
		Associate		Partner			Adjust	Adjusted
Firm	Location	Low	High	Low	High	Average	(B)	Rate
Dickinson Wright	Detroit, Mi	$ 195	$ 275	$ 355	$ 575	$ 350	115%	$ 306
Dykema	Detroit, Mi	$ 185	$ 425	$ 295	$ 615	$ 380	115%	$ 332
Butzel Long	Detroit, Mi	$ 175	$ 325	$ 250	$ 600	$ 338	115%	$ 295
Jaffe Raitt Heuer & Weiss	Southfield, Mi	$ 175	$ 250	$ 225	$ 550	$ 300	115%	$ 262
Brooks Kushman	Southfield, Mi	$ 180	$ 275	$ 300	$ 425	$ 295	115%	$ 258
Kemp, Klein, Umphrey, Edelman & Ma	Troy, Mi	$ 145	$ 260	$ 200	$ 350	$ 239	115%	$ 208
Rader, Fishman & Grauer	Bloomfield Hills, Mi	$ 130	$ 250	$ 275	$ 550	$ 301	115%	$ 263
Williams, Williams, Rattner & Plunkett	Birmingham, Mi	$ 150	$ 250	$ 275	$ 450	$ 281	115%	$ 246
Abbott, Nicholson, Quilter, Esshaki,	Detroit, Mi	$ 150	$ 220	$ 300	$ 375	$ 261	115%	$ 228
Parmenter O'Toole	Muskegon, Mi			$ 125	$ 275	$ 200	103%	$ 194
Lipson, Neilson, Cole, Seltzer & Garin	Bloomfield Hills, Mi	$ 185	$ 235	$ 225	$ 300	$ 236	115%	$ 206
Berman DeLeve Kuchan & Chapman	Kansas City, Mo			$ 250	$ 250	$ 250	109%	$ 230
Boggs, Avellino, Lach & Boggs	St. Louis, Mo			$ 160	$ 160	$ 160	101%	$ 159
Bryan Cave	Kansas City, Mo	$ 200	$ 200	$ 385	$ 435	$ 305	109%	$ 280
Danna McKitrick	St. Louis, Mo			$ 300	$ 300	$ 300	101%	$ 298
David Shroeder Law Offices	Springfield, Mo			$ 260	$ 260	$ 260	99%	$ 263
Dobson, Goldberg, Berns & Rich	St. Louis, Mo			$ 300	$ 425	$ 363	101%	$ 360
Dunn & Davison	Kansas City, Mo			$ 225	$ 225	$ 225	109%	$ 207
Evans Partnership	St. Louis, Mo			$ 175	$ 175	$ 175	101%	$ 174
Greensfelder Hemker & Gale	St. Louis, Mo			$ 235	$ 300	$ 268	101%	$ 266
Husch Blackwell Sanders	Kansas City, Mo	$ 204	$ 345	$ 356	$ 472	$ 344	109%	$ 316
Karfeld Law Firm	St. Louis, Mo			$ 265	$ 265	$ 265	101%	$ 264
Krigel & Krigel	Kansas City, Mo	$ 175	$ 225	$ 200	$ 250	$ 213	109%	$ 195
Law Office of Brad Goss	St. Charles, Mo			$ 175	$ 175	$ 175	101%	$ 174
Law Offices of George A. Barton	Kansas City, Mo	$ 300	$ 400	$ 400	$ 600	$ 425	109%	$ 390
McDowell, Rice, Smith & Buchann	Kansas City, Mo			$ 425	$ 425	$ 425	109%	$ 390
Neil Weintraub, Attorney at Law	St. Louis, Mo			$ 260	$ 260	$ 260	101%	$ 259
Pennington Shea	St. Louis, Mo			$ 190	$ 260	$ 225	101%	$ 224
Pletz and Reed	Jefferson City, Mo	$ 150	$ 150	$ 180	$ 180	$ 165	103%	$ 160
Polsinelli Shughart	Kansas City, Mo	$ 210	$ 350	$ 380	$ 600	$ 385	109%	$ 353
Raymond I. Plaster	Springfield, Mo			$ 275	$ 275	$ 275	99%	$ 278
Shook, Hardy & Bacon	Kansas City, Mo	$ 265	$ 265	$ 425	$ 425	$ 345	109%	$ 317
Speer Law Firm	Kansas City, Mo	$ 400	$ 400	$ 500	$ 500	$ 450	109%	$ 413
Spencer Fane Britt & Browne	Kansas City, Mo	$ 150	$ 325	$ 310	$ 470	$ 314	109%	$ 288
Stanton & Redlingshafer	Kansas City, Mo			$ 195	$ 195	$ 195	109%	$ 179
Stinson Morrison Hecker	Kansas City, Mo	$ 195	$ 195	$ 350	$ 445	$ 296	109%	$ 272
The Sader Law Firm	Kansas City, Mo	$ 225	$ 235	$ 265	$ 265	$ 248	109%	$ 227
Thompson Coburn	St. Louis, Mo	$ 200	$ 200	$ 480	$ 480	$ 340	101%	$ 338
						Overall Cost-of-Living Adjusted Average 2009 Billing Rate		**$ 265**

Note A: Source is Michigan Lawyers Weekly and Missouri Lawyers Weekly

Note B: Source is Council for Community and Economic Research. This percentage represents the cost of living difference between the Michigan and Missouri cities and Chattanooga, Tenn. A number over 100% indicates the Michigan or Missouri city's cost of living is higher than Chattanooga. A number less than 100% indicates Chattanooga's cost of living is higher.

Exhibit 6

Tennessee American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2008 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 147	$ 196	$ 268	$ 295	$ 384

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 147	$196	$268	$295	$384	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 44	$ 59	$ 54	$ 29	$ 38	**$ 224**

Escalation to Test Period Midpoint (September 30, 2009) (Note B)

CPI at December 31, 2008	210.2
CPI at September 30, 2009	216.0
Inflation/Escalation	2.8%
Average Hourly Billing Rate For Management Consultants At September 30, 2009	**$ 231**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2009 Edition," Association of Management Consulting Firms

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

Tennessee American Water Company
Billing Rates Of Tennessee Certified Public Accountants

Survey billing rates were those in effect in 2007 (Note A)

Type of Firm	Average Hourly Billing Rate (Note A) Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 78	$ 98	$ 122	$ 138

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 78	$ 98	$ 122	$ 138	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 23	$ 29	$ 24	$ 28	**$ 105**

Escalation to Test Period Midpoint (June 30, 2009) (Note B)	
CPI at December 31, 2007	210.0
CPI at June 30, 2009	215.7
Inflation/Escalation	2.7%
Average Hourly Billing Rate For CPAs At June 30, 2009	**$ 108**

Note A: Source is AICPA's 2008 National PCPS/TSCPA Management of an Accounting Practice Survey (Tennessee edition)
Note B: source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.t

Exhibit 8

Tennessee American Water Company
Billing Rates Of Tennessee Engineers

Note: Billing rates in effect during 2009

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
Name of Firm	CAD Drafter Engineer Tech	Engineer Design Engineer Project Engineer	Project Manager Project Associate Sr. Mgr. Engineer	Officer Principal Engineer
Firm #1	$68	$89	$136	$173
Firm #2	$80	$98	$149	$179
Firm #3	$68	$96	$168	$208

B. Calculation of Overall Average Engineering Hourly Billing Rate

	CAD Drafter Engineer Tech	Engineer Design Engineer Project Engineer	Project Manager Project Associate Sr. Mgr. Engineer	Officer Principal Engineer	
Average Hourly Billing Rate (From Above)	$72	$94	$151	$187	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$22	$33	$38	$19	**$111**

Source: Information provided by American Water Works Service Company. Firm names have not been disclosed to preserve the confidentiality of their hourly rates.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended March 31, 2010		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 129	$ 265	$ (136)
Management Consultant	$ 128	$ 231	$ (103)
Certified Public Accountant	$ 81	$ 108	$ (27)
Professional Engineer	$ 61	$ 111	$ (50)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to TAWC during the 12-months ended March 31, 2010, outside service providers would have cost $1,838,669 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 45% higher than those of the Service Company ($1,838,669 / $4,099,018).

	12 Months Ended March 31, 2010		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (136)	899	$ (121,947)
Management Consultant	$ (103)	6,118	$ (630,010)
Certified Public Accountant	$ (27)	24,293	$ (650,038)
Professional Engineer	$ (50)	8,664	$ (436,675)
Service Company Less Than Outside Providers			$ (1,838,669)

It should be noted that the cost differential associated with using outside providers is even greater because Service Company personnel do not charge for more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. If, for instance, Service Company personnel worked 5% overtime (2 hours) per week on TAWC's behalf, that would have amounted to 2,000 additional hours of work during the 12 months ended March 31, 2010. Based on the hourly rate differentials above, this overtime would have added another $92,000 to the cost of using outside provider.

If TAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform almost 40,000 hours of work (more than 26 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing TAWC management team. Thus, it would be necessary for TAWC to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill this position would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $165,000 per year to TAWC's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding a Professional Position To TAWC's Staff

	Total
New Positions' Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Total Cost of Full Time Position	$ 164,600

Thus, the total effect on the ratepayers of TAWC of contracting all services now provided by Service Company would be an increase in their costs of $2,003,269 ($1,838,669 + $164,600). Based on the results of this comparison, it is possible to conclude that the Service Company charged TAWC at the lower of cost or market for services provided during the 12 months ended March 31, 2010.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to TAWC with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, TAWC's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

Tennessee	• Kingsport Power	
North Carolina	• Duke Energy Carolinas	• Progress Energy Carolinas
Kentucky	• Duke Energy Kentucky • Kentucky Power	• Kentucky Utilities • Louisville Gas & Electric
Mississippi	• Entergy Mississippi	• Mississippi Power
Virginia	• Appalachian Power	• Virginia Electric Power
Georgia	• Georgia Power	
Alabama	• Alabama Power	
Arkansas	• Entergy Arkansas	
Missouri	• Empire District Electric • Kansas City Power & Light	• Union Electric

Tennessee American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Tennessee American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

TAWC Cost per Customer

As calculated below, TAWC's 12 months ended March 31, 2010 customer account services expense per customer was $29.08. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by TAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

Tennessee American Water Company

	Cost Component	Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 1,120,113	$ 450,805	$ 1,570,918	
Service Company	Customer payment processing			$ 130,927	Note B
Operating Company	Postage & forms			$ 464,130	
			Cost Pool Total	$ 2,165,975	
			Total Customers	74,475	
	12 Months Ended March 31, 2010 Cost Per Customer			**$ 29.08**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Test year Call Handling charges		$ 502,486
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.32	
Percent different	90%	90%
Total Adjustment		$ 450,805

Note B: Estimated customer payment processing expenses

Number of customers	74,475
Number of payments/customer/year	12.0
Total payments processed/year	893,700
Bank charge per item	$ 0.1465
Total estimated annual expense	$ 130,927

Electric Utility Group Cost per Customer

Exhibit 10 shows the actual 2009 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was obtained from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, TAWC's cost per customer is below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that TAWC's 12 months ended March 31, 2010 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to TAWC were comparable to those of other utilities.

Customer Account Services Expenses Per Customer	
Virginia Electric Power	$ 17.53
Louisville Gas & Electric	$ 20.40
Union Electric	$ 21.87
Progress Energy Carolinas	$ 22.96
Duke Energy Carolinas	$ 26.96
Tennessee American Water	**$ 29.08**
Kansas City Power & Light	$ 29.64
Comparison Group Average	**$ 32.01**
Appalachian Power	$ 32.70
Kingsport Power	$ 32.78
Duke Energy Kentucky	$ 34.65
Kentucky Utilities	$ 35.47
Kentucky Power	$ 36.03
Empire District Electric	$ 37.79
Georgia Power	$ 42.84
Entergy Mississippi	$ 45.84
Entergy Arkansas	$ 47.60
Alabama Power	$ 49.05
Mississippi Power	$ 67.39

Exhibit 10
Page 1 of 3

Tennessee American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		Tennessee	Missouri			Alabama	Arkansas
		Kingsport Power	Empire District Electric	Kansas City Power & Light	Union Electric	Alabama Power	Entergy Arkansas
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 1,458,469	$ 4,985,478	$ 12,163,465	$ 22,713,638	$ 60,153,942	$ 25,616,113
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 1,697	$ 184,860	$ 2,371	$ 200,456	$ -	$ 103,284
Subtotal		$ 1,460,166	$ 5,170,338	$ 12,165,836	$ 22,914,094	$ 60,153,942	$ 25,719,397
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 63,259	$ 930,079	$ 2,636,671	$ 2,267,993	$ 7,147,923	$ 6,817,930
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 18,076	$ 250,143	$ 558,111	$ 788,888	$ 3,121,268	$ 333,631
Total Cost Pool		**$ 1,541,501**	**$ 6,350,560**	**$ 15,360,618**	**$ 25,970,975**	**$ 70,423,133**	**$ 32,870,958**
Total Customers (page 304, line 43)		47,027	168,032	518,196	1,187,613	1,435,612	690,500
Customer Account Services Expense per Customer		**$ 32.78**	**$ 37.79**	**$ 29.64**	**$ 21.87**	**$ 49.05**	**$ 47.60**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 526,873	$ 11,454,549	$ 60,579,650	$ 80,158,501	$ 49,906,316	$ 64,841,181
Total O&M Payroll (page 355, line 65)		$ 1,967,933	$ 40,270,300	$167,621,486	$364,470,026	$284,869,068	$ 41,476,558
Benefits as Percent of Payroll		26.8%	28.4%	36.1%	22.0%	17.5%	156.3%
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 261,311	$ 4,346,335	$ 9,742,970	$ 14,738,859	$ 49,380,337	$ 5,473,554
Gas (page 354, line 37)		$ -	$ -	$ -	$ 3,534,098	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 261,311	$ 4,346,335	$ 9,742,970	$ 18,272,957	$ 49,380,337	$ 5,473,554
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 1,458,469	$ 4,985,478	$ 12,163,465	$ 22,713,638	$ 60,153,942	$ 25,616,113
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 1,697	$ 184,860	$ 2,371	$ 200,456	$ -	$ 103,284
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 1,460,166	$ 5,170,338	$ 12,165,836	$ 22,914,094	$ 60,153,942	$ 25,719,397
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 154,677	$ 1,702,173	$ 4,081,210	$ 17,688,852	$ 12,648,925	$ 6,560,032
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 1,614,843	$ 6,872,511	$ 16,247,046	$ 40,602,946	$ 72,802,867	$ 32,279,429
Percent Applicable to Customer Accounts Services (903 and 905)		90.4%	75.2%	74.9%	56.4%	82.6%	79.7%
Customer Account Services Portion of Total Payroll		$ 236,281	$ 3,269,841	$ 7,295,565	$ 10,312,263	$ 40,800,892	$ 4,361,183
Pension & Benefits Pertaining to Customer Accounts Services		$ 63,259	$ 930,079	$ 2,636,671	$ 2,267,993	$ 7,147,923	$ 6,817,930
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 236,281	$ 3,269,841	$ 7,295,565	$ 10,312,263	$ 40,800,892	$ 4,361,183
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 18,076	$ 250,143	$ 558,111	$ 788,888	$ 3,121,268	$ 333,631

Exhibit 10
Page 2 of 3

Tennessee American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		Virginia		Kentucky			
		Appalachian Power	Virginia Electric Power	Duke Energy Kentucky	Kentucky Power	Kentucky Utilities	Louisville Gas & Electric
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 28,380,733	$ 34,105,089	$ 3,864,114	$ 5,769,938	$ 14,908,295	$ 5,312,623
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 40,577	$ -	$ -	$ 11,053	$ 381,731	$ 376,263
Subtotal		$ 28,421,310	$ 34,105,089	$ 3,864,114	$ 5,780,991	$ 15,290,026	$ 5,688,886
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 2,437,214	$ 6,239,031	$ 574,673	$ 425,941	$ 3,361,029	$ 1,963,008
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 529,463	$ 1,787,731	$ 232,521	$ 97,581	$ 526,276	$ 322,726
Total Cost Pool		**$ 31,387,987**	**$ 42,131,851**	**$ 4,671,308**	**$ 6,304,513**	**$ 19,177,331**	**$ 7,974,620**
Total Customers (page 304, line 43)		959,814	2,403,558	134,819	174,994	540,618	390,825
Customer Account Services Expense per Customer		**$ 32.70**	**$ 17.53**	**$ 34.65**	**$ 36.03**	**$ 35.47**	**$ 20.40**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 38,645,990	$167,027,121	$ 6,660,396	$ 7,869,045	$ 38,828,205	$ 37,681,044
Total O&M Payroll (page 355, line 65)		$ 109,744,984	$625,619,817	$ 35,227,412	$ 23,565,539	$ 79,474,397	$ 80,979,200
Benefits as Percent of Payroll		35.2%	26.7%	18.9%	33.4%	48.9%	46.5%
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 7,978,348	$ 30,292,243	$ 2,598,192	$ 1,433,061	$ 8,670,255	$ 3,198,589
Gas (page 354, line 37)		$ -	$ -	$ 1,383,512	$ -	$ -	$ 2,615,816
Total Payroll Charged to Customer Accounts		$ 7,978,348	$ 30,292,243	$ 3,981,704	$ 1,433,061	$ 8,670,255	$ 5,814,405
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 28,380,733	$ 34,105,089	$ 3,864,114	$ 5,769,938	$ 14,908,295	$ 5,312,623
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 40,577	$ -	$ -	$ 11,053	$ 381,731	$ 376,263
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 28,421,310	$ 34,105,089	$ 3,864,114	$ 5,780,991	$ 15,290,026	$ 5,688,886
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,341,650	$ 10,103,836	$ 1,197,835	$ 713,762	$ 3,980,247	$ 2,151,907
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 32,762,960	$ 44,208,925	$ 5,061,949	$ 6,494,753	$ 19,270,273	$ 7,840,793
Percent Applicable to Customer Accounts Services (903 and 905)		86.7%	77.1%	76.3%	89.0%	79.3%	72.6%
Customer Account Services Portion of Total Payroll		$ 6,921,081	$ 23,369,029	$ 3,039,493	$ 1,275,570	$ 6,879,426	$ 4,218,641
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,437,214	$ 6,239,031	$ 574,673	$ 425,941	$ 3,361,029	$ 1,963,008
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 6,921,081	$ 23,369,029	$ 3,039,493	$ 1,275,570	$ 6,879,426	$ 4,218,641
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 529,463	$ 1,787,731	$ 232,521	$ 97,581	$ 526,276	$ 322,726

Tennessee American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		Georgia	Mississippi		North Carolina		
		Georgia Power	Energy Mississippi	Mississippi Power	Duke Energy Carolinas	Prog Energy Carolinas	
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 84,911,244	$ 17,647,249	$ 9,277,161	$ 58,491,837	$ 25,264,008	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 88,908	$ 71,579	$ 1,162,224	$ 63,286	$ 2,913,845	
Subtotal		$ 85,000,152	$ 17,718,828	$ 10,439,385	$ 58,555,123	$ 28,177,853	
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 12,582,725	$ 2,024,275	$ 1,664,015	$ 3,743,004	$ 4,374,673	
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 3,286,888	$ 202,332	$ 426,091	$ 1,771,092	$ 1,007,671	**Group Average**
Total Cost Pool		**$ 100,869,765**	**$ 19,945,435**	**$ 12,529,491**	**$ 64,069,219**	**$ 33,560,198**	**$ 495,139,462**
Total Customers (page 304, line 43)		2,354,531	435,133	185,924	2,376,853	1,461,874	15,465,923
Customer Account Services Expense per Customer		**$ 42.84**	**$ 45.84**	**$ 67.39**	**$ 26.96**	**$ 22.96**	**$ 32.01**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 120,553,041	$ 25,179,302	$ 18,913,231	$123,891,641	$135,011,713	
Total O&M Payroll (page 355, line 65)		$ 411,648,938	$ 32,898,611	$ 63,306,677	$766,304,539	$406,521,358	
Benefits as Percent of Payroll		29.3%	76.5%	29.9%	16.2%	33.2%	
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 59,384,131	$ 3,205,909	$ 6,716,310	$ 25,491,667	$ 15,865,023	
Gas (page 354, line 37)		$ -	$ -	$ -	$ -	$ -	
Total Payroll Charged to Customer Accounts		$ 59,384,131	$ 3,205,909	$ 6,716,310	$ 25,491,667	$ 15,865,023	
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 84,911,244	$ 17,647,249	$ 9,277,161	$ 58,491,837	$ 25,264,008	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 88,908	$ 71,579	$ 1,162,224	$ 63,286	$ 2,913,845	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 85,000,152	$ 17,718,828	$ 10,439,385	$ 58,555,123	$ 28,177,853	
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 32,480,565	$ 3,758,629	$ 2,148,847	$ 5,918,702	$ 5,760,524	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 117,480,717	$ 21,477,457	$ 12,588,232	$ 64,473,825	$ 33,938,377	
Percent Applicable to Customer Accounts Services (903 and 905)		72.4%	82.5%	82.9%	90.8%	83.0%	
Customer Account Services Portion of Total Payroll		$ 42,965,861	$ 2,644,864	$ 5,569,817	$ 23,151,530	$ 13,172,176	
Pension & Benefits Pertaining to Customer Accounts Services		$ 12,582,725	$ 2,024,275	$ 1,664,015	$ 3,743,004	$ 4,374,673	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 42,965,861	$ 2,644,864	$ 5,569,817	$ 23,151,530	$ 13,172,176	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	
Estimated Employer's Portion of FICA		$ 3,286,888	$ 202,332	$ 426,091	$ 1,771,092	$ 1,007,671	

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to TAWC by the Service Company would be necessary if TAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for TAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 11 was created showing which entity—TAWC or a Service Company location—is responsible for each of the functions TAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 11, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if TAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to TAWC. For all of the services listed in Exhibit 11, there was only one entity that was primarily responsible for the service.

Tennessee American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	TAWC	Customer Call Center	Division Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Engineering and Construction Management							
CPS Preparation	S				P		
Five-Year System Planning	S				P		
Engineering Standards & Policies Development	S				P		
Project Design							
Major Projects (e.g., new treatment plant)	S				P		
Special Projects	P				S		
Minor Projects (e.g., pipelines)	P						
Construction Project Management							
Major Projects	S				P		
Special Projects	S				P		
Minor Projects	P						
Hydraulics Review	p				S		
Developers Extensions	P						
Tank Painting	P				S		
Water Quality and Purification							
Water Quality Standards Development	S				S		P
Research Studies	S				S		P
Water Quality Program Implementation	P				S		
Water Treatment Operations & Maintenance	P		S		S		
Compliance Sampling and Chemical Testing	S				S		P
Sample Collection and Other Testing	S				S		P
Transmission and Distribution							
Preventive Maintenance Program Development	P						
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	P		S		S		
Customer Contact	S	P	S				
Call Processing	S	P	S				
Service Order Creation	S	P	S				
Service Order Processing	P	S	S				
Customer Credit	S	P	S				
Meter Reading	P					S	
Customer Bill Preparation		S				P	
Bill Collection	S	P				S	
Customer Payment Processing	S			P			
Meter Standards Development	S		S		P		
Meter Testing, Maintenance & Replacement	P		S				

Tennessee American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible
S - Provides Support

Water Company Function	Performed By: TAWC	American Water Service Company: Customer Call Center	Division Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Financial Management							
Financial Planning	S		P		S		
Financings--Equity					P		
Financings--Long Term Debt & Preferred (Note A)	S		P				
Short Term Lines of Credit Arrangements(Note A)	S		P				
Investor Relations			S		P		
Insurance Program Administration	S				P		
Loss Control/Safety Program Administration	S		P		S		
Pension Fund Asset Management					P		
Cash Management/Disbursements	S			P			
Internal Auditing	S		S		P		
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions					P		
Regional Guidelines & Instructions			P				
Budget Preparation							
Revenue and O&M	P		S				
O&M	P		S				
Depreciation and Interest Expense	S		S	P			
Budget Preparation--Service Company Charges		S	P	S	S	S	S
Capital Budget Preparation—Projects	P				S		
Capital Budget Preparation—Non-Project Work	P						
Prepare Monthly Budget Variance Report	p		S	S			
("Budget/Plan Analysis")							
Prepare Capital Project Budget Status Report	P			S			
Year-End Projections	P			S			
Accounting and Taxes							
Accounts Payable Accounting	S			P			
Payroll Accounting	S			P			
Work Order Accounting	S			P			
Fixed Asset Accounting	S			P			
Journal Entry Preparations--Billing Corrections	S			P			
Journal Entry Preparation--All Others	S			P			
Financial Statement Preparation	S			P			
State Commission Reporting	S		S	P			
Income Taxes--State				P			
Income Taxes--Federal				P			
Property Taxes	S			P			
Gross Receipts (Town) Taxes	S			P			

Note A: Financings and lines of credit are the responsibility of American Capital Corporation

Tennessee American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible
S - Provides Support

Water Company Function	Performed By: TAWC	American Water Service Company: Customer Call Center	Division Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	S		P				
Rate Case Planning and Preparation	S		P				
Rate Case Administration	S		P				
Commission Inquiry Response	S		P				
Legal			P		S		
Purchasing and Materials Management – National (pipe, chemicals, meters, etc.)							
Specification Development	S		S	S	P		
Bid Solicitation	S			P			
Contract Administration	S			P			
Purchasing and Materials Management – State (state supplier service agreements)							
Specification Development	P				S		
Bid Solicitation	P			S			
Contract Administration	P			S			
Ordering	P						
Inventory Management	P			S			
Human Resources Management							
Benefit Program Development					P		
Benefits Program Administration	S				P		
Management Compensation Administration					P		
Wage & Salary Program Design					P		
Wage & Salary Administration	P		S				
Labor Relations - Wages	P		S				
Labor Relations - Benefits					P		
Labor Relations - Work Rules	P		S				
Training Program Development	S		S		P		
Training--Course Delivery	P		S				
Affirmative Action/EEO--Plan Development	P						
Affirmative Action/EEO--Implementation	P						
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance						P	
Software Maintenance						P	
Network Administration	S		P			S	
PC Acquisition & Support	S		P			S	
Help Desk				S		P	

Governance Practices Associated With Service Company Charges

There are several ways by which TAWC exercises control over Service Company services and charges. The most important of these are described below.

- **Divisional Sr. Vice President Oversight** – The Eastern Division Senior Vice President is on the Executive Management Team (EMT) of American Water. The Divisional Sr. Vice President is responsible for the overall performance of each operating company in the Division, including Long Island Water Corp., Indiana American Water Company, Ohio American Water Company, Virginia American Water Company, West Virginia American Water Company, Kentucky American Water Company, Tennessee American Water Company, Michigan American Water Company, and Maryland American Water Company. As part of the EMT, each Divisional Senior Vice President has equal say with other EMT members in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending.
- **Divisional Vice President & Treasurer** – The Divisional Vice President and Treasurer of the Eastern Division is responsible for the financial reporting, performance and internal controls of each of the operating companies in the division. The Vice President and Treasurer monitors the performance and expense levels of the Service Company and validates the cost of services received. Also, the Vice President and Treasurer reviews the monthly charges and investigates whenever the amount, quality and/or services are appropriate.
- **Operating Company Board Oversight** – TAWC board of directors includes members of American Water's EMT, members of the Eastern Division's management team, TAWC's Management team and business and community leaders from outside the Company. This diverse board ensures that TAWC's needs are a factor in the delivery of Service Company services. The TAWC Board meets at a minimum of four times each year and at every meeting financial and operational reports and issues are discussed at length.
- **Service Company Board Oversight** – The Service Company Board of Directors is comprised of 16 members, some of whom are the presidents of state operating companies. They typically meet four times a year to provide governance on the activities and bylaws of Service Company. Their primary responsibilities include:
  - Approve the Business Plan and Operating Budget
  - Review Financial Performance of the Service Center
  - Review performance metrics of certain functional groups
  - Approve policy, procedures and practices of AW as it relates to Service Company
- **Service Company Budget Review/Approval** – Several operating company presidents sit on the Service Company board and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors (e.g., TAWC).
- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the Divisional Senior Vice President. The Divisional Senior Vice President, with input from the divisional and state management teams (including TAWC) has the ability to impact all new initiatives and projects before they are authorized. Major non-capital projects and initiatives for the Service Company are approved through the Business Plan. All significant business initiatives (capital or non-capital) are required to be submitted to the "BATT" (Business and Technology Team) committee for final approval. The "BATT" team is comprised of C-level executive members (CEO, CFO, etc.).

- **Accounting and Financial Reporting** – Similar to the states, the Service Company follows the same accounting and financial reporting processes. During the month accounting transactions are recorded. At month end, the SSC and Service Company Finance teams review all transactions. Variance analyses are performed based on month to month actual as well as actual to budget to ensure accuracy. Once completed, the service company bill is run and the actuals are "pushed down" and allocated to the states based on predetermined formulas. A conference call is schedule before the operating companies close their books each month to discuss Service Company performance. This is based at a functional level with explanation reported for those expense variances that meet or exceed certain thresholds. At this time, the operating companies may question expenses and spending for better understanding of results. Finance personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. Any mistakes or overcharges are credited on a subsequent billing.
- **Operating Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly by each operating company, has line items for Management Fees and Shared Service Expense (i.e., IT, Call Center, etc.). In this way, Service Company budget versus actual charges as charged to the operating company can be monitored and reviewed for the month and year-to-date as compared to prior year, plan and reforecast.
- Capital Investment Management (CIM) – CIM covers capital and asset planning and is employed throughout American Water, including the Service Company. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business,
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans,
  - The impacts of these plans are understood and affordable, and
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment. The process is managed at three levels (state, divisional, and national (corporate) for all American Water companies, including all Tennessee American Operating Units.

Market Cost Comparison of Service Company Charges to Virginia American Water Company

12-Months Ended September 30, 2009

Virginia American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended September 30, 2009

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to Virginia American Water Company (VAWC):

1. Were the Service Company's charges to VAWC during the 12 months ended September 30, 2009 reasonable?

2. Was VAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during the 12 months ended September 30, 2009?

3. Were the 12 months ended September 30, 2009 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services VAWC receives from the Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's costs for the 12 months ended September 30, 2009 per VAWC customer was very reasonable. For example, during the 12 months ended September 30, 2009, VAWC was charged $58 per customer for administrative and general ('A&G")-related services provided by the Service Company. This compares favorably to costs per customer for electric and combination electric/gas service companies that average $109 for service companies reporting to the Federal Energy Regulatory Commission ("FERC"). Only 3 of the 24 utility service companies that filed a FERC Form 60 for 2008 had a lower A&G cost per customer than VAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- VAWC was charged the lower of cost or market for managerial and professional services during the 12 months ended September 30, 2009.

- On average, the hourly rates for outside service providers are 60% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could only be procured effectively by VAWC from outside professionals if it provided careful supervision to those service providers. If these services were contracted entirely to outside providers, VAWC would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended September 30, 2009, VAWC and its ratepayers would have incurred more than $2.2 million in additional expenses. This amount includes the higher cost of outside providers and the cost of one VAWC position needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to VAWC from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $2.2 million cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week), then that work would have cost an estimated $100,000 in additional charges from outside providers.

- It would be difficult for VAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from VAWC customers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is below the average of the neighboring electric utility comparison group. As will be explained further , this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and VAWC. During the 12-months ended September 30, 2009, the customer accounts cost for VAWC customers was $27.58 compared to the 2008 average of $29.13 for neighboring electric utilities. The highest comparison group per customer cost was $76.47 and the lowest $15.67.

Concerning question 4, the following conclusions was drawn:

- The services that the Service Company provides are necessary and would be required even if VAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to VAWC. For all of the services listed in Exhibit 11, there was only one entity primarily responsible for the service and thus no duplication of efforts between the Service Company and VAWC.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding its own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like VAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One is in Alton, Illinois that went into operation in 2001 and a second is in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of VAWC in a manner that was not as .comprehensive as that now provided by the national call centers.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include rates and revenues, engineering, operations and field resource coordination.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology ("IT") Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times their hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 5, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 2% of American Water's Shared Services' professional labor is assigned to VAWC during a month, then 2% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 2% of the Shared Services' accumulated professional and support labor is charged to VAWC during the month, then 2% of that month's overhead expenses will be assigned to VAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to VAWC, then 2% of that office's office expenses would be assigned to VAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended September 30, 2009, the Service Company billed VAWC $3,814,848 in O&M-related charges and $645,553 in capital-related charges. Included in the O&M amount are certain non-recurring expenses which are excluded from this market study. As calculated in the table below, net testable Service Company charges of $4,467,146 were subjected to a market cost comparison.

	12 Months Ended Sep. 30, 2009
Mgmt Fee Expense (O&M)	$ 3,814,848
Add(Subtract): Non-Recurring Items	
Sarbanes-Oxley	$ 6,745
Net O&M Expenses	$ 3,821,593
Mgmt Fees - Capital	$ 645,553
Total Testable AWWSC Charges	**$ 4,467,146**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology, and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total test period Service Company charges break down between management/professional services and customer account services as follows:

	12 Months Ended Sep 30, 2009	
	Amount	Hours
Management and Professional Services	$ 3,485,883	37,564
Customer Account Services	$ 981,263	25,779
Total Service Company Charges	**$ 4,467,146**	**63,343**

This study's first question—whether Service Company 12 months ended September 30, 2009 charges were reasonable—was determined by comparing VAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 12 months ended September 3, 2009 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to VAWC during the 12 months ended September 30, 2009. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 12 months ended September 30, 2009 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing VAWC's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to VAWC and determining if these services would be required if VAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

VAWC's Service Company Cost per Customer

During the 12 months ended September 30, 2009, VAWC was charged $58 per customer by the Service Company for A&G/O&M-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	12 Months ended Sep 30, 2009 Svc. Co. Charges
Testable Service Company charges	$ 4,467,146
Less: Capital charges	$ (645,553)
Less: Non-A&G function O&M charges	
Engineering	$ (5,905)
Operations	$ (511,757)
Water Quality	$ (128,477)
Net A&G/O&M-related charges	$ 3,175,454
VAWC customers	54,437
VAWC Cost Per Customer	**$ 58**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2008, a Form 60 was filed by 24 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G/O&M-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

O&M expenses charged to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2008 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

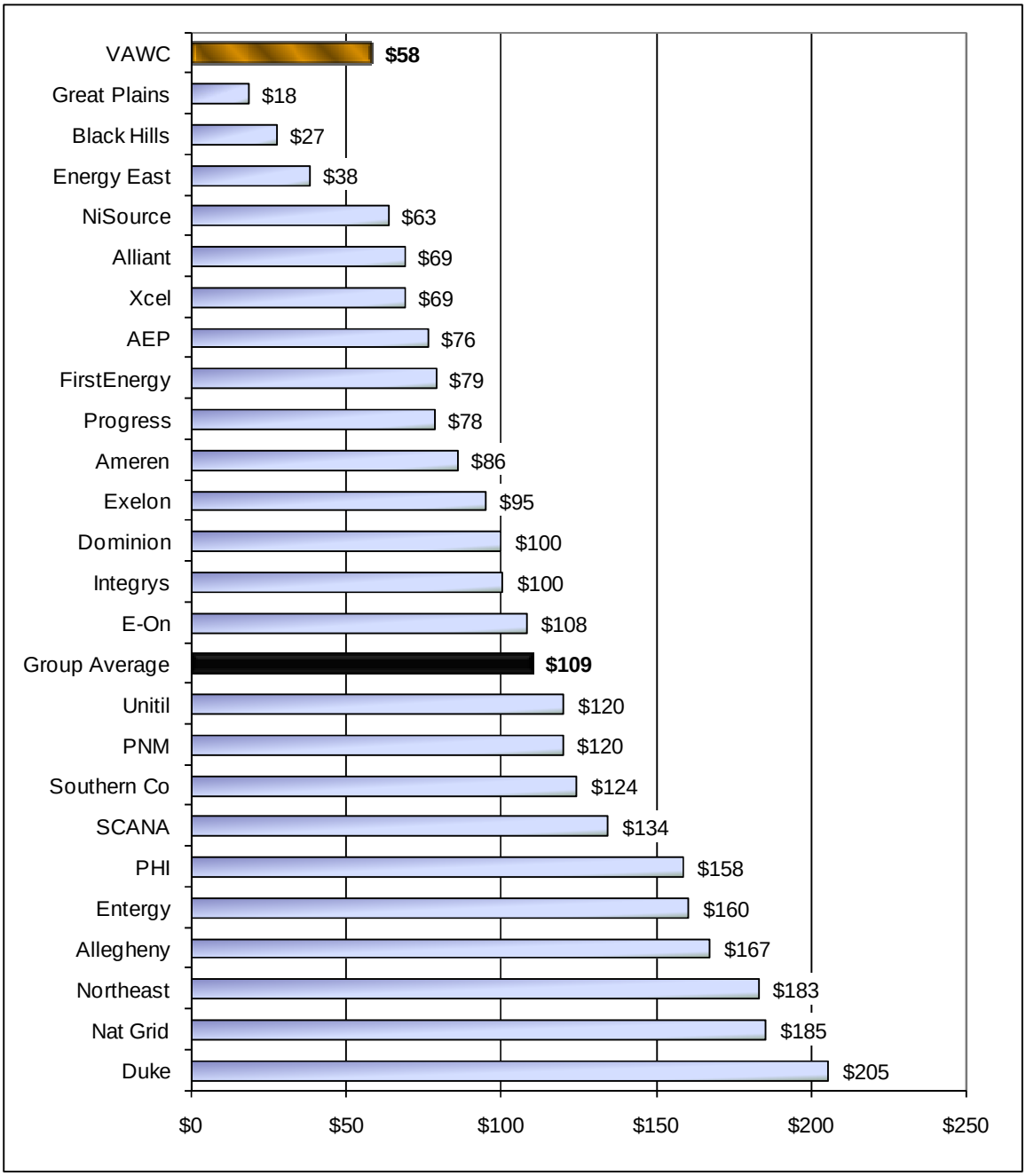
A&G expenses per regulated utility customer for the 24 utility companies that file Form 60 for 2008 are calculated below.

Utility Company	2008 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$396,340,118	5,213,000	$ 76
Allegheny	$263,588,707	1,577,873	$ 167
Alliant	$205,754,832	3,000,000	$ 69
Ameren	$291,684,710	3,400,000	$ 86
Black Hills	$20,763,828	759,400	$ 27
Dominion	$357,718,046	3,588,500	$ 100
Duke	$923,936,645	4,500,000	$ 205
Energy East	$113,714,789	2,989,800	$ 38
Entergy	$432,575,683	2,700,000	$ 160
E-On	$136,276,177	1,263,000	$ 108
Exelon	$558,687,014	5,885,000	$ 95
FirstEnergy	$354,028,109	4,499,000	$ 79
Great Plains	$15,000,708	820,000	$ 18
Integrys	$216,364,166	2,157,000	$ 100
Nat Grid	$1,240,706,398	6,700,000	$ 185
NiSource	$237,380,009	3,750,000	$ 63
Northeast	$302,138,730	1,654,000	$ 183
PHI	$302,463,412	1,910,000	$ 158
Progress	$242,677,256	3,100,000	$ 78
PNM	$102,688,385	859,000	$ 120
SCANA	$191,207,825	1,424,300	$ 134
Southern Co	$546,498,605	4,402,000	$ 124
Unitil	$20,341,422	169,600	$ 120
Xcel	$367,626,617	5,345,000	$ 69
Group Total	**$7,840,162,191**	**71,666,473**	**$ 109**

Exhibit 1 shows VAWC's 12 months ended September 30, 2009 Service Company cost per customer of $58 to be considerably lower than the average of $109 per customer for the comparison group service companies. Only 3 of 24 comparison group service companies had a lower cost per customer than VAWC. Based on this result, it is possible to conclude that the Service Company's 12 months ended September 30, 2009 charges to VAWC were reasonable.

Exhibit 1

Virginia-American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to VAWC during the 12 months ended September 30, 2009. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged VAWC during the 12 months ended September 30, 2009, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended September 30, 2009 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to VAWC during the 12 months ended September 30, 2009.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 12 months ended September 30, 2009 test period non-labor Service Company charges:

- Contract Services – 12 months ended September 30, 2009 Service Company charges to VAWC include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services).

These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 12 months ended September 30, 2009 Service Company charges to VAWC are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended September 30, 2009 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total management, professional & technical services charges	$ 92,848	$ 1,008,025	$ 1,672,626	$ 712,384	$ 3,485,883
Less:					
Contract services	$ 9,381	$ 43,756	$ 174,947	$ 4,570	$ 232,653
Travel expenses	$ 1,204	$ 28,146	$ 21,502	$ 25,144	$ 75,996
IT infrastructure expenses	$ 2,957	$ 116,455	$ 98,265	$ 21,465	$ 239,141
Net Service Charges (A)	$ 79,306	$ 819,669	$ 1,377,912	$ 661,205	$ 2,938,092
Total Hours (B)	443	7,391	18,771	10,960	37,564
Average Hourly Rate (A / B)	**$ 179**	**$ 111**	**$ 73**	**$ 60**	

Exhibit 2

Virginia-American Water Company
Analysis of 12 Months Ended September 30, 2009 Service Company Charges By Location And Function

Location	Function	12 Months Ended September 30, 2009 Service Company Charges				
		Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 93,478	$ 93,478
Call Center	Human Resources		$ 17,611			$ 17,611
Corporate	Accounting			$ 222,392		$ 222,392
	Administration		$ 144,300			$ 144,300
	Audit			$ 24,483		$ 24,483
	Communications		$ 43,664			$ 43,664
	Finance			$ 128,390		$ 128,390
	Human Resources		$ 122,707			$ 122,707
	Information Technology			$ 3,004		$ 3,004
	Legal	$ 45,736				$ 45,736
	Operations		$ 80,301		$ 199,542	$ 279,843
	Rates & Revenue			$ 35,409		$ 35,409
	Risk Management		$ 28,770			$ 28,770
	Water Quality				$ 57,122	$ 57,122
Regional Offices	Accounting			$ 14,564		$ 14,564
	Administration		$ 250,021			$ 250,021
	Communications		$ 73,843			$ 73,843
	Engineering				$ 93,710	$ 93,710
	Finance			$ 287,037		$ 287,037
	Human Resources		$ 37,593			$ 37,593
	Legal	$ 47,111				$ 47,111
	Operations		$ 147,047		$ 266,427	$ 413,473
	Risk Management		$ 9,921			$ 9,921
	Water Quality				$ 2,106	$ 2,106
Information Technology	Information Technology			$ 698,940		$ 698,940
Shared Services	Accounting			$ 196,408		$ 196,408
	Administration		$ 52,246			$ 52,246
	Finance			$ 33,764		$ 33,764
	Rates & Revenue			$ 28,235		$ 28,235
Total Dollars Charged		**$ 92,848**	**$ 1,008,025**	**$ 1,672,626**	**$ 712,384**	**$ 3,485,883**

Exhibit 3

Virginia-American Water Company
Analysis of 12 Months Ended September 30, 2009Service Company Hours By Location And Function

		12 Months Ended September 30, 2009 Service Company Hours				
Location	Function	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				1,227	1,227
Call Center	Human Resources		237			237
Corporate	Accounting			2,194		2,194
	Administration		134			134
	Audit			261		261
	Communications		210			210
	Finance			671		671
	Human Resources		1,062			1,062
	Information Technology			11		11
	Legal	210				210
	Operations		371		2,520	2,891
	Rates & Revenue			229		229
	Risk Management		337			337
	Water Quality				661	661
Regional Offices	Accounting			174		174
	Administration		1,425			1,425
	Communications		1,036			1,036
	Engineering				1,477	1,477
	Finance			3,469		3,469
	Human Resources		574			574
	Legal	233				233
	Operations		1,617		5,044	6,661
	Risk Management		156			156
	Water Quality				31	31
Information Technology	Information Technology			5,979		5,979
Shared Services	Accounting			4,478		4,478
	Administration		232			232
	Finance			882		882
	Rates & Revenue			422		422
Total Hours Charged		**443**	**7,391**	**18,771**	**10,960**	**37,564**

Exhibit 4

Virginia-American Water Company
12 Months Ended September 30, 2009 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total	Outside Service Provider Category
Accounting	$ 77,411	$ 2,539	$ 2,724	$ 82,674	Certified Public Accountant
Administration	$ 13,144	$ 3,287	$ 107,895	$ 124,326	Management Consultant
Audit	$ 1,626	$ 637	$ 233	$ 2,496	Certified Public Accountant
Communications	$ 8,153	$ 4,557	$ 794	$ 13,503	Management Consultant
Engineering	$ -	$ 184	$ 81	$ 265	Professional Engineer
Finance	$ 42,266	$ 6,984	$ 6,111	$ 55,361	Certified Public Accountant
Human Resources	$ 20,156	$ 5,526	$ 2,448	$ 28,130	Management Consultant
Information Technology	$ 48,743	$ 9,580	$ 87,940	$ 146,263	Certified Public Accountant
Legal	$ 9,381	$ 1,204	$ 2,957	$ 13,542	Attorney
Operations	$ 6,760	$ 36,046	$ 10,046	$ 52,853	Management Consultant, Professional Engineer
Rates & Revenue	$ 4,900	$ 1,763	$ 1,256	$ 7,919	Certified Public Accountant
Risk Management	$ 603	$ 1,691	$ 1,895	$ 4,188	Management Consultant
Water Quality	$ (490)	$ 2,000	$ 14,761	$ 16,270	Professional Engineer
Total	**$ 232,653**	**$ 75,996**	**$ 239,141**	**$ 547,791**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	IT HW/SW	Total
Attorney	$ 9,381	$ 1,204	$ 2,957	$ 13,542
Management Consultant	$ 43,756	$ 28,146	$ 116,455	$ 188,356
Certified Public Accountant	$ 174,947	$ 21,502	$ 98,265	$ 294,714
Professional Engineer	$ 4,570	$ 25,144	$ 21,465	$ 51,179
Total	**$ 232,653**	**$ 75,996**	**$ 239,141**	**$ 547,791**

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among Virginia certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	Virginia Average
Partners/Owners	98%
Directors (11+ years experience)	86%
Managers (6-10 years experience)	88%
Sr Associates (4-5 years experience)	81%
Associates (1-3 years experience)	23%
New Professionals	0%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2008)

Attorneys

The Virginia State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for Virginia attorneys. Therefore, an estimate of Virginia attorney rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5, the average rate for each firm was adjusted for the cost of living differential between its location and Richmond, Virginia. The Lawyers Weekly surveys included rates in effect at December 31, 2007. Thus, the 2007 average rate was escalated to March 31, 2009—the midpoint of the test year ended September 30, 2009.

Management Consultants

The cost per hour for management consultants was developed from a 2009 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2008 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2008 average rate was escalated to March 31, 2009—the midpoint of the 12 months ended September 30, 2009.

Certified Public Accountants

The average hourly rate for Virginia CPAs was developed from a 2008 survey performed by the American Institute of Certified Public Accountants (AICPA). The Virginia version of this survey was used to develop hourly rates for member firms in Virginia.

As shown in Exhibit 7, a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2007. Thus, the data had to be escalated to March 31, 2009—the test year's midpoint.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by VAWC in 2009. As presented in Exhibit 8, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

Virginia-American Water Company
Estimated Billing Rates For Virginia Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates as of December 31, 2007 (Note A)								Cost of	
		Number	Billing Rate Range					Living	
		Of	Associate		Partner			Adjust	Adjusted
Firm	Location	Lawyers	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright PLLC	Detroit, Mi	229	$ 170	$ 275	$ 260	$ 530	$ 309	85%	$ 365
Dykema	Detroit, Mi	222	$ 185	$ 390	$ 245	$ 625	$ 361	85%	$ 427
Butzel Long	Detroit, Mi	209	$ 165	$ 400	$ 220	$ 550	$ 334	85%	$ 395
Bodman LLP	Detroit, Mi	128	$ 125	$ 215	$ 210	$ 495	$ 261	85%	$ 309
Jaffe Raitt Heuer & Weiss, PC	Southfield, Mi	100	$ 165	$ 225	$ 225	$ 500	$ 279	97%	$ 289
Trott & Trott, PC	Bingham Farms, Mi	64	$ 170	$ 170	$ 235	$ 235	$ 203	125%	$ 162
Brooks Kushman PC	Southfield, Mi	52	$ 160	$ 275	$ 250	$ 505	$ 298	97%	$ 308
Kemp, Klein, Umphrey, Edelman & May PC	Troy, Mi	36	$ 150	$ 190	$ 200	$ 340	$ 220	111%	$ 198
Pepper Hamilton LLP	Detroit, Mi	33	$ 200	$ 315	$ 340	$ 615	$ 368	85%	$ 435
Hertz, Schram & Saretsky, PC	Bloomfield Hills, Mi	29	$ 175	$ 260	$ 275	$ 400	$ 278	139%	$ 200
Strobl & Sharp, PC	Bloomfield Hills, Mi	28	$ 110	$ 210	$ 200	$ 300	$ 205	139%	$ 148
Kupelian Ormond & Magy, PC	Southfield, Mi	25	$ 165	$ 195	$ 235	$ 320	$ 229	97%	$ 237
Rader, Fishman & Grauer, PLLC	Bloomfield Hills, Mi	25	$ 130	$ 250	$ 275	$ 495	$ 288	139%	$ 207
McShane & Bowie PLC	Grand Rapids, Mi	22	$ 160	$ 275	$ 250	$ 375	$ 265	96%	$ 277
Edwards Angel Palmer & Dodge	Boston, Ma	259	$ 144	$ 321	$ 474	$ 474	$ 353	147%	$ 241
Sullivan & Worcester	Boston, Ma	137	$ 245	$ 530	$ 415	$ 700	$ 473	147%	$ 322
Burns & Levinson	Boston, Ma	112	$ 210	$ 350	$ 375	$ 475	$ 353	147%	$ 240
Bowditch & Dewey	Worcester, Ma	64	$ 150	$ 300	$ 280	$ 550	$ 320	115%	$ 277
Mirick O'Connell	Worcester, Ma	60	$ 160	$ 250	$ 280	$ 400	$ 273	115%	$ 236
Hinckley, Allen & Snyder	Boston, Ma	58	$ 200	$ 330	$ 300	$ 480	$ 328	147%	$ 223
Prince Lobel Glovsky & Tye	Boston, Ma	52	$ 175	$ 265	$ 275	$ 475	$ 298	147%	$ 203
Robinson & Cole	Boston, Ma	48	$ 220	$ 375	$ 340	$ 490	$ 356	147%	$ 243
Bromberg & Sunstein	Boston, Ma	42	$ 250	$ 450	$ 500	$ 725	$ 481	147%	$ 328
Lawson & Weitzen	Boston, Ma	35	$ 125	$ 225	$ 225	$ 400	$ 244	147%	$ 166
Murtha Cullina	Boston, Ma	34	$ 165	$ 290	$ 250	$ 500	$ 301	147%	$ 205
Marcus Errico Emmer & Brooks	Braintree, Ma	28	$ 250	$ 250	$ 300	$ 360	$ 290	137%	$ 211
Rich May	Boston, Ma	25	$ 150	$ 300	$ 300	$ 400	$ 288	147%	$ 196
Keegan Werlin	Boston, Ma	22	$ 150	$ 275	$ 325	$ 475	$ 306	147%	$ 209
Barron & Stadfeld	Boston, Ma	21	$ 160	$ 230	$ 250	$ 350	$ 248	147%	$ 169
Cain Hibbard Myers & Cook	Pittsfield, Ma	19	$ 150	$ 200	$ 210	$ 235	$ 199	116%	$ 171
							Overall Average 2007 Billing Rate		$ 253

Escalation to Test Year's Mid-Point - March 31, 2009 (Note B)	
CPI at December 31, 2007	210.0
CPI at March 31, 2009	212.7
Inflation/Escalation	1.3%
Average Billing Rate At March 31, 2009	**$ 256**

Note A: Source is Michigan Lawyers Weekly (April 2008) and Massachusetts Lawyers Weekly (April 2008)
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
Note C: Source is Sperling's Best Places (http://www.bestplaces.net/col/col.aspx). This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Richmond, Virginia. A number over 100% indicates the Michigan or Massachusetts city's cost of living is higher than Richmond. A number less than 100 % indicates Richmond's cost of living is higher.

Exhibit 6

Virginia-American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2008 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 147	$ 196	$ 268	$ 295	$ 384

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 147	$196	$268	$295	$384	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 44	$ 59	$ 54	$ 29	$ 38	**$ 224**

Escalation to the Test Year's Mid-Point (March 31, 2009) (Note B)

CPI at December 31, 2008	210.2
CPI at March 31, 2009	212.7
Inflation/Escalation	1.2%
Average Hourly Billing Rate For Management Consultants At March 31, 2009	**$ 227**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2009 Edition," Association of Management Consulting Firms

Exhibit 7

Virginia-American Water Company
Estimated Billing Rates Of Virginia Certified Public Accountants

Survey billing rates were those in effect in 2007 (Note A)

	Average Hourly Billing Rate (Note A)			
Type of Firm	Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 87	$ 109	$ 123	$ 168

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 87	$ 109	$ 123	$ 168	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 26	$ 33	$ 25	$ 34	**$ 117**

Escalation to Midpoint of March 31, 2009 Test Period (Note B)	
CPI at December 31, 2007	210.0
CPI at March 31, 2009	212.7
Inflation/Escalation	1.3%
Average Hourly Billing Rate For CPAs At March 31, 2009	**$ 118**

Note A: Source is AICPA's 2008 National PCPS/TSCPA Management of an Accounting Practice Survey (Virginia edition)
Note B: Source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 8

Virginia-American Water Company
Estimated Billing Rates Of Virginia Engineers

Billing rates in effect in 2009

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
	Technician	Engineer Design Engineer	Project Manager	Officer
Name of Firm	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer
Firm #1	$73	$85	$135	$175
Firm #2	$70	na	$129	$160
Firm #3	$53	$63	$118	$155

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician	Engineer Design Engineer	Project Manager	Officer	
	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer	
Average Hourly Billing Rate (From Above)	$65	$74	$127	$163	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$20	$26	$32	$16	**$93**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended September 30, 2009		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 179	$ 256	$ (77)
Management Consultant	$ 111	$ 227	$ (116)
Certified Public Accountant	$ 73	$ 118	$ (45)
Professional Engineer	$ 60	$ 93	$ (33)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to VAWC during the 12-months ended September 30, 2009, outside service providers would have cost $2,094,318 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 60% higher than those of the Service Company ($2,094,318 / $3,485,883).

	12 Months Ended September 30, 2009		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (77)	443	$ (34,228)
Management Consultant	$ (116)	7,391	$ (859,040)
Certified Public Accountant	$ (45)	18,771	$ (837,603)
Professional Engineer	$ (33)	10,960	$ (363,447)
Service Company Less Than Outside Providers			$ (2,094,318)

It should be noted that the cost differential associated with using outside providers is even greater because Service Company personnel do not charge for more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. If, for instance, Service Company personnel worked 5% overtime (2 hours) per week on VAWC's behalf, that would have amounted to over 1,800 additional hours of work during the 12 months ended September 30, 2009. Based on the hourly rate differentials above, this overtime would have added another $104,000 to the cost of using outside provider.

If VAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform over 37,000 hours of work (more than 25 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing VAWC management team. Thus, it would be necessary for VAWC to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill this position would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $150,000 per year to VAWC's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding 1 Professional Position To VAWC's Staff

	Total
New Positions' Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Cost of One Position	$ 149,400

Thus, the total effect on the ratepayers of VAWC of contracting all services now provided by Service Company would be an increase in their costs of $2,243,718 ($2,094,318 + $149,400). Based on the results of this comparison, it is possible to conclude that the Service Company charged VAWC at the lower of cost or market for services provided during the 12 months ended September 30, 2009.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to VAWC with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, VAWC's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

Virginia	• Appalachian Power	• Virginia Electric Power
West Virginia	• Appalachian Power • Monongahela Power	• Wheeling Power
Maryland	• Baltimore Gas & Electric • Delmarva Power & Light	• Potomac Electric
North Carolina	• Duke Energy Carolinas	• Progress Energy Carolinas
Kentucky	• Duke Energy Kentucky • Kentucky Power	• Kentucky Utilities • Louisville Gas & Electric
Tennessee	• Kingsport Power	

Virginia-American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Virginia-American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

VAWC Cost per Customer

As calculated below, VAWC's 12 months ended September 30, 2009 customer account services expense per customer was $27.58. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by VAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

Virginia-American Cost Per Customer		Year Ended 9/30/2009 Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Cost Component					
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 833,451	$ 316,716	$ 1,150,168	
Regional Offices		$ 147,812		$ 147,812	
Operating Company	Customer payment processing			$ 38,868	Note B
Operating Company	Postage & forms			$ 164,723	
			Cost Pool Total	$ 1,501,570	
			Total Customers	54,437	
	12 Months Ended September 30, 2009 Cost Per VAWC Customer			**$ 27.58**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 352,162	
Electric utility industry's avg calls/customer	2.50		
American Water's avg calls/customer	1.32		
Percent different	90%	90%	
Total Adjustment		$ 316,716	

Note B: Estimated customer payment processing expenses

Number of customers	54,437	
Number of payments/customer/year	4.2	
Total payments processed/year	228,635	
Bank charge per item	$ 0.1700	(subject to check)
Total estimated annual expense	$ 38,868	

Electric Utility Group Cost per Customer

Exhibit 10 shows the actual 2008 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, VAWC's cost per customer is below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that VAWC's 12 months ended September 30, 2009 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to VAWC were comparable to those of other utilities.

Average Customer Accounts Expense Per Customer	
Louisville Gas & Electric	$ 15.67
Virginia Electric Power	$ 16.15
Monongahela Power	$ 16.17
Duke Power	$ 22.99
Prog Energy - Carolinas	$ 21.65
Wheeling Power	$ 26.12
Virginia American Water	**$ 27.58**
Kentucky Utilities	$ 28.42
Comparison Group Average	**$ 29.13**
Duke Energy Kentucky	$ 29.65
Appalachian Power	$ 32.57
Kingsport Power	$ 32.60
Baltimore Gas & Electric	$ 35.46
Kentucky Power	$ 36.02
Delmarva Power & Light	$ 69.08
Potomac Electric	$ 76.47

Exhibit 10
Page 1 of 3

Virginia-American Water Company
Comparison Group ~~September 30, 2009~~2008 Actual Customer Accounts Expense Per Customer

		Virginia		West Virginia		
		Appalachian Power	Virginia Electric Power	Appalachian Power	Monongahela Power	Wheeling Power
Customer Account Services Cost Pool						
FERC Account Balances:						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 29,231,353	$ 32,985,338		$ 5,020,473	$ 1,013,571
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 1,894	$ -		$ -	$ 286
Subtotal		$ 29,233,247	$ 32,985,338		$ 5,020,473	$ 1,013,857
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,415,185	$ 3,978,170		$ 849,338	$ 46,865
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 548,440	$ 1,573,799		$ 294,683	$ 18,802
Total Cost Pool		**$ 31,196,872**	**$ 38,537,306**		**$ 6,164,494**	**$ 1,079,524**
Total Customers (page 304, line 43)		957,875	2,386,208		381,193	41,334
Customer Account Services Expense per Customer		**$ 32.57**	**$ 16.15**	see Virginia	**$ 16.17**	**$ 26.12**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 23,000,789	$124,252,946		$ 16,659,462	$ 402,736
Total O&M Payroll (page 355, line 65)		$116,519,186	$642,556,137		$ 75,556,781	$ 2,112,138
Benefits as Percent of Payroll		19.7%	19.3%		22.0%	19.1%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)		$ 8,480,076	$ 27,320,711		$ 6,101,855	$ 339,964
Gas (page 354, line 37)		$ -	$ -			
Total Payroll Charged to Customer Accounts		$ 8,480,076	$ 27,320,711		$ 6,101,855	$ 339,964
Percent Applicable to Customer Accounts Services (903 and 905):						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 29,231,353	$ 32,985,338		$ 5,020,473	$ 1,013,571
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 1,894	$ -		$ -	$ 286
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 29,233,247	$ 32,985,338		$ 5,020,473	$ 1,013,857
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,345,473	$ 10,819,819		$ 2,932,203	$ 388,499
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 34,578,720	$ 43,805,157		$ 7,952,676	$ 1,402,356
Percent Applicable to Customer Accounts Services (903 and 905)		84.5%	75.3%		63.1%	72.3%
Customer Account Services Portion of Total Payroll		$ 7,169,154	$ 20,572,530		$ 3,852,062	$ 245,783
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,415,185	$ 3,978,170		$ 849,338	$ 46,865
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll		$ 7,169,154	$ 20,572,530		$ 3,852,062	$ 245,783
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%		7.65%	7.65%
Estimated Employer's Portion of FICA		$ 548,440	$ 1,573,799		$ 294,683	$ 18,802

Virginia-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Maryland			North Carolina	
		Baltimore Gas & Electric	Delmarva Power & Light	Potomac Electric	Duke Energy Carolinas	Prog Energy Carolinas
Customer Account Services Cost Pool						
FERC Account Balances:						
Acct 903 - Customer Records & Collection (page 322, line 131)		$ 28,731,040	$ 32,574,788	$ 51,049,711	$ 44,487,077	$ 25,567,705
Acct 905 - Misc Customer Accounts (page 322, line 133)		$ 4,115,795	$ -	$ -	$ 2,782,661	$ 3,147,580
Subtotal		$ 32,846,835	$ 32,574,788	$ 51,049,711	$ 47,269,738	$ 28,715,285
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits	**Note A**	$ 8,208,844	$ 1,184,741	$ 6,217,334	$ 2,666,465	$ 3,505,221
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 2,528,394	$ 551,639	$ 1,009,884	$ 1,253,668	$ 1,049,423
Total Cost Pool		**$ 43,584,072**	**$ 34,311,168**	**$ 58,276,929**	**$ 51,189,871**	**$ 33,269,929**
Total Customers (page 304, line 43)		1,229,181	496,682	762,094	2,364,417	1,447,424
Customer Account Services Expense per Customer		**$ 35.46**	**$ 69.08**	**$ 76.47**	**$ 21.65**	**$ 22.99**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 45,202,255	$ 6,458,817	$ 25,000,866	$113,864,381	$104,610,824
Total O&M Payroll (page 355, line 65)		$181,995,810	$ 39,311,821	$ 53,083,661	$699,798,490	$409,402,544
Benefits as Percent of Payroll		24.8%	16.4%	47.1%	16.3%	25.6%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)		$ 25,480,677	$ 7,184,790	$ 13,534,519	$ 18,553,510	$ 16,538,900
Gas (page 354, line 37)		$ 13,071,562	$ 1,796,197	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 38,552,239	$ 8,980,987	$ 13,534,519	$ 18,553,510	$ 16,538,900
Percent Applicable to Customer Accounts Services (903 and 905):						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 28,731,040	$ 32,574,788	$ 51,049,711	$ 44,487,077	$ 25,567,705
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 4,115,795	$ -	$ -	$ 2,782,661	$ 3,147,580
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 32,846,835	$ 32,574,788	$ 51,049,711	$ 47,269,738	$ 28,715,285
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,467,374	$ 7,995,878	$ 1,289,369	$ 6,246,835	$ 5,904,985
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 38,314,209	$ 40,570,666	$ 52,339,080	$ 53,516,573	$ 34,620,270
Percent Applicable to Customer Accounts Services (903 and 905)		85.7%	80.3%	97.5%	88.3%	82.9%
Customer Account Services Portion of Total Payroll		$ 33,050,899	$ 7,210,967	$ 13,201,097	$ 16,387,812	$ 13,717,953
Pension & Benefits Pertaining to Customer Accounts Services		$ 8,208,844	$ 1,184,741	$ 6,217,334	$ 2,666,465	$ 3,505,221
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll		$ 33,050,899	$ 7,210,967	$ 13,201,097	$ 16,387,812	$ 13,717,953
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 2,528,394	$ 551,639	$ 1,009,884	$ 1,253,668	$ 1,049,423

Exhibit 10
Page 3 of 3

Virginia-American Water Company
Comparison Group 2008 Actual Customer Accounts Expense Per Customer

		Kentucky				Tennessee	
		Duke Energy Kentucky	Kentucky Power	Kentucky Utilities	Louisville Gas & Electric	Kingsport Power	
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 131)		$ 3,221,753	$ 5,948,209	$ 12,515,610	$ 4,626,491	$ 1,473,158	
Acct 905 - Misc Customer Accounts (page 322, line 133)		$ (46,234)	$ 4,229	$ 334,960	$ 336,884	$ 425	
Subtotal		$ 3,175,519	$ 5,952,438	$ 12,850,570	$ 4,963,375	$ 1,473,583	
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 574,297	$ 268,710	$ 1,972,749	$ 1,054,370	$ 32,646	**Group Average**
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 243,542	$ 105,032	$ 424,973	$ 262,847	$ 24,728	
Total Cost Pool		**$ 3,993,358**	**$ 6,326,180**	**$ 15,248,292**	**$ 6,280,591**	**$ 1,530,957**	**$330,989,546**
Total Customers (page 304, line 43)		134,703	175,646	536,441	400,699	46,961	11,360,858
Customer Account Services Expense per Customer		**$ 29.65**	**$ 36.02**	**$ 28.42**	**$ 15.67**	**$ 32.60**	**$ 29.13**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 6,333,174	$ 4,765,373	$ 24,119,043	$ 22,418,737	$ 199,803	
Total O&M Payroll (page 355, line 65)		$ 35,107,273	$ 24,348,550	$ 67,918,514	$ 73,056,617	$ 1,978,375	
Benefits as Percent of Payroll		18.0%	19.6%	35.5%	30.7%	10.1%	
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 2,613,424	$ 1,602,234	$ 7,181,104	$ 2,668,667	$ 368,129	
Gas (page 354, line 37)		$ 1,559,494	$ -	$ -	$ 2,175,749	$ -	
Total Payroll Charged to Customer Accounts		$ 4,172,918	$ 1,602,234	$ 7,181,104	$ 4,844,416	$ 368,129	
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 3,221,753	$ 5,948,209	$ 12,515,610	$ 4,626,491	$ 1,473,158	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ (46,234)	$ 4,229	$ 334,960	$ 336,884	$ 425	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 3,175,519	$ 5,952,438	$ 12,850,570	$ 4,963,375	$ 1,473,583	
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 986,864	$ 993,970	$ 3,761,113	$ 2,034,678	$ 204,604	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 4,162,383	$ 6,946,408	$ 16,611,683	$ 6,998,053	$ 1,678,187	
Percent Applicable to Customer Accounts Services (903 and 905)		76.3%	85.7%	77.4%	70.9%	87.8%	
Customer Account Services Portion of Total Payroll		$ 3,183,556	$ 1,372,968	$ 5,555,204	$ 3,435,906	$ 323,247	
Pension & Benefits Pertaining to Customer Accounts Services		$ 574,297	$ 268,710	$ 1,972,749	$ 1,054,370	$ 32,646	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 3,183,556	$ 1,372,968	$ 5,555,204	$ 3,435,906	$ 323,247	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	
Estimated Employer's Portion of FICA		$ 243,542	$ 105,032	$ 424,973	$ 262,847	$ 24,728	

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to VAWC by the Service Company would be necessary if VAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for VAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 11 was created showing which entity—VAWC or a Service Company location—is responsible for each of the functions VAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if VAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to VAWC. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Virginia-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	VAWC	Customer Call Center	Divisional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Engineering and Construction Management							
CPS Preparation	S				P		
Five-Year System Planning	S		S		P		
Engineering Standards & Policies Development					P		
Project Design							
Major Projects (e.g., new treatment plant)	S				P		
Special Projects	P				S		
Minor Projects (e.g., pipelines)	P						
Construction Project Management							
Major Projects	P				S		
Special Projects	P				S		
Minor Projects	P						
Hydraulics Review	P		S				
Developers Extensions	P						
Tank Painting	P				S		
Water Quality and Purification							
Water Quality Standards Development					P		S
Research Studies	S				P		S
Water Quality Program Implementation	P				S		S
Water Treatment Operations & Maintenance	P				S		
Compliance Tracking and Chemical Testing	S						P
Sample Collection and Other Testing	P						S
Transmission and Distribution							
Preventive Maintenance Program Development	P						
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	S		P		S		
Customer Contact	S	P					
Call Processing		P					
Service Order Creation	S	P	S				
Service Order Processing	P	S	S				
Customer Credit		P	S				
Meter Reading	P		S			S	
Customer Bill Preparation		S				P	
Bill Collection	S	P	S			S	
Customer Payment Processing	S			P			
Meter Standards Development					P		
Meter Testing, Maintenance & Replacement	P						

Virginia-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	VAWC	Customer Call Center	Divisional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Financial Management							
Financial Planning	S		P	S	S		
Financings--Equity				S	P		
Financings--Long Term Debt & Preferred (A)			S	S	P		
Short Term Lines of Credit Arrangements (A)			S	S	P		
Investor Relations			S		P		
Insurance Program Administration					P		
Loss Control/Safety Program Administration	P				S		
Pension Fund Asset Management					P		
Cash Management/Disbursements				P			
Internal Auditing					P		
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions					P		
Regional Guidelines & Instructions			P				
Budget Preparation							
Revenue	P		S				
O&M	P		S				
Depreciation and Interest Expense	S		P	S			
Budget Preparation--Service Company Charges		S	P	S	S	S	S
Capital Budget Preparation—Projects	P				S		
Capital Budget Preparation—Non-Project Work	P				S		
Prepare Monthly Budget Variance Report ("Budget/Plan Analysis")	P		S		S		
Prepare Capital Project Budget Status Report	P				S		
Year-End Projections (A)	P		S				
Accounting and Taxes							
Accounts Payable Accounting	S		S	P			
Payroll Accounting	S		S	P			
Work Order Accounting	S		S	P			
Fixed Asset Accounting	S		S	P			
Journal Entry Preparation—Billing Corrections	S		S	P			
Journal Entry Preparation--All Others	S		S	P			
Financial Statement Preparation	S		S	P			
State Commission Reporting	S		S	P			
Income Taxes—State				P			
Income Taxes—Federal				P			
Property Taxes	S		S	P			
Gross Receipts Taxes	S		S	P			

Note A: Financings and lines of credit are the responsibility of American Capital Corporation

Virginia-American Water Company
Designation Of Responsibility For Water Utility Functions

Primarily Responsible P Provides Support S	Performed By:						
		American Water Service Company					
Water Company Function	VAWC	Customer Call Center	Divisional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	S		P				
Rate Case Planning and Preparation	S		P				
Rate Case Administration	S		P				
Commission Inquiry Response	S		P				
Legal			P		S		
Purchasing and Materials Management							
Specification Development	S		S	S	P		
Bid Solicitation	S				P		
Contract Administration	S				P		
Ordering	P						
Inventory Management	P			S			
Human Resources Management							
Benefit Program Development					P		
Benefits Program Administration			P				
Management Compensation Administration					P		
Wage & Salary Program Design					P		
Wage & Salary Administration	S		P				
Labor Negotiations--Wages	S		P				
Labor Negotiations--Benefits					P		
Labor Negotiations-- Work Rules	S		P				
Training Program Development	S		S		P		
Training--Course Delivery	S		P				
Affirmative Action/EEO--Plan Development	S		P				
Affirmative Action/EEO--Implementation	S		P				
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance						P	
Software Maintenance						P	
Network Administration						P	
PC Acquisition & Support						P	
Help Desk				S		P	

VI - Question 4 – Need for Service Company Services

Governance Practices Associated With Service Company Charges

There are several ways by which VAWC exercises control over Service Company services and charges. The most important of these are described below.

- **President of Regulated Operations Oversight** – The President of Regulated Operations is on the Executive Management Team (EMT) of American Water. This position is responsible for the overall performance of each operating company in American Water. As part of the EMT, the President of Regulated Operations has equal say with other EMT members in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending. The President of Regulated Operations also addresses local concerns with each operating company president.
- **Divisional Vice President & Treasurer** – The Divisional Vice President and Treasurer of the Eastern Division is responsible for the financial reporting, performance and internal controls of each of the operating companies in the division. The Vice President and Treasurer monitors the performance and reporting from the Service Company and follows up on instances where the quality and timeliness of services are not as expected. The operating company interacts with the Divisional VP & Treasurer to discuss any concerns with billings, etc.
- **Operating Company Board Oversight** – VAWC board of directors includes members of American Water's EMT, members of the divisional management team and business and community leaders from outside the Company. VAWC's president is Chairman of the VAWC board. This helps ensure that VAWC's needs are a factor in the delivery of Service Company services.
- **Service Company Budget Review/Approval** – The President of Regulated Operations sits on the Service Company board and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors. VAWC's president also sits on the Service Company board.
- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the President of Regulated Operations. With input from the local presidents and Divisional Vice President & Treasurer, they have the ability to impact all new initiatives and projects before they are authorized.
- **Service Company Bill Scrutiny** – VAWC Finance personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. VAWC's financial manager discusses the monthly bill with Shared Services Center office personnel and any mistakes or overcharges are credited on a subsequent billing. The VAWC Finance Manager prepares an actual-to-budget comparison of management fees each month for use in identifying unusual variances. Service Company actual-to-budget comparison is included in the monthly Financial Review Package (FRP). Unusual variances are researched, explanations are provided and any necessary corrections are made.
- **Service Company Budget Variance Reporting** – Each month, a summary variance analysis is prepared that explains differences between budgeted and actual Service Company spending. In addition, a more detailed monthly variance report, called the "Statement of Expenses and Billed Charges," is produced by Service Company location and shows actual spending for the month.

- **Operating Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly, has a line item for Management Fees (i.e., Service Company charges). In this way, Service Company budget versus actual charges can be monitored for the month and year-to-date. Additional information exists that allows more detailed analysis of "Divisional" and "Corporate" Management Fees.
- **Capital Investment Management ("CIM") –** CIM is one of American Water's primary business planning processes. It covers capital and asset planning and is employed throughout American Water. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable, and
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment. The process is managed at two levels for all American Water companies, including all VAWC Operating Units. Monthly meetings of the CIM are held to review capital spending compared to plan, review new project requests, and review updates or modifications to existing projects. The President of VAWC and others participate as necessary (e.g. VAWC operations managers and Rates Manager) and provide the data used in the monthly review schedules.

Market Cost Comparison of Service Company Charges to Virginia American Water Company

12-Months Ended September 30, 2011

Virginia American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended September 30, 2011

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to Virginia American Water Company (VAWC):

1. Were the Service Company's charges to VAWC during the 12 months ended September 30, 2011 reasonable?

2. Was VAWC charged the lower of cost or market for managerial and professional services provided by the Service Company during the 12 months ended September 30, 2011?

3. Were the 12 months ended September 30, 2011 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services VAWC receives from the Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's costs for the 12 months ended September 30, 2011 per VAWC customer are very reasonable. For example, during the 12 months ended September 30, 2011, VAWC was charged $66 per customer for administrative and general ('A&G")-related services provided by the Service Company. This compares favorably to costs per customer for electric and combination electric/gas service companies that average $111 for service companies reporting to the Federal Energy Regulatory Commission ("FERC"). Only 4 of the 24 utility service companies that filed a FERC Form 60 for 2010 had a lower A&G cost per customer than VAWC's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- VAWC was charged the lower of cost or market for managerial and professional services during the 12 months ended September 30, 2011.

- On average, the hourly rates for outside service providers are 40% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could only be procured effectively by VAWC from outside professionals if it provided careful supervision to those service providers. If these services were contracted entirely from outside providers, VAWC would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended September 30, 2011, VAWC and its ratepayers would have incurred almost $2.4 million in additional expenses. This amount includes the higher cost of outside providers and the cost of one VAWC position needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to VAWC from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If all overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $2.4 million cited above.

- It would be difficult for VAWC to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from VAWC customers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is below the average of the neighboring electric utility comparison group. As will be explained further, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and VAWC. During the 12-months ended September 30, 2011, the customer accounts cost for VAWC customers was $22.69 compared to the 2010 average of $32.87 for neighboring electric utilities. The highest comparison group per customer cost was $75.43 and the lowest $16.81.

Concerning question 4, the following conclusions was drawn:

- The services that the Service Company provides are necessary and would be required even if VAWC were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to VAWC. For all of the services listed in Exhibit 12, there was only one entity primarily responsible for the service and thus no duplication of efforts between the Service Company and VAWC.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding its own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like VAWC, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of NJAWC, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include legal, communication, human resources and maintenance.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial

services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times their hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 5, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 2% of American Water's Shared Services' professional labor is assigned to VAWC during a month, then 2% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 2% of the Shared Services' accumulated professional and support labor is charged to VAWC during the month, then 2% of that month's overhead expenses will be assigned to VAWC.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to VAWC, then 2% of that office's office expenses would be assigned to VAWC. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended September 30, 2011, the Service Company billed VAWC approximately $6.455 million. As shown in the table below, certain adjustments are made to per books O&M management fees to arrive at total proforma O&M management fees of $5.156 million for purposes of VAWC's rate case. VAWC's per books management fees were subjected to analysis in this market cost comparison.

	12 Months Ended Sep. 30, 2011		
Management Fees	O&M	Capital	Total
Per Books Total	$ 4,605,478	$ 1,849,875	$ 6,455,353
Rate Case Adjustments:			
Projected Increase	$ 588,507		
Non-Recurring Items	$ (55,582)		
Other Adjustments	$ 17,527		
Proforma Total	$ 5,155,930		

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into two categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology, and engineering.

- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.

Total test period Service Company charges break down between management/professional services and customer account services as follows:

	12 Months Ended Sep 30, 2011	
	Amount	Hours
Management and Professional Services	$ 5,657,728	39,475
Customer Account Services	$ 797,625	15,851
Total Service Company Charges	**$ 6,455,353**	**55,326**

This study's first question—whether Service Company 12 months ended September 30, 2011 charges were reasonable—was determined by comparing VAWC's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 12 months ended September 30, 2011 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to VAWC during the 12 months ended September 30, 2011. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 12 months ended September 30, 2011 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing VAWC's customer accounts services expenses to those of neighboring electric utilities. This utility comparison group was selected because the cost of outside providers of customer accounts services is proprietary and not publicly available. Comparison to electric utilities is appropriate because all utilities, regardless of service type, must perform customer account services activities, including updating customer records for meter reads, printing and mailing bills, and the collection and processing of customer payments. Electric utility costs are available from the Federal Energy Regulatory Commission (FERC) Form 1, thus there is appropriate data transparency. The selection of electric utilities from Virginia and neighboring states provides a sufficiently sized comparison group.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to VAWC and determining if these services would be required if VAWC were a stand-alone utility.

IV – Question 1 – Reasonableness of Service Company Charges

VAWC's Service Company Cost per Customer

During the 12 months ended September 30, 2011, VAWC was charged $66 per customer by the Service Company for A&G/O&M-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	12 Months ended Sep 30, 2011 Svc. Co. Charges
Testable Service Company charges	$ 6,455,353
Less: Capital charges	$ (1,849,875)
Less: Non-A&G function O&M charges	
Engineering	$ (34,682)
Operations	$ (609,740)
Water Quality	$ (136,175)
Net A&G/O&M-related charges	$ 3,824,882
VAWC customers	57,928
VAWC Cost Per Customer	**$ 66**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system subject to regulation by the FERC must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2010, a Form 60 was filed by 25 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

Charges to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2010 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

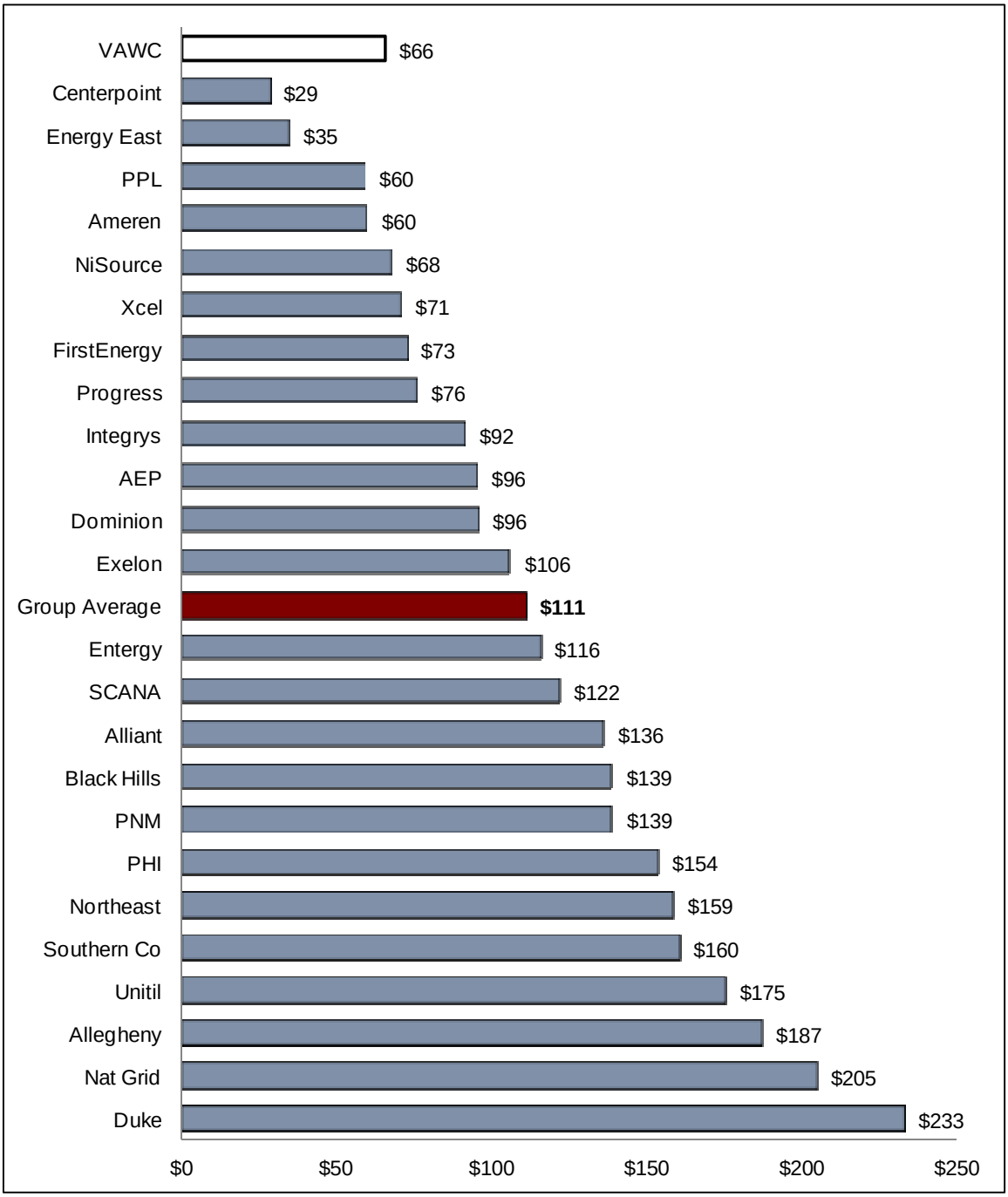
One service company that filed a Form 60 was excluded from the comparison group because its Form 60 contained no data for 2010. That service company, Great Plains Energy Services Incorporated, became inactive in 2010 and had no charges to its regulated utility affiliate. The A&G expenses per regulated utility customer for the other 24 utility companies that filed a Form 60 for 2010 are calculated below.

Utility Company	2010 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$504,470,290	5,270,000	$ 96
Allegheny	$280,648,832	1,500,000	$ 187
Alliant	$190,279,242	1,397,000	$ 136
Ameren	$199,214,264	3,300,000	$ 60
Black Hills	$101,069,342	728,000	$ 139
Centerpoint	$154,637,102	5,400,000	$ 29
Dominion	$355,526,659	3,700,000	$ 96
Duke	$1,050,793,575	4,510,000	$ 233
Energy East	$104,272,025	2,973,000	$ 35
Entergy	$312,275,947	2,700,000	$ 116
Exelon	$625,208,791	5,890,000	$ 106
FirstEnergy	$328,067,979	4,500,000	$ 73
Integrys	$201,979,742	2,200,000	$ 92
Nat Grid	$1,412,608,875	6,900,000	$ 205
NiSource	$255,900,005	3,755,000	$ 68
Northeast	$332,151,577	2,095,000	$ 159
PHI	$298,918,585	1,946,000	$ 154
Progress	$236,500,882	3,100,000	$ 76
PNM	$101,288,510	728,700	$ 139
PPL	$158,366,212	2,659,000	$ 60
SCANA	$177,720,204	1,457,000	$ 122
Southern Co	$708,564,089	4,417,000	$ 160
Unitil	$30,113,132	171,700	$ 175
Xcel	$376,977,165	5,300,000	$ 71
Group Total	**$8,497,553,025**	**76,597,400**	**$ 111**

Exhibit 1 shows VAWC's 12 months ended September 30, 2011 Service Company cost per customer of $66 to be considerably lower than the average of $111 per customer for the comparison group service companies. Only 4 of 24 comparison group service companies had a lower cost per customer than VAWC. Based on this result, it is possible to conclude that the Service Company's 12 months ended September 30, 2011 charges to VAWC were reasonable.

Exhibit 1

Virginia-American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial and rates and revenues services
- Information Technology Professional – information technology services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the five outside service provider categories, based on the dollars and hours charged to VAWC during the 12 months ended September 30, 2011. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged VAWC during the 12 months ended September 30, 2011, its hourly rates are actually overstated because some Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If all overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended September 30, 2011 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to VAWC during the 12 months ended September 30, 2011.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 12 months ended September 30, 2011 test period non-labor Service Company charges:

V – Question 2 – Provision of Services at the Lower of Cost or Market

- Contract Services – 12 months ended September 30, 2011 Service Company charges to VAWC include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services). These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 12 months ended September 30, 2011 Service Company charges to VAWC are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended September 30, 2011 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Total management, professional & technical services charges	$ 131,772	$ 2,015,125	$ 1,283,252	$ 1,126,275	$ 1,101,305	$ 5,657,728
Less:						
Contract services	$ 10,948	$ 868,645	$ 143,991	$ 181,587	$ 40,060	$ 1,245,230
Travel expenses	$ 3,180	$ 40,110	$ 26,502	$ 13,365	$ 30,378	$ 113,535
IT infrastructure expenses	$ 3,155	$ 272,975	$ 7,362	$ 175,439	$ 19,468	$ 478,400
Net Service Charges (A)	$ 114,489	$ 833,395	$ 1,105,397	$ 755,884	$ 1,011,399	$ 3,820,563
Total Hours (B)	499	6,448	15,320	4,798	12,410	39,475
Average Hourly Rate (A / B)	**$ 229**	**$ 129**	**$ 72**	**$ 158**	**$ 82**	

Exhibit 2

Virginia-American Water Company
Analysis of 12 Months Ended September 30, 2011 Service Company Charges By Location And Function

		12 Months Ended September 30, 2011 Service Company Charges					
Location	Function	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Belleville Lab	Water Quality					$ 95,760	$ 95,760
Call Center	Human Resources		$ 18,936				$ 18,936
Corporate	Accounting			$ 149,874			$ 149,874
	Administration		$ 96,850				$ 96,850
	Audit			$ 20,607			$ 20,607
	Communications		$ 40,234				$ 40,234
	Engineering					$ 85,206	$ 85,206
	Finance		$ 1,178,808	$ 173,831			$ 1,352,640
	Human Resources		$ 140,483				$ 140,483
	Information Technology				$ 33,658		$ 33,658
	Legal	$ 57,671					$ 57,671
	Operations		$ 70,070			$ 251,655	$ 321,726
	Procurement			$ 103,985			$ 103,985
	Rates & Revenue			$ 34,299			$ 34,299
	Risk Management		$ 20,065				$ 20,065
	Water Quality					$ 62,391	$ 62,391
Division/Region Offices	Administration		$ 276,602				$ 276,602
	Business Development		$ 16,730				$ 16,730
	Communications		$ 44,487				$ 44,487
	Engineering					$ 140,036	$ 140,036
	Finance			$ 427,562			$ 427,562
	Human Resources		$ 32,199				$ 32,199
	Legal	$ 74,101					$ 74,101
	Operations		$ 863			$ 466,144	$ 467,007
	Procurement			$ 13,987			$ 13,987
	Risk Management		$ 18,159				$ 18,159
	Water Quality					$ 111	$ 111
Information Technology	Information Technology				$ 1,092,617		$ 1,092,617
Shared Services	Accounting			$ 327,299			$ 327,299
	Administration		$ 60,640				$ 60,640
	Finance			$ 9,296			$ 9,296
	Rates & Revenue			$ 22,510			$ 22,510
Total Dollars Charged		**$ 131,772**	**$ 2,015,125**	**$ 1,283,252**	**$ 1,126,275**	**$ 1,101,305**	**$ 5,657,728**

Exhibit 3

Virginia-American Water Company
Analysis of 12 Months Ended September 30, 2011Service Company Hours By Location And Function

		12 Months Ended September 30, 2011 Service Company Hours					
Location	Function	Attorney	Management Consultant	Certified Public Accountant	IT Professional	Professional Engineer	Total
Belleville Lab	Water Quality					873	873
Call Center	Human Resources		203				203
Corporate	Accounting			901			901
	Administration		75				75
	Audit			136			136
	Communications		205				205
	Engineering					1,238	1,238
	Finance		2,281	1,806			4,087
	Human Resources		898				898
	Information Technology				1,459		1,459
	Legal	160					160
	Operations		185			2,000	2,186
	Procurement			819			819
	Rates & Revenue			138			138
	Risk Management		176				176
	Water Quality					510	510
Division/Region Offices	Administration		1,514				1,514
	Business Development		82				82
	Communications		237				237
	Engineering					1,708	1,708
	Finance			4,828			4,828
	Human Resources		-				-
	Legal	339					339
	Operations		33			6,080	6,113
	Procurement			92			92
	Risk Management		391				391
	Water Quality					-	-
Information Technology	Information Technology				3,338		3,338
Shared Services	Accounting			6,378			6,378
	Administration		168				168
	Finance			-			-
	Rates & Revenue			223			223
Total Hours Charged		**499**	**6,448**	**15,320**	**4,798**	**12,410**	**39,475**

Exhibit 4

Virginia-American Water Company
12 Months Ended September 30, 2011 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	IT HW/SW	Travel Expenses	Total	Outside Service Provider Category
Accounting	$ 87,502	$ 1,130	$ 4,187	$ 92,819	Certified Public Accountant
Administration	$ 4,055	$ 127,494	$ 1,325	$ 132,875	Management Consultant
Audit	$ 682	$ 447	$ 227	$ 1,356	Certified Public Accountant
Business Development	$ -	$ 69	$ 994	$ 1,063	Management Consultant
Communications	$ 10,908	$ 1,263	$ 2,271	$ 14,443	Management Consultant
Engineering	$ (1)	$ 676	$ 13,632	$ 14,307	Professional Engineer
Finance	$ 818,461	$ 137,074	$ 23,904	$ 979,438	Management Consultant
	$ 17,352	$ 4,610	$ 19,895	$ 41,857	Certified Public Accountant
Human Resources	$ 33,502	$ 5,210	$ 7,978	$ 46,690	Management Consultant
Information Technology	$ 181,587	$ 175,439	$ 13,365	$ 370,391	IT Professional
Legal	$ 10,948	$ 3,155	$ 3,180	$ 17,283	Attorney
Operations	$ 1,647	$ 1,032	$ 1,377	$ 4,056	Management Consultant
	$ 40,992	$ 6,100	$ 14,802	$ 61,894	Professional Engineer
Procurement	$ 31,178	$ 508	$ 1,105	$ 32,791	Certified Public Accountant
Rates & Revenue	$ 7,277	$ 667	$ 1,088	$ 9,032	Certified Public Accountant
Risk Management	$ 71	$ 834	$ 2,261	$ 3,166	Management Consultant
Water Quality	$ (931)	$ 12,691	$ 1,944	$ 13,704	Professional Engineer
Total	**$ 1,245,230**	**$ 478,400**	**$ 113,535**	**$ 1,837,165**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	IT HW/SW	Travel Expenses	Total
Attorney	$ 10,948	$ 3,155	$ 3,180	$ 17,283
Management Consultant	$ 868,645	$ 272,975	$ 40,110	$ 1,181,730
Certified Public Accountant	$ 143,991	$ 7,362	$ 26,502	$ 177,855
IT Professional	$ 181,587	$ 175,439	$ 13,365	$ 370,391
Professional Engineer	$ 40,060	$ 19,468	$ 30,378	$ 89,906
Total	**$ 1,245,230**	**$ 478,400**	**$ 113,535**	**$ 1,837,165**

Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among Virginia certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	Virginia Average
Partners/Owners	98%
Directors (11+ years experience)	90%
Managers (6-10 years experience)	72%
Sr Associates (4-5 years experience)	61%
Associates (1-3 years experience)	17%
New Professionals	8%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2010)

Attorneys

The Virginia State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for Virginia attorneys. Therefore, an estimate of Virginia attorney rates was developed from surveys conducted by Lawyers Weekly in the states of Michigan, Missouri and Massachusetts. As presented in Exhibit 5 (page 19), the average rate for each firm was adjusted for the cost of living differential between its location and Richmond, Virginia. The Lawyers Weekly surveys included rates in effect at December 31, 2010. Thus, the 2010 average rate was escalated to March 31, 2011—the midpoint of the test year ended September 30, 2011.

Management Consultants

The cost per hour for management consultants was developed from a 2011 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2010 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6 (page 20), was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2010 average rate was escalated to March 31, 2011—the midpoint of the 12 months ended September 30, 2011.

Certified Public Accountants

The average hourly rate for Virginia CPAs was developed from a 2010 survey performed by the American Institute of Certified Public Accountants (AICPA). The Virginia version of this survey was used to develop hourly rates for member firms in Virginia.

As shown in Exhibit 7 (page 21), a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2009. The 2010 average rate was escalated to March 31, 2011—the midpoint of the 12 months ended September 30, 2011.

Information Technology Professionals

The average hourly rate for information technology consultants and contractors was developed from Baryenbruch & Company, LLC IT industry hourly billing rate data. As shown in Exhibit 8 (page 22), that data was compiled and a weighted average was calculated based on a percent of time that is typically applied to an IT consulting assignment based on Baryenbruch & Company, LLC's experience.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by VAWC in 2011. As presented in Exhibit 9 (page 23), an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

Virginia-American Water Company
Estimated Billing Rates For Virginia Attorneys Based On Michigan, Missouri and Massachusetts Attorney Billing Rates

Billing rates as of December 31, 2010 (Note A)							Cost of Living	
		Billing Rate Range						
		Associate		Partner			Adjust	Adjusted
Firm	Location	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright	Detroit, Mi	$ 205	$ 290	$ 360	$ 575	$ 358	97%	$ 369
Dykema Gossett	Detroit, Mi	$ 235	$ 410	$ 310	$ 645	$ 400	97%	$ 413
Butzel Long	Detroit, Mi	$ 185	$ 330	$ 310	$ 590	$ 354	97%	$ 365
Maddin, Hauser, Wartell, Roth &	Southfield, Mi	$ 195	$ 295	$ 225	$ 400	$ 279	97%	$ 288
Kemp Klein Law Firm	Troy, Mi	$ 160	$ 260	$ 240	$ 350	$ 253	97%	$ 261
Rader, Fishman & Grauer	Bloomfield Hills, Mi	$ 130	$ 250	$ 275	$ 550	$ 301	97%	$ 311
Jaffe Raitt Heuer & Weiss	Southfield, Mi	$ 175	$ 250	$ 225	$ 550	$ 300	97%	$ 310
Hertz Schram	Bloomfield Hills, Mi	$ 265	$ 265	$ 325	$ 325	$ 295	97%	$ 305
Lipson, Neilson, Cole, Seltzer & (	Bloomfield Hills, Mi	$ 185	$ 185	$ 225	$ 345	$ 235	97%	$ 243
O'Reilly Rancilio	Sterling Heights, Mi	$ 160	$ 200	$ 225	$ 300	$ 221	97%	$ 229
Parmenter O'Toole	Muskegon, Mi	$ 125	$ 195	$ 200	$ 290	$ 203	87%	$ 232
Scholten Fant	Grand Haven, Mi	$ 180	$ 180	$ 220	$ 220	$ 200	87%	$ 229
Abbott, Nicholson, Quilter, Essha	Detroit, Mi	$ 200	$ 200	$ 350	$ 350	$ 275	97%	$ 284
Greensfelder Hemker & Gale	St. Louis, Mo	$ 175	$ 240	$ 285	$ 435	$ 284	85%	$ 334
Thompson Coburn	St. Louis, Mo	$ 225	$ 310	$ 480	$ 480	$ 374	85%	$ 440
Armstrong Teasdale	St. Louis, Mo	$ 200	$ 325	$ 335	$ 475	$ 334	85%	$ 393
HeplerBroom	St. Louis, Mo	$ 150	$ 150	$ 275	$ 275	$ 213	85%	$ 250
Husch Blackwell	Kansas City, Mo	$ 206	$ 326	$ 342	$ 483	$ 339	92%	$ 368
Lathrop & Gage	Kansas City, Mo	$ 195	$ 240	$ 325	$ 420	$ 295	92%	$ 320
Polsinelli, Shughart	Kansas City, Mo	$ 260	$ 260	$ 400	$ 400	$ 330	92%	$ 358
Spencer, Fane, Britt & Browne	St. Louis, Mo	$ 220	$ 230	$ 280	$ 390	$ 280	85%	$ 329
Stinson, Morrison, Hecker	St. Louis, Mo	$ 205	$ 255	$ 285	$ 445	$ 298	85%	$ 350
Burns & Levinson	Boston, Ma	$ 210	$ 350	$ 375	$ 525	$ 365	124%	$ 295
Sullivan & Worcester	Boston, Ma	$ 290	$ 535	$ 475	$ 830	$ 533	124%	$ 431
Holland & Knight	Boston, Ma	$ 215	$ 450	$ 445	$ 800	$ 478	124%	$ 386
Seyfarth Shaw	Boston, Ma	$ 327	$ 327	$ 511	$ 511	$ 419	124%	$ 339
Bowditch & Dewey	Worcester, Ma	$ 125	$ 220	$ 250	$ 550	$ 286	124%	$ 231
Prince Lobel	Boston, Ma	$ 195	$ 325	$ 325	$ 525	$ 343	124%	$ 277
Hinckley, Allen & Snyder	Boston, Ma	$ 205	$ 395	$ 360	$ 645	$ 401	124%	$ 324
Mirick O'Connell	Worcester, Ma	$ 220	$ 220	$ 350	$ 350	$ 285	124%	$ 230
Lawson & Weitzen	Boston, Ma	$ 125	$ 225	$ 225	$ 450	$ 256	124%	$ 207
Sunstein Kann Murphy Timbers	Boston, Ma	$ 285	$ 535	$ 575	$ 825	$ 555	124%	$ 449
Keegan Werlin	Boston, Ma	$ 200	$ 300	$ 300	$ 475	$ 319	124%	$ 258
Rich May	Boston, Ma	$ 150	$ 325	$ 295	$ 400	$ 293	124%	$ 236
Anderson Kreiger	Cambridge, Ma	$ 285	$ 285	$ 450	$ 450	$ 368	124%	$ 297
Bernkopf Goodman	Boston, Ma	$ 205	$ 395	$ 375	$ 550	$ 381	124%	$ 308
Tarlow Breed Hart & Rodgers	Boston, Ma	$ 225	$ 365	$ 375	$ 495	$ 365	124%	$ 295
Donoghue Barrett & Singal	Boston, Ma	$ 225	$ 390	$ 350	$ 450	$ 354	124%	$ 286
Cesari and McKenna	Boston, Ma	$ 150	$ 400	$ 425	$ 525	$ 375	124%	$ 303
						Overall Average 2010 Billing Rate		$ 311

Escalation to Test Year's Mid-Point - March 31, 2011 (Note B)	
CPI at December 31, 2010	219.2
CPI at March 31, 2011	223.5
Inflation/Escalation	2.0%
Average Hourly Billing Rate For Attorneys At March 31, 2011	**$ 317**

Note A: Source is Michigan Lawyers Weekly (April 2010), Missouri Lawyers Weekly (April 2010) and Massachusetts Lawyers Weekly (April 2010)

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Note C: Source is Council for Community and Economic Research. This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Richmond, Virginia. A number over 100% indicates the Michigan/Missouri/Massachusetts city's cost of living is higher than Richmond. A number less than 100% indicates Richmond's cost of living is higher.

Exhibit 6

Virginia-American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2010 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 188	$ 244	$ 306	$ 319	$ 395

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 188	$244	$306	$319	$395	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 56	$ 73	$ 61	$ 32	$ 39	**$ 262**

Escalation to Test Period Midpoint (March 31, 2011) (Note B)

CPI at December 31, 2010	219.2
CPI at March 31, 2011	223.5
Inflation/Escalation	2.0%
Average Hourly Billing Rate For Management Consultants At March 31, 2011	**$ 267**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2011 Edition," Association of Management Consulting Firms

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

Virginia-American Water Company
Estimated Billing Rates Of Virginia Certified Public Accountants

A. Calculation of Average Hourly Billing Rate by Public Accounting Position
Survey billing rates were those in effect in 2009 (Note A)

	Average Hourly Billing Rate (Note A)				
	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate by CPA Firm Position	$ 83	$ 116	$ 163	$ 197	
Percent of Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 25	$ 35	$ 33	$ 39	**$ 132**

Escalation to Test Period Midpoint (March 31, 2011) (Note B)

CPI at December 31, 2009	216.0
CPI at March 31, 2011	223.5
Inflation/Escalation	3.5%
Average Hourly Billing Rate For CPAs At March 31, 2011	**$ 136**

Note A: Source is AICPA's 2010 National PCPS/TSCPA Management of an Accounting Practice Survey (Virginia edition)

Exhibit 8

Virginia-American Water Company
Estimated Billing Rates Of Virginia Information Technology Professionals

IT Resource Level	2011 Hourly Rate (A)
Consultant Positions	
Senior Manager/Partner Consultant	$ 369
Staff/Manager Consultant	$ 255
Contractor Positions	
Senior Contractor	$ 151
Contractor	$ 73

Overall Average	2011 Rate	% of Project Assignment	
Senior Manager/Partner Consultant	$ 369	10%	$ 37
Staff/Manager Consultant	$ 255	30%	$ 76
Senior Contractor	$ 151	30%	$ 45
Contractor	$ 73	30%	$ 22
	Weighted Average		**$ 180**

Note A: Source is Baryenbruch & Company, LLC

Exhibit 9

Virginia-American Water Company
Estimated Billing Rates Of Virginia Engineers

Billing rates in effect in 2011

A. Calculation of Average Hourly Rate by Engineer Position

	Average Hourly Billing Rates			
	Technician	Engineer Design Engineer	Project Manager	Officer
Name of Firm	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer
Firm #1	$85	na	$170	na
Firm #2	$70	na	$93	na
Firm #3	$78	$93	$148	$190
Firm #4	na	$74	$83	$126

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician	Engineer Design Engineer	Project Manager	Officer	
	Senior Technician	Project Engineer	Sr. Mgr. Engineer	Principal Engineer	
Average Hourly Billing Rate (From Above)	$78	$83	$123	$158	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$23	$29	$31	$16	**$99**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended September 30, 2011		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 229	$ 317	$ (88)
Management Consultant	$ 129	$ 267	$ (138)
Certified Public Accountant	$ 72	$ 136	$ (64)
IT Professional	$ 158	$ 180	$ (23)
Professional Engineer	$ 82	$ 99	$ (17)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to VAWC during the 12-months ended September 30, 2011, outside service providers would have cost $2,242,566 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 40% higher than those of the Service Company ($2,242,566 / $5,657,728).

	12 Months Ended September 30, 2011		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (88)	499	$ (43,973)
Management Consultant	$ (138)	6,448	$ (888,648)
Certified Public Accountant	$ (64)	15,320	$ (983,614)
IT Professional	$ (23)	4,798	$ (109,178)
Professional Engineer	$ (17)	12,410	$ (217,153)
Service Company Less Than Outside Providers			$ (2,242,566)

It should be noted that the cost differential associated with using outside providers is even greater because exempt Service Company personnel do not charge more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. Thus, VAWC would have been charged by outside providers for overtime worked by Service Company personnel who are not paid for that time.

If VAWC were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform over 39,000 hours of work (more than 26 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing VAWC management team. Thus, it would be necessary for VAWC to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill this position would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $150,000 per year to VAWC's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding 1 Professional Position To VAWC's Staff

	Total
New Positions' Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Cost of One Position	$ 149,400

Thus, the total effect on the ratepayers of VAWC of contracting all services now provided by Service Company would be an increase in their costs of $2,391,966 ($2,242,566 + $149,400). Based on the results of this comparison, it is possible to conclude that the Service Company charged VAWC at the lower of cost or market for services provided during the 12 months ended September 30, 2011.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Customer Call Center Maintenance – support of phone banks, voice recognition units, call center software applications and telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – processing customer payments at locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to VAWC with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, VAWC's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 10 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

Virginia	• Appalachian Power	• Virginia Electric Power
West Virginia	• Appalachian Power • Monongahela Power	• Wheeling Power
Maryland	• Baltimore Gas & Electric • Delmarva Power & Light	• Potomac Electric
North Carolina	• Duke Energy Carolinas	• Progress Energy Carolinas
Kentucky	• Duke Energy Kentucky • Kentucky Power	• Kentucky Utilities • Louisville Gas & Electric
Tennessee	• Kingsport Power	

Virginia-American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

Virginia-American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

VAWC Cost per Customer

As calculated below, VAWC's 12 months ended September 30, 2011 customer account services expense per customer was $22.69. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by VAWC. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses have to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

Virginia-American Cost Per Customer		Year Ended 9/30/2011 Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Cost Component					
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 797,625	$ 319,456	$ 1,117,081	
Operating Company	Customer payment processing			$ 32,310	Note B
Operating Company	Postage & forms			$ 164,723	
			Cost Pool Total	$ 1,314,114	
			Total Customers	57,928	
			12 Months Ended September 30, 2011 Cost Per VAWC Customer	**$ 22.69**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Call handling expenses		$ 325,053
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.26	
Percent different	98%	98%
Total Adjustment		$ 319,456

Note B: Estimated customer payment processing expenses

Number of customers	57,928
Number of payments/customer/year	5.6
Total payments processed/year	324,397
Bank charge per item	$ 0.0996
Total estimated annual expense	$ 32,310

Electric Utility Group Cost per Customer

Exhibit 11 shows the actual 12 months ending September 30, 2011 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, VAWC's cost per customer is below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that VAWC's 12 months ended September 30, 2011 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to VAWC were comparable to those of other utilities.

Average Customer Accounts Expense Per Customer	
Monongahela Power	$ 16.81
Virginia Electric Power	$ 17.69
Louisville Gas & Electric	$ 20.01
Duke Power	$ 21.19
Virginia American Water	**$ 22.69**
Wheeling Power	$ 27.63
Appalachian Power	$ 30.44
Kingsport Power	$ 32.03
Comparison Group Average	**$ 32.87**
Kentucky Power	$ 33.44
Kentucky Utilities	$ 34.68
Prog Energy - Carolinas	$ 35.14
Baltimore Gas & Electric	$ 36.73
Duke Energy Kentucky	$ 47.19
Delmarva Power & Light	$ 74.83
Potomac Electric	$ 75.43

Exhibit 11
Page 1 of 3

Virginia-American Water Company
Comparison Group 12 Months Ended 9/30/2011 Actual Customer Accounts Expense Per Customer

		Virginia		West Virginia		
		Appalachian Power	Virginia Electric Power	Appalachian Power	Monongahela Power	Wheeling Power
Customer Account Services Cost Pool						
FERC Account Balances:						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 27,249,698	$ 33,998,108		$ 5,080,087	$ 1,053,082
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 99,126	$ -		$ -	$ 4,240
Subtotal		$ 27,348,824	$ 33,998,108		$ 5,080,087	$ 1,057,322
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,460,195	$ 7,285,413		$ 1,118,992	$ 59,851
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 455,406	$ 1,568,592		$ 281,002	$ 19,889
Total Cost Pool		**$ 29,264,425**	**$ 42,852,113**		**$ 6,480,081**	**$ 1,137,062**
Total Customers (page 304, line 43)		961,229	2,422,970		385,504	41,146
Customer Account Services Expense per Customer		**$ 30.44**	**$ 17.69**	see Virginia	**$ 16.81**	**$ 27.63**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 34,736,360	$217,149,354		$ 23,432,243	$ 630,611
Total O&M Payroll (page 355, line 65)		$141,615,451	$611,156,982		$ 76,919,229	$ 2,739,309
Benefits as Percent of Payroll		24.5%	35.5%		30.5%	23.0%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)		$ 6,900,199	$ 25,836,931		$ 6,420,217	$ 330,793
Gas (page 354, line 37)		$ -	$ -		$ -	$ -
Total Payroll Charged to Customer Accounts		$ 6,900,199	$ 25,836,931		$ 6,420,217	$ 330,793
Percent Applicable to Customer Accounts Services (903 and 905):						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 27,249,698	$ 33,998,108		$ 5,080,087	$ 1,053,082
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 99,126	$ -		$ -	$ 4,240
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 27,348,824	$ 33,998,108		$ 5,080,087	$ 1,057,322
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,351,446	$ 8,841,673		$ 3,799,093	$ 287,953
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 31,700,270	$ 42,839,781		$ 8,879,180	$ 1,345,275
Percent Applicable to Customer Accounts Services (903 and 905)		86.3%	79.4%		57.2%	78.6%
Customer Account Services Portion of Total Payroll		$ 5,953,020	$ 20,504,465		$ 3,673,229	$ 259,988
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,460,195	$ 7,285,413		$ 1,118,992	$ 59,851
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll		$ 5,953,020	$ 20,504,465		$ 3,673,229	$ 259,988
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%		7.65%	7.65%
Estimated Employer's Portion of FICA		$ 455,406	$ 1,568,592		$ 281,002	$ 19,889

Virginia-American Water Company
Comparison Group 12 Months Ended 9/30/2011 Actual Customer Accounts Expense Per Customer

		Maryland			North Carolina	
		Baltimore Gas & Electric	Delmarva Power & Light	Potomac Electric	Duke Energy Carolinas	Prog Energy Carolinas
Customer Account Services Cost Pool						
FERC Account Balances:						
Acct 903 - Customer Records & Collection (page 322, line 131)		$ 32,124,609	$ 33,731,176	$ 51,028,163	$ 76,091,685	$ 23,141,107
Acct 905 - Misc Customer Accounts (page 322, line 133)		$ 3,467,467	$ 2,228	$ -	$ 142,668	$ 2,813,905
Subtotal		$ 35,592,076	$ 33,733,404	$ 51,028,163	$ 76,234,353	$ 25,955,012
Add: Employee Benefits & Employer FICA (not included in above amounts)						
Account 926 - Employee Pension & Benefits	**Note A**	$ 7,175,643	$ 3,138,929	$ 7,139,118	$ 5,657,079	$ 3,678,404
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 2,664,148	$ 517,430	$ 900,454	$ 2,038,709	$ 863,719
Total Cost Pool		**$ 45,431,866**	**$ 37,389,763**	**$ 59,067,735**	**$ 83,930,141**	**$ 30,497,135**
Total Customers (page 304, line 43)		1,236,939	499,689	783,069	2,388,580	1,438,889
Customer Account Services Expense per Customer		**$ 36.73**	**$ 74.83**	**$ 75.43**	**$ 35.14**	**$ 21.19**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt						
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 41,908,186	$ 19,690,595	$ 37,396,545	$184,003,526	$134,644,705
Total O&M Payroll (page 355, line 65)		$203,392,492	$ 42,429,484	$ 61,657,632	$866,817,416	$413,276,879
Benefits as Percent of Payroll		20.6%	46.4%	60.7%	21.2%	32.6%
Payroll Applicable to Customer Account Services						
Total Payroll Charged to Customer Accounts Function						
Electric (page 354, line 7)		$ 26,762,799	$ 6,765,452	$ 13,188,369	$ 28,448,738	$ 13,660,562
Gas (page 354, line 37)		$ 13,788,328	$ 1,485,099	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 40,551,127	$ 8,250,551	$ 13,188,369	$ 28,448,738	$ 13,660,562
Percent Applicable to Customer Accounts Services (903 and 905):						
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 32,124,609	$ 33,731,176	$ 51,028,163	$ 76,091,685	$ 23,141,107
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 3,467,467	$ 2,228	$ -	$ 142,668	$ 2,813,905
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 35,592,076	$ 33,733,404	$ 51,028,163	$ 76,234,353	$ 25,955,012
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,851,707	$ 7,414,978	$ 6,146,168	$ 5,146,079	$ 5,448,525
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 41,443,783	$ 41,148,382	$ 57,174,331	$ 81,380,432	$ 31,403,537
Percent Applicable to Customer Accounts Services (903 and 905)		85.9%	82.0%	89.3%	93.7%	82.6%
Customer Account Services Portion of Total Payroll		$ 34,825,460	$ 6,763,794	$ 11,770,636	$ 26,649,786	$ 11,290,450
Pension & Benefits Pertaining to Customer Accounts Services		$ 7,175,643	$ 3,138,929	$ 7,139,118	$ 5,657,079	$ 3,678,404
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services						
Customer Account Services Portion of Total Payroll		$ 34,825,460	$ 6,763,794	$ 11,770,636	$ 26,649,786	$ 11,290,450
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 2,664,148	$ 517,430	$ 900,454	$ 2,038,709	$ 863,719

Exhibit 11
Page 3 of 3

Virginia-American Water Company
Comparison Group 12 Months Ended 9/30/2011 Actual Customer Accounts Expense Per Customer

		Kentucky				Tennessee	
		Duke Energy Kentucky	Kentucky Power	Kentucky Utilities	Louisville Gas & Electric	Kingsport Power	
Customer Account Services Cost Pool							
FERC Account Balances:							
Acct 903 - Customer Records & Collection (page 322, line 131)		$ 5,309,327	$ 5,464,903	$ 14,571,794	$ 5,367,031	$ 1,457,131	
Acct 905 - Misc Customer Accounts (page 322, line 133)		$ -	$ 30,730	$ 514,885	$ 368,105	$ 4,563	
Subtotal		$ 5,309,327	$ 5,495,633	$ 15,086,679	$ 5,735,136	$ 1,461,694	
Add: Employee Benefits & Employer FICA (not included in above amounts)							
Account 926 - Employee Pension & Benefits	**Note A**	$ 777,756	$ 250,814	$ 3,286,611	$ 1,857,239	$ 34,377	**Group Average**
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 292,961	$ 91,123	$ 502,613	$ 329,174	$ 15,271	
Total Cost Pool		**$ 6,380,044**	**$ 5,837,570**	**$ 18,875,903**	**$ 7,921,549**	**$ 1,511,341**	**$376,576,728**
Total Customers (page 304, line 43)		135,213	174,579	544,285	395,868	47,183	11,455,143
Customer Account Services Expense per Customer		**$ 47.19**	**$ 33.44**	**$ 34.68**	**$ 20.01**	**$ 32.03**	**$ 32.87**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt							
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 7,408,852	$ 6,710,251	$ 39,239,991	$ 35,350,404	$ 410,134	
Total O&M Payroll (page 355, line 65)		$ 36,480,032	$ 31,868,069	$ 78,442,680	$ 81,901,172	$ 2,381,572	
Benefits as Percent of Payroll		20.3%	21.1%	50.0%	43.2%	17.2%	
Payroll Applicable to Customer Account Services							
Total Payroll Charged to Customer Accounts Function							
Electric (page 354, line 7)		$ 2,803,590	$ 1,335,667	$ 8,535,558	$ 3,203,900	$ 227,434	
Gas (page 354, line 37)		$ 1,739,242	$ -		$ 2,620,974	$ -	
Total Payroll Charged to Customer Accounts		$ 4,542,832	$ 1,335,667	$ 8,535,558	$ 5,824,874	$ 227,434	
Percent Applicable to Customer Accounts Services (903 and 905):							
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 5,309,327	$ 5,464,903	$ 14,571,794	$ 5,367,031	$ 1,457,131	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ -	$ 30,730	$ 514,885	$ 368,105	$ 4,563	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 5,309,327	$ 5,495,633	$ 15,086,679	$ 5,735,136	$ 1,461,694	
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 988,901	$ 666,740	$ 4,513,214	$ 2,028,527	$ 203,677	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 6,298,228	$ 6,162,373	$ 19,599,893	$ 7,763,663	$ 1,665,371	
Percent Applicable to Customer Accounts Services (903 and 905)		84.3%	89.2%	77.0%	73.9%	87.8%	
Customer Account Services Portion of Total Payroll		$ 3,829,550	$ 1,191,154	$ 6,570,098	$ 4,302,923	$ 199,619	
Pension & Benefits Pertaining to Customer Accounts Services		$ 777,756	$ 250,814	$ 3,286,611	$ 1,857,239	$ 34,377	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services							
Customer Account Services Portion of Total Payroll		$ 3,829,550	$ 1,191,154	$ 6,570,098	$ 4,302,923	$ 199,619	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	
Estimated Employer's Portion of FICA		$ 292,961	$ 91,123	$ 502,613	$ 329,174	$ 15,271	

VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to VAWC by the Service Company would be necessary if VAWC were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for VAWC. Based on discussions with Service Company personnel, the matrix in Exhibit 12 was created showing which entity—VAWC or a Service Company location—is responsible for each of the functions VAWC requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if VAWC were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to VAWC. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

Virginia-American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:							
		American Water Service Company						
Water Company Function	VAWC	Customer Call Center	Eastern Division	Shared Services	Corporate Office	IT Service Centers	Supply Chain	Belleville Lab
Engineering and Construction Management								
CPS Preparation	S				P			
Five-Year System Planning	S		S		P			
Engineering Standards & Policies Development					P			
Project Design								
Major Projects (e.g., new treatment plant)	S				P			
Special Projects	P				S			
Minor Projects (e.g., pipelines)	P							
Construction Project Management								
Major Projects	P				S			
Special Projects	P				S			
Minor Projects	P							
Hydraulics Review	P		S					
Developers Extensions	P							
Tank Painting	P				S			
Water Quality and Purification								
Water Quality Standards Development					P			S
Research Studies	S				P			S
Water Quality Program Implementation	P				S			S
Water Treatment Operations & Maintenance	P				S			
Compliance Sampling	S							P
Testing/Other Sampling	P							S
Transmission and Distribution								
Preventive Maintenance Program Development	P							
System Maintenance	P							
Leak Detection	P							
Customer Service								
Community Relations	S		P		S			
Customer Contact	S	P						
Call Processing		P						
Service Order Creation	S	P	S					
Service Order Processing	P	S	S					
Customer Credit		P	S					
Meter Reading	P		S			S		
Customer Bill Preparation		S				P		
Bill Collection	S	P	S			S		
Customer Payment Processing	S			P				
Meter Standards Development					P			
Meter Testing, Maintenance & Replacement	P							

Virginia-American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:							
		American Water Service Company						
Water Company Function	VAWC	Customer Call Center	Eastern Division	Shared Services	Corporate Office	IT Service Centers	Supply Chain	Belleville Lab
Financial Management								
Financial Planning	S		P	S	S			
Financings--Equity				S	P			
Financings--Long Term Debt & Preferred (Note A)			S	S	P			
Short Term Lines of Credit Arrangements(Note A)			S	S	P			
Investor Relations			S		P			
Insurance Program Administration					P			
Loss Control/Safety Program Administration	P				S			
Pension Fund Asset Management					P			
Cash Management/Disbursements				P				
Internal Auditing					P			
Budgeting and Variance Reporting								
Corporate Guidelines & Instructions					P			
Regional Guidelines & Instructions			P					
Budget Preparation								
Revenue	P		S					
O&M	P		S					
Depreciation and Interest Expense	S		P	S				
Budget Preparation--Service Company Charges		S	P	S	S	S	S	S
Capital Budget Preparation—Projects	P				S			
Capital Budget Preparation—Non-Project Work	P				S			
Prepare Monthly Budget Variance Report	P		S		S			
("Budget/Plan Analysis")								
Prepare Capital Project Budget Status Report	P				S			
Year-End Projections	P		S					
Accounting and Taxes								
Accounts Payable Accounting	S		S	P				
Payroll Accounting	S		S	P				
Work Order Accounting	S		S	P				
Fixed Asset Accounting	S		S	P				
Journal Entry Preparations--Billing Corrections	S		S	P				
Journal Entry Preparation--All Others	S		S	P				
Financial Statement Preparation	S		S	P				
State Commission Reporting	S		S	P				
Income Taxes--State					P			
Income Taxes--Federal					P			
Property Taxes	S		S	P				
Gross Receipts (Town) Taxes	S		S	P				

Note A: Lines of credit are the responsibility of American Water Capital Corporation ("AWCC"). AWCC is also responsible for Corporate financings which may be distributed to the regulated subsidiaries.

Virginia-American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible
S - Provides Support

Water Company Function	Performed By: VAWC	American Water Service Company: Customer Call Center	Eastern Division	Shared Services	Corporate Office	IT Service Centers	Supply Chain	Belleville Lab
Rates								
Rate Studies & Tariff Change Administration	S		P	S				
Rate Case Planning and Preparation	S		P	S				
Rate Case Administration	S		P					
Commission Inquiry Response	S		P	S	S			
Legal			P		S			
Purchasing and Materials Management – National (pipe, chemicals, meters, etc.)								
Specification Development	S		S		P		S	
Bid Solicitation	S						P	
Contract Administration	S						P	
Purchasing and Materials Management – State (state supplier service agreements)								
Specification Development	P		S					
Bid Solicitation	P							
Contract Administration	P							
Ordering	P							
Inventory Management	P							
Human Resources Management								
Benefit Program Development					P			
Benefits Program Administration			P	S				
Management Compensation Administration					P			
Wage & Salary Program Design					P			
Wage & Salary Administration	S		P					
Labor Negotiations--Wages	S		P					
Labor Negotiations--Benefits					P			
Labor Negotiations-- Work Rules	S		P					
Training Program Development	S		S		P			
Training--Course Delivery	S		P					
Affirmative Action/EEO--Plan Development	S		P					
Affirmative Action/EEO--Implementation	S		P					
Information Systems Services								
Service Company Data Centers								
System Operations & Maintenance						P		
Software Maintenance						P		
Network Administration						P		
PC Acquisition & Support	S					P		
Help Desk				S		P		

VI - Question 4 – Need for Service Company Services

Governance Practices Associated With Service Company Charges

There are several ways by which VAWC exercises control over Service Company services and charges. The most important of these are described below.

- **President of Regulated Operations Oversight** – The President of Regulated Operations is on the Executive Leadership Team (ELT) of American Water. This position is responsible for the overall performance of each operating company in American Water. As part of the ELT, the President of Regulated Operations has equal say with other ELT members in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending. The President of Regulated Operations also addresses local concerns with each operating company president.
- **Operating Company Board Oversight** – VAWC board of directors includes members of American Water's ELT, members of the divisional management team and business and community leaders from outside the Company. VAWC's president is Chairman of the VAWC board. This helps ensure that VAWC's needs are a factor in the delivery of Service Company services.
- **Service Company Budget Review/Approval** – The ELT serves as the Board of Directors for the Service Company and must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors. VAWC's president also acts as ex officio and attends the Service Company board meetings.
- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's ELT, which includes the President of Regulated Operations. With input from the local presidents and Divisional Vice President & Treasurer, they have the ability to impact all new initiatives and projects before they are authorized.
- **Service Company Bill Scrutiny** – VAWC Finance personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. VAWC's financial manager discusses the monthly bill with Shared Services Center office personnel and any mistakes or overcharges are credited on a subsequent billing. The VAWC Finance Manager prepares an actual-to-budget comparison of management fees each month for use in identifying unusual variances. Service Company actual-to-budget comparison is included in the monthly Financial Review Package (FRP). Unusual variances are researched, explanations are provided and any necessary corrections are made.
- **Service Company Budget Variance Reporting** – Each month, a summary variance analysis is prepared that explains differences between budgeted and actual Service Company spending. In addition, a more detailed monthly variance report, called the "Statement of Expenses and Billed Charges," is produced by Service Company location and shows actual spending for the month.
- **Operating Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly, has a line item for Management Fees (i.e., Service Company charges). In this way, Service Company budget versus actual charges can be monitored for the month and year-to-date. Additional information exists that allows more detailed analysis of "Divisional" and "Corporate" Management Fees.
- **Capital Investment Management (CIM) –** CIM is one of American Water's primary business planning processes. It covers capital and asset planning and is employed throughout American Water. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the

capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:

- Capital expenditure plans are aligned with the strategic intent of the business
- The impact of capital expenditure and income plans are fully reflected in operating expense plans
- The impacts of these plans are understood and affordable, and
- Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

The CIM process was designed to optimize the effectiveness of asset investment. The process is managed at two levels for all American Water companies, including all VAWC Operating Units. Monthly meetings of the CIM are held to review capital spending compared to plan, review new project requests, and review updates or modifications to existing projects. The President of VAWC and others participate as necessary (e.g. VAWC operations managers and Rates Manager) and provide the data used in the monthly review schedules.

Market Cost Comparison of Service Company Charges to West Virginia American Water Company

12-Months Ended December 31, 2009

West Virginia American Water Company
Market Cost Comparison of Service Company Charges
12-Months Ended December 31, 2009

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I – Introduction

Purpose of This Study

This study was undertaken to answer four questions concerning the services provided by American Water Works Service Company, Inc. (Service Company) to West Virginia American Water Company (WV American):

1. Were the Service Company's charges to WV American during the 12 months ended December 31, 2009 reasonable?

2. Was WV American charged the lower of cost or market for managerial and professional services provided by the Service Company during the 12 months ended December 31, 2009?

3. Were the 12 months ended December 31, 2009 costs of the Service Company's customer accounts services, including those of the National Call Centers, comparable to those of other utilities?

4. Are the services WV American receives from Service Company necessary?

Study Results

Concerning question 1, the following conclusion was reached:

- The Service Company's 12 months ended December 31, 2009 cost per WV American customer was very reasonable compared to cost per customer for electric and combination electric/gas service companies. During the 12 months ended December 31, 2009, WV American was charged $54 per customer for administrative and general (A&G)-related services provided by the Service Company. This compares to an average of $109 per customer for service companies reporting to the Federal Energy Regulatory Commission (FERC). Only 3 of the 24 utility service companies that filed a FERC Form 60 for 2008 had a lower per customer A&G cost than WV American's charges from the Service Company.

Concerning question 2, the following conclusions were drawn from this study:

- WV American was charged the lower of cost or market for managerial and professional services during the 12 months ended December 31, 2009.

- On average, the hourly rates for outside service providers are 48% higher than the Service Company's hourly rates.

- The managerial and professional services provided by the Service Company are vital and could not be procured externally by WV American without careful supervision on the part of WV American. If these services were contracted entirely to outside providers, WV American would have to add at least one position to manage activities of outside firms. This position would be necessary to ensure the quality and timeliness of services provided.

- If all the managerial and professional services now provided by the Service Company had been outsourced during the 12 months ended December 31, 2009, WV American and its ratepayers would have incurred more than $4,100,000 in additional expenses. This amount includes the higher cost of outside providers and the cost of one WV American position needed to direct the outsourced work.

- This study's hourly rate comparison actually understates the cost advantages that accrue to WV American from its use of the Service Company. Outside service providers generally bill for every hour worked. Service Company exempt personnel, on the other hand, charge a maximum of 8 hours per day even when they work more hours. If the overtime hours of Service Company personnel were factored into the hourly rate calculation, the Service Company would have had an even greater annual dollar advantage than the $4,100,000 cited above. For instance, if Service Company overtime is conservatively estimated at 5% (2 hours per week), then that work would have added more than $200,000 in charges from outside providers.

- It would be difficult for WV American to find local service providers with the same specialized water industry expertise as that possessed by the Service Company staff. Service Company personnel spend substantially all their time serving operating water companies. This specialization brings with it a unique knowledge of water utility operations and regulation that is most likely unavailable from local service providers.

- Service Company fees do not include any profit markup. Only its actual cost of service is being recovered from WV American ratepayers.

Concerning question 3, the following conclusion was reached:

- The cost of the Service Company's customer accounts services, including those provided by the National Call Center, is below the range of the average of the neighboring electric utility comparison group. As will be explained further herein, this group of companies provides a reasonable proxy group for comparison to a regulated utility of the size and scope of the Service Company and WV American. During the 12-months ended December 31, 2009, the customer accounts cost for WV American customers was $29.15 compared to the 2008 average of $32.23 for neighboring electric utilities. The highest comparison group per customer cost was $72.58 and the lowest $15.58.

Concerning question 4, the following conclusions were drawn:

- The services that the Service Company provides are necessary and would be required even if WV American were a stand-alone water utility.

- Furthermore, there is no redundancy or overlap in the services provided by the Service Company to WV American. For all of the services listed in Exhibit 11, there was only one entity primarily responsible for the service.

II – Background

Overview of American Water Works Service Company

American Water's Service Company exists to provide certain shared services to American Water subsidiaries. It follows a service company model used by many utility holding companies that own multiple regulated utilities. By consolidating executive and professional services into a single service company, utility holding companies are able to realize the following benefits for ratepayers:

- Purchasing Economies – Common expenses (e.g., insurance, chemicals, piping) can be procured on a much larger scale thereby providing greater bargaining power for the combined entity compared to individual utility operating companies. A service company facilitates corporate-wide purchasing programs through its procurement and contract administration functions.

- Operating Economies of Scale – A service company is able to deliver services more efficiently because workloads can be balanced across more persons and facilities. For instance, American Water's Service Company is able to maintain one principal data center for the entire corporation. This is much more cost-efficient than each operating utility funding their own data center with its large fixed hardware, software and staffing costs.

- Continuity of Service – Centralizing service company personnel who perform similar services facilitates job cross-training and sharing of knowledge and expertise. This makes it easier to deal with staff turnover and absences and to sustain high levels of service to operating utilities. An individual operating utility might experience considerable disruption if a key professional left and it was necessary to hire outside to fill the vacancy.

- Maintenance of Corporate-Wide Standards – Personnel in American Water's Service Company establish standards for many functions (e.g., engineering designs, operating procedures and maintenance practices). It is easier to ensure these standards are followed by every operating utility because their implementation is overseen by the Service Company.

- Improved Governance – American Water's Service Company provides another dimension of management and financial oversight that supplements local operating utility management. The Service Company facilitates standard planning and reporting that help ensure operating utilities meet the requirements of their customers in a cost effective manner.

- Retention of Personnel – A service company organization provides operating utility personnel with another career path beyond what may be available on a local level. These opportunities tend to improve employee retention.

American Water follows the model for other utility service companies in another important regard. Its services are provided to affiliate operating utilities, like WV American, at cost. American Water's Service Company is not a profit-making entity. It assigns only its actual expenses to the American Water subsidiaries it services.

The Service Company provides services to American Water operating companies from the following locations:

- Corporate Office – Includes American Water's executive management and personnel from the various corporate support services. American Water's corporate office is located in Voorhees, New Jersey.

- National Call Centers – Perform customer service functions, including: customer call processing, service order processing, correspondence processing, credit and collections. American Water maintains two call centers. One in Alton, Illinois that went into operation in 2001 and a second in Pensacola, Florida that went into operation in 2005. Prior to the establishment of these national call centers, customer service functions were performed by employees of WV American, which incurred the expense on its books.

- National Shared Services Center – The Shared Services Center, located in Cherry Hill, New Jersey, provides various financial, accounting and treasury functions that had been performed by individual operating companies. This arrangement has improved and streamlined the Company's financial processes and allowed operating companies to focus on providing utility service.

- Regional Offices – Regional offices provide operating companies with certain support services that can be performed more effectively on a regional basis because individual operating company/center workloads are not sufficient to warrant a full-time staff for these activities. At the same time, these services require closer proximity to operating companies served so they are not provided by the National Shared Services Center. Examples of regional office services include rates and revenues, engineering, operations and field resource coordination.

- Belleville Lab – The national trace substance laboratory is located in Belleville, Illinois and performs testing for all American Water operating companies.

- Information Technology Service Centers – American Water's principal data center, located in Hershey, Pennsylvania, supports the IT infrastructure required to run corporate and operating company business applications and the communications systems. IT personnel rotate, as needed, throughout the regional offices and operating companies.

Service Company Expense Categories

The Service Company renders a monthly bill to operating companies. Charges are broken down into the following expense categories:

- Labor – base pay (salaries) of managerial and professional employees
- Labor-Related Overheads - employee benefit costs (payroll taxes, medical coverage, pensions, disability insurance) and other general expenses
- Support - wages and salaries of office support personnel, including secretaries, clerical personnel, telephone operators and mail clerks
- Office Expenses - office rent, equipment leases, telephone, electric, office supplies, property taxes, office maintenance
- Vouchers/Journal Entries – (1) travel expenses incurred by Service Company personnel, (2) other items submitted for reimbursement by employees, including professional association dues, (3) outside service contracts for such things as actuarial

services, and (4) various other expenditures, including data center expenses for software licenses and hardware maintenance.

Service Company expenses are either assigned directly or allocated to operating companies, as shown in the table below.

Expense Category	Direct Charged	Allocated	Comments
Labor	X	X	Professional personnel working for one or several operating companies
Labor-Related Overheads	X	X	These are primarily employee benefit costs that relate directly to labor
Support		X	Administrative personnel support the professional staff, thus support costs are allocated on the basis of professional labor
Office Expense		X	Are all allocated on the basis of professional labor
Vouchers/Journals	X	X	May be either directly in support of one operating company (e.g., an engineer traveling from the Corporate Office to the operating company) or allocated to several operating companies

A direct charge occurs when Service Company work or expenses are incurred in support of only one operating company. Direct charge examples include work in support of an operating company's rate case, engineering design work on an operating company's project and the preparation of an operating company's financial statements.

Service Company expenses are allocated when more than one operating company benefits from the underlying work. Examples include assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts and creation of company-wide engineering design standards.

Charging and Assignment Of Service Company Time and Expenses

Service Company transactions are assigned with the following information so there is a proper accounting and eventual charging to an operating company:

- Operating company
- Formula number
- Work order (where applicable)
- Authorization number (where applicable)

Charges can originate from the following systems:

- Payroll System
- RVI System (outside vendor payments)
- PCard System (credit card payments)
- Internal Purchase Order System
- Journal entries

II – Background

The Service Company's time reporting process enables labor and support charges to be assigned to the proper operating company. Labor charges are based on the time reported by managerial and professional Service Company employees. Every week, Service Company professional employees complete an electronic time sheet that shows:

- Formula number (this is linked to operating company within American Water's financial system)
- Employee hours worked
- Account number for non-labor charges

At month-end, time report information is processed and direct and allocated professional labor hours tabulated for each operating company. Dollar charges are then calculated using the hourly rate of each Service Company professional employee based upon their base salary (i.e., an employee's hours times his/her hourly rate of pay).

Support (administrative) personnel charge their time to the activity "General Admin." As described in the table on page 4, their labor charges are allocated to operating companies based upon how their office's professional personnel labor charges are assigned. For instance, if 20% of American Water's Southeast Region's professional labor is assigned to WV American during a month, then 20% of that office's monthly administrative labor charges also are assigned to the operating company.

The overhead cost category is next assigned based on professional and administrative labor costs. Thus, if 20% of the Southeast Region's accumulated professional and support labor is charged to WV American during the month, then 20% of that month's overhead expenses will be assigned to WV American.

Each Service Company location's office expenses are allocated to operating companies based on how professional labor charges for that office have been assigned. For instance, if 2% of professional labor from one Service Company office is assigned to WV American, then 2% of that office's office expenses would be assigned to WV American. Thus, office expenses are allocated in the very same way as administrative labor.

Vouchers/journal entries may be charged directly or allocated, depending on who benefits from the expenditure. For instance, the cost of a continuing professional education course taken by a professional in a regional office is allocated to the operating companies served by that office. Travel expenses by that same professional to a rate case proceeding are charged directly to the operating company whose case is being heard.

III – Service Company Cost Comparison Approach

During the 12 months ended December 31, 2009, the Service Company billed WV American $10,565,539 in O&M-related charges and $803,376 in capital-related charges. These total charges of $11,368,915 were subjected to a market cost comparison.

Service Company Charges	12 Months Ended December 31, 2009
Management Fees - O&M	$ 10,565,539
Management Fees - Capital	$ 803,376
Total Testable SC Charges	**$ 11,368,915**

For purposes of comparing these charges to certain outside benchmarks, Service Company services were placed into three categories:

- Managerial and Professional Services – Includes such services as management, accounting, legal, human resources, information technology and engineering.
- Customer Accounts Services – Includes customer-related services, such as call center, credit, billing, collection and payment processing.
- Field Resource Coordination Services – Includes the dispatching and oversight of work to operating company field crews.

Total test period Service Company charges break down between management/professional services, customer account services and field resource coordination as follows:

	12 Months Ended Dec. 31, 2009	
	Amount	Hours
Management and Professional Services	$ 8,433,389	77,663
Customer Account Services	$ 2,592,450	68,701
Field Resource Coordination	$ 343,076	7,906
Total Service Company Charges	**$ 11,368,915**	**154,270**

This study's first question—whether Service Company 12 months ended December 31, 2009 charges were reasonable—was determined by comparing WV American's A&G-related Service Company charges per customer to the same charges for utility companies that must file the FERC Form 60 – Annual Report of Service Companies.

The second question—whether Service Company charges during the 12 months ended September 3, 2009 were at the lower of cost or market—was evaluated by comparing the cost per hour for managerial and professional services provided by Service Company personnel to hourly billing rates that would be charged by outside providers of equivalent services. Service Company costs per hour were based on actual charges to WV American during the 12 months ended December 31, 2009. Outside providers' billing rates came from surveys or other information from professionals that could perform the services now provided by the Service Company.

III – Service Company Cost Comparison Approach

The third question—whether Service Company's 12 months ended December 31, 2009 customer account services charges, including those of the National Call Center costs, were comparable to other utilities—was addressed by comparing WV American's customer accounts services expenses to those of neighboring electric utilities. This approach was selected because the costs of outside providers of call center services are not publicly available. However, electric utility customer account services expenses can be obtained from the FERC Form 1. The availability and transparency of FERC data adds to the validity of its use in this comparison.

The fourth question—the necessity of Service Company services—was investigated by defining the services provided to WV American and determining if these services would be required if WV American were a stand-alone utility.

WV American's Service Company Cost per Customer

During the 12 months ended December 31, 2009, WV American was charged $54 per customer by the Service Company for A&G/O&M-related services. The calculation of this amount, shown in the table below, starts with total net testable Service Company charges and adjusts for capital and non-A&G functions (engineering, operations and water quality) charges. These adjustments are necessary to develop a per customer cost that is comparable to cost of utility service companies.

	12 Months ended Dec 31, 2009 Svc. Co. Charges
Testable Service Company charges	$ 11,368,915
Less: Capital charges	$ (803,376)
Less: Non-A&G function O&M charges	
Engineering	$ (17,086)
Operations	$ (989,038)
Water Quality	$ (326,125)
Net A&G/O&M-related charges	$ 9,233,290
WV American customers	172,006
WV American Cost Per Customer	**$ 54**

Comparison Group Cost Per Customer

Every centralized service company in a holding company system must file a Form 60 in accordance with the Public Utility Holding Company Act of 2005, Section 1270, Section 390 of the Federal Power Act and 18 C.F.R. paragraph 366.23. This report is designed to collect financial information from service companies that are subject to regulation by the FERC.

For 2008, a Form 60 was filed by 24 utility service companies, all of which serve utilities that provide regulated electric and, in some cases, gas service to retail customers. In order to make a valid comparison of this group's costs to those of American Water Works Service Company, it was necessary to isolate expenses that that they have in common. These include A&G/O&M-related charges associated with the following FERC accounts:

901 – Supervision	921 – Office supplies and expenses
903 – Customer records and collection expenses	923 – Outside services employed
905 – Miscellaneous customer accounts expenses	926 – Employee pensions and benefits
907 – Supervision	928 – Regulatory commission expenses
910 – Misc customer service and info expenses	930.2 – Miscellaneous general expenses
911 – Supervision	931 – Rents
920 - Administrative and general salaries	935 – Maintenance of structures and equipment

O&M expenses charged to utility affiliates for the comparison group service companies were obtained from Schedule XVI – Analysis of Charges for Service Associate and Non-Associate Companies (p. 303 to 306) of each entity's FERC Form 60. This schedule shows charges by FERC Account.

Comparison group service company 2008 expenses were also adjusted to remove charges to non-regulated affiliates from the cost pool used to calculate the cost per regulated service customer. This determination was made using information from the FERC Form 60 schedule: Account 457 – Analysis of Billing – Associate Companies.

IV – Question 1 – Reasonableness of Service Company Charges

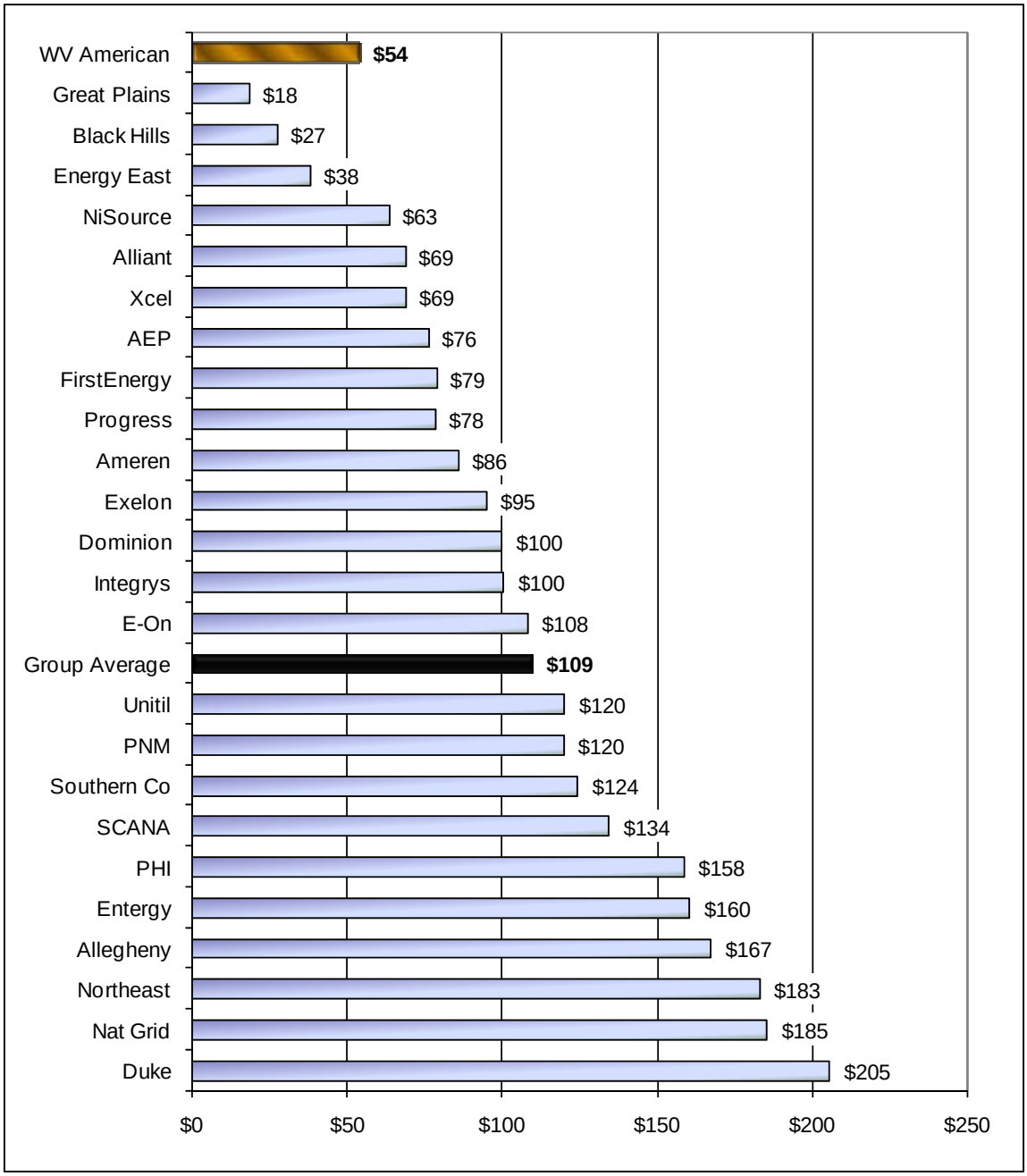
A&G expenses per regulated utility customer for the 24 utility companies that file Form 60 for 2008 are calculated below.

Utility Company	2008 Regulated Retail Service Company A&G Expenses	Regulated Retail Customers	Cost per Customer
AEP	$396,340,118	5,213,000	$ 76
Allegheny	$263,588,707	1,577,873	$ 167
Alliant	$205,754,832	3,000,000	$ 69
Ameren	$291,684,710	3,400,000	$ 86
Black Hills	$20,763,828	759,400	$ 27
Dominion	$357,718,046	3,588,500	$ 100
Duke	$923,936,645	4,500,000	$ 205
Energy East	$113,714,789	2,989,800	$ 38
Entergy	$432,575,683	2,700,000	$ 160
E-On	$136,276,177	1,263,000	$ 108
Exelon	$558,687,014	5,885,000	$ 95
FirstEnergy	$354,028,109	4,499,000	$ 79
Great Plains	$15,000,708	820,000	$ 18
Integrys	$216,364,166	2,157,000	$ 100
Nat Grid	$1,240,706,398	6,700,000	$ 185
NiSource	$237,380,009	3,750,000	$ 63
Northeast	$302,138,730	1,654,000	$ 183
PHI	$302,463,412	1,910,000	$ 158
Progress	$242,677,256	3,100,000	$ 78
PNM	$102,688,385	859,000	$ 120
SCANA	$191,207,825	1,424,300	$ 134
Southern Co	$546,498,605	4,402,000	$ 124
Unitil	$20,341,422	169,600	$ 120
Xcel	$367,626,617	5,345,000	$ 69
Group Total	**$7,840,162,191**	**71,666,473**	**$ 109**

Exhibit 1 shows WV American's 12 months ended December 31, 2009 Service Company cost per customer of $54 to be considerably lower than the average of $109 per customer for the comparison group service companies. Only 3 of 24 comparison group service companies had a lower cost per customer than WV American. Based on this result, it is possible to conclude that the Service Company's 12 months ended December 31, 2009 charges to WV American were reasonable.

Exhibit 1

West Virginia American Water Company
Comparison of Service Company Annual Costs Per Customer



V – Question 2 – Provision of Services at the Lower of Cost or Market

Methodology

The lower-of-cost-or-market comparison is accomplished by comparing the cost per hour for Service Company managerial and professional services to those of outside service providers to whom these duties could be assigned. Based on the nature of the Service Company services it was determined that the following outside providers could perform the categories of services indicated below:

- Management Consultants – executive and administrative management, risk management services, human resources and communications services
- Attorneys – legal services
- Certified Public Accountants – accounting, financial, information technology and rates and revenues services
- Professional Engineers – engineering, operations and water quality services.

The services provided by the Belleville lab are assumed to be transferable to professional engineers for purposes of this cost comparison. This was done for two reasons. First, there is no readily available survey of hourly billing rates for testing services such as those performed by Belleville. Second, Belleville personnel have similar, scientific educational backgrounds as Service Company engineering personnel. Thus, it is valid to compare the hourly rates of Belleville services to those of outside engineering firms.

Service Company's hourly rate were calculated for each of the four outside service provider categories, based on the dollars and hours charged to WV American during the 12 months ended December 31, 2009. Hourly billing rates for outside service providers were developed using third party surveys or directly from information furnished by outside providers themselves.

It should be noted that by using the Service Company's hours charged WV American during the 12 months ended December 31, 2009, its hourly rates are actually overstated because Service Company personnel charge a maximum 8 per day even when they work more. Outside service providers generally bill for every hour worked. If the overtime hours of Service Company personnel had been factored into the hourly rate calculation, Service Company hourly rates would have been lower.

The last step in the market cost comparison was to compare the Service Company's average cost per hour to the average cost per hour for outside providers.

Service Company Hourly Rates

Exhibit 2 (page 14) details the assignment of 12 months ended December 31, 2009 management and professional Service Company charges by outsider provider category. Exhibit 3 (page 15) shows the same assignment for Service Company management and professional hours charged to WV American during the 12 months ended December 31, 2009.

Certain adjustments to these dollar amounts were necessary to calculate Service Company hourly rates that are directly comparable to those of outside providers. Adjustments were made to the following 12 months ended December 31, 2009 test period non-labor Service Company charges:

V – Question 2 – Provision of Services at the Lower of Cost or Market

- Contract Services – 12 months ended December 31, 2009 Service Company charges to WV American include expenses associated with the use of outside professional firms to perform certain corporate-wide services (e.g., legal, financial audit, actuarial services). These professional fees are excluded from the Service Company hourly rate calculation because the related services have effectively been out-sourced already.

- Travel Expenses – In general, client-related travel expenses are not recovered by outside service providers through their hourly billing rate. Rather, actual out-of-pocket travel expenses are billed to clients in addition to fees for professional services. Thus, it is appropriate to remove these Service Company charges from the hourly rate calculation.

- Information Technology Infrastructure Expenses – Included in the 12 months ended December 31, 2009 Service Company charges to WV American are leases, maintenance fees and depreciation related to American Water's enterprise mainframe, server and network infrastructure and corporate business applications. An outside provider that would take over operation of this infrastructure would recover these expenses over and above the labor necessary to operate the data center.

Exhibit 4 (page 16) shows how contract services, travel expenses and computer hardware/software-related Service Company charges are assigned among the four outside provider categories.

Based on the assignment of expenses and hours shown in Exhibits 2 and 3 and the excludable items shown in Exhibit 4, the Service Company's equivalent costs per hour for the 12 months ended December 31, 2009 are calculated below.

	Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Total management, professional & technical services charges	$ 368,301	$ 2,223,797	$ 4,849,695	$ 991,596	$ 8,433,389
Less:					
Contract services	$ 29,441	$ 160,875	$ 580,482	$ (10,241)	$ 760,557
Travel expenses	$ 4,710	$ 78,075	$ 64,442	$ 37,016	$ 184,244
Computer hardware/software	$ 8,155	$ 342,854	$ 338,007	$ 55,363	$ 744,379
Net Service Charges (A)	$ 325,994	$ 1,641,993	$ 3,866,763	$ 909,459	$ 6,744,209
Total Hours (B)	2,472	13,138	48,051	14,002	77,663
Average Hourly Rate (A / B)	**$ 132**	**$ 125**	**$ 80**	**$ 65**	

West Virginia American Water Company
Analysis of 12 Months Ended December 31, 2009 Service Company Charges By Location And Function

Location	Function	12 Months Ended December 31, 2009 Service Company Charges				
		Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				$ 286,438	$ 286,438
Call Center	Human Resources		$ 56,346			$ 56,346
Corporate	Accounting			$ 601,315		$ 601,315
	Administration		$ 643,396			$ 643,396
	Audit			$ 90,568		$ 90,568
	Communications		$ 141,349			$ 141,349
	Engineering			$ 567,989		$ 567,989
	Finance		$ 454,250			$ 454,250
	Human Resources			$ 75,359		$ 75,359
	Legal	$ 155,752				$ 155,752
	Operations		$ 235,939		$ 571,035	$ 806,974
	Rates & Revenue			$ 105,565		$ 105,565
	Risk Management		$ 61,121			$ 61,121
	Water Quality				$ 4,429	$ 4,429
Regional Offices	Accounting			$ 37,592		$ 37,592
	Administration		$ 195,167			$ 195,167
	Communications		$ 211,432			$ 211,432
	Engineering				$ 17,543	$ 17,543
	Finance			$ 562,322		$ 562,322
	Human Resources		$ 12,891			$ 12,891
	Legal	$ 212,549				$ 212,549
	Operations		$ 35,880		$ 110,425	$ 146,305
	Risk Management		$ 47,773			$ 47,773
	Water Quality				$ 1,726	$ 1,726
Information Technology	Information Technology			$ 2,134,009		$ 2,134,009
Shared Services	Accounting			$ 600,643		$ 600,643
	Administration		$ 128,254			$ 128,254
	Finance			$ 4,675		$ 4,675
	Rates & Revenue			$ 69,656		$ 69,656
Total Dollars Charged		**$ 368,301**	**$ 2,223,797**	**$ 4,849,695**	**$ 991,596**	**$ 8,433,389**

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West Virginia American Water Company
Analysis of 12 Months Ended December 31, 2009Service Company Hours By Location And Function

Location	Function	12 Months Ended December 31, 2009 Service Company Hours				
		Attorney	Management Consultant	Certified Public Accountant	Professional Engineer	Total
Belleville Lab	Water Quality				3,832	3,832
Call Center	Human Resources		717			717
Corporate	Accounting			6,954		6,954
	Administration		1,715			1,715
	Audit			842		842
	Communications		648			648
	Engineering			4,549		4,549
	Finance		3,790			3,790
	Human Resources			677		677
	Legal	681				681
	Operations		814		9,435	10,248
	Rates & Revenue			731		731
	Risk Management		654			654
	Water Quality				-	-
Regional Offices	Accounting			458		458
	Administration		-			-
	Communications		3,233			3,233
	Engineering				0	0
	Finance			5,411		5,411
	Human Resources		70			70
	Legal	1,791				1,791
	Operations		6		729	735
	Risk Management		759			759
	Water Quality				6	6
Information Technology	Information Technology			14,903		14,903
Shared Services	Accounting			12,726		12,726
	Administration		732			732
	Finance			-		-
	Rates & Revenue			800		800
Total Hours Charged		**2,472**	**13,138**	**48,051**	**14,002**	**77,663**

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West Virginia American Water Company

12 Months Ended December 31, 2009 Service Company Charges Excludable From The Hourly Rate Calculation

Charges By Function	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	Computer HW/SW	Total	Outside Service Provider Category
Accounting	$ 145,333	$ 8,035	$ 7,744	$ 161,112	Certified Public Accountant
Administration	$ 47,310	$ 11,712	$ 317,077	$ 376,099	Management Consultant
Audit	$ 13,956	$ 1,825	$ 865	$ 16,646	Certified Public Accountant
Communications	$ 26,592	$ 12,984	$ 2,640	$ 42,215	Management Consultant
Engineering		$ 432	$ 260	$ 691	Professional Engineer
Finance	$ 153,160	$ 22,573	$ 16,016	$ 191,749	Certified Public Accountant
Human Resources	$ 80,714	$ 18,310	$ 11,026	$ 110,050	Management Consultant
Information Technology	$ 251,777	$ 26,133	$ 311,713	$ 589,623	Certified Public Accountant
Legal	$ 29,441	$ 4,710	$ 8,155	$ 42,307	Attorney
Operations	$ 14,815	$ 53,276	$ 30,356	$ 98,447	Management Consultant, Professional Engineer
Rates & Revenue	$ 16,257	$ 5,876	$ 1,669	$ 23,801	Certified Public Accountant
Risk Management	$ 1,057	$ 17,526	$ 1,784	$ 20,366	Management Consultant
Water Quality	$ (19,853)	$ 852	$ 35,075	$ 16,073	Professional Engineer
Total	**$ 760,557**	**$ 184,244**	**$ 744,379**	**$ 1,689,180**	

Recap By Outside Provider	Exclusions From Hourly Rate Calculation: Contract Services	Travel Expenses	Computer HW/SW	Total
Attorney	$ 29,441	$ 4,710	$ 8,155	$ 42,307
Management Consultant	$ 160,875	$ 78,075	$ 342,854	$ 581,804
Certified Public Accountant	$ 580,482	$ 64,442	$ 338,007	$ 982,932
Professional Engineer	$ (10,241)	$ 37,016	$ 55,363	$ 82,137
Total	**$ 760,557**	**$ 184,244**	**$ 744,379**	**$ 1,689,180**

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Outside Service Provider Hourly Rates

The next step in the cost comparison was to obtain the average billing rates for each outside service provider. The source of this information and the determination of the average rates are described in the paragraphs that follow.

It should be noted that professionals working for three of the five outside provider categories may be licensed to practice by state regulatory bodies. However, not every professional working for these firms is licensed. For instance, among West Virginia certified public accounting firms, only more experienced staff are predominantly CPAs (see table below). Some Service Company employees also have professional licenses. Thus, it is valid to compare the Service Company's hourly rates to those of the outside professional service providers included in this study.

Position	WVa Average
Partners/Owners	98%
Directors (11+ years experience)	81%
Managers (6-10 years experience)	66%
Sr Associates (4-5 years experience)	44%
Associates (1-3 years experience)	16%
New Professionals	7%

Source: AICPA's National PCPS/TSCPA Management of an Accounting Practice Survey (2008)

Attorneys

The West Virginia State Bar does not survey its members as to their hourly billing rates. In addition, publicly available billing rate information could not be found for West Virginia attorneys. Therefore, an estimate of West Virginia attorney rates was developed from two surveys conducted by Lawyers Weekly in the states of Michigan and Massachusetts. As presented in Exhibit 5, the average rate for each firm was adjusted for the cost of living differential between its location and Charleston, West Virginia. The Lawyers Weekly surveys included rates in effect at December 31, 2007. Thus, the 2007 average rate was escalated to June 30, 2009—the midpoint of the test year ended December 31, 2009.

Management Consultants

The cost per hour for management consultants was developed from a 2009 survey performed by the Association of Management Consulting Firms—an industry trade organization. The survey includes rates that were in effect during 2008 for firms throughout the United States. Consultants typically do not limit their practice to any one region and must travel to a client's location. Thus, the U.S. national average is appropriate for comparison.

The first step in the calculation, presented in Exhibit 6, was to determine an average rate by consultant position level. From these rates, a single weighted average hourly rate was calculated based upon the percent of time that is typically applied to a consulting assignment by each consultant position level. The 2008 average rate was escalated to June 30, 2009—the midpoint of the 12 months ended December 31, 2009.

Certified Public Accountants

The average hourly rate for West Virginia CPAs was developed from a 2008 survey performed by the American Institute of Certified Public Accountants (AICPA). The West Virginia version of this survey was used to develop hourly rates for member firms in West Virginia.

As shown in Exhibit 7, a weighted average hourly rate was developed based on a set of accountant positions and a percent of time that is typically applied to an accounting assignment. This survey includes rate information in effect during 2007. Thus, the data had to be escalated to June 30, 2009—the test year's midpoint.

Professional Engineers

The Company provided hourly rate information for outside engineering firms that could have been used by WV American in 2009. As presented in Exhibit 8, an average rate was developed for each engineering position level. Then, using a typical percentage mix of project time by engineering position, a weighted average cost per hour was calculated.

Exhibit 5

West Virginia American Water Company
Estimated Billing Rates For West Virginia Attorneys Based On Michigan and Massachusetts Attorney Billing Rates

Billing rates as of December 31, 2007 (Note A)								Cost of	
		Number	Billing Rate Range					Living	
		Of	Associate		Partner			Adjust	Adjusted
Firm	Location	Lawyers	Low	High	Low	High	Average	(C)	Rate
Dickinson Wright PLLC	Detroit, Mi	229	$ 170	$ 275	$ 260	$ 530	$ 309	98%	$ 315
Dykema	Detroit, Mi	222	$ 185	$ 390	$ 245	$ 625	$ 361	98%	$ 369
Butzel Long	Detroit, Mi	209	$ 165	$ 400	$ 220	$ 550	$ 334	98%	$ 341
Bodman LLP	Detroit, Mi	128	$ 125	$ 215	$ 210	$ 495	$ 261	98%	$ 267
Jaffe Raitt Heuer & Weiss, PC	Southfield, Mi	100	$ 165	$ 225	$ 225	$ 500	$ 279	112%	$ 249
Trott & Trott, PC	Bingham Farms, Mi	64	$ 170	$ 170	$ 235	$ 235	$ 203	145%	$ 140
Brooks Kushman PC	Southfield, Mi	52	$ 160	$ 275	$ 250	$ 505	$ 298	112%	$ 266
Kemp, Klein, Umphrey, Edelman & May PC	Troy, Mi	36	$ 150	$ 190	$ 200	$ 340	$ 220	129%	$ 171
Pepper Hamilton LLP	Detroit, Mi	33	$ 200	$ 315	$ 340	$ 615	$ 368	98%	$ 375
Hertz, Schram & Saretsky, PC	Bloomfield Hills, Mi	29	$ 175	$ 260	$ 275	$ 400	$ 278	161%	$ 173
Strobl & Sharp, PC	Bloomfield Hills, Mi	28	$ 110	$ 210	$ 200	$ 300	$ 205	161%	$ 128
Kupelian Ormond & Magy, PC	Southfield, Mi	25	$ 165	$ 195	$ 235	$ 320	$ 229	112%	$ 204
Rader, Fishman & Grauer, PLLC	Bloomfield Hills, Mi	25	$ 130	$ 250	$ 275	$ 495	$ 288	161%	$ 179
McShane & Bowie PLC	Grand Rapids, Mi	22	$ 160	$ 275	$ 250	$ 375	$ 265	111%	$ 239
Edwards Angel Palmer & Dodge	Boston, Ma	259	$ 144	$ 321	$ 474	$ 474	$ 353	170%	$ 208
Sullivan & Worcester	Boston, Ma	137	$ 245	$ 530	$ 415	$ 700	$ 473	170%	$ 278
Burns & Levinson	Boston, Ma	112	$ 210	$ 350	$ 375	$ 475	$ 353	170%	$ 207
Bowditch & Dewey	Worcester, Ma	64	$ 150	$ 300	$ 280	$ 550	$ 320	134%	$ 240
Mirick O'Connell	Worcester, Ma	60	$ 160	$ 250	$ 280	$ 400	$ 273	134%	$ 204
Hinckley, Allen & Snyder	Boston, Ma	58	$ 200	$ 330	$ 300	$ 480	$ 328	170%	$ 193
Prince Lobel Glovsky & Tye	Boston, Ma	52	$ 175	$ 265	$ 275	$ 475	$ 298	170%	$ 175
Robinson & Cole	Boston, Ma	48	$ 220	$ 375	$ 340	$ 490	$ 356	170%	$ 210
Bromberg & Sunstein	Boston, Ma	42	$ 250	$ 450	$ 500	$ 725	$ 481	170%	$ 283
Lawson & Weitzen	Boston, Ma	35	$ 125	$ 225	$ 225	$ 400	$ 244	170%	$ 143
Murtha Cullina	Boston, Ma	34	$ 165	$ 290	$ 250	$ 500	$ 301	170%	$ 177
Marcus Errico Emmer & Brooks	Braintree, Ma	28	$ 250	$ 250	$ 300	$ 360	$ 290	159%	$ 182
Rich May	Boston, Ma	25	$ 150	$ 300	$ 300	$ 400	$ 288	170%	$ 169
Keegan Werlin	Boston, Ma	22	$ 150	$ 275	$ 325	$ 475	$ 306	170%	$ 180
Barron & Stadfeld	Boston, Ma	21	$ 160	$ 230	$ 250	$ 350	$ 248	170%	$ 146
Cain Hibbard Myers & Cook	Pittsfield, Ma	19	$ 150	$ 200	$ 210	$ 235	$ 199	135%	$ 148
							Overall Average 2007 Billing Rate		$ 219

Escalation to Test Period Midpoint (June 30, 2009) (Note B)	
CPI at December 31, 2007	210.0
CPI at June 30, 2009	215.7
Inflation/Escalation	2.7%
Average Hourly Billing Rate For Attorneys At June 30, 2009	**$ 225**

Note A: Source is Michigan Lawyers Weekly (April 2008) and Massachusetts Lawyers Weekly (April 2008)
Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)
Note C: Source is Sperling's Best Places (http://www.bestplaces.net/col/col.aspx). This percentage represents the cost of living difference between the Michigan and Massachusetts cities and Charleston, West Virginia. A number over 100 indicates the Michigan or Massachusetts city's cost of living is higher than Charleston. A number less than 100 % indicates Charleston's cost of living is higher.

Exhibit 6

West Virginia American Water Company
Billing Rates of U.S. Management Consultants

Survey billing rates in effect in 2008 (Note A)

A. Calculation of Average Hourly Billing Rate by Consultant Position

	Average Hourly Rates (Note A)				
	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner
Average	$ 147	$ 196	$ 268	$ 295	$ 384

B. Calculation of Overall Average Hourly Billing Rate Based on a Typical Distribution of Time on an Engagement

	Entry-Level Consultant	Associate Consultant	Senior Consultant	Junior Partner	Senior Partner	
Average Hourly Billing Rate (from above)	$ 147	$196	$268	$295	$384	
Percent of Consulting Assignment	30%	30%	20%	10%	10%	Weighted Average
	$ 44	$ 59	$ 54	$ 29	$ 38	**$ 224**

Escalation to Test Period Midpoint (June 30, 2009) (Note B)

CPI at December 31, 2008	210.2
CPI at June 30, 2009	215.7
Inflation/Escalation	2.6%
Average Hourly Billing Rate For Management Consultants At June 30, 2009	**$ 230**

Note A: Source is "Operating Ratios For Management Consulting Firms, 2009 Edition," Association of Management Consulting Firms

Note B: Source is U.S. Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt)

Exhibit 7

West Virginia American Water Company
Estimated Billing Rates Of West Virginia Certified Public Accountants

Survey billing rates were those in effect in 2007 (Note A)

	Average Hourly Billing Rate (Note A)			
Type of Firm	Staff Accountant	Senior Accountant	Manager	Partner
Average Hourly Rate	$ 73	$ 105	$ 134	$ 168

B. Calculation of Overall Average Accountant Billing Rate Based Upon Typical Distribution of Time on an Engagement

	Staff Accountant	Senior Accountant	Manager	Partner	
Average Hourly Billing Rate (From Above)	$ 73	$ 105	$ 134	$ 168	
Typical Percent of Time Spent on an Accounting Assignment	30%	30%	20%	20%	Weighted Average
	$ 22	$ 32	$ 27	$ 34	**$ 114**

Escalation to Test Period Midpoint (June 30, 2009) (Note B)	
CPI at December 31, 2007	210.0
CPI at June 30, 2009	215.7
Inflation/Escalation	2.7%
Average Hourly Billing Rate For CPAs At June 30, 2009	**$ 117**

Note A: Source is AICPA's 2008 National PCPS/TSCPA Management of an Accounting Practice Survey (West Virginia edition)
Note B: source is US Bureau of Labor Statistics (ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.t

Exhibit 8

West Virginia American Water Company
Estimated Billing Rates Of West Virginia Engineers

A. Calculation of Average Hourly Rate by Engineer Position

Name of Firm	Average Hourly Billing Rates: Technician Senior Technician	Engineer Design Engineer Project Engineer	Project Manager Sr. Mgr. Engineer	Officer Principal Engineer
Firm #1	$65	$107	$167	$209
Firm #2	$70	$96	$130	$155
Firm #3	$77	$118	$183	$195
Firm #4	$79	$114	$176	$221
Firm #5	$50	$72	$132	$171
Firm #6	$62	$92	$158	$208
Firm #7	$74	$96	$123	$163
Firm #8	$59	$93	$148	$190
Firm #9	$72	$97	$149	$179
Firm #10	$75	$103	$143	$200
Firm #11	$55	$107	$166	$200
Firm #12	$80	$114	$176	$210
Firm #13	$63	$74	$127	$165
Firm #14	$83	$98	$165	$250
Firm #15	$75	$113	$193	$225
Firm #16	$87	$90	$141	$182
Firm #17	$70	$92	$144	$199
Firm #18	$55	$77	$95	na

B. Calculation of Overall Average Engineering Hourly Billing Rate

	Technician Senior Technician	Engineer Design Engineer Project Engineer	Project Manager Sr. Mgr. Engineer	Officer Principal Engineer	
Average Hourly Billing Rate (From Above)	$69	$97	$151	$195	
Typical Percent of Time on an Engineering Assignment	30%	35%	25%	10%	Weighted Average
	$21	$34	$38	$20	**$112**

Source: Information provided by American Water Works Service Company

V – Question 2 – Provision of Services at the Lower of Cost or Market

Service Company versus Outside Provider Cost Comparison

As shown in the table below, Service Company costs per hour are considerably lower than those of outside providers.

	12 Months Ended December 31, 2009		
Service Provider	Service Company	Outside Provider	Difference--Service Co. Greater(Less) Than Outside
Attorney	$ 132	$ 225	$ (93)
Management Consultant	$ 125	$ 230	$ (105)
Certified Public Accountant	$ 80	$ 117	$ (36)
Professional Engineer	$ 65	$ 112	$ (47)

Based on these cost per hour differentials and the number of managerial and professional services hours billed to WV American during the 12-months ended December 31, 2009, outside service providers would have cost $4,019,121 more than the Service Company (see table below). Thus, on average, outside provider's hourly rates are 48% higher than those of the Service Company ($4,019,121 / $8,433,389).

	12 Months Ended December 31, 2009		
Service Provider	Hourly Rate Difference--Service Co. Greater(Less) Than Outside	Service Company Hours Charged	Dollar Difference
Attorney	$ (93)	2,472	$ (228,950)
Management Consultant	$ (105)	13,138	$ (1,384,160)
Certified Public Accountant	$ (36)	48,051	$ (1,745,758)
Professional Engineer	$ (47)	14,002	$ (660,253)
Service Company Less Than Outside Providers			$ (4,019,121)

It should be noted that the cost differential associated with using outside providers is even greater because Service Company personnel do not charge for more than 8 hours per day even when they work more. Outside providers generally charge clients for all hours worked. If, for instance, Service Company personnel worked 5% overtime (2 hours) per week on WV American's behalf, that would have amounted to over 3,800 additional hours of work during the 12 months ended December 31, 2009. Based on the hourly rate differentials above, this overtime would have added another $200,000 to the cost of using outside provider.

If WV American were to use outside service providers rather than the Service Company for managerial and professional services, it would incur other additional expenses besides those associated with higher hourly rates. Managing outside firms who would perform approximately 77,600 hours of work (more than 51 full-time equivalents at 1,500 "billable" hours per FTE per year) would add a significant workload to the existing WV American management team. Thus, it would be necessary for WV American to add at least one position to supervise the outside firms and ensure they delivered quality and timely services. The individuals that would fill this position would need a good understanding of each profession being managed. They must also have management experience and the authority necessary to give them credibility with the outside firms. As calculated in the table below, this position would add almost $165,000 per year to WV American's personnel expenses.

V – Question 2 – Provision of Services at the Lower of Cost or Market

Cost of Adding a Professional Position To WVA's S	Total
New Positions' Salary	$ 100,000
Benefits (at 49.4%)	$ 49,400
Office Expenses (15.2%)	$ 15,200
Total Cost of Full Time Position	$ 164,600

Thus, the total effect on the ratepayers of WV American of contracting all services now provided by Service Company would be an increase in their costs of $4,183,721 ($4,019,121 + $164,600). Based on the results of this comparison, it is possible to conclude that the Service Company charged WV American at the lower of cost or market for services provided during the 12 months ended December 31, 2009.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Background

Customer Accounts Services covers the following utility functions:

- Customer Call Center – customer calls/contact, credit, order taking/disposition, bill collection efforts, outage calls
- Call Center IT – maintenance of phone banks, voice recognition units, call center software applications, telecommunications
- Customer billing – bill printing, stuffing, and mailing
- Remittance processing – processing customer payments received in the mail
- Bill payment centers – locations where customers can pay their bills in person

It is difficult to compare the cost of the Service Company's customer accounts services-related charges to WV American with outside providers of the same services because survey data is proprietary and expensive to obtain. For this reason, WV American's charges from the Service Company for customer accounts services are compared to those of neighboring electric utilities because the data necessary to make such comparison is available to the public.

Neighboring electric utility cost information comes from the FERC Form 1 that each utility must file. FERC's chart of accounts is defined in Chapter 18, Part 101 of the Code of Federal Regulations. FERC accounts that contain customer accounts services-related expenses are Account 903 Customer Accounts Expense – Records and Collection Expense and Account 905 Customer Accounts Expense – Miscellaneous Customer Accounts Expense. Exhibit 9 provides FERC's definition of the type of expenses that should be recorded in these accounts.

In addition to the charges in these FERC accounts, labor-related overheads charged to the following FERC accounts must be added to the labor components of Accounts 903 and 905:

- Account 926 Employee Pension and Benefits
- Account 408 Taxes Other Than Income (employer's portion of FICA)

Comparison Group

Electric utilities included in the comparison group are shown in the table below. These are companies whose FERC Form 1 show amounts for accounts 903 and 905.

West Virginia	• Appalachian Power • Monongahela Power	• Wheeling Power
Kentucky	• Duke Energy Kentucky • Kentucky Power	• Kentucky Utilities • Louisville Gas & Electric
Maryland	• Baltimore Gas & Electric • Delmarva Power & Light	• Potomac Electric
Ohio	• Cleveland Elect Illuminating • Columbus Southern Electric • Dayton Power & Light • Duke Energy Ohio	• Ohio Edison • Ohio Power • Toledo Edison
Virginia	• Appalachian Power	• Virginia Electric Power
Pennsylvania	• Duquesne Light • PECO Energy • Pennsylvania Electric	• Pennsylvania Power • PPL Electric

Virginia-American Water Company
FERC Account Descriptions

903 – Customer Records and Collection Expenses

This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Labor

1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting services because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses, including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services, removals, etc.
30. Rent of mechanical equipment.

West Virginia American Water Company
FERC Account Descriptions

905 – Miscellaneous Customer Accounts Expenses

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

WV American Cost per Customer

As calculated below, WV American's 12 months ended December 31, 2009 customer account services expense per customer was $29.15. The cost pool used to calculate this average includes charges for Service Company services (e.g., call center, billing, payment processing) and postage and forms expenses, which are incurred directly by WV American. It was necessary to adjust the National Call Center charges because electric utilities experience an average of 2.50 calls per customer compared to American Water's 1.32 calls per customer. Thus, National Call Center expenses had to be increased, for comparison purposes, to reflect its costs at a 2.50 calls per customer level.

West Virginia American Water Company

	Cost Component	Service Co Charges	Adjustment Fewer Calls For Water Cos. (A)	Adjusted	
Service Company					
Call Centers	Call processing, order processing, credit, bill collection	$ 2,592,450	$ 1,035,507	$ 3,627,957	
Service Company	Customer payment processing			$ 251,817	Note B
Operating Company	Postage & forms			$ 1,134,869	
			Cost Pool Total	$ 5,014,643	
			Total Customers	172,006	
	12 Months Ended December 31, 2009 Cost Per WV American Customer			**$ 29.15**	

Note A: Adjustment for American Water's fewer calls per customer

This adjustment is necessary because water utilities experience fewer calls per customer than do electric utilities

Test year Call Handling charges		$ 1,154,220
Electric utility industry's avg calls/customer	2.50	
American Water's avg calls/customer	1.32	
Percent different	90%	90%
Total Adjustment B		$ 1,035,507

Note B: Estimated customer payment processing expenses

Number of customers	172,006
Number of payments/customer/year	12.0
Total payments processed/year	2,064,072
Bank charge per item	$ 0.1220
Total estimated annual expense	$ 251,817

Electric Utility Group Cost per Customer

Exhibit 10 shows the actual 2008 customer accounts expense per customer calculation for the electric utility comparison group. All of the underlying data was taken from the utilities' FERC Form 1.

VI - Question 3 - Reasonableness of Customer Accounts Services Costs

Summary of Results

As shown in the table below, WV American's cost per customer is below the average cost of the neighboring electric utility comparison group. It can therefore be concluded that WV American's 12 months ended December 31, 2009 customer accounts-related expenses, including those of the Alton and Pensacola Call Centers, assigned by the Service Company to WV American were comparable to those of other utilities.

Average Customer Accounts Expense Per Customer		
Monongahela Power	$	15.58
Pennsylvania Electric	$	15.59
Pennsylvania Power	$	16.65
Duquesne Light	$	16.83
Cleveland Electric Illuminating	$	17.46
Virginia Electric Power	$	17.53
Ohio Edison	$	18.26
Louisville Gas & Electric	$	20.40
Toledo Edison	$	22.17
Dayton Power & Light	$	26.91
Wheeling Power	$	27.15
West Virginia American Water	**$**	**29.15**
PPL Electric	$	29.30
Ohio Power	$	31.46
Comparison Group Average	**$**	**32.23**
Appalachian Power	$	32.70
Baltimore Gas & Electric	$	33.24
Duke Energy Kentucky	$	34.65
Columbus Southern Power	$	35.34
Kentucky Utilities	$	35.77
Kentucky Power	$	36.03
Duke Energy Ohio	$	36.68
PECO Energy	$	60.99
Potomac Electric	$	69.99
Delmarva Power & Light	$	72.58

West Virginia American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		West Virginia			Kentucky			
		Appalachian Power	Monongahela Power	Wheeling Power	Duke Energy Kentucky	Kentucky Power	Kentucky Utilities	Louisville Gas & Electric
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 28,380,733	$ 4,787,060	$ 988,941	$ 3,864,114	$ 5,769,938	$ 14,908,295	$ 5,312,623
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 40,577	$ -	$ 2,002	$ -	$ 11,053	$ 381,731	$ 376,263
Subtotal		$ 28,421,310	$ 4,787,060	$ 990,943	$ 3,864,114	$ 5,780,991	$ 15,290,026	$ 5,688,886
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	Note A	$ 2,437,214	$ 932,359	$ 109,417	$ 574,673	$ 425,941	$ 3,498,704	$ 1,963,008
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	Note B	$ 529,463	$ 258,173	$ 18,966	$ 232,521	$ 97,581	$ 547,833	$ 322,726
Total Cost Pool		**$ 31,387,987**	**$ 5,977,591**	**$ 1,119,326**	**$ 4,671,308**	**$ 6,304,513**	**$ 19,336,564**	**$ 7,974,620**
Total Customers (page 304, line 43)		959,814	383,621	41,225	134,819	174,994	540,618	390,825
Customer Account Services Expense per Customer		**$ 32.70**	**$ 15.58**	**$ 27.15**	**$ 34.65**	**$ 36.03**	**$ 35.77**	**$ 20.40**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 38,645,990	$ 19,760,966	$ 763,622	$ 6,660,396	$ 7,869,045	$ 38,828,205	$ 37,681,044
Total O&M Payroll (page 355, line 65)		$109,744,984	$ 71,527,705	$ 1,730,215	$ 35,227,412	$ 23,565,539	$ 79,474,397	$ 80,979,200
Benefits as Percent of Payroll		35.2%	27.6%	44.1%	18.9%	33.4%	48.9%	46.5%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 7,978,348	$ 5,717,636	$ 334,934	$ 2,598,192	$ 1,433,061	$ 8,670,255	$ 3,198,589
Gas (page 354, line 37)		$ -	$ -	$ -	$ 1,383,512	$ -	$ -	$ 2,615,816
Total Payroll Charged to Customer Accounts		$ 7,978,348	$ 5,717,636	$ 334,934	$ 3,981,704	$ 1,433,061	$ 8,670,255	$ 5,814,405
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 28,380,733	$ 4,787,060	$ 988,941	$ 3,864,114	$ 5,769,938	$ 14,908,295	$ 5,312,623
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 40,577	$ -	$ 2,002	$ -	$ 11,053	$ 3,980,247	$ 376,263
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 28,421,310	$ 4,787,060	$ 990,943	$ 3,864,114	$ 5,780,991	$ 18,888,542	$ 5,688,886
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,341,650	$ 3,323,228	$ 347,807	$ 1,197,835	$ 713,762	$ 3,980,247	$ 2,151,907
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 32,762,960	$ 8,110,288	$ 1,338,750	$ 5,061,949	$ 6,494,753	$ 22,868,789	$ 7,840,793
Percent Applicable to Customer Accounts Services (903 and 905)		86.7%	59.0%	74.0%	76.3%	89.0%	82.6%	72.6%
Customer Account Services Portion of Total Payroll		$ 6,921,081	$ 3,374,808	$ 247,918	$ 3,039,493	$ 1,275,570	$ 7,161,222	$ 4,218,641
Pension & Benefits Pertaining to Customer Accounts Services		$ 2,437,214	$ 932,359	$ 109,417	$ 574,673	$ 425,941	$ 3,498,704	$ 1,963,008
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 6,921,081	$ 3,374,808	$ 247,918	$ 3,039,493	$ 1,275,570	$ 7,161,222	$ 4,218,641
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 529,463	$ 258,173	$ 18,966	$ 232,521	$ 97,581	$ 547,833	$ 322,726

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West Virginia American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		Ohio						
		Cleveland Electric Illum.	Columbus Southern Pwr	Dayton Power & Light	Duke Energy - Ohio	Ohio Edison	Ohio Power	Toledo Edison
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 11,078,571	$ 23,995,865	$ 12,152,249	$ 20,628,013	$ 16,095,079	$ 20,376,821	$ 5,301,394
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 513,885	$ 38,965	$ -	$ 364	$ 569,733	$ 32,797	$ 288,638
Subtotal		$ 11,592,456	$ 24,034,830	$ 12,152,249	$ 20,628,377	$ 16,664,812	$ 20,409,618	$ 5,590,032
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**	$ 1,338,033	$ 2,040,686	$ 1,305,444	$ 3,200,139	$ 1,869,806	$ 1,561,681	$ 1,160,684
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 232,453	$ 399,278	$ 390,992	$ 1,245,096	$ 415,891	$ 368,482	$ 137,768
Total Cost Pool		**$ 13,162,942**	**$ 26,474,795**	**$ 13,848,685**	**$ 25,073,613**	**$ 18,950,508**	**$ 22,339,781**	**$ 6,888,484**
Total Customers (page 304, line 43)		753,865	749,192	514,569	683,606	1,037,998	710,161	310,725
Customer Account Services Expense per Customer		**$ 17.46**	**$ 35.34**	**$ 26.91**	**$ 36.68**	**$ 18.26**	**$ 31.46**	**$ 22.17**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 14,864,080	$ 21,317,346	$ 24,263,807	$ 38,841,720	$ 15,371,043	$ 39,643,136	$ 10,357,452
Total O&M Payroll (page 355, line 65)		$ 33,755,585	$ 54,521,915	$ 94,996,325	$197,547,298	$ 44,691,456	$122,272,893	$ 16,070,418
Benefits as Percent of Payroll		44.0%	39.1%	25.5%	19.7%	34.4%	32.4%	64.5%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)		$ 4,223,978	$ 6,135,731	$ 6,704,811	$ 14,202,894	$ 7,920,312	$ 5,978,707	$ 2,506,750
Gas (page 354, line 37)		$ -	$ -	$ -	$ 6,628,577	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts		$ 4,223,978	$ 6,135,731	$ 6,704,811	$ 20,831,471	$ 7,920,312	$ 5,978,707	$ 2,506,750
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 11,078,571	$ 23,995,865	$ 12,152,249	$ 20,628,013	$ 16,095,079	$ 20,376,821	$ 5,301,394
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 513,885	$ 38,965	$ -	$ 364	$ 569,733	$ 32,797	$ 288,638
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 11,592,456	$ 24,034,830	$ 12,152,249	$ 20,628,377	$ 16,664,812	$ 20,409,618	$ 5,590,032
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 4,522,260	$ 4,220,027	$ 3,789,539	$ 5,774,026	$ 7,613,869	$ 4,923,442	$ 2,191,001
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 16,114,716	$ 28,254,857	$ 15,941,788	$ 26,402,403	$ 24,278,681	$ 25,333,060	$ 7,781,033
Percent Applicable to Customer Accounts Services (903 and 905)		71.9%	85.1%	76.2%	78.1%	68.6%	80.6%	71.8%
Customer Account Services Portion of Total Payroll		$ 3,038,606	$ 5,219,324	$ 5,111,003	$ 16,275,770	$ 5,436,478	$ 4,816,754	$ 1,800,894
Pension & Benefits Pertaining to Customer Accounts Services		$ 1,338,033	$ 2,040,686	$ 1,305,444	$ 3,200,139	$ 1,869,806	$ 1,561,681	$ 1,160,684
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll		$ 3,038,606	$ 5,219,324	$ 5,111,003	$ 16,275,770	$ 5,436,478	$ 4,816,754	$ 1,800,894
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA		$ 232,453	$ 399,278	$ 390,992	$ 1,245,096	$ 415,891	$ 368,482	$ 137,768

West Virginia American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		Virginia		Pennsylvania				
		Appalachian Power	Virginia Electric Power	Duquesne Light	PECO Energy	Pennsylvania Electric	Pennsylvania Power	PPL Electric
Customer Account Services Cost Pool								
FERC Account Balances:								
Acct 903 - Customer Records & Collection (page 322, line 131)			$ 34,105,089	$ 7,251,333	$ 54,108,164	$ 8,285,931	$ 2,345,167	$ 29,834,173
Acct 905 - Misc Customer Accounts (page 322, line 133)			$ -	$ -	$ 31,454,063	$ 318,212	$ 62,195	$ 1,237,553
Subtotal			$ 34,105,089	$ 7,251,333	$ 85,562,227	$ 8,604,143	$ 2,407,362	$ 31,071,726
Add: Employee Benefits & Employer FICA (not included in above amounts)								
Account 926 - Employee Pension & Benefits	**Note A**		$ 6,239,031	$ 2,344,537	$ 7,908,524	$ 306,665	$ 180,088	$ 8,438,577
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**		$ 1,787,731	$ 484,798	$ 1,945,506	$ 276,430	$ 69,299	$ 1,445,946
Total Cost Pool			**$ 42,131,851**	**$ 10,080,668**	**$ 95,416,257**	**$ 9,187,238**	**$ 2,656,750**	**$ 40,956,249**
Total Customers (page 304, line 43)			2,403,558	598,969	1,564,433	589,201	159,558	1,397,730
Customer Account Services Expense per Customer		see W.Va.	**$ 17.53**	**$ 16.83**	**$ 60.99**	**$ 15.59**	**$ 16.65**	**$ 29.30**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt								
Account 926 - Employee Pension & Benefits (page 323, line 187)			$167,027,121	$ 19,609,439	$ 43,788,734	$ 2,761,682	$ 1,285,130	$ 40,413,365
Total O&M Payroll (page 355, line 65)			$625,619,817	$ 53,003,877	$140,811,506	$ 32,541,096	$ 6,464,412	$ 90,520,382
Benefits as Percent of Payroll			26.7%	37.0%	31.1%	8.5%	19.9%	44.6%
Payroll Applicable to Customer Account Services								
Total Payroll Charged to Customer Accounts Function								
Electric (page 354, line 7)			$ 30,292,243	$ 9,501,076	$ 24,534,887	$ 6,047,880	$ 1,444,650	$ 20,125,865
Gas (page 354, line 37)			$ -	$ -	$ 5,390,281	$ -	$ -	$ -
Total Payroll Charged to Customer Accounts			$ 30,292,243	$ 9,501,076	$ 29,925,168	$ 6,047,880	$ 1,444,650	$ 20,125,865
Percent Applicable to Customer Accounts Services (903 and 905):								
Acct 903 - Customer Records & Collection (page 322, line 161)			$ 34,105,089	$ 7,251,333	$ 54,108,164	$ 8,285,931	$ 2,345,167	$ 29,834,173
Acct 905 - Misc Customer Accounts (page 322, line 163)			$ -	$ -	$ 31,454,063	$ 318,212	$ 62,195	$ 1,237,553
Subtotal - Total Charges Applicable to Customer Accounts Services			$ 34,105,089	$ 7,251,333	$ 85,562,227	$ 8,604,143	$ 2,407,362	$ 31,071,726
Acct 902 - Meter Reading Expenses (page 322, line 160)			$ 10,103,836	$ 3,620,208	$ 15,118,763	$ 5,796,694	$ 1,431,801	$ 2,013,136
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading			$ 44,208,925	$ 10,871,541	$100,680,990	$ 14,400,837	$ 3,839,163	$ 33,084,862
Percent Applicable to Customer Accounts Services (903 and 905)			77.1%	66.7%	85.0%	59.7%	62.7%	93.9%
Customer Account Services Portion of Total Payroll			$ 23,369,029	$ 6,337,231	$ 25,431,455	$ 3,613,458	$ 905,873	$ 18,901,253
Pension & Benefits Pertaining to Customer Accounts Services			$ 6,239,031	$ 2,344,537	$ 7,908,524	$ 306,665	$ 180,088	$ 8,438,577
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services								
Customer Account Services Portion of Total Payroll			$ 23,369,029	$ 6,337,231	$ 25,431,455	$ 3,613,458	$ 905,873	$ 18,901,253
Employer's Portion of FICA (6.20%) and Medicare (1.45%)			7.65%	7.65%	7.65%	7.65%	7.65%	7.65%
Estimated Employer's Portion of FICA			$ 1,787,731	$ 484,798	$ 1,945,506	$ 276,430	$ 69,299	$ 1,445,946

West Virginia American Water Company
Comparison Group 2009 Actual Customer Accounts Expense Per Customer

		Maryland			
		Baltimore Gas & Electric	Delmarva Power & Light	Potomac Electric	
Customer Account Services Cost Pool					
FERC Account Balances:					
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 27,866,774	$ 32,434,776	$ 45,896,046	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 3,630,336	$ -	$ -	
Subtotal		$ 31,497,110	$ 32,434,776	$ 45,896,046	
Add: Employee Benefits & Employer FICA (not included in above amounts)					
Account 926 - Employee Pension & Benefits	**Note A**	$ 7,086,906	$ 3,183,229	$ 7,120,702	
Account 408 - Taxes Other Than Income (Employer's Portion of FICA)	**Note B**	$ 2,449,386	$ 528,359	$ 870,314	
Total Cost Pool		**$ 41,033,402**	**$ 36,146,364**	**$ 53,887,062**	**Group Average**
					$ 535,006,556
Total Customers (page 304, line 43)		1,234,644	498,046	769,966	16,602,137
Customer Account Services Expense per Customer		**$ 33.24**	**$ 72.58**	**$ 69.99**	**$ 32.23**
Note A: Calculation of Pension & Benefits Pertaining to Customer Acct Mgmt					
Account 926 - Employee Pension & Benefits (page 323, line 187)		$ 39,876,147	$ 18,030,414	$ 35,071,199	
Total O&M Payroll (page 355, line 65)		$180,157,469	$ 39,120,620	$ 56,032,805	
Benefits as Percent of Payroll		22.1%	46.1%	62.6%	
Payroll Applicable to Customer Account Services					
Total Payroll Charged to Customer Accounts Function					
Electric (page 354, line 7)		$ 24,805,988	$ 7,101,649	$ 12,971,565	
Gas (page 354, line 37)		$ 12,759,646	$ 1,558,899	$ -	
Total Payroll Charged to Customer Accounts		$ 37,565,634	$ 8,660,548	$ 12,971,565	
Percent Applicable to Customer Accounts Services (903 and 905):					
Acct 903 - Customer Records & Collection (page 322, line 161)		$ 27,866,774	$ 32,434,776	$ 45,896,046	
Acct 905 - Misc Customer Accounts (page 322, line 163)		$ 3,630,336	$ -	$ -	
Subtotal - Total Charges Applicable to Customer Accounts Services		$ 31,497,110	$ 32,434,776	$ 45,896,046	
Acct 902 - Meter Reading Expenses (page 322, line 160)		$ 5,457,249	$ 8,236,558	$ 6,434,241	
Total Charges Applicable to Customer Acccounts Svcs & Meter Reading		$ 36,954,359	$ 40,671,334	$ 52,330,287	
Percent Applicable to Customer Accounts Services (903 and 905)		85.2%	79.7%	87.7%	
Customer Account Services Portion of Total Payroll		$ 32,018,115	$ 6,906,657	$ 11,376,654	
Pension & Benefits Pertaining to Customer Accounts Services		$ 7,086,906	$ 3,183,229	$ 7,120,702	
Note B: Calculation of Employer's FICA Pertaining to Customer Accounts Services					
Customer Account Services Portion of Total Payroll		$ 32,018,115	$ 6,906,657	$ 11,376,654	
Employer's Portion of FICA (6.20%) and Medicare (1.45%)		7.65%	7.65%	7.65%	
Estimated Employer's Portion of FICA		$ 2,449,386	$ 528,359	$ 870,314	

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VI - Question 4 – Need for Service Company Services

Analysis of Services

The final aspect of this study was an assessment of whether the services that are provided to WV American by the Service Company would be necessary if WV American were a stand-alone water utility. The first step in this evaluation was to determine specifically what the Service Company does for WV American. Based on discussions with Service Company personnel, the matrix in Exhibit 11 was created showing which entity—WV American or a Service Company location—is responsible for each of the functions WV American requires to ultimately provide service to its customers. This matrix was reviewed to determine: (1) if there was redundancy or overlap in the services being provided by the Service Company and (2) if Service Company services are typical of those needed by a stand-alone water utility.

Upon review of Exhibit 12, the following conclusions can be drawn:

- The services that the Service Company provides are necessary and would be required even if WV American were a stand-alone water utility.

- There is no redundancy or overlap in the services provided by the Service Company to WV American. For all of the services listed in Exhibit 12, there was only one entity that was primarily responsible for the service.

West Virginia American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	WV American	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Engineering and Construction Management							
CPS Preparation	P				S		
Five-Year System Planning	P						
Engineering Standards & Policies Development					P		
Project Design							
Major Projects (e.g., new treatment plant)	P				S		
Special Projects	P				S		
Minor Projects (e.g., pipelines)	P						
Construction Project Management							
Major Projects	P				S		
Special Projects	P				S		
Minor Projects	P						
Hydraulics Review	P						
Developers Extensions	P						
Tank Painting	P						
Water Quality and Purification							
Water Quality Standards Development	S				P		S
Research Studies	S				P		S
Water Quality Program Implementation	P				S		
Water Treatment Operations & Maintenance	P				S		
Compliance Sampling and Chemical Testing	S						P
Sample Collection and Other Testing	P				S		S
Transmission and Distribution							
Preventive Maintenance Program Development	P				S		
System Maintenance	P						
Leak Detection	P						
Customer Service							
Community Relations	S		P		S		
Customer Contact	S	P					
Call Processing		P					
Service Order Creation	S	P	S				
Service Order Processing	S	S	P				
Customer Credit	S	P					
Meter Reading	P					S	
Customer Bill Preparation		S				P	
Bill Collection	S	P	S			S	
Customer Payment Processing	S			P			
Meter Standards Development	S				P		
Meter Testing, Maintenance & Replacement	P						

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West Virginia American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	WV American	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Financial Management							
Financial Planning	S		P	S	S		
Financings--Equity			S	S	P		
Financings--Long Term Debt & Preferred (Note A)	S		S	S	P		
Short Term Lines of Credit Arrangements(Note A)	S		S	S	P		
Investor Relations			S		P		
Insurance Program Administration	S				P		
Loss Control/Safety Program Administration	P				S		
Pension Fund Asset Management					P		
Cash Management/Disbursements	S			P			
Internal Auditing					P		
Budgeting and Variance Reporting							
Corporate Guidelines & Instructions					P		
Regional Guidelines & Instructions			P				
Budget Preparation							
Revenue and O&M	P		S				
Depreciation and Interest Expense	P		S	S			
Budget Preparation--Service Company Charges		S	P	S	S	S	S
Capital Budget Preparation—Projects	P						
Capital Budget Preparation—Non-Project Work	P						
Prepare Monthly Budget Variance Report	P		S				
("Budget/Plan Analysis")							
Prepare Capital Project Budget Status Report	P						
Year-End Projections	P						
Accounting and Taxes							
Accounts Payable Accounting	S			P			
Payroll Accounting	S			P			
Work Order Accounting	S			P			
Fixed Asset Accounting	S			P			
Journal Entry Preparations--Billing Corrections	S			P			
Journal Entry Preparation--All Others	S			P			
Financial Statement Preparation	S			P			
State Commission Reporting	S			P			
Income Taxes--State				P			
Income Taxes--Federal				P			
Property Taxes	S		S	P			
Gross Receipts (Town) Taxes	S		S	P			

Note A: Lines of credit are the responsibility of American Water Capital Corporation ("AWCC").

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West Virginia American Water Company
Designation Of Responsibility For Water Utility Functions

P - Primarily Responsible S - Provides Support	Performed By:						
		American Water Service Company					
Water Company Function	WV American	Customer Call Center	Regional Office	Shared Services	Corporate Office	IT Service Centers	Belleville Lab
Rates							
Rate Studies & Tariff Change Administration	S		P				
Rate Case Planning and Preparation	S		P				
Rate Case Administration	S		P				
Commission Inquiry Response	S		P				
Legal			P		S		
Purchasing and Materials Management – National (pipe, chemicals, meters, etc.)							
Specification Development	S			S	P		
Bid Solicitation	S				P		
Contract Administration	S				P		
Purchasing and Materials Management – State (state supplier service agreements)							
Specification Development	P		S				
Bid Solicitation	P						
Contract Administration	P						
Ordering	P						
Inventory Management	P			S			
Human Resources Management							
Benefit Program Development					P		
Benefits Program Administration	S				P		
Management Compensation Administration					P		
Wage & Salary Program Design					P		
Wage & Salary Administration	S		P				
Training Program Development	S		S		P		
Training--Course Delivery	S		P				
Affirmative Action/EEO--Plan Development	S		P				
Affirmative Action/EEO--Implementation	S		P				
Information Systems Services							
Service Company Data Centers							
System Operations & Maintenance						P	
Software Maintenance						P	
Network Administration	S					P	
PC Acquisition & Support						P	
Help Desk				S		P	

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Governance Practices Associated With Service Company Charges

There are several ways by which WV American exercises control over Service Company services and charges. The most important of these are described below.

- **President of Regulated Operations Oversight** – The President of Regulated Operations is on the Executive Management Team (EMT) of American Water. This position is responsible for the overall performance of each operating company in American Water. As part of the EMT, the President of Regulated Operations has equal say with other EMT members in major business decisions of American Water and has the ability to monitor Service Company performance quality and spending. The President of Regulated Operations also has dialogue with each operating company president to address local concerns.
- **Divisional Vice President & Treasurer** – The Divisional Vice President and Treasurer of the Eastern Division states is responsible for the financial reporting, performance and internal controls of each of the operating companies in the division. The Vice President and Treasurer monitors the performance and reporting from the Service Company and follows up on instances where the quality and timeliness of services are not as expected. The operating company interacts with the Divisional VP & Treasurer to discuss any concerns with billings, etc.
- **Operating Company Board Oversight** – WV American's board of directors includes members of American Water's EMT, members of the divisional management team and business and community leaders from outside the Company. WV American's president is Chairman of the KAWC board. This helps ensure that WV American's needs are a factor in the delivery of Service Company services.
- **Service Company Budget Review/Approval** – The President of Regulated Operations sits on the Service Company board and that board must formally approve the budget for Service Company charges for the next year. These budgeted charges are consolidated with the operating company's own spending into an overall budget which must be approved by the operating company's board of directors. WV American's president also sits on the Service Company board.
- **Major Project Review And Approval** – Major projects undertaken by the Service Company must first be reviewed by American Water's Executive Management Team, which includes the President of Regulated Operations. With input from the local presidents and Divisional Vice President & Treasurer, they have the ability to impact all new initiatives and projects before they are authorized.
- **Service Company Bill Scrutiny** – WV American Finance personnel review the monthly Service Company bill for accuracy and reasonableness on a monthly basis. WV American financial manager has dialogue with Shared Services Center office personnel concerning the monthly bill and any mistakes or overcharges are credited on a subsequent billing. The WV American Finance Manager prepares an actual to budget comparison of management fees each month for use in identifying unusual variances. Service Company actual to budget comparison is included in the monthly FRP. Unusual variances are researched, explanations are provided and any corrections are made, as necessary.
- **Service Company Budget Variance Reporting** – Each month, a summary variance analysis is prepared that explains differences between budgeted and actual Service Company spending. In addition, a more detailed monthly variance report, called the "Statement of Expenses and Billed Charges," is produced by Service Company location and shows actual spending for the month.

- **Operating Company Budget Variance Reporting** – The "Budget/Plan Analysis," produced monthly, has a line item for Management Fees (i.e., Service Company charges). In this way, Service Company budget versus actual charges can be monitored for the month and year-to-date. Additional information exists that allows more detailed analysis of "Divisional" and "Corporate" Management Fees.

- **Capital Investment Management ("CIM") –** CIM is one of American Water's primary business planning processes. It covers capital and asset planning and is employed throughout American Water. CIM provides a full range of governance practices, including a formal protocol for assessing system needs, prioritizing expenditures, managing the capital program, approving project spending, delivering projects and measuring outputs. CIM ensures that:
  - Capital expenditure plans are aligned with the strategic intent of the business
  - The impact of capital expenditure and income plans are fully reflected in operating expense plans
  - The impacts of these plans are understood and affordable, and
  - Effective controls are in place over budgets (through business plans) and individual capital projects (through appropriate authorization thresholds, management and reporting processes).

  The CIM process was designed to optimize the effectiveness of asset investment. The process is managed at two levels for all American Water companies, including all WV American Operating Units. Monthly meetings of the CIM are held to review capital spending compared to plan, review new project requests, and review updates or modifications to existing projects. The President of WV American and others participate as necessary (e.g. WV American operations managers and Rates Manager) and provide the data used in the monthly review schedules.

Illinois American Water
2010 Belleville Lab Cost Study
Service Company Cost Study

Test Name (A)	Belleville Lab Cost (A)	Lowest Cost Vendor (B)	Overall Lowest Cost (C)	Vendor Lowest Cost (D)	AW Savings (E)
Carbamates	$ 51,266	AW	$ 51,266	$ 60,447	$ 9,181
Crypto/Giardia	79,720	AW	79,720	301,901	222,181
Cyanide	26,554	AW	26,554	28,704	2,150
Diquat	72,151	AW	72,151	76,357	4,206
EDB/DBCP	38,766	V2	30,046	30,046	(8,719)
Endothall	59,615	AW	59,615	59,664	49
Glyphosate	35,724	AW	35,724	43,716	7,992
HAA's	460,130	AW	460,130	817,762	357,631
Herbicides	191,898	V2	185,795	185,795	(6,103)
IC-DBP's	22,671	AW	22,671	133,014	110,344
IC-Minerals	108,407	AW	108,407	148,766	40,359
ICP	275,378	AW	275,378	512,076	236,698
ICPMS	285,524	AW	285,524	761,965	476,441
Lead & Copper	102,466	AW	102,466	110,360	7,894
Mercury	58,140	V1	38,085	38,085	(20,055)
Nitrate & Nitrite	68,510	AW	68,510	92,323	23,813
PCB's	50,842	V1	39,163	39,163	(11,679)
Perchlorates	21,021	AW	21,021	22,509	1,488
Radon	15,494	AW	15,494	31,658	16,164
Semi-Volatiles	151,922	AW	151,922	388,089	236,167
TOC	114,980	AW	114,980	144,483	29,504
TTHM's	213,509	AW	213,509	331,589	118,081
UV254	20,140	AW	20,140	26,715	6,575
Volatiles	174,670	AW	174,670	536,406	361,736
UCMR Degrad.*	98,799	V1	81,284	81,284	(17,516)
UCMR Explosive *	85,796	AW	85,796	103,115	17,319
UCMR Flame Ret *	74,454	AW	74,454	117,260	42,806
UCMR Nitro *	57,274	AW	57,274	97,940	40,666
Total	$ 3,015,819		$ 2,951,748	$ 5,321,194	$ 2,305,374

IL American's Portion of Savings $ 207,253

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Test Name (A)	Test Time Hrs / Sample (B)	2010 # of Tests Projected (3) (C)	Average labor Cost Per Sample (D)	Building and Other Overheads (2) (E)	Total Sampling Cost for Belleville Lab (F)	Belleville Avg Cost per Test Method (G)	V1 Cost per per Test Method (1) (H)	Total Cost for V1 Lab (I)	V2 Cost per per Test Method (1) (J)	Total Cost for V2 Lab (K)	V3 Cost per per Test Method (1) (L)	Total Cost for V3 Lab (M)
Carbamates	1.10	484	$ 48.57	$ 27,756	$ 51,266	$ 105.92	$ 165.35	$ 80,029	$ 135.55	$ 65,606	$ 124.89	$ 60,447
Crypto/Giardia	1.30	653	57.41	42,234	79,720	122.08	462.33	301,901	480.34	313,662	480.34	313,662
Cyanide	0.20	800	8.83	19,489	26,554	33.19	35.88	28,704	51.25	41,000	41.00	32,800
Diquat	1.30	591	57.41	38,224	72,151	122.08	139.80	82,622	134.50	79,490	129.20	76,357
EDB/DBCP	1.00	546	44.16	14,655	38,766	71.00	81.48	44,488	55.03	30,046	84.65	46,219
Endothall	1.40	458	61.82	31,301	59,615	130.16	135.59	62,100	135.59	62,100	130.27	59,664
Glyphosate	0.90	398	39.74	19,907	35,724	89.76	109.84	43,716	136.57	54,355	125.88	50,100
HAA's	0.70	6,252	30.91	266,875	460,130	73.60	146.29	914,605	130.80	817,762	130.80	817,762
Herbicides	1.80	1,181	79.49	98,025	191,898	162.49	183.37	216,560	157.32	185,795	157.32	185,795
IC-DBP's	0.20	683	8.83	16,639	22,671	33.19	194.75	133,014	194.75	133,014	194.75	133,014
IC-Minerals	0.20	3,266	8.83	79,563	108,407	33.19	56.94	185,966	45.55	148,766	68.33	223,166
ICP	0.30	6,672	13.25	186,990	275,378	41.27	113.18	755,137	97.57	650,987	76.75	512,076
ICPMS	0.20	8,602	8.83	209,553	285,524	33.19	192.94	1,659,670	161.63	1,390,341	88.58	761,965
Lead & Copper	0.20	3,087	8.83	75,202	102,466	33.19	35.75	110,360	35.75	110,360	35.75	110,360
Mercury	0.40	1,178	17.66	37,332	58,140	49.35	32.33	38,085	32.33	38,085	32.33	38,085
Nitrate & Nitrite	0.20	2,064	8.83	50,281	68,510	33.19	71.35	147,266	44.73	92,323	58.05	119,815
PCB's	1.10	480	48.57	27,526	50,842	105.92	81.59	39,163	187.18	89,846	129.11	61,973
Perchlorates	0.50	366	22.08	12,940	21,021	57.44	128.13	46,896	61.50	22,509	92.25	33,764
Radon	0.10	617	4.42	12,769	15,494	25.11	76.98	47,497	51.31	31,658	76.98	47,497
Semi-Volatiles	0.80	1,860	35.33	86,214	151,922	81.68	234.65	436,449	208.65	388,089	250.25	465,465
TOC	0.20	3,464	8.83	84,387	114,980	33.19	41.71	144,483	61.14	211,789	41.71	144,483
TTHM's	0.30	5,173	13.25	144,979	213,509	41.27	64.10	331,589	69.27	358,334	84.77	438,515
UV254	0.10	802	4.42	16,598	20,140	25.11	33.31	26,715	46.64	37,405	39.98	32,064
Volatiles	0.30	4,232	13.25	118,606	174,670	41.27	131.93	558,328	131.93	558,328	126.75	536,406
UCMR Degrad.*	4.80	244	211.96	47,081	98,799	404.91	333.13	81,284	410.00	100,040		81,284
UCMR Explosive *	1.90	503	83.90	43,594	85,796	170.57	205.00	103,115	205.00	103,115		103,115
UCMR Flame Ret *	1.40	572	61.82	39,091	74,454	130.16	256.25	146,575	205.00	117,260		117,260
UCMR Nitro *	2.20	294	97.15	28,713	57,274	194.81	333.13	97,940	410.00	120,540		97,940
Total		55,522		$ 1,876,524	$ 3,015,819			$ 6,864,258		$ 6,352,606		$ 5,701,052

*** Minimum Cost for V1 and V2 Utilized for V3**

Belleville Labor Cost / Hr: $ 44.16

(1) Per sample cost adjusted for add-on costs

(2) Based on # of tests and the time required to perform tests

AW Cost Savings $ 3,848,439 $ 3,336,786 $ 2,685,233

(3) Based on a 5% increase from 2008

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Test Name (A)	Outside Vendor Cost (B)	Fixed Overhead (C)	Vendor Cost + Fixed Cost (D)	AW Cost (E)	Increased Cost to Out Source (F)
Carbamates					
Crypto/Giardia					
Cyanide					
Diquat					
EDB/DBCP	30,046	14,655	44,701	38,766	5,936
Endothall					
Glyphosate					
HAA's					
Herbicides	185,795	98,025	283,820	191,898	91,923
IC-DBP's					
IC-Minerals					
ICP					
ICPMS					
Lead & Copper					
Mercury	38,085	37,332	75,417	58,140	17,277
Nitrate & Nitrite					
PCB's	39,163	27,526	66,690	50,842	15,847
Perchlorates					
Radon					
Semi-Volatiles					
TOC					
TTHM's					
UV254					
Volatiles					
UCMR Degrad.*	81,284	47,081	128,364	98,799	29,565
UCMR Explosive *					
UCMR Flame Ret *					
UCMR Nitro *					
Total	$ 374,373	$ 224,620	$ 598,993	$ 438,444	$ 160,548

IL American's Portion of Cost of Outsourcing Testing $ 14,433

Deloitte.

IAWC Exhibit 11.01

SERVICE COMPANY COST STUDY

PREPARED FOR ILLINOIS-AMERICAN WATER COMPANY

MAY, 2009

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I. INTRODUCTION

Deloitte & Touche LLP ("Deloitte & Touche") was engaged by Illinois-American Water Company ("IAWC") to conduct a Service Company Cost Study ("Study") comparing the cost of certain services expected to be obtained by IAWC from American Water Works Service Company, Inc. ("AWWSC" or "Service Company") to the costs that would be incurred if such services were obtained in the open market. This Study is prepared in response to the Illinois Commerce Commission's ("Commission") Order of July 30, 2008 in Docket 07-0507 that IAWC

> "…conduct a study comparing the cost of each service obtained from the Service Company to the costs of such services had they been obtained through competitive bidding on the open market. As part of the study, IAWC must also provide an analysis of the services provided by the Service Company to all of IAWC's affiliates. The analysis must provide details on the specific services provided to IAWC and how costs are allocated among affiliates of IAWC. IAWC shall include the study in its next rate filing."[1]

As the testimony of IAWC's President, Ms. Teasley, discusses, in response to this requirement, IAWC has presented the testimony of five witnesses, including the testimony of Messrs. Mark Young of Deloitte & Touche and Bernard L. Uffelman of Uffelman Advisory Services, LLC, who sponsor this Study. As Ms. Teasley explains, Mr. John Young, President of AWWSC discusses each service that AWWSC performs. Mr. Edward Grubb addresses the cost assignment and allocation process, and other matters related to AWWSC services.

As Ms. Teasley explains, in procuring services, IAWC's practice is to provide support for utility operations based on considerations of cost-effectiveness, timeliness, reliability and adequacy. For certain services, IAWC is able to maintain adequate service quality and achieve efficiencies through the use of qualified third-party providers (i.e., AWWSC or a non-affiliate provider). As Ms. Teasley indicates, for certain services that can be outsourced, IAWC has determined that use of a non-affiliate provider is not feasible. For the reasons Ms. Teasley discusses, the services in this category include corporate governance, the customer service center and the employee benefits service center. For the reasons given by Ms. Teasley, IAWC believes that these services should be performed only by employees of IAWC or those of an affiliated company. Ms. Teasley sponsors a study that compares the cost incurred by IAWC in obtaining these, and other services, from AWWSC to the market cost that IAWC would incur if it were to itself retain the personnel needed to provide these services on a stand-alone basis ("Self Provision Study"). Thus the Self Provision Study provides the applicable market comparison for services that cannot be

[1] Illinois Commerce Commission Docket 07-0507, Section IV. B. 6. d

outsourced to non-affiliates. The required market comparison for services that IAWC can effectively outsource to an affiliate or non-affiliate provider are the subject of this Study. This Study also provides an analysis of IAWC's customer service center costs which supports the Self Provision Study sponsored by Ms. Teasley.

The remainder of this Study is comprised of the following seven sections:

- Overview of AWWSC
- Study Methodology
- Market Cost Comparison Survey Information
- Market Analysis
- Customer Accounts Analysis
- Study Conclusions
- Professional Standards

The Service Company provided Deloitte & Touche with information pertaining to AWWSC and IAWC to perform the Study, including but not limited to information related to the projected level of service costs for the fully forecasted 2010 test year. The analysis also relied on market information obtained directly by Deloitte & Touche. The sources of information used in developing the analysis are noted throughout this Study and supporting schedules.

The methodology used by Deloitte & Touche for comparing the cost of each service expected to be obtained from the Service Company that can be performed by a non-affiliate to the costs of such services that would be incurred if such services were obtained through competitive bidding on the open market is described in greater detail in the following sections of this Study. The methodology incorporates a comparison of the forecasted cost of certain services expected to be obtained by IAWC from the Service Company during the forecast period to the expected cost or market price for the services in the future period if such services were obtained on the open market. The results of the analysis show either the cost savings expected to be realized (i.e., Service Company costs lower than market) or the excess costs expected to be incurred (i.e., Service Company costs higher than market) by IAWC from obtaining professional and managerial services through the Service Company when compared to the costs of acquiring such services in the open market from third-party service providers.

As discussed above, the Self Provision Study provides the applicable market comparison for IAWC's customer service related cost (comparing the cost incurred by IAWC to obtain this service from AWWSC to the cost to self provision, i.e., the cost to IAWC of retaining the needed personnel in the market to provide this service on a stand-alone basis). As Ms. Teasley discusses, the Self Provision Study demonstrates that the cost incurred by IAWC to obtain this service through AWWSC is significantly below the cost that would be incurred to self-provide the services.

This Study provides an additional analysis of customer service costs that supports the Self Provision Study sponsored by Ms. Teasley. The analysis performed by Deloitte & Touche includes a comparison of IAWC's customer service cost to the customer service costs reported by other utilities in narrowly defined customer accounts for providing comparable services. Although not a market cost comparison for this type of service, the additional analysis demonstrates that IAWC's customer service cost to obtain this service through AWWSC is below the average level of cost incurred by other utilities for this function.

II. OVERVIEW OF AWWSC

AWWSC is a subsidiary of American Water Works Company, Inc. ("AWWC" or "American Water") and is organized as a services organization to provide governance and support services to AWWC affiliates, including IAWC. Service companies are common in the utility industry and provide support services to affiliates in a centralized manner resulting in cost efficiencies to affiliates by eliminating the need for affiliates to perform support services on a stand-alone basis.

A. **AWWSC Locations**

AWWSC is a collection of organizations (i.e., functions) that provide managerial and professional support services to AWWC affiliates including IAWC from a number of locations. The AWWSC locations are described below.

Belleville Lab – personnel at this location perform water quality testing for all AWWC operating water utility affiliates. The Belleville Lab is located in Belleville, Illinois.

National Call Centers – AWWSC personnel perform the following customer service activities: customer call processing, service order processing, customer payment processing, credit and collection, customer billing and other customer related activities. AWWSC operates two call centers located in Alton, Illinois and Pensacola, Florida. AWWSC's call centers respond to customer inquiries nationwide from AWWC's regulated operations, including customers in Illinois served by IAWC.

Corporate – personnel located in Voorhees, New Jersey include AWWC's executive management group as well as AWWSC functional leadership who provide corporate oversight and support services to AWWC affiliates. Corporate operations personnel are also located in Mt. Laurel, New Jersey.

Information Technology Service Centers ("ITS") – this function consists of a principal data center located in Hershey, Pennsylvania to support AWWC's information technology infrastructure required to operate AWWSC and operating company business applications and computer systems. A second data center is

located in Haddon Heights, New Jersey. ITS administrative personnel are located in Voorhees, New Jersey.

Shared Service Center ("SSC") – personnel at this location in Cherry Hill, New Jersey provide financial, accounting and treasury services to AWWC's operating companies.

B. **AWWSC Business Functions**

As discussed in Mr. John Young's testimony, AWWSC services are provided to American Water affiliates by AWWSC personnel in the following functions:

- **Communications and External Affairs**
- **Corporate Finance**
  - Treasury
  - Controller
  - Planning & Reporting
- **Customer Service Center**
- **Human Resources**
- **Information Technology Services**
- **Legal**
- **Operations Services**
  - Engineering
  - Maintenance & SCADA
  - Innovation & Environmental Stewardship
  - Central Laboratory Services
  - Supply Chain
  - Best Operating Practices
  - Operations Risk Management
- **Divisional Operations Support and Regulated Operations**
- **Shared Services Center**
- **Other**
  - Business Development
  - Internal Audit
  - Investor Relations
  - Regulatory Programs

C. **AWWSC Costs**

The types of costs incurred by AWWSC in providing service to affiliates including IAWC include the following:

- **Compensation costs** – this cost category includes the salaries and wages of AWWSC professional and managerial and administrative personnel who provide services to AWWC affiliates, and

- **Overhead costs** – this cost category includes labor-related overhead costs, building/office costs, and other overhead costs. Labor-related overhead costs include but are not limited to: employee benefits, pensions and payroll taxes. Building/office and other overhead costs include but are not limited to: depreciation expense, property and equipment rental, transportation lease and maintenance costs, property and liability insurance, utility and miscellaneous general office costs.

Labor loading rates are developed by AWWSC and applied to AWWSC employee compensation costs to recover the overhead costs referenced above. The "fully-loaded" AWWSC costs are billed to affiliates for services provided. Charges for services provided by AWWSC to affiliates are therefore billed "at cost" and do not include a profit or mark-up.

III. STUDY METHODOLOGY

This section of the Study provides an overview of the methodology used by Deloitte & Touche for comparing the cost of certain services expected to be obtained by IAWC from the Service Company to the costs of such services that would be incurred if the services were obtained through competitive bidding on the open market. This section of the Study also provides an overview of the methodology used by Deloitte & Touche for comparing IAWC's customer service related costs to those of other utilities. Sections V and VI of the Study provide additional detailed information including schedules summarizing the results of the market and customer accounts analyses discussed below.

A. Market Analysis

1. Primary Analysis

This section describes the primary analysis used by Deloitte & Touche to compare the cost of each service expected to be obtained from the Service Company that can be effectively outsourced to an affiliate or non-affiliate provider to the cost that would be incurred for the service if it were obtained on the open market ("Market Analysis"). To develop the analysis, the Service Company provided Deloitte & Touche with test year forecast information regarding IAWC's fully forecasted test year including the services expected to be utilized by IAWC during the forecast period and the costs expected to be incurred in the provision of such services. Information provided by the Service Company related to the test year included, but was not limited to, the business units and locations providing the services (e.g., Belleville Lab, Corporate, SSC); the functions providing the services (e.g., accounting, audit, finance, treasury); the categories

of services to be provided within each function (e.g., accounting, engineering, legal); the job titles of the personnel expected to provide the services and the number of positions in each job title; the number of hours expected to be worked in providing the services; and the costs expected to be incurred in providing the services (e.g., labor, labor overheads, building and office costs, and other overheads). This information provided Deloitte & Touche with an understanding of the services and costs expected to be incurred by the Service Company at the service level (i.e., business unit and function) in providing services to IAWC during the test year for comparison to an expected market price if such services were obtained from third-party providers through a competitive bidding process.

In providing professional and managerial services to affiliates, including IAWC, the Service Company incurs similar types of costs as shown in Section II above as do third-party providers. However, unlike charges or billing rates established by third-party vendors to bill for services provided that include a profit component, services provided by AWWSC to affiliates are billed at cost. Services provided by the Service Company and their related fully-loaded costs can be grouped or categorized for an “apples-to-apples” comparison to the services and costs that would result from obtaining such services from outside service providers in the open market.

To develop the market service categories and cost information to compare to the IAWC test year services and costs, Deloitte & Touche obtained and used market survey cost information as described in Section IV of this Study for the following professional and managerial service categories:

- Accounting Services,
- Engineering Services,
- Information Technology Services,
- Legal Services, and
- Management Consulting Services.

The market surveys corresponding to the above five service categories contain external market survey hourly billing rate (“Market Rate”) information or, in the case of information technology services, compensation information for computing a Market Rate for the professional service classifications listed in the market surveys. For example, as explained in greater detail in Section IV of this Study, the Market Rate information for accounting services was reported by accounting firms for the following professional service classifications:

- Partner,
- Director,
- Manager,
- Senior Associate, and
- Associate.

To assist Deloitte & Touche with the comparison of the 2010 forecasted cost for each type of service expected to be obtained by IAWC from the Service Company to an expected market price for the service in the future period (for those services that can be effectively outsourced to a non-affiliate provider), the Service Company provided Deloitte & Touche with a summary by business unit location and function of the test year costs and hours expected to be incurred during the test year. The summary also included the Service Company's expected unitized cost per hour ("Service Company Rate") for providing each service. The Service Company Rate was calculated by dividing the expected test year costs to provide the service by the projected number of hours required to provide the service. This information was mapped to the professional and managerial personnel classifications contained in the market surveys as provided to the Service Company by Deloitte & Touche for each of the five service categories listed above and resulted in comparative data for comparing the fully-loaded cost of certain services expected to be obtained from the Service Company to the cost of such services if they were obtained through competitive bidding on the open market.

Since professional services firms typically recover the cost of administrative personnel and executive assistants through the hourly billing rates they charge for their professional personnel, the Service Company's cost of its administrative personnel and executive assistants were included in the calculation of the Service Company Rates for its professional and managerial personnel. This adjustment resulted in the recognition of the Service Company's costs for administrative personnel and executive assistants in the fully-loaded cost of each service expected to be provided by the Service Company to IAWC for comparison to the market survey costs charged by outside providers.

To compare IAWC's costs for the services expected to be provided by the Service Company during the forecasted 2010 test year to the costs for such services had they been provided by outside third-party service providers, it was necessary to exclude employee meals and travel expenses. This adjustment was necessary since professional services firms typically charge clients directly for meals and travel expenses and therefore, travel-related costs are not recovered through the firms' hourly billing rates. In addition, an adjustment was made by IAWC to exclude certain software and hardware related costs (e.g., computer software applications and maintenance, computer hardware costs, depreciation and amortization, license fees and annual updates) from Service Company costs. To the extent a professional services firm incurs costs related to specialized hardware and software applications required to perform services on behalf of a specific client, such as American Water, such costs would typically be charged directly to the client as an expense and therefore would not be included in the firm's hourly billing rates.

Based on the professional service classifications defined by Deloitte & Touche, Deloitte & Touche and the Service Company developed for each of the five service categories a time distribution of the expected test year Service Company

hours for each professional service classification within each of the service categories. The time distributions were used by Deloitte & Touche to apply to the Market Rate for each professional classification to compute a weighted average Market Rate for each service category and professional classification. Because the market surveys contained 2007 or, in the case of information technology services, 2008 price information, the Market Rates for each service category were escalated using the consumer price index – all urban consumers ("CPI") to 2010 expected cost levels.[2]

The weighted average Market Rate for each service category and professional classification was compared to the Service Company Rate for each service category and professional classification as computed by the Service Company for IAWC's test year. The differences between the Service Company Rates and the Market Rates were then multiplied by the number of budgeted hours contained in IAWC's forecast period to calculate either the cost savings expected to be realized (i.e., Service Company costs lower than market) or the excess costs expected to be incurred (i.e., Service Company costs higher than market) by IAWC from obtaining professional and managerial services through the Service Company when compared to the costs of such professional services if they were acquired in the open market from third-party service providers.

To supplement the Market Rates used in the analyses, and to verify that the Market Rates are an appropriate measure for comparing to the Service Company Rates, Deloitte & Touche requested information from American Water regarding rates quoted or charged by third-party vendors ("Supplemental Rates") to American Water for services provided. American Water provided information relating to the Supplemental Rates charged for services provided to it or subsidiaries by third-party vendors in relevant markets. Section V of this Study contains the analysis and discussion of the comparison of the Service Company's fully-loaded Service Company Rates to the Market Rates and the Supplemental Rates.

2. Secondary Analysis

In addition to the primary Market Analysis described above which included analysis of the Service Company Rates for Belleville Lab employees, IAWC witness Edward Grubb performed an analysis of the Belleville Lab costs. As described in Mr. Grubb's testimony, the Service Company performed a cost study comparing the Belleville Lab's cost to perform certain tests on a "per test" basis to the cost for use of outside commercial testing labs to perform the same tests. The analysis recognizes that laboratory services of the type utilized by IAWC are available in the market on a "per test" basis (while the primary Market

[2] United States Department Of Labor, Bureau Of Labor Statistics for changes in CPI-U through 2008. Congressional Budget Office *The Budget and Economic Outlook: Fiscal Years 2009 to 2019*, January 8, 2009, economic projection of percentage changes in CPI-U for calendar years 2009 and 2010.

Analysis recognizes that personnel qualified to perform the tests can be retained in the market on an hourly basis).

B. **Customer Accounts Analysis**

This section describes the Customer Accounts Analysis performed by Deloitte & Touche which supports the market comparison for customer service related costs contained in the Self Provision Study sponsored by Ms. Teasley. AWWSC's National Call Centers and IAWC perform numerous customer-related activities, the costs of which are charged or allocated to IAWC. Customer-related activities performed and costs incurred by AWWSC and IAWC include but are not limited to:

- Customer billing inquiries,
- Customer order processing,
- Billing information processing,
- Customer payment processing,
- Correspondence processing,
- Bank service charges,
- Postage, and
- Bill forms.

In most circumstances, the reasonableness of costs incurred by a specific utility cannot properly be assessed based solely on a comparison of the utility's costs with those incurred by other entities. This is because the needs, activities and cost structures of the entities involved may differ with the result that a cost comparison is meaningless. Where, however, a comparison is narrowly focused on a process reasonably expected to involve similar activities, and there is an applicable standardized accounting process, a cost comparison may provide an indication of reasonableness.

In the case of customer service, such activities among utilities are sufficiently similar to allow cost comparisons among regulated utilities that apply an established regulatory accounting framework. In these circumstances, there is some basis to expect reasonable accuracy and consistency of approach among the entities involved. United States electric utilities perform similar customer-related activities and incur similar types of customer-related costs in providing services to customers as does IAWC, therefore a Customer Accounts Analysis using information from regulatory filings was performed. Deloitte & Touche selected 13 electric utilities, 7 of which are combination electric and gas utilities, operating in the central region of the United States (i.e., Illinois, Indiana, Iowa, Missouri, and Ohio) for purposes of the Customer Accounts Analysis. Of the 13 utilities, 11 receive support services from a centralized service company affiliate.[3]

[3] *FERC Financial Report FERC Form No. 60: Annual Report of Centralized Service Companies.* Form No. 60 is an annual regulatory support filing under 18 CFR 366.23

The number of customers served by the electric utilities ranges from approximately 166 thousand to over 3.8 million.

The results of Deloitte & Touche's Customer Accounts Analysis are discussed in greater detail in Section VI of this Study.

IV. MARKET COST COMPARISON SURVEY INFORMATION

This section of the Study provides a discussion of the market surveys from which Deloitte & Touche obtained the service classifications and Market Rates used to calculate the weighted average hourly billing rates for each of the five service categories used in the Market Analysis. The market surveys contain information relating to the compensation, fee and billing practices for the five categories of professional services firms. The market surveys were identified by Deloitte & Touche through research based on selection criteria, which included the following: availability of survey information to member firms or through purchase; reliability of survey information for use in determining the price of services in relevant markets; reputation of the organization that conducted the survey and published the survey data; if the organization conducting the survey was a trade organization, the number and types of member firms; the purpose of the survey; the number of information requests sent and responses received; number and frequency of presentations of the survey by the organization in past years; type of categorization in the survey of the market information; and the amount of information provided regarding educational and experience requirements for identified market categories. The selection criteria are discussed as applicable below in connection with each survey selected. Based on the research conducted, Deloitte & Touche concluded that the surveys selected each provide a reliable indication of a market price for services covered by the survey.

The Market Rates and professional service classifications for each of the five service categories are provided in schedules of the Study, which will be discussed below. The discussion below highlights certain information relative to the Study.

A. **Accounting Services**

Deloitte & Touche used the results of the AICPA's *2008 PCPS/TSCPA National Management of an Accounting Practice Survey ("MAP Survey")*[4] for the accounting services classifications. The 2008 MAP Survey was conducted by Intelli-Service, an independent market research company.

The AICPA has approximately 339,000 members ranging from sole practitioners to the largest U.S. accounting firms. Surveys were sent to 80,000 members and

[4] AICPA refers to the American Institute of Certified Public Accountants, PCPS refers to the Private Companies Practice Section of the AICPA, and TSCPA refers to the Texas Society of Certified Public Accountants

responses were received from 2,808 firms who provided information regarding their last fiscal year, which for most respondents was December, 2007. Average billing rate information was provided on both a regional and national basis. The survey respondents represented firms comprised of sole practitioners, single-office firms or regional firms. The MAP Survey has been conducted on an annual basis for 5 years and addresses key metrics that firms rely on to gauge their performance and profitability. For purposes of the analysis, Deloitte & Touche used the average billing rates reported by accounting firms in the Midwest Region having net client fees of two million dollars or more per year. Such firms typically have lower billing rates than national or "Big 4" firms (i.e., Deloitte, PricewaterhouseCoopers, KPMG or Ernst & Young). Therefore the accounting services Market Rates used in the Study are lower than those of the larger firms (as confirmed by Supplemental Rates that will be discussed) and are therefore conservative for purposes of the Study.

According to the MAP Survey, average billing rates for accounting services range from 1.84 times for partners to 4.43 times for associates of the professional's hourly compensation. For example, using a 4.43 times multiplier, an associate making $20 per hour would have a billing rate of approximately $89 per hour. Professional services firms that establish hourly billing rates based on a multiple of employees' salaries, use a multiplier, which, when applied to the employee's hourly compensation, is intended to cover the employee's salary and benefits, a portion of overhead costs, and a profit for the owners of the firm.

The MAP Survey also identifies the types of accounting firm costs and overheads (e.g., salaries, employee benefits, professional dues and licenses, library costs, continuing education, insurance, rent and other company costs, interest, computer and technology, promotion and marketing, payroll taxes, phone and web connectivity, and depreciation) incurred in providing service to clients. In general, the hourly billing rates of professional services providers are set at a level to recover all expenses (i.e., fully-loaded) and earn a profit for the owners.

B. **Engineering Services**

Deloitte & Touche used the results of the ZweigWhite Information Services, LLC *2008 Fee & Billing Survey of Architecture, Engineering, Planning & Environmental Consulting Firms* ("ZweigWhite Survey") for developing the engineering services classifications. The purpose of the eleventh annual ZweigWhite Survey is to gather, analyze, and publish information on the fee and billing practices of engineering, architecture, planning and environmental consulting firms. Survey responses to an 83-item questionnaire were received from 102 firms regarding their 2007 operations and represents a diverse cross-section of the design and consulting industry. Of the respondents, 85% have standard billing rates for each position or status level. Firms that use a multiple of employees' salaries to determine billing rates use a median of 3.0 times the employee's hourly wage rate.

The majority of firms (67%) mark up reimbursable expenses using a standard median markup of 10%, although a quarter of the firms mark up reimbursables by 15%. Average billing rate information was provided on both a national and regional basis. For analysis purposes, Deloitte & Touche used the average billing rates reported in the ZweigWhite Survey by firms for the North Central region including Illinois, Ohio, Indiana, Iowa and Missouri).

C. **Information Technology Services**

Deloitte & Touche used the *2008 IT Salary Report* published by Computer Economics, Inc. ("Computer Economics Report") and the *2008 IT Market Compensation Study* published by Gartner, Inc. ("Gartner Study") for developing information applicable to technology services classifications. The Computer Economics Report draws on a survey of information technology managers based on actual salaries paid to their employees in 2007 as well as their estimates of projected pay raises for 2008. The Computer Economics Report provides base salary projections for 78 specific job titles in 78 metropolitan areas of the United States. Computer Economics has been publishing salary data since 1990. The Gartner Study, which has been conducted annually for the past ten years, provided compensation data based on survey responses from 283 enterprises effective as of March 1, 2008. The Gartner Study data was utilized for six AWWSC positions for which no corresponding market compensation information was provided by the Computer Economics Report.

Unlike the other market survey data obtained by Deloitte & Touche, the Computer Economics Report and the Gartner Study provide average salary information, rather than average billing rate information, by position or service classification. For this reason, Deloitte & Touche calculated an hourly compensation rate and applied a billing rate multiplier of 3.0 times to develop a Market Rate for the job titles listed in the Computer Economics Report and the Gartner Study. Use of a billing rate multiplier of 3.0 times to develop a Market Rate for the job titles listed in the Computer Economics Report and the Gartner Study is both appropriate and conservative, as the 3.0 times multiplier is within the range of the other multipliers listed in the market rate surveys (i.e., 1.84 times to 4.43 times for accountants and 3.0 times for engineers as previously discussed in the Accounting Services and Engineering Services sections above, and 5.0 times for management consultants as discussed in the Management Consulting Services section below).

For developing the calculated Market Rates for each job title, Deloitte & Touche used the Middle Atlantic (i.e., Philadelphia, Pennsylvania / Atlantic City, New Jersey Metropolitan Area) median salary information for large companies (i.e., annual revenues greater than $750 million) listed in the Computer Economics Report. For developing the calculated Market Rates for the six job titles matched to the Gartner Study, Deloitte & Touche used the Northeast Region salary information listed in the Gartner Study.

D. **Legal Services**

Deloitte & Touche used the results of the Incisive Legal Intelligence *2008 NLJ Billing Survey* ("NLJ Survey") of the 250 largest law firms in the United States based on number of lawyers for developing the legal services classifications. The National Law Journal ("NLJ") surveyed approximately 300 law firms to determine the largest firms. The NLJ's thirty-first annual survey contains billing information for 216 large law firms regarding their 2007 billing practices. The NLJ is a subsidiary of Incisive Legal Intelligence, an Incisive Media US Properties, LLC company. Of the 216 firms, 127 firms provided specific hourly billing rate information for partners and associates. Some of the 127 firms provided their average partner and associate billing rates. For those firms that did not provide an average hourly billing rate, but did report high and low hourly billing rates, Deloitte & Touche used the reported partner and associate high and low hourly billing rates to develop an average partner and associate billing rate for the market comparison.

The NLJ Survey provides partner and associate billing rate information for the law firms listed by name and location. Deloitte & Touche used the NLJ Survey Midwest firm information (i.e., law firms operating in the states of Illinois, Missouri, Michigan, and Ohio) for developing the Market Rates for comparison to the Service Company Rates.

E. **Management Consulting Services**

Deloitte & Touche used the results of the Association of Management Consulting Firms' ("AMCF") 2008 Edition of the *Operating Ratios for Management Consulting Firms: A Resource for Benchmarking* ("AMCF Survey") for the management consulting services classifications.

The twenty-second annual AMCF Survey is based on 2007 consulting industry results including industry billing rates and procedures and was compiled by Industry Insights, Inc. AMCF distributed questionnaires to all 31 AMCF members as well as to other U.S. management consulting firms. Requests to participate in the AMCF Survey were primarily targeted to larger volume consulting businesses rather than single practitioners. In all, 49 responses were received and included in the AMCF Survey data.

Among survey respondents, billing rates on an overall staff basis for 2007 were set at a multiplier of approximately 5.0 times employee earnings. In other words, if an employee effectively earns $50 per hour, a 5.0 times earnings multiplier for billing rate determination would translate into a billing rate of $250 per hour.

V. MARKET ANALYSIS

This section of the Study provides the results of the Deloitte & Touche Market Analysis comparing the cost of each service expected to be obtained from the Service Company during the test year that can be performed by an affiliate or

non-affiliate provider to the cost that would be incurred for the service if it were obtained from a non-affiliate provider through competitive bidding in the open market. The Market Analysis provides a reasonable estimate of the cost savings realized, or the excess costs incurred by IAWC from obtaining professional and managerial services through AWWSC as compared to the cost of obtaining the services from non-affiliate providers. As shown on Schedule 8, the expected test year net cost savings realized by IAWC from obtaining each category of service from the Service Company rather than through outside third-party service providers totals $7.692 million.

The test year savings expected to be realized by IAWC, as shown on Schedule 8, are effectively understated due to the fact that Service Company managerial and professional personnel are “exempt employees” and, as such, only report a maximum time worked of eight hours per day even though they may actually work more than an eight-hour day. Since outside third-party vendors typically charge for all time incurred associated with the services provided, had the market analysis comparison recognized the additional time worked by Service Company employees, the Service Company Rates used in the market analysis would have been lower and the expected test year savings to IAWC would be greater than $7.692 million.

A. **Accounting Services**

Schedules 1 through 1.2 show the Market Analysis of accounting services. Schedule 1 Column A shows the accounting professional classifications contained in the MAP Survey as used in the analysis. Columns B and C show respectively the Market Rates from the MAP Survey for all participant firms and for Midwest Region firms having net client fees of $2 million or more per year. The adjusted 2010 Market Rates resulting from application of the cost escalator, as shown on Schedule 6 to adjust the Market Rates from the MAP Survey to a 2010 level, are shown in Column D. Column E shows the time distribution for each professional classification as provided by the Service Company on Schedule 1.1. Column F of Schedule 1 shows the weighted average Market Rate by professional classification resulting from applying the time distributions to the adjusted 2010 MAP Survey Market Rates. The weighted average Market Rate from Schedule 1 is used on Schedule 8 for comparison to the AWWSC average internal rate per hour for accounting services as provided by the Service Company on Schedule 1.1.

The table at the bottom of Schedule 1 provides a comparison of the Service Company Rates by professional classification as provided by the Service Company on Schedule 1.1 to the MAP Survey adjusted 2010 Market Rates for accounting services as shown at the top of Schedule 1. Schedule 1 also quantifies the hourly rate difference between the Service Company Rate and the MAP Survey Market Rate for each professional classification and whether the Service Company Rate is above or below the Market Rate. As shown on

Schedule 8, the cost savings realized by IAWC for accounting-related services obtained through the Service Company is projected to be $1.773 million.

Schedule 1.2 contains Supplemental Rate information regarding hourly billing rates for a “Big 4” accounting firm from information provided by American Water. As shown on Schedule 1.2, the Supplemental Rates, as adjusted to 2010 test year levels, range from a low of $254 per hour for staff accountants to a high of $489 per hour for partners. The Supplemental Rates shown on Schedule 1.2 are substantially higher than the MAP Survey Market Rates shown at the bottom of Schedule 1. As previously stated in the Study, this is to be expected as the larger accounting firms typically have higher billing rates than smaller firms. Since the Study compares the Service Company Rates to the average MAP Survey Market Rates of smaller accounting firms, the projected level of cost savings realized by IAWC for accounting related services obtained through the Service Company of $1.773 million is a conservative estimate.

B. **Engineering Services**

Schedules 2 through 2.2 show the Market Analysis of engineering services. Schedule 2 Column A shows the engineering professional classifications contained in the ZweigWhite Survey. Columns B and C show respectively the Market Rates from the ZweigWhite Survey for all firms and for North Central Region firms. The adjusted 2010 Market Rates from application of the cost escalator, as shown on Schedule 6 to adjust the ZweigWhite Survey Market Rates to a 2010 level, are shown in Column D. Column E of Schedule 2 shows the time distribution for each professional classification as provided by the Service Company on Schedule 2.1. Column F of Schedule 2 shows the weighted average Market Rate by professional classification resulting from applying the time distributions to the adjusted 2010 ZweigWhite Survey Market Rates. The weighted average Market Rate from Schedule 2 is used on Schedule 8 for comparison to the AWWSC average internal rate per hour for engineering services as provided by the Service Company on Schedule 2.1.

The table at the bottom of Schedule 2 provides a comparison of the Service Company Rates by professional classification as provided by the Service Company on Schedule 2.1 to the ZweigWhite Survey adjusted 2010 Market Rates for engineering services as shown at the top of Schedule 2. Schedule 2 also quantifies the hourly rate difference between the Service Company Rate and the ZweigWhite Survey Market Rate for each professional classification and whether the Service Company Rate is above or below the Market Rate. As shown on Schedule 8 the cost savings realized by IAWC for engineering-related services obtained through the Service Company is projected to be $1.167 million.

Schedule 2.2 contains Supplemental Rate information regarding hourly billing rates for engineering firms that provide service to American Water. Schedule 2.2 was prepared from information provided by the Service Company for contracted services with eight outside engineering firms. As shown on Schedule 2.2, the

Supplemental Rates, as adjusted to 2010 test year levels, range from a low of $66 per hour for technicians to a high of $211 per hour for principals. The Market Rates adjusted to 2010 test year levels, as shown in Column D of Schedule 2, range from a low of $70 per hour for drafters to a high of $142 for department heads. The Supplemental Rate information supports the reasonableness of the Market Rates as a comparative measure for use in the Market Analysis.

C. **Information Technology Services**

Schedules 3 through 3.3 show the Market Analysis for information technology services. Schedule 3 Column A shows the information technology services professional classifications contained in the Computer Economics Report or the Gartner Study. Columns B and C show, respectively, the national and Middle Atlantic information technology services Market Rates as calculated from the Computer Economics Report, or the national and Northeast Region Market Rates as calculated from the Gartner Study, as shown on Schedule 3.2. The adjusted 2010 Market Rates from application of the cost escalator, as shown on Schedule 6 to adjust the Market Rates to a 2010 level, are shown in Column D. Column E of Schedule 3 shows the time distribution for each professional classification as provided by the Service Company on Schedule 3.1. Column F of Schedule 3 shows the weighted average Market Rate by professional classification resulting from applying the time distributions to the adjusted 2010 Computer Economics Report or the Gartner Study Market Rates. The weighted average Market Rate from Schedule 3 is used on Schedule 8 for comparison to the AWWSC average internal rate per hour for information technology services as provided by the Service Company on Schedule 3.1.

The table at the bottom of Schedule 3 provides a comparison of the Service Company Rates by professional classification as provided by the Service Company on Schedule 3.1 to the Market Rates from the Computer Economics Report or the Gartner Study as adjusted to reflect 2010 Market Rates for information technology services. Schedule 3 also quantifies the hourly rate difference between the Service Company Rate and the calculated Computer Economics Report or the Gartner Study Market Rate for each professional classification and whether the Service Company Rate is above or below the Market Rate. As shown on Schedule 8, the cost savings realized by IAWC for information technology services obtained through the Service Company is projected to be $1.468 million.

Schedule 3.3 contains Supplemental Rate information regarding hourly billing rates for information technology firms that provide service to American Water. Schedule 3.3 was prepared from information provided by the Service Company for contracted services with outside information technology services vendors. As shown on Schedule 3.3 the Supplemental Rates, as adjusted to 2010 test year levels, range from a low of $87 per hour for analysts to a high of $741 per hour for business sponsors. The Market Rates adjusted to 2010 test year levels as shown in Column C of Schedule 3 range from a low of $57 for a computer

operator to a high of $223 for a director of client services. The Supplemental Rate information supports the reasonableness of the Market Rates as a measure for use in the Market Analysis.

D. **Legal Services**

Schedules 4 through 4.4 show the Market Analysis of legal services. Schedule 4 Column A shows the legal professional classifications used in the Market Analysis. The partner and associate professional classifications are from the NLJ Survey. The paralegal classification was included for the analysis although paralegal information is not contained in the NLJ Survey. Including the paralegal classification was necessary since the Service Company employs several paralegals. Schedules 4.2 and 4.3 show the Midwest Region law firms from the NLJ Survey and the average Market Rates for the partner and associate professional classifications respectively. The billing rate for the paralegal classification is shown on Schedule 4.4 and is discussed below. The adjusted 2010 Market Rates resulting from application of the cost escalator, as shown on Schedule 6 to adjust the NLJ Survey partner and associate Market Rates as well as the paralegal billing rate are shown in Column C of Schedule 4. Column D shows the time distribution for each professional classification as provided by the Service Company on Schedule 4.1. Column E of Schedule 4 shows the weighted average Market Rate by professional classification resulting from applying the time distributions to the adjusted Market Rates shown in Column C. The weighted average Market Rate from Schedule 4 is used on Schedule 8 for comparison to the AWWSC average internal rate per hour for legal services as provided by the Service Company on Schedule 4.1.

The table at the bottom of Schedule 4 provides a comparison of the Service Company Rates by professional classification as provided by the Service Company on Schedule 4.1 to the adjusted 2010 Market Rates for legal services as shown at the top of Schedule 4. Schedule 4 also quantifies the hourly rate difference between the Service Company Rate and the Market Rate for each professional classification and whether the Service Company Rate is above or below the Market Rate. As shown on Schedule 8 the cost savings realized by IAWC for legal services obtained through the Service Company is projected to be $0.668 million.

Schedule 4.4 contains Supplemental Rate information for law firms that provide service to American Water. Schedule 4.4 was prepared from information provided by the Service Company for contracted services with eleven outside law firms. As shown on Schedule 4.4, the Supplemental Rates, as adjusted to 2010 test year levels, range from a low of $143 per hour for paralegals to a high of $534 per hour for partners. As shown on Schedule 4.4, paralegal billing rates range from $143 per hour to $193 per hour. Deloitte & Touche used the $143 per hour paralegal billing rate as the Market Rate to compare to the Service Company Rate for the paralegal classification. The Market Rates adjusted to 2010 test year levels as shown in Column C of Schedule 4 range from a low of

$143 for paralegals to a high of $435 for partners. The reasonableness of the Market Rates for use in the Market Analysis is supported by the Supplemental Rate information.

E. **Management Consulting Services**

Schedules 5 through 5.2 show the Market Analysis of management consulting services. Schedule 5 Column A shows the management consulting professional classifications contained in the AMCF Survey as used in the analysis. Column B shows the Market Rates from the AMCF Survey. The adjusted 2010 Market Rates resulting from application of the cost escalator, as shown on Schedule 6 to adjust the AMCF Survey Market Rates to a 2010 level, are shown in Column C. Column D shows the time distribution for each professional classification as provided by the Service Company on Schedule 5.1. Column E of Schedule 5 shows the weighted average Market rate by professional classification resulting from applying the time distributions to the adjusted 2010 AMCF Survey Market Rates. The weighted average Market Rate from Schedule 5 is used on Schedule 8 for comparison to the AWWSC average internal rate per hour for management consulting services as provided by the Service Company on Schedule 5.1.

The table at the bottom of Schedule 5 provides a comparison of the Service Company Rates by professional classification as provided by the Service Company on Schedule 5.1 to the AMCF Survey adjusted 2010 Market Rates for management consulting services as shown at the top of Schedule 5. Schedule 5 also quantifies the hourly rate difference between the Service Company Rate and the AMCF Survey Market Rate for each professional classification and whether the Service Company Rate is above or below the Market Rate. As shown on Schedule 8 the cost savings realized by IAWC for management consulting services obtained through the Service Company is projected to be $2.616 million.

Schedule 5.2 contains Supplemental Rate information regarding hourly billing rates for management consulting firms that provide service to American Water. Schedule 5.2 was prepared from information provided by the Service Company for contracted services with outside consulting firms. As shown on Schedule 5.2, the Supplemental Rates, as adjusted to 2010 test year levels, range from a low of $81 per hour for technicians to a high of $763 per hour for principals. The Market Rates adjusted to 2010 test year levels as shown in Column C of Schedule 5 range from a low of $137 for research associates to a high of $301 for junior partners. The Supplemental Rate information supports the reasonableness of the Market Rates for use in the Market Analysis.

VI. CUSTOMER ACCOUNTS ANALYSIS

As discussed in Section IV of the Study, Deloitte & Touche performed a Customer Accounts Analysis of the 2007 customer accounts expenses of 13 electric utilities operating in the states of Illinois, Indiana, Iowa, Missouri, and Ohio. For electric and combination utilities, customer accounts expenses are

recorded to specific accounts as defined in the Federal Energy Regulatory Commission ("FERC") Uniform System of Accounts.[5] The utilities file annual financial reports with the FERC[6] which contain customer accounts information which can be used to compare to IAWC's customer service related costs.

The Customer Accounts Analysis is based on 2007 FERC Form 1 amounts reported for Accounts 901, 903 and 905, as well as computations of employee benefits and payroll taxes associated with customer accounts activities recorded to FERC Accounts 926 and 402, respectively. The Customer Accounts Analysis computes a 2007 customer accounts "expense per customer" for the 13 utilities which was escalated to a 2010 level for comparison to IAWC's 2010 test year customer service expense per customer.

The 13 utilities included in the Customer Accounts Analysis as shown on Schedule 7 include:

Iowa:
- Interstate Power and Light Company
- MidAmerican Energy Company

Illinois:
- Central Illinois Light Company (Ameren-CILCO)
- Central Illinois Public Service Company (Ameren-CIPS)
- Commonwealth Edison
- Illinois Power Company (Ameren-IP)

Indiana:
- Duke Energy Indiana
- Indiana Michigan Power Company

Missouri:
- The Empire District Electric Company
- Kansas City Power & Light Company
- Union Electric Company (Ameren UE)

Ohio:
- Duke Energy Ohio
- Ohio Power Company

The following provides a brief discussion of the FERC accounts for reporting costs associated with customer accounts activities. The complete account

[5] 18 CFR Part 101

[6] *FERC Financial Report FERC Form No. 1: Annual Report of Major Electric Utilities, Licensees and Others and Supplemental Form 3-Q: Quarterly Financial Report*

descriptions and types of expenses recorded to FERC accounts 901, 903 and 905 are provided in Appendix 1 of the Study.

Account 901 – Supervision – this account shall include the cost of labor and expenses incurred in the general direction and supervision of customer accounting and collecting activities. Direct supervision of a specific activity shall be charged to Account 902, Meter Reading Expenses, or Account 903, Customer Records and Collection Expenses.

Because the general supervision expenses recorded to Account 901 relate to both Accounts 902 and 903, a portion of the total Account 901 expense amount related to Account 903 was included in the Customer Accounts Analysis.

Account 903 – Customer Records and Collection Expenses – this account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.

Account 905 – Miscellaneous Customer Accounts Expenses – this account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

The types of electric utility customer accounts activities whose costs are recorded to Accounts 903 and 905 include but are not limited to:

- Customer account inquiries,
- Customer order processing,
- Verifying billing with contracts or rate schedules,
- Customer bill preparation and mailing,
- Collections,
- Payment processing,
- Receiving, refunding, or applying customer deposits, and
- Correspondence processing.

Utility employee labor is charged to Accounts 901, 903, or 905, however, employee pension and benefit expenses as well as payroll tax expenses are recorded to Account 926 – Employee Pensions and Benefits and Account 408 – Taxes Other Than Income Taxes, Other Income and Deductions respectively. To properly compare the customer accounts expenses incurred by the utilities to those incurred by IAWC, calculated amounts of pension and benefits and payroll tax expense were included in the Customer Accounts Analysis as shown on Schedule 7.

The 2007 customer accounts expense per customer for the utilities shown on Schedule 7 were escalated to a 2010 level using the CPI cost escalator as previously discussed in the Study for comparison to IAWC's 2010 test year

forecasted customer service cost per customer. IAWC's 2010 test year forecasted customer service costs were prepared by IAWC and are shown on Schedule 7.1.

The IAWC forecasted 2010 test year customer service expense expected to be incurred for customer service activities performed by AWWSC, Regional Offices, and IAWC is $7.286 million as shown on Schedule 7.1. IAWC's forecasted 2010 test year customer services expense per customer is $23.33 as shown on Schedule 7.1.

The results of the Deloitte & Touche Customer Accounts Analysis are summarized on Schedule 7.2. As shown on Schedule 7.2, the customer accounts expense per customer for the 13 utilities range from $16.75 to $41.38 with a group average cost per customer of $33.98. IAWC's forecasted test year 2010 customer service expense per customer is $23.33 per customer as shown on Schedule 7.1. IAWC's customer service expense per customer is below the average expense per customer of the utility group included in the analysis.

VII. STUDY CONCLUSIONS

The provision of services to IAWC through the Service Company results in significant cost benefits to IAWC. Based on the Market Analysis, and as shown on Schedule 8, the cost savings expected to be realized by IAWC from obtaining services through the Service Company during the forecast period when compared to the costs of acquiring such services in the open market from third-party service providers amount to $ 7.692 million. The net savings expected to be realized by IAWC results from the Service Company's ability to provide services at a cost which is lower than the market cost of such services. As mentioned previously in the Study, had the Market Analysis recognized the fact that Service Company managerial and professional employees actually work more time than the maximum reportable time of eight hours per day, the expected net savings of $7.692 million would be larger.

The results of the Customer Accounts Analysis show that IAWC's forecasted 2010 test year customer service expense compares favorably with the customer accounts expenses reported by the group of utilities. The customer accounts expense per customer for the utilities ranges from $16.75 to $41.38. IAWC's test year customer service expense per customer of $23.33 is below the $33.98 average expense per customer of the other utilities included in the comparison.

VIII. PROFESSIONAL STANDARDS

The services provided by Deloitte & Touche for this Study were performed under the Standards for Consulting Services of the American Institute of Certified Public Accountants ("AICPA"). Consulting services differ fundamentally from attestation services provided in an attestation engagement. Consulting services may include consultations, advisory services such as this Study, implementation services, transaction services, staff and other support services, and product services. However, consulting services exclude services subject to other AICPA Technical Standards, such as Statements on Auditing Standards, Statements on Standards for Attestation Engagements, or Statements on Standards for Accounting and Review Services.

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Illinois-American Water Company
FERC Account Descriptions

901 – Supervision (Major only).
This account shall include the cost of labor and expenses incurred in the general direction and supervision of customer accounting and collecting activities. Direct supervision of a specific activity shall be charged to account 902, Meter Reading Expenses, or account 903, Customer Records and Collection Expenses, as appropriate. (See operating expense instruction 1.)

903 – Customer Records and Collection Expenses.
This account shall include the cost of labor, materials used and expenses incurred in work on customer applications, contracts, orders, credit investigations, billing and accounting, collections and complaints.
Labor
1. Receiving, preparing, recording and handling routine orders for service, disconnections, transfers or meter tests initiated by the customer, excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
2. Investigations of customers' credit and keeping of records pertaining thereto, including records of uncollectible accounts written off.
3. Receiving, refunding or applying customer deposits and maintaining customer deposit, line extension, and other miscellaneous records.
4. Checking consumption shown by meter readers' reports where incidental to preparation of billing data.
5. Preparing address plates and addressing bills and delinquent notices.
6. Preparing billing data.
7. Operating billing and bookkeeping machines.
8. Verifying billing records with contracts or rate schedules.
9. Preparing bills for delivery, and mailing or delivering bills.
10. Collecting revenues, including collection from prepayment meters unless incidental to meter-reading operations.
11. Balancing collections, preparing collections for deposit, and preparing cash reports.
12. Posting collections and other credits or charges to customer accounts and extending unpaid balances.
13. Balancing customer accounts and controls.
14. Preparing, mailing, or delivering delinquent notices and preparing reports of delinquent accounts.
15. Final meter reading of delinquent accounts when done by collectors incidental to regular activities.
16. Disconnecting and reconnecting service because of nonpayment of bills.
17. Receiving, recording, and handling of inquiries, complaints, and requests for investigations from customers, including preparation of necessary orders, but

Illinois-American Water Company
FERC Account Descriptions

excluding the cost of carrying out such orders, which is chargeable to the account appropriate for the work called for by such orders.
18. Statistical and tabulating work on customer accounts and revenues, but not including special analyses for sales department, rate department, or other general purposes, unless incidental to regular customer accounting routines.
19. Preparing and periodically rewriting meter reading sheets.
20. Determining consumption and computing estimated or average consumption when performed by employees other than those engaged in reading meters.

Materials and Expenses

21. Address plates and supplies.
22. Cash overages and shortages.
23. Commissions or fees to others for collecting.
24. Payments to credit organizations for investigations and reports.
25. Postage.
26. Transportation expenses (Major only), including transportation of customer bills and meter books under centralized billing procedure.
27. Transportation, meals, and incidental expenses.
28. Bank charges, exchange, and other fees for cashing and depositing customers' checks.
29. Forms for recording orders for services removals, etc.
30. Rent of mechanical equipment.
31. Communication service (Nonmajor only).

905 – Miscellaneous Customer Accounts Expenses (Major only).

This account shall include the cost of labor, materials used and expenses incurred not provided for in other accounts.

Labor

1. General clerical and stenographic work.
2. Miscellaneous labor.

Materials and Expenses

3. Communication service.
4. Miscellaneous office supplies and expenses and stationery and printing other than those specifically provided for in accounts 902 and 903.

THE REMAINDER OF THIS ATTACHMENT IS CONFIDENTIAL AND HAS BEEN PROVIDED IN A SEALED ENVELOPE

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw/Deron Allen

Other Participating Employees: Linda C. Bridwell

Question:

73. Provide all ***Documents*** constituting, containing, referring to, or relating to recommendations contained in the ***Schumaker Report***.

Response:

Several recommendations in the Schumaker report will be addressed by the BT program. Because the BT efforts are ongoing and have not been fully implemented, the level of documentation available to support ongoing efforts that address the recommendations is limited. However, in response to the recommendations in the Schumaker Report listed under "Internal Controls Review,"

> Recommendation III-1 Continue to reduce the use of outside contractors for SOX compliance tasks. (Refer to Finding III-2)
>
> Recommendation III-4 Improve documentation for purchase card transactions in order for a third party to determine the business purpose of the transaction and to evaluate if the appropriate formula was used to allocate the cost. (Refer to Finding III-6)

TAWC states as follows. American Water currently maintains a control environment in which the majority of internal controls are manual due to limitations of systems and processes. The manually intensive nature of internal controls and processes requires the increased need for compensating activities to achieve process objectives. Through its BT program, American Water is updating and modernizing its business processes, upgrading its information technology systems, and automating manual tasks. The increased capabilities of BT systems to enable our processes, when considered with the abilities of internal control, will improve the operation and effectiveness controls.

As we improve our processes, clean up our data, upgrade our technology through the implementation of SAP Enterprise Resource Planning (ERP), Enterprise Asset Management (EAM), and Customer Information System (CIS), American Water is optimizing its control environment to support more effective and efficient processes. Process and system enhancements enabled a significant redesign of the Company's financial (including Sarbanes-Oxley related controls), operational and regulatory controls. By leveraging American Water internal resources with control experience and external resources with specialized knowledge of the complexities of SAP and other related systems, we are optimizing our control environment and related activities and increasing the automation of many internal controls.

In response to the recommendation in the Schumaker Report listed under "Organizational & Operations Assessment Review,"

> Recommendation IV-1 Place greater emphasis on measuring internal business processes that could foretell customer satisfaction issues. (Refer to Finding IV-2, Finding IV-4, Finding IV-7, and Finding IV-8)

TAWC states as follows. The BT program aims to improve workflow throughout our field, back-office, and customer service operations, as well as to enhance our field, back office, and customer service capabilities. SAP CIS will provide a companywide software application that assists in the management of every aspect of the customer relationship – from customer inquiry to billing and collecting for services provided. Customer information will be captured and stored in a centralized database that is integrated with other systems throughout the company. The SAP EAM system will provide a platform for connecting people, processes, assets, industry-based knowledge, and decision support capabilities based on quality information. It allows for a holistic view of an organization's asset base, better enabling managers to manage operations for quality and efficiency. The following are some of the anticipated benefits of the integrated CIS and EAM system:

- Greater first contact resolution because of greater automation in the billing process and redirected resources providing the opportunity to resolve customer requests in a timely manner
- Improved scheduling between field service representatives and customers that will increase customer convenience and service that could lead to offering a smaller window of time for service call appointments. Currently, all appointments are offered in three-hour blocks.

- More integrated systems (and fewer manual processes) leading to the timely closure of service orders and efficient handling of customer requests. Some examples of the manual processes that will be improved include the creation, dispatching, and execution of service orders as well as researching various items such as water quality information and business rules.
- Fewer repeat calls into the call center since the new system will better equip Customer Service Representatives with the information they need to resolve customer inquiries. Currently, business rules and state-specific data reside in multiple databases that are needed to support customer inquiries. These databases are difficult to navigate and can limit Customer Service Representatives' timely resolution of customer issues.
- More efficiently dispatch service orders by bundling work and improving visibility of outstanding orders to enable the offloading of excess work to contractors (better way to manage peaks and valleys).
- Improved complaint resolution effectiveness by attaching a timer on escalated utility contacts. For example, if a customer has a billing inquiry and the Call Service Representative cannot resolve it, the Customer Service Representative would set up a utility contact and route the question to the billing department. Currently, there is no timer on the utility contact, thus no aging report that highlights how long an escalated customer inquiry has gone unresolved.
- Better asset reliability and fewer unexpected outages by improving American Water's reliability centered maintenance programs.
- Improved customer solutions and response times through more visible data that will improve employee dispatch.

In response to the recommendations in the Schumaker Report listed under “Affiliate Relationships and Transactions Review,”

> Recommendation II-2 Perform a detailed analysis to verify that the use of the number of customers for allocating AWWSC costs among regulated utilities reasonably approximates the use of cost-causative factors; subsequently make modifications, as appropriate. (Refer to Finding II-2)

TAWC states that it had an analysis completed that was provided in the last proceeding and is attached to this response.

As for the following recommendation,

> Recommendation II-3 Continue to regularly evaluate the cost of services provided to TAWC by its affiliates, specifically AWWSC, so as to verify that TAWC ratepayers are not being harmed by charging these services at cost rather than market. (Refer to Finding II-3)

TAWC states that American Water has undertaken a number of different reviews of the cost of services provided that are provided in response to Item 72 of this same data request.

Finally, as to the following recommendation,

> Recommendation II-6 Update corporate tax allocation documentation to reflect the current American Water organization structure. (Refer to Finding II-6)

TAWC states that American Water adopted a new taxing policy which is attached.

R. DALE GRIMES

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December 28, 2010

Via Hand Delivery

Chairman Mary W. Freeman
c/o Sharla Dillon
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243

Re: ***Tennessee American Water Company's Management Audit***
Docket No. 09-00086

Dear Chairman Freeman:

Attached you will find an original and five (5) copies of Tennessee American Water Company's Customer Based Cost Allocation Analysis with appendices. This document is also being filed today by way of email with the Tennessee Regulatory Authority Docket Manager, Ms. Sharla Dillon.

Please file the original and four copies of this material and stamp the additional copy as "filed," and return the file-stamped copies to me by way of our courier.

Should you have any questions concerning this matter, please do not hesitate to contact me at the email address or telephone number listed above.

With kindest regards, I remain

Very truly yours,

R. D Grimes

R. Dale Grimes

RDG/smb
Enclosures

cc: Hon. Eddie Roberson (*w/o enclosures*)
Hon. Sara Kyle (*w/o enclosures*)
Mr. David Foster (*w/o enclosures*)

Ryan McGehee, Esq. (*w/o enclosures*)
J. Richard Collier, Esq. (*w/o enclosures*)
Kelly Cashman-Grams, Esq. (*w/o enclosures*)
Rebecca Montgomery, Esq. (*w/o enclosures*)
Mr. John S. Watson (*w/o enclosures*)
Mr. Michael A. Miller (*w/o enclosures*)

BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

IN RE:	)	
	)	
TENNESSEE AMERICAN WATER	)	
COMPANY'S REQUEST FOR	)	**Docket No. 09-00086**
PROPOSAL FOR A MANAGEMENT	)	
AUDIT	)	

AFFIDAVIT

STATE OF TEXAS

COUNTY OF TRAVIS

I, BERNARD L. UFFELMAN, President of Uffelman Advisory Services, LLC, do hereby swear and affirm that the attached Customer Based Cost Allocation Analysis, Tennessee-American Water Company, and appendices thereto are true and complete copies of same and contain my opinions and conclusions with respect thereto.

DATED this __28th__ day of December, 2010.

B L Uffelman
(signature)

Bernard L. Uffelman
(printed name)

Sworn to and subscribed before me this 28th day of December, 2010.

NOTARY PUBLIC

My Commission Expires:

May 22, 2013

TERRI RABALAIS
MY COMMISSION EXPIRES
May 22, 2013

Customer Based Cost Allocation Analysis

Tennessee-American Water Company

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Customer Based Cost Allocation Study

Introduction and Scope:

In the rate order in proceeding No 08-00039, the Tennessee Regulatory Authority ("TRA") ordered Tennessee American Water Company ("TAWC", or "the Company") to have a management audit performed of the affiliate relationship between TAWC and American Water Works Service Company, Inc. ("AWWSC"). The Authority said, "The panel ordered the Company to develop a Request For Proposal ("RFP") for a comprehensive management audit by an independent certified public accountant. The RFP for the audit shall include, but not be limited to, an investigation of AWWSC's management performance and decisions relating to internal processes and internal controls with and attestation and recommendation of any needed management changes and implementation thereof. Further, the audit shall evaluate and attest to the charges allocated to TAWC, including the efficiency of processes and /or functions performed on behalf of TAWC, as well as the accuracy and reasonableness of the allocation factors utilized (68). This RFP should be filed in this docket no later than six months from September 22, 2008, for approval by the Authority. The issuance of the RFP shall occur subsequent to an approval of the RFP by the Authority." [1]

In response to this requirement, on March 23, 2009 the Company filed the proposed RFP with the TRA. This filing started a chain of events that led to a motion by Director Roberson issued on June 11, 2009. The TRA panel acted on this motion in their regularly scheduled meeting on June 15, 2009, issuing an Order on the matter on July 16, 2009. At the Director's conference on August 14, no party to the 08-00039 docket made comment and the TRA approved the RFP submitted on June 11, 2009 with minor changes that included adding the language "TAWC may

[1] TRA Order in Docket No. 08-00039, at page 21-22.

enter directly into a contract with said firms subsequent to TRA approval." The Company was directed to issue the RFP as soon as possible and to file the RFP with the list of recipients in this docket file (new docket number 09-00086). On September 8, 2009 the TRA issued its written Order approving the RFP. The Company issued the RFP to 14 firms considered to be qualified to perform the management audit. On September 8, 2009 the Company filed a letter of clarification concerning the RFP based upon several inquiries about the RFP from the vendors who were invited to bid. On September 11, 2009 the TRA issued an Order approving the Clarification Letter to be provided to the potential bidders. On October 27, 2009 the Company filed the three responses to the RFP received by the Company from (1) Northstar-TCBA-MFSG, (ii) WHN-Liberty, and (iii) Schumaker-Work & Greer. On October 28, 2009 the Company provided a filing to the TRA recommending that Schumaker-Work & Greer be selected as the firm to perform the Management Audit. This was followed by a number of discovery requests regarding the selection of the management auditor issued by the TRA Staff. On January 4, 2010 the Company filed a copy of the executed contract with the TRA. The TRA at its conference on January 25, 2010 authorized the Company to move forward with the management audit and the contract with Schumaker-Work & Greer.

The Company filed the completed Management Audit with the TRA on September 10, 2010 in Docket No. 09-00086. One of the key findings set forth in the audit report suggested further analysis on the use of relative number of customers as a basis for allocation of "common costs" as defined in the agreement between TAWC and AWWSC. Finding II-2 said "The cost-allocation methodologies impacting TAWC are generally reasonable, although the use of number of customers for allocating AWWSC costs among regulated utilities is essentially a simplification mechanism that is not necessarily based on cost-causative factors."

The related recommendation (Recommendation II-2) in the audit report was for TAWC to "perform a detailed analysis to verify that the use of the number of customers for allocating AWWSC costs among regulated utilities reasonably approximates the use of cost-causative factors; subsequently make modifications, as appropriate." TAWC has accepted this recommendation and has performed the requested analysis. This Study reflects the results of the detailed analysis performed. The Company conducted the analysis in conjunction with American Water Works Service Company personnel and Mr. Bernard L. Uffelman, of Uffelman Advisory Services LLC, a recognized expert in the field of public utility cost allocation issues, who provided guidance and support with regard to appropriate cost causative allocation methodologies and the analysis utilized in this Study. Mr. Uffelman's credentials are attached to the Study as Appendix 1. A letter from Mr. Uffelman describing his involvement in the Study and his conclusions is attached hereto as Appendix 2.

Background:

In providing public utility water and wastewater services to its customers, the Company utilizes the AWWSC, which provides centralized services to the Company and its affiliates in numerous areas that are essential to the provision of high quality, reliable service to customers. The Company receives services from the AWWSC in the following functional areas:

1. Internal Audit
2. Business Development
3. Business Transformation Project
4. External Affairs (Communications)
5. Finance
6. Human Resources (including Benefits Service Center)

7. Information Technology Services
8. Investor Relations
9. Legal
10. Regulatory Services
11. Regulated Operations Management
12. Shared Services Center
13. Operation Services (including Lab, Supply Chain, Property)

The AWWSC provides these services to the Company pursuant to a contract between the Company and the Service Company (the "Service Company Contract") *which was effective January 1, 1989*. The Service Company Agreement is attached hereto as Appendix 3. This contract is substantially the same as the contract the Service Company utilizes to provide similar services to all of American Water's regulated subsidiaries.

The AWWSC also provides certain limited services to American Water's non regulated subsidiaries. The non regulated entities do not take the same level of services as the regulated utilities for a number of reasons. For example, because the AWWSC primarily provides services to utilities regulated by state public utility commissions, it is structured to provide services that are commonly required by these commissions, such as accounting records and procedures maintained pursuant to versions of the Uniform System of Accounts as adopted by the National Association of Regulatory Utility Commissioners ("NARUC") as well as state requirements pertaining to customer service, the filing of annual reports, etc. The non regulated entities, therefore, will often have their own departments to provide services designed to meet their own business needs.

Billing and Cost Allocation:

Billing and allocation of costs among the regulated subsidiaries is done pursuant to the approved Service Company Agreement. Under this agreement, a direct charge to the utility receiving the service is the preferred method of billing. That is, where possible, a regulated subsidiary is directly charged based on the time spent to provide the services directly to that regulated subsidiary. Where services are provided in common to more than one regulated subsidiary, costs are apportioned among the regulated subsidiaries on the basis of the number of customers. Common overheads then follow the primary allocations.

Allocations of common costs based on the number of customers served by a utility represent a rational and reasonable way to allocate these costs for a number of reasons. For example, the types of services required by the regulated utilities are in large part driven by regulatory requirements, which, while not necessarily uniform, are often very similar. For example, all the regulated utilities need to perform regular laboratory testing of water quality as a requirement of state and federal law, as noted below. These requirements may vary slightly from state to state but are very similar in nature, varying most significantly in the number of tests required. The result of the laboratory testing services provided by the Belleville Laboratory is that each customer has the same assurance that his water service has met federal and state water quality requirements whether he is served by a small, medium or large water system.

The water and wastewater services that the regulated utilities provide to their customers are also substantially similar and encompass a full range of activities and responsibilities necessary to provide reliable, high quality end use service to customers, including securing reliable supplies and providing all necessary treatment, distribution, and other operating requirements

necessary to comply with water quality and other regulatory standards and mandates. These include, among others, requirements established by the United States Environmental Protection Agency ("USEPA") and local state environmental agencies pursuant to the Safe Drinking Water and Clean Water Acts.

Allocations to the regulated utilities based on customer counts are also highly transparent and administratively efficient. Utilities routinely keep track of their customer counts, and allocations can readily be modified in response to changes in these counts, either on an annual basis or in response to a particular event, such as a significant acquisition or divestiture.

In comparing the merits of a customer versus more cost-causative based method of allocating common costs, it is also relevant to consider the potential for introducing greater volatility into the process of allocating common costs, which could result from factors that may bear little or no relationship to underlying cost causation, thereby causing unwarranted year-to-year differences in state utility cost responsibility. For example, cost responsibility based on revenues may be appropriate for some purposes but could be significantly impacted year-to-year by fluctuating weather conditions in the various states or the timing of rate case orders, neither of which bears any clear relationship to underlying cost responsibility. Such volatility could also significantly impede planning and budgeting processes.

It is also relevant to consider the potential for the use of numerous factors that may arguably be more "cost causative" to induce parties in regulatory proceedings in the various states to propose the use of different factors which advantage their state in a particular year, to the disadvantage of other states. This would jeopardize the full recovery of all appropriate AWWSC

costs and therefore the continued existence of the AWWSC structure with potentially very negative impacts on total costs and customer service.

As with the regulated entities, the preferred method of charging the non regulated companies is through direct charging for the services, where the services can be specifically associated with a particular company. Where services are provided in common with regulated companies, however, allocation of AWWSC costs on a customer basis to the non regulated entities would not make sense and would not allocate to them a fair share of the costs for the services they receive. This is primarily because, in many instances, such as with operation and maintenance contracts an unregulated entity may have with a government entity, there is only one customer, the contracting municipality.

For these reasons, approximately five years ago, the AWWSC developed a set of cost causative metrics designed to insure that a fair share of the costs of providing services to the non regulated entities was charged to those entities. These metrics were developed with the guidance and assistance of Mr. Bernie Uffelman, then a partner with Deloitte & Touche LLP and the U.S. Regulatory Services Leader for Deloitte's Energy & Resources Practice, recognized experts in the field of utility cost allocations, and were designed to be based on cost causative factors relevant to the nature of the services being provided. For example, the Human Resources Benefits Call Center allocation factor includes the number of employees as the primary cost driver for services associated with employee benefit plans that are dedicated to regulated business units versus non-regulated business units. This is referred to as the "Tier 1" allocation of AWWSC costs to the non regulated entities that receive services. These costs are removed from the pool of AWWSC costs that are allocated to the regulated utilities on the basis

of customer counts, as are the direct charges to both the regulated and non regulated companies.

In summary, the process for allocating AWWSC costs is as follows:

1. Where services are amenable to direct billing, it is applicable to both regulated and non regulated entities.
2. Services provided to the non regulated entities that are not direct billed are allocated to those entities based on the Tier 1 metrics.
3. The AWWSC charges that remain after direct billing and Tier 1 allocations are allocated to the regulated utilities on the basis of customer counts.
4. Overheads follow the direct bills and allocations described above.

The process of billing and cost allocation is more fully described in the Cost Allocation Manual attached hereto as Appendix 4. Compiled in 2009 and approved by the Service Company Board of Directors in February 2010, this Manual consolidated a number of sources in the AWWSC to reflect in one place the billing and allocation process being followed in the AWWSC, pursuant to another recommendation contained in the Pennsylvania-American Management Audit.[2]

[2] Recommendation VIII-1 recommended that the Company develop formal, comprehensive documentation for affiliate relationships and cost allocations, and assign the responsibility for affiliate transactions to the appropriate manager.

Study Methodology:

Examined Costs

This study examined 2009 total actual AWWSC billed charges of $248,211,987. Business Transformation project charges of $5,689,095 were excluded from the Study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses. Non-regulated direct and allocated charges of $20,111,078 were also excluded, since AWWSC is currently utilizing cost-causative factors to allocate common costs to the non-regulated business. The remaining $222,411,814 of charges billed to TAWC and the other regulated companies were then used to compare total actual AWWSC billed charges to the total produced using a cost-causative factor approach. AWWSC direct costs of $34,819,151 billed to the regulated companies were kept constant. Only the regulated company common costs billed in the amount of $187,592,663 were reallocated using cost-causative factors. The total bill to Tennessee American, including both direct costs and reallocated costs, was then compared to the 2009 actual charges in order to determine if there was a significant difference in the resultant bill for TAWC.

Cost-Causative Factor Selection

Cost-causative factors used in the Study were selected from the factors used in AWWSC Tier 1 allocations and are noted below. The one additional cost causative factor selected for this Study beyond those already used for Tier 1 allocations is "customers', given that costs of several functions are partially or fully driven by numbers of customers. Generally, there are many possible factors which could be related in some way to various business unit functions, but in determining the factors to be utilized in this Study, several evaluation criteria were considered. These are listed below:

1. To be considered cost-causative, a relationship must exist between the selected factor and the cost structure of the Service Co. business unit.
2. Factor metric must be measurable, repeatable and readily available from Company records or reports.
3. Factor utilization must create a relatively non-volatile cost allocation to affiliates from year to year.
4. Factor must be understandable to AWWSC management, affiliate management, and other stakeholders.
5. Affiliates must be able to exercise a reasonable degree of control over the factor metric to utilize AWWSC services/costs most efficiently.
6. Factor should minimize potential for manipulation which could improperly distort cost relationships

The selected factors were applied at the AWWSC business unit level. A cost-causative factor was assigned to each business unit if a direct relationship between the business unit and a causative factor could clearly be established. The causative factors used in the Study are listed below. Please see **Appendix 7** for a list of the AWWSC business units, causative factor assigned and reason for the factor assignment.

Causative Factors:

Customers

Employees

Invoices

Net Plant

Premises

Revenues

50% Customers 50% Revenue

50% Employees & 50% Customers

33% Customers 33% Employees 33% Residual

For some business units more than one causative factor was identified. Therefore, a weighted-average of factors was utilized based upon an evaluation of the business unit's activities. For business units where there was no clear assignable causative factor or combination of factors, a "residual" allocation factor was assigned to the AWWSC business unit. As noted in "Cost Allocation and Affiliate Transactions", residual costs are "...costs which cannot be specifically attributed to a product, service or affiliate for which there are no cost causative relationships, (and) are typically accumulated or "pooled" and then allocated in the same ratio as all other costs are assigned or allocated."[3] The residual factor was calculated by totaling the AWWSC charges for each regulated company after all other causative factors had been applied to the common charges. Cost-causative factors were identified for 77 of the 153 (50%) AWWSC business units that were examined in the study. The common costs of these 77 business units accounted for $114,021,979 or 61% of the $187,592,663 of total common costs charged to the regulated companies. The remaining $73,570,684 or 39% of the common costs allocated to regulated companies was classified as residual.

Cost-Causative Reallocation Method

The following further describes the method used to reallocate AWWSC costs that were examined in the study:

[3] COST ALLOCATION AND AFFILIATE TRANSACTIONS, Edison Electric Institute, Washington, D.C., (1999), page 9

- The formulas charged by business units were not changed in reallocation. Only the allocation basis was changed from a customer-based allocation factor to a cost-causative based factor. Please note that "customers" was determined to be the cost-causative factor for certain business units as mentioned above.
- All charges from business unit 032580 SSC-AWE and 032089 CORP-AWE Pass-Through were allocated to the non-regulated business (AWE), since these groups provide service only to the non-regulated business.
- Overheads were distributed by overhead location based on the redistribution of allocated charges using the new cost-causative factors.
- Residual allocation was computed by summing for each regulated subsidiary all costs which could be allocated using the selected cost causative factors, and dividing by the total of all costs allocated to all the regulated subsidiaries by these factors. This created a residual percentage for each subsidiary, which was then utilized to distribute the remaining residual costs not previously allocated.
- Each company received a percentage of the residual costs based on the overall regulated company allocated amounts after allocated charges and allocated overheads (excluding residual factors). In other words, each regulated utility received the same pro-rata amount of residual costs as it received of allocated common costs.

RESULTS:

Appendix 5 shows a summary of the actual and reallocated 2009 charges for TAWC and all other regulated and non-regulated companies. Column A shows the actual AWWSC charges for 2009. Column B shows the removal of Business Transformation charges. Column C shows a minor adjustment made to the non-regulated charges. Column D shows the resultant total of

charges to the regulated business that was examined in the study. Columns E through G show the segregation of the actual 2009 charges into direct and allocated. Columns H through J show the direct, allocated and total charges after applying the cost-causative factors. Columns K and L show the amount and percentage difference between the actual amounts billed (Col. G) and the re-allocated amounts based upon causative (Col. J).

Appendix 6 is a detailed view of all the 2009 AWWSC charges for TAWC by functional location and business unit. Columns A, B and C show the original breakdown of the charges as billed to TAWC during 2009. Column A shows the direct charges, column B shows the original allocated charges and column C contains the total charges for the business unit. Columns D, E and F represent the charges after reallocation using the causative factors and assumptions mentioned above. Column D shows the direct charges and equals column A. Column E represents the reallocated causative charges, and column F is the adjusted total for the business unit. Columns, G and H represent the difference between the original and causative allocations.

Conclusion:

After reallocation using the cost-causative factors mentioned above, the net difference to TAWC was a decrease of $120,501 out of a total charge of $5,067,078, or (2.38%) compared to the original customer-based allocation methodology. This relatively small overall difference verifies that the use of the number of customers for allocating AWWSC costs reasonably approximates the use of cost causative factors and does not justify changes in the current customer-based allocation methodology for allocating common costs. The customer-based method reflects the fact that the types of services the AWWSC provides to all the regulated utilities are largely driven by similar regulatory and operational requirements. This method is

also highly transparent, administratively efficient, and less susceptible to timing and volatility issues which may be unrelated to underlying cost causation, but which may unduly complicate planning and budgeting process and increase overall costs. It also reduces the potential that a variety of allegedly more "cost causative" factors used in various states could result in failure to achieve full recovery of legitimate AWWSC costs.

Appendices:

Appendix 1	Credentials of Bernard L. Uffelman
Appendix 2	Letter from Bernard L. Uffelman dated December 17, 2010
Appendix 3	Agreement dated January 1, 1989 between American Water Works Service Company, Inc. and Tennessee-American Water Company
Appendix 4	Cost Allocation Manual
Appendix 5	Tennessee-American Cost-Causative Billing Summary
Appendix 6	Tennessee -American Cost-Causative Business Unit Detail
Appendix 7	Service Company Business Unit Cost-Causative Factor Allocation Schedule
Appendix 8	Total Service Company Cost-Causative Business Unit Detail

Uffelman Advisory Services, LLC

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Professional Experience

Mr. Uffelman is President of Uffelman Advisory Services, LLC, a firm that specializes in energy and utility regulatory and litigation support services. Prior to his retirement from Deloitte & Touche LLP, Mr. Uffelman was a Partner and the U.S. Regulatory Services Leader for Deloitte & Touche's Energy & Resources Practice. Mr. Uffelman has been associated with the regulated utilities industry for over 38 years, including experience as an employee of major investor-owned utilities. Mr. Uffelman also served as Chief Accountant of the Illinois Commerce Commission and Director of Accounting for the Public Utility Commission of Texas. His primary responsibilities have included regulatory accounting, revenue requirements development, regulatory and litigation support, financial and business planning, and strategic services. Mr. Uffelman has testified on utility industry issues before public utility commissions and courts in 20 states and in over 60 different proceedings.

Major Projects

- Managed the accounting divisions of two state public utility regulatory commissions. Directed the staff's review of rate filing packages of electric, gas, telephone, and water utilities. Managed the preparation of staff's case in such areas as accounting, tax, rate of return, depreciation, fuel, cost allocation, rate design, forecasted test periods, and financial integrity. Presented testimony as a commission witness in rate cases and other dockets. Recommended accounting, financial and tax policy to commissioners and prescribed ratemaking treatment for complex regulatory issues.

- Participated as a member of a multi-disciplinary team of consultants and attorneys in developing the regulatory strategy and approach for the combination of two large multi-state electric utilities. Addressed the affiliate transaction and cost allocation issues associated with the merger of two electric registered public utility holding companies. Testified to the regulatory treatment for the gain resulting from the sale of a utility's jurisdictional operations. Testified to the proper accounting and ratemaking treatment for production maintenance costs of a large public power association. Developed the price-cap ratemaking methodology for privatization of a government owned island electric utility. Reviewed internal controls related to an electric utility's fuel procurement, trading operations and fuel adjustment clause filings.

- Testified to a gas company's rate case revenue requirement levels and proposed ratemaking for adoption of Statement of Financial Accounting Standards No. 106 - "Employers' Accounting for Postretirement Benefits Other Than Pensions." Testified to the reasonableness of a gas company's and a water utility's postretirement benefits. Presented a seminar on SFAS 106 to the parties to Hawaii Public Utilities Commission Docket No. 7243.

- Managed the review of a State Uniform System of Accounts (USOA) and recommended changes to comply with the FERC USOA. Worked with utilities to modify their accounting systems to track specific costs as required by public utility commissions. Represented the NARUC accounting committee in developing a USOA for the cellular telecommunications industry. Assisted utilities with regulatory filings with the FERC.

- Testified to deferred accounting treatment (DAT) for plant costs until such time as the generating unit was recognized as plant in service for cost of service and ratemaking purposes. Reviewed the DAT used by a large municipal power agency and the effects of the accounting deferrals on the agency's future rates. Participated in the analysis and implementation of a phase-in plan to rate base a major electric generating station. Chaired the revenue requirements committee of a major electric utility's rate moderation task force responsible for moderating the rate effect of rate basing the utility's three nuclear generating units. Participated as a commission staff member in the prudency reviews of nuclear generating stations. Analyzed and testified to the financial impact on shareholders and rate payers of deregulating a utility's nuclear generating facilities. Researched and reported on the costs associated with nuclear decommissioning for a foreign government.

- Assisted Cable TV operators to respond with reply comments to the FCC's Notice of Proposed Rule making regarding re-regulation of cable service and cost-of-service standards resulting from the Cable Television Act of 1992. Assisted operators with calculating permitted rates for regulated cable programming services and equipment charges. Testified in Cable TV franchise renewal and late fee proceedings.

- Conducted a national survey and analysis of state commission cost allocation issues and transfer pricing policies. Analyzed the appropriate capital structure to support the utility related operations of a major electric utility's fuel subsidiary. Analyzed and testified to an electric utility's financial reorganization plan and the prudence of its coal contracts. Performed affiliate transaction and cost allocation reviews for major electric, gas, and water utilities. Testified to affiliate transactions, cost allocations, transfer pricing, and accounting control systems for several major electric and gas utilities. Testified to the reasonable and prudently incurred costs of a major gas distribution company's customer information system. Performed a service company cost study for a major investor-owned water utility comparing the cost of each service obtained from the service company to the costs of such services had they been obtained through competitive bidding on the open market. Provided testimony related to the cost study findings and conclusions. Analyzed and reported on the appropriate cost allocation methodology for allocating shared services, corporate overheads, and administrative and general costs to the business units of a multinational power marketer.

- Responded to a public utility commission's request for information regarding the effects of the Tax Reform Act of 1986 on a major electric utility. Conducted a nationwide survey of U.S. public utility regulators to determine the predominant practice of each of the nation's public utility regulatory commissions regarding the use of certain non-traditional approaches to the calculation of federal income taxes for ratemaking purposes. Testified to the continued use and application of the traditional "stand-alone" method (as opposed to a consolidated effective tax rate method) for computing the income tax component of cost of service. Responded to a public utility commission's request for comments regarding the commission's rules on depreciation methods. Developed a white paper related to capital recovery issues for an independent systems operator.

- Directed the review of the outside customer accounts collection function for a large multi-state gas distribution company including the review of the use of third party collection agencies. Directed the regulatory and ratemaking assessment related to the acquisition of electric, gas, telecommunications, and water and wastewater properties by potential acquirers. Testified on behalf of a major real estate developer in support of the developer's request to finance water and wastewater utility plant additions. Reviewed a major gas and electric utility's legal services function and made recommendations as to the appropriate use of in-house and outside counsel to achieve cost reductions. Analyzed the financial and regulatory effects of an innovative marketing/financing arrangement for a major electric utility. Performed an analysis and comparison of a major utility's present and projected electric rates to those of other utilities. Testified to a comparison of the rates charged by an investor-owned water utility to the rates charged by surrounding municipal-owned utilities.

- Provided litigation support in electric, gas, and water contract rate disputes. Provided litigation support in an electric utility property tax dispute and a mining company lignite contract dispute. Prepared rate filing packages for major electric and gas distribution companies. These filings included revenue requirements, cost of service studies, testimony, exhibits and financial statements. Conducted a management audit of a large southwestern electric utility. Testified to the reliability of a company's GRC filings for ratemaking purposes. Prepared and testified to lead-lag studies for major electric and gas utilities.

- Assisted a Regional Bell Operating Company (RBOC) in responding to a state commission mandated regulatory audit. Regulatory assistance included direct and reply testimony responding to various issues raised by the audit. Managed the review of internal controls to prevent customer "slamming" for a large long-distance reseller and assisted the Company in obtaining an operating license to provide local service.

- Directed the accounting, budgeting, and financial functions associated with project accounting as a member of the project construction team of a major electric utility. Directed the cash accounting and cash management functions of a major utility, including investments, borrowings, and commercial bank relations. Supervised internal audits of a major electric and gas utility, prepared audit reports and conducted management audit conferences.

Mr. Uffelman has provided client services to a number of regulated and non-regulated entities including:

AGL Resources
American Electric Power Co., Inc.
American Water
AT&T Broadband/Tele-Communications, Inc.
Atmos Energy
Austin Energy
Brazos River Authority
Cablevision Systems Corporation
Cayman Island Government
Centel (Electric Utility Business)
Chugach Electric Association, Inc.
Citizens Utilities Company
City of Garland, Texas
City Utilities, Springfield, Missouri
CLECO Corporation
Commonwealth Edison
Corning Natural Gas Corporation
Duquesne Light Company
Edison Electric Institute
Elizabethtown Gas Company
El Paso Electric Company
ENSERCH (Lone Star Gas)
Energy East
Entergy
ERCOT
EXCEL Communications, Inc.
FPL Group Inc.
Great Plains Energy
Hawaiian Electric Company
Indianapolis Water Company
Japanese Ministry of Economics
KKR Group
Los Angeles DWP
Lower Colorado River Authority
MidAmerican Energy Company
Mirant
National Cable Television Association
New York Power Authority
OGE Energy Corp.
ONEOK Inc. (KGS and ONG)
Pacific Gas and Electric Company
PacifiCorp
PJM
Progress Energy Florida
Public Service Electric and Gas
Reliant Energy
Robson Communities Utilities
SBC
Sempra Energy
Sierra Pacific Resources
Southern Company
Southwest Gas Corporation
Tennessee Valley Authority
Texas-New Mexico Power Company
The Carlyle Group
Texas Utilities Company
United Water Resources
Waste Management, Inc.
Xcel Energy

Testimony

- Testified before the Alaska, Arizona, California, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Nevada, New Jersey, New Mexico, New York, Oklahoma, Oregon and Texas public utility commissions. Testified before the Illinois Legislature; the Texas Railroad Commission; the Supreme Court of the State of New York; the Superior Court of the State of California; the Circuit Courts for Baltimore, Maryland and Cook County, Illinois; the US District Court for Colorado; the King County, Seattle, Washington franchise authority; the City Council of Garland, Texas; and the Board of Water and Power Commissioners, the Commerce, Energy and Natural Resources Committee, and the City Council of the City of Los Angeles, California.

Certifications and Memberships

- Certified Public Accountant and member of the American Institute of Certified Public Accountants and the Texas Society of Certified Public Accountants
- Licensed Certified Public Accountant in Illinois and Texas
- Completed the National Association of Regulatory Utility Commissioners (NARUC) Annual Regulatory Studies Program
- Served as a member of the NARUC Staff Subcommittee on Accounts
- Served as Chairman of the Texas Society of Certified Public Accountants Natural Gas, Telecommunications, and Electric Industries Committee
- Served on the University of Texas Regulatory Institute Advisory Committee and as an instructor for the University of Texas Regulatory Institute
- Served on the Advisory Council for the Center for Public Utilities at New Mexico State University
- Moderated and participated in panel discussions on numerous industry topics

Education

- Illinois State University (MBA - Finance)
- Southern Illinois University (BS - Accounting)

Presentations

- *Regulated Utility Training*, Vectren Corporation, Evansville, Indiana, November 29, 2007
- *Ratemaking and Rate Proceeding Seminar*, WBI Holdings, Inc./MDU Resources Group, Inc., Bismarck, North Dakota, November 13-14, 2007
- *Ratemaking and Rate Proceeding Training,* Deloitte Training Seminar, Dallas, Texas, March 27-29, 2007
- *Rate Case Training*, Public Utility Commission of Texas, Austin, Texas, February 14, 2006
- *Rate Case Training*, Kansas City Power & Light, Kansas City, Missouri, August 29-31, 2005
- *Rate Case Challenges*, Southeastern Electric Exchange, Baltimore, Maryland, June 30, 2005
- *FERC Update*, Southeast Public Utility Accounting Workshop, Tampa, Florida, March 29-30, 2004

- *Regulatory Compliance Infrastructure Assessment for the Energy Industry*, Deloitte & Touche Energy Conference, Washington, D.C., June 18-20, 2003
- *Ratemaking Overview*, Sierra Pacific Power Company and Nevada Power Company, Las Vegas and Reno, Nevada, June 26-27, 2001
- *Public Utility Training*, California Public Utilities Commission, San Francisco, California, November 9, 2000
- *Shared Service Organizations*, EEI/AGA Accounting Committees, Savannah, Georgia, May 23, 2000
- *Utility Regulatory and Litigation Services Practice*, Deloitte & Touche LLP Strategic Planning Group Meeting, Atlanta, Georgia, June 2-3, 1999
- *Energy Without Boundaries – But Not Without Rules*, Deloitte & Touche LLP Utilities/Energy Conference, Toronto, Ontario, July 13-15, 1998
- *Affiliate Transactions - Recent Developments*, Southeast Public Utility Accounting Workshop, Pinehurst, North Carolina, April 27-29, 1998
- *Stranded Cost Identification and Measurement*, EEI/AGA Accounting Committees, Albuquerque, New Mexico, December 9, 1997
- *Tax Implications of Electric Utility Industry Restructuring*, The Council of State Governments – West, San Francisco, California, August 21, 1997
- *Regulatory and Litigation Services*, Deloitte & Touche LLP National Energy/Utilities Conference, Los Angeles, California, July 28, 1997
- *Tax Implications of U.S. Electric Utility Industry Restructuring*, German Delegation on Energy Restructuring, Sponsored by the United States Department of Energy and the State Department, Houston, Texas, March 3, 1997
- *Tax Implications of Electric Utility Industry Restructuring*, National Association of Regulatory Utility Commissioners, Winter Committee Meetings, Washington, DC, February 26, 1997
- *Electric Utility Industry Restructuring*, NJUA Accounting and Tax Committee, Jamesburg, New Jersey, September 27, 1996
- *Managing Potentially Stranded Costs (PSC) in the Electric Utility Industry*, EXNET Utility & Telecommunications Accounting and Tax Conference, Washington, DC, May 7, 1996
- *Electric Utility Stranded Costs*, EXNET Utility & Telecommunications Accounting and Tax Conference, Washington, DC, May 4, 1995

- *Overview of the Utility Ratemaking Process in Texas*, Deloitte & Touche LLP Utility Training Seminar, Dallas, Texas, October 3, 1994
- *FERC Accounting Training Seminar*, ONEOK Inc., Tulsa, Oklahoma, May 24, 1994
- *President Clinton's Energy Tax*, Midwest Gas Association, Inc. Accounting and Finance Conference, Minneapolis, Minnesota, April 15-16, 1993
- *SFAS No. 106 - Employers' Accounting for Postretirement Benefits, Other Than Pensions*, Public Utilities Roundtable, Dallas, Texas, November 30, 1992
- *SFAS No. 106 - Employers' Accounting for Postretirement Benefits Other Than Pensions*, American Gas Association Rate Committee Meeting, Houston, Texas, September 20, 1992
- *FERC Accounting Training Seminar*, City of College Station, Texas, June 9, 1992
- *Seminar on SFAS No. 106 - Employers' Accounting for Postretirement Benefits Other Than Pensions*, Parties to Hawaii Public Utilities Commission Docket No. 7243, May 7, 1992
- *Affiliate Transactions and Cross Subsidy Issues*, Public Utilities Reports, Inc. and The Management Exchange, 10th Annual Utility and Telecommunications Accounting and Tax Conference, Washington, DC, May 2, 1991
- *Regulatory Accounting and The Ratemaking Process*, National Cable TV Association (NCTA) Annual Convention, New Orleans Convention Center, New Orleans, Louisiana, March 26, 1991
- *Fundamental Issues in Utility Ratemaking*, University of Texas Regulatory Institute, Management Development Program, Austin, Texas, June 12-14, 1990
- *Fundamentals of Utility Regulation*, University of Texas Regulatory Institute, Management Development Program, Austin, Texas, June 13-15, 1989
- *Phase-Ins: Bridging the Gap Between Traditional Ratemaking and Market Forces*, TSCPA Public Utilities Accounting and Ratemaking Conference, Dallas, Texas, April 17, 1986
- *Rate Moderation Plans and Regulatory Responsibility*, 10th Annual Public Utilities Conference, University of Texas at Dallas, Dallas, Texas, July 18, 1985
- *Promoting Stable and Efficient Utility Operations - Management Audits of Public Utilities*, Joint Committee on Public Utility Regulation of the Illinois Legislature, Chicago, Illinois, February 14, 1985

Publications

- *Cost Allocation and Affiliate Transactions: A Survey and Analysis of State Cost Allocation Issues and Transfer Pricing Policies*, June 1999. Mr. Uffelman co-authored this Deloitte & Touche report on behalf of the Edison Electric Institute.

- *Federal, State and Local Tax Implications of Electric Utility Industry Restructuring*, October 1996. Mr. Uffelman co-authored Deloitte & Touche's analysis for The National Council on Competition and the Electric Industry.

- *Survey of Federal Income Taxes in Regulation*, March 1994. Mr. Uffelman co-authored this report on how public utility regulatory commissions determine federal income tax expense for ratemaking purposes.

- *Accounting for Public Utilities* published by Matthew Bender and updated annually. Mr. Uffelman served as a contributing author on this work which provides a basic, but comprehensive, analysis of accounting for public utilities.

Testimony

Alaska
Alaska Public Utilities Commission

- APUC Docket No. U-93-1, Rate Case; direct testimony on behalf of Chugach Electric Association, Inc., January 1993; Rebuttal testimony on behalf of Chugach Electric Association, Inc., February 1993; testified to the proper accounting and ratemaking treatment for production maintenance costs.

Regulatory Commission of Alaska

- RCA Docket No. U-02-47, Revenue Requirements Study; prefiled testimony on behalf of Waste Management of Alaska, Inc., March 2003; testified to the functioning of WMA's revenue requirements models and the input of test year data, both financial and statistical, into the models for each of WMA's regulated service areas; prefiled reply testimony on behalf of Waste Management of Alaska, Inc., May 2004 .

Arizona - Arizona Corporation Commission

- ACC Docket No. E-1032-93-111, Rate Case; rebuttal testimony on behalf of Citizens Utilities Company's Arizona Gas Division, January 1994, regarding the effects of adoption of SFAS No. 106 - "Employers' Accounting for Postretirement Benefits Other Than Pensions".

- ACC Docket No. E-1032-92-073, Application for approval of the accounting method used to record AFUDC. Direct testimony on behalf of Citizens Utilities Company, May 1994.

- ACC Docket No. U-1551-93-272, Rate Case; rebuttal testimony, May 1994 on behalf of Southwest Gas Corporation regarding the prudence of costs associated with the development of the Company's customer information system.

- ACC Docket No. U-2199-94-439, Application for approval of financing and accounting orders. Direct testimony on behalf of Pima Utility Company (Robson Communities), December 1994; rebuttal testimony on behalf of Pima Utility Company (Robson Communities), May 1995.

- ACC Docket No. U-2492-94-448, Application for approval of financing and accounting orders. Direct testimony on behalf of SaddleBrooke Development Company (Robson Communities), December 1994. Rebuttal testimony on behalf of SaddleBrooke Development Company (Robson Communities), May 1995.

- ACC Docket No. U-2849, Application of SaddleBrooke Utility Company for a rate increase. Direct testimony (cost of capital) on behalf of SaddleBrooke Utility Company, (Robson Communities), November 1995.

- ACC Docket No. E-1032-95-433, Application of Citizens Utilities Company, Arizona Electric Division, for a hearing to determine the fair value of its properties for ratemaking purposes. Rebuttal testimony on behalf of Citizens Utilities Company, July 1996. Rejoinder testimony on behalf of Citizens Utilities Company, August 1996. (Accounting method used to record AFUDC)

- ACC Docket No. E-1032-95-473, Application of Citizens Utilities Company, Northern Arizona Gas Division, for a hearing to determine the fair value of its properties for ratemaking purposes. Rebuttal testimony on behalf of Citizens Utilities Company, August 1996. Rejoinder testimony on behalf of Citizens Utilities Company, September 1996. (Accounting method used to record AFUDC)

- ACC Docket No. E-1032-95-417, Application of Citizens Utilities Company, Maricopa Water/Wastewater Division, for a hearing to determine the fair value of its properties for ratemaking purposes. Rebuttal testimony on behalf of Citizens Utilities Company, September 1996. Rejoinder testimony on behalf of Citizens Utilities Company, October 1996. (Accounting method used to record AFUDC)

- ACC Docket No. U-1944-92-261, Application of Lago Del Oro Water Company (Robson Communities) for financing authorization. Rebuttal testimony on behalf of Robson Communities, December 1996. (Capital structure and use of Advances and Contributions in Aid of Construction)

- ACC Docket No. U-2849-97-383, Application of SaddleBrooke Utility Company (Robson Communities) for a rate increase; direct testimony (cost of capital) on behalf of SaddleBrooke Utility Company, June 1997.

- ACC Docket No. G-01551A-00-0309, Earnings Determination; supplemental testimony, May 2001, on behalf of Southwest Gas Corporation regarding the appropriateness of the inclusion of certain items in the rate case test year.

California
California Public Utilities Commission

- Order Instituting Rulemaking/Investigation on the Commission's Own Motion to Assess and Revise the New Regulatory Framework for Pacific Bell and Verizon California Inc. (R. 01-09-001/I. 01-09-002)

- Direct testimony on behalf of SBC Pacific Bell in Phase 2A, May 2002, in response to Overland Consulting's regulatory audit of Pacific Bell relating to various issues including depreciation reserve deficiency amortization and postretirement benefits other than pensions; reply testimony on behalf of SBC Pacific Bell in Phase 2A, May 2002.

- Direct testimony on behalf of SBC Pacific Bell in Phase 2B, June 2002, relating to local competition costs, software buy-out agreement, local number portability costs, and contingent liabilities; reply testimony on behalf of SBC Pacific Bell in Phase 2B, July 2002.

- California-American Water Company Compliance Filing Regarding Review By Deloitte & Touche LLP In CPUC Case Nos. A.05-02-012 And A.05-02-013; direct testimony on behalf of California-American Water Company regarding the reliability of the Company's General Rate Case filings for ratemaking purposes, April 2005; rebuttal testimony on behalf of California-American Water Company, July 2005.

City of Los Angeles

- Direct testimony on behalf of the Los Angeles Department of Water and Power regarding Water System Rate Proposal (Proposed Amendments to Water Rates Ordinance No. 170435) to the Board of Water and Power Commissioners; the Commerce, Energy and Natural Resources Committee of the City Council; and the City Council, April 2004.

Superior Court of the State of California

- Testimony on behalf of the Los Angeles Department of Water and Power in the Superior Court of the State of California in and for the County of San Bernardino. Civil Action No. SCVSS 100293, State of California, ex rel. Barakat Consulting Incorporated, et al., Plaintiffs, vs. Los Angeles Department of Water and Power, et al., Defendants, December 2006.

Colorado - US District Court for Colorado

- Civil Action No. 01-BB-1546(PAC) Western Retail Energy Company, Plaintiff, v. TXU Energy Services Company, Defendant; expert report and testimony on behalf of TXU Energy Services regarding natural gas pricing, June 2002.

Georgia - Georgia Public Service Commission

- Docket No. 14311-U, Atlanta Gas Light Company, Rate Case; direct testimony on behalf of AGL regarding AGL's cash working capital requirement and lead-lag study, January 2002.

Hawaii - Hawaii Public Utilities Commission

- Parties to HPUC Docket No. 7243; seminar on SFAS No. 106 - "Employers' Accounting for Postretirement Benefits Other Than Pensions," May 1992.

Illinois
Illinois Commerce Commission

- Docket Nos. 87-0043, 87-0044, 87-0057, 87-0096, consolidated ; Commonwealth Edison Company, Rate Case; direct testimony regarding spin-off of nuclear generation assets, April 1987, on behalf of:
  - The People of the State of Illinois, by Neil F. Hartigan, Attorney General
  - The Governor of the State of Illinois, James R. Thompson, by the Governor's Office of Consumer Services
  - The People of Cook County, by Richard M. Daley, Cook County State's Attorney
  - William G. Shephard, Small Business Utility Advocate

- Approximately twelve cases as ICC Staff witness. (Mr. Uffelman testified in approximately twelve cases as a Staff witness of the Illinois Commerce Commission. Mr. Uffelman does not have copies of his testimony which he filed on behalf of the ICC Staff, but copies can be obtained from the ICC.)

- Docket No. 07-0507, Illinois-American Water Company ("IAWC") Rate Case. Direct testimony regarding *Analysis of Water Rates, Fees and Charges For Selected Cities In The Vicinity Of The Chicago Metro District Of Illinois-American Water Company* on behalf of IAWC, August, 2007.
  Rebuttal testimony on behalf of IAWC, February, 2008. Surrebuttal testimony on behalf of IAWC, March, 2008.

- Docket No. 09-0319, Illinois-American Water Company ("IAWC") Rate Case. Direct testimony regarding the *Service Company Cost Study* ("Study") performed by Deloitte & Touche on behalf of IAWC, May 2009. The Study was prepared in response to Illinois Commerce Commission Order in Docket 07-0507 that IAWC conduct a study comparing the cost of each service obtained from the Service Company to the costs of such services had they been obtained through competitive bidding on the open market. Supplemental direct testimony on behalf of IAWC, August 2009. Rebuttal testimony on behalf of IAWC, October 2009.

Joint Committee on Public Utility Regulation of the Illinois Legislature

- Direct testimony regarding "Management Audits of Public Utilities" on behalf of the Illinois Commerce Commission, February 1985.

Circuit Court of Cook County, Illinois

- Case No. 95CH11993; BOE AND DEBRA CHMIL, Plaintiff, v. TELE-COMMUNICATIONS, INC., ET AL., Defendant; direct testimony on behalf of Defendant, August 1998.

Indiana - Indiana Utility Regulatory Commission

- IURC Cause No. 39713, Rate Case; direct testimony on behalf of Indianapolis Water Company, June 1993, regarding the effects of adoption of SFAS No. 106 - "Employers' Accounting for Postretirement Benefits Other Than Pensions".

Iowa - Iowa Utilities Board

- IUB Docket Nos. RPU-01-3 and RPU-01-___ ; direct testimony on behalf of MidAmerican Energy Company, June 2001; issues related to the prior flow-through of Iowa state income taxes.

Kansas - Kansas State Corporation Commission

- KSCC Docket No. 175,456-U; rebuttal testimony on behalf of Centel Corporation (CENTEL), August 1991; sale and transfer of the Electrical Utility Operations and Business of CENTEL to UtiliCorp United; Inc. (UTILICORP).

- KSCC Docket No. 03-KGSG-602-RTS; rebuttal testimony on behalf of Kansas Gas Service, a Division of ONEOK, Inc. August 2003, regarding the allocation of ONEOK's A&G and corporate overhead costs to KGS.

- KSCC Docket No. 06-KGSG-1209-RTS; rebuttal testimony on behalf of Kansas Gas Service, a Division of ONEOK, Inc. October 2006, regarding the allocation of ONEOK's A&G and corporate overhead costs to KGS.

Kentucky - Kentucky Public Service Commission

- KPSC Case 9613 Rebuttal, November 1986; rebuttal testimony on behalf of Big Rivers Electric Corporation regarding financial reorganization plan and prudence of coal contracts.

- KPSC Case No. 2006-00464, In The Matter Of Atmos Energy Corporation For An Adjustment Of Gas Rates; direct testimony regarding Gas Cost of Service Study prepared on behalf of Atmos Energy Corporation Kentucky Division, December 2006.

Louisiana - Louisiana Public Service Commission

- LPSC Docket No. U-24064; Red Simpson, Inc. et al. v. Cleco Corporation; in re: Alleged acts of prohibited subsidization of non-regulated affiliates, violation of General Orders and unfair competition through predatory pricing; direct testimony on behalf of Cleco Corporation, June 2000; rebuttal testimony on behalf of Cleco Corporation, September 2000.

Maryland - Circuit Court For Baltimore, Maryland

- Case No. 95311038/CL204287; LOUIS BURCH, ET AL., Plaintiff, v. UNITED CABLE TELEVISION OF BALTIMORE LIMITED PARTNERSHIP, Defendant; direct testimony on behalf of Defendant, June 1997.

Nevada
Public Service Commission of Nevada

- PSCN Docket Nos. 93-3003, et al. Rate Case Rehearing Issues; Direct testimony, April 1994 on behalf of Southwest Gas Corporation and rebuttal testimony, July 1994 on behalf of Southwest Gas Corporation relating to the prudence of costs associated with the development of the Company's customer information system.

Nevada Public Utilities Commission

- NPUC Docket No. 04-3011, Rate Case; direct testimony, March 2004 on behalf of Southwest Gas Corporation relating to cash working capital; rebuttal testimony, June 2004 on behalf of Southwest Gas Corporation relating to cash working capital.

New Jersey - New Jersey Board of Public Utilities

- NJBPU Docket No. GR 02040245, Rate Case; direct testimony, April 2002 on behalf of NUI Utilities Inc. d/b/a Elizabethtown Gas Company, regarding cash working capital requirement and lead-lag study; supplemental testimony, July 2002 on behalf of NUI Utilities Inc. d/b/a Elizabethtown Gas Company, regarding cash working capital requirement and lead-lag study; rebuttal testimony, September 2002 on behalf of NUI Utilities Inc. d/b/a Elizabethtown Gas Company, regarding cash working capital requirement and lead-lag study.

New Mexico - New Mexico Public Service Commission

- Docket No. 2162, Rate Case, El Paso Electric Company; direct testimony, November 1987 on behalf of EPE; testified to EPE's cost allocation study as to compliance with the NMPSC's Order of January 16, 1987, approving the stipulation in Case No. 2074 relating to the Company's general diversification plan.

New York
New York Public Service Commission

- NYPSC Case No. 91-G-1199 Rate Case; on behalf of Corning Natural Gas Corporation, November 1991; direct testimony regarding the effects of adoption of SFAS No. 106 - "Employers' Accounting for Postretirement Benefits Other Than Pensions".

Supreme Court of The State of New York

- Village of Bergen et al, Petitioners, v. Power Authority of the State of New York, Respondent Index No. 081556; testimony on behalf of the New York Power Authority (NYPA) January 1999, regarding the allocation of overhead costs as one of the components of the rate charged by NYPA.

Oklahoma - Oklahoma Corporation Commission

- Cause No. PUD 200400610, Application of Oklahoma Natural Gas Company, a Division of ONEOK, Inc., for a Review and Change or Modification in its Rates, Charges, Tariffs, and Terms and Conditions of Service. Rebuttal testimony, June 2005, on behalf of Oklahoma Natural Gas related to the continued use of the Distrigas Method by ONEOK for allocating corporate administrative and general expenses to the various ONEOK business units.

- Cause No. PUD 200500151, application of Oklahoma Gas and Electric Company ("OG&E") for an Order of the Commission authorizing Applicant to Modify its Rates, Charges, and Tariffs for retail Electric Service in Oklahoma. Rebuttal testimony, September 2005, on behalf of OG&E related to the continued use of the Distrigas Method by OGE Energy Corp. ("OGE") for allocating corporate administrative and general expenses to the various OGE business units.

Oregon - Public Utility Commission of Oregon

- PUCO Case UE 170, Pacific Power & Light, Request for a General Rate Increase. Rebuttal testimony, June 2005, on behalf of PacifiCorp related to the continued use and application of the traditional "stand-alone" method (as opposed to a consolidated effective tax rate method) for computing the income tax expense component of cost of service.

Texas
Texas Public Utility Commission

- PUCT Docket No. 6350, El Paso Electric Company Rate Case. Direct testimony on behalf of the PUCT Staff, October 1985 on various issues including deferred accounting treatment, nuclear plant phase-in plan, nuclear decommissioning costs and cash working capital.

- PUCT Docket No. 7460, El Paso Electric Company Rate Case. Rebuttal testimony on behalf of EPE, August 1987 supporting the Company's deferred tax study and position.

- PUCT Docket No. 9165, El Paso Electric Company Rate Case. Direct testimony on behalf of EPE, November 1989 regarding the accuracy and reliability of the Company's rate case data and information.

- PUCT Docket No. 9945, El Paso Electric Company Rate Case. Direct testimony on behalf of EPE, July 1991 regarding reasonableness and necessity of rate case fees and expenses.

- PUCT Docket No. 10060, Brazos River Authority Rate Case. Direct testimony on behalf of BRA, February 1991 relating to BRA's accounting and indirect cost allocation system, and revenue requirement determination.

- PUCT Docket No. 10200, Texas-New Mexico Power Company Rate Case. Prudence rebuttal testimony on behalf of TNP, December 1991 relating to plant in service balance for ratemaking purposes. Revenue requirements rebuttal testimony on behalf of TNP, January 1992 regarding plant in service balance, capital structure and deferred accounting treatment.

- PUCT Docket No. 16705, Entergy Gulf States, Inc.'s Transition to Competition Plan. Direct testimony on behalf of EGSI, November 1996 regarding affiliate transactions and depreciation expense accounting. Supplemental direct testimony on behalf of EGSI, April 1997, regarding affiliate transactions and regulatory accounting issues associated with EGSI's transition to competition plan. Rebuttal testimony on behalf of EGSI, October 1997, associated with EGSI's transition to competition plan.

Railroad Commission of Texas

- RCT Docket No. GUD8664, Lone Star Pipeline Company and Lone Star Gas Company - Transmission Rate Case. Rebuttal testimony on behalf of Lone Star Gas Company on the issues of cash working capital and postretirement benefits other than pensions, January 1997.

City of Garland, Texas

- Testimony before the Garland City Council, April 1995, regarding the review of selected financial and rate-making practices of the Texas Municipal Power Agency (TMPA).

Washington - King County, Seattle, Washington

- Renewal of King County Cable Television Franchises of TCI Cablevision of Washington, Inc. Rebuttal testimony on behalf of TCI Cablevision of Washington, Inc., October 1995 regarding reasonableness of TCI's compensation for franchise.

Employment History of Bernard L. Uffelman

Uffelman Advisory Services, LLC – Austin, Texas
- President — October 2008 to present

Deloitte & Touche LLP – Austin, Texas
- U.S. Regulatory Services Leader, Energy & Resources — June 1997 to September 2008
- Partner, Public Utility Services — July 1994 to June 1997

KPMG Peat Marwick – Austin, Texas
- Partner in Charge – National Utility Consulting — October 1993 to July 1994
- Partner, National Utility Consulting — July 1993 to October 1993
- Director, National Utility Consulting — October 1990 to July 1993

FINANCO, Inc. – Austin, Texas
- Principal and Shareholder — November 1988 to October 1990

Peat Marwick Main & Co. – Austin, Texas
- Senior Manager – National Utilities Industry Practice — May 1986 to November 1988

Texas Public Utility Commission – Austin, Texas
- Director of Accounting — April 1985 to May 1986

Illinois Commerce Commission – Springfield, Illinois
- Chief Accountant — September 1982 to April 1985

Houston Lighting and Power Company
- Project Controller — 1982

Illinois Commerce Commission – Springfield, Illinois
- Accountant — 1980 to 1982

Central Louisiana Electric Company – Lafayette, Louisiana
- Manager of Regulatory Accounting — 1979 to 1980

Illinois Power Company – Decatur, Illinois
- Rate Administrator — 1977 to 1979
- Cash Accountant — 1972 to 1977
- Internal Auditor — 1969 to 1972

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December 17, 2010

Tennessee-American Water Company
Attn: Michael A. Miller, Director of Rates
1600 Pennsylvania Avenue
Charleston, WV 25302

Dear Mr. Miller:

Subject: AWWSC Cost-Causative Factor Analysis Study

Introduction and Background

This letter provides information regarding the services, findings and conclusions provided by Uffelman Advisory Services, LLC ("UAS") to Tennessee-American Water Company ("TAWC") related to the AWWSC Cost-Causative Factor Analysis Study ("Study") and should be read in conjunction with the attached Study. The services provided by UAS were performed in accordance with the Statement on Standards for Consulting Services issued by the American Institute of Certified Public Accountants. The Study was performed in response to the August 31, 2010 Affiliate Audit Report Of Tennessee-American Water Company For The Tennessee Regulatory Authority issued by Schumaker & Company, Inc. (the "Auditor").

Among the findings and recommendations of the Auditor's Affiliate Audit Report are the following:
"Finding II-2: The cost-allocation methodologies impacting TAWC are generally reasonable, although the use of number of customers for allocating AWWSC costs among regulated utilities is essentially a simplification mechanism that is not necessarily based on cost-causative factors."
"Recommendation II-2: Perform a detailed analysis to verify that the use of the number of customers for allocating AWWSC costs among regulated utilities reasonably approximates the use of cost-causative factors; subsequently make modifications, as appropriate."

Services Provided by UAS to TAWC

UAS assisted TAWC with the Study design and detailed analysis to comply with the Auditor's recommendation to verify that the customer based allocation methodology used to allocate common costs among the regulated affiliated utilities for the services provided by American Water Works Service Company, Inc. ("AWWSC" or the "Service Company") reasonably approximates the use of cost-causative factors, and to determine if modifications are appropriate. AWWSC provides services to the regulated utilities pursuant to a contract between AWWSC and the regulated utilities (the "Service Company Contract"). Billing and allocation of costs among the regulated subsidiaries is performed pursuant to the approved Service Company Contract. Each regulated operating company pays its proportional share of

all common costs that remain after all direct charges and Tier 1 assignments to non regulated companies have been made. In accordance with this contract, a direct charge to the utility receiving the service is the preferred method of billing. Where practicable, a regulated utility is therefore directly charged on the basis of the time spent to provide the services directly to the regulated subsidiary. The Service Company Contract provides that where services are provided in common to more than one regulated subsidiary, and the costs for such services are not directly charged, costs are apportioned among the regulated utilities on the basis of the number of customers served by the regulated operating company relative to the total number of customers served by all of the regulated operating companies (i.e., Tier 2 allocation). In addition to the Service Company Contract, the American Water Works Service Company, Inc. Accounting and Service Fee Billing Manual (the "Cost Allocation Manual") documents the methods by which AWWSC costs are accounted for and billed to affiliates. Assistance provided by UAS to representatives of TAWC and AWWSC related to the Study included, but was not limited to: providing advice, assistance and guidance to TAWC and AWWSC representatives that performed the Study; consulting with TAWC and AWWSC representatives as to the identification and use of alternative allocation methodologies for allocating AWWSC common costs (i.e., Tier 2 charges) among the regulated utilities; and reviewing the Study results including the appropriateness of the alternative allocation methodologies used to determine if the use of the customer allocator reasonably approximates the use of cost-causative factors.

Study Methodology and Analysis

As shown on Appendix 5 of the Study, the total actual 2009 Service Company charges examined for the Study were $222,411,814, including total direct charges of $34,819,151 and total allocated costs of $187,592,663, based on the Original Allocation Factor (i.e., allocation of Service Company common costs to the regulated utilities based on number of customers). TAWC's direct and allocated costs billed by the Service Company for the period were $820,284 and $4,246,794 respectively which total $5,067,078. As shown on Appendix 5, reallocation of TAWC's common costs based on the Cost-Causative Allocations used in the Study results in a decrease of $120,501 in TAWC's allocated costs resulting in total TAWC costs of $4,946,578 ($820,284 of direct costs and $4,126,294 of allocated costs), a decrease in TAWC's total costs of 2.38%.

Appendix 6 of the Study provides the detailed cost analysis by AWWSC Business Unit and the resulting cost allocations to TAWC using the Original Allocation methodology based on number of customers and the allocations based on the Cost-Causative Allocations methodology. Appendix 6 shows the Cost-Causative Allocation factors used to allocate the common costs to TAWC and provides a comparison by Business Unit and in total of the costs allocated to TAWC using the Cost-Causative Allocation methodology to the costs allocated to TAWC using the customer allocation methodology. As shown on Appendix 6, use of the Cost-Causative Allocations methodology results in a reduction of $120,501 of Service Company costs allocated to TAWC.

Appendix 7 of the Study shows the cost-causative allocation factors used, and the reason for such assignments, for allocating Service Company common costs by Business Unit and function to the regulated utilities. The cost-causative allocation factors used in the analysis for comparing the allocation of Service Company common costs based on the alternative cost-causative allocation methodology to the customer allocation methodology (i.e., Tier 2 methodology) are listed in the Study along with the criteria used to determine the selection of the cost-causative factors and the metrics (i.e., values) used to develop the alternative cost-causative allocators. As noted in the Study, a customer allocator was identified and is used as the allocation factor for allocating Service Company common costs to the

regulated utilities where the Business Units provide services and incur costs on behalf of the regulated utility customers. For some Business Units and functional activities more than one cost-causative factor was identified for cost allocation purposes. In such cases, the analysis utilized a multifactor allocation formula for allocating common costs based on the weighted-average of a combination of two or three cost-causative factors as described in the Study. For Business Units and functional activities where no clear cost causative factor, or a combination of factors, could be identified for allocating Service Company common costs to the regulated subsidiaries, the residual common costs were allocated based on the residual allocation factor as discussed in the Study. Residual costs were allocated on the basis of how all of the other common costs were allocated using identified cost-causative allocation factors. As a result, the residual common costs follow the allocation of the other common costs allocated to the regulated subsidiaries which is an acceptable method (i.e., "Residual Factor") for allocating residual costs.

Appendix 8 of the Study shows for each Business Unit the Service Company common costs allocated to the regulated subsidiaries using either an assigned cost-causative allocator or the Residual Factor. For 77 of the 153 Business Units a cost-causative factor was identified and used. For the other 76 Business Units the common costs were allocated on the basis of the Residual Factor. As shown on Appendix 8, $114,021,979 or 61% of the total Service Company common costs of $187,592,663 were allocated to the regulated utilities using cost-causative factors, and $73,570,684 or 39% of the common costs were identified as residual costs and allocated on the basis of the Residual Factor.

Cost Accounting and Allocation Methodologies

Many different cost allocation methodologies exist, each with potentially different impacts on allocated costs in multiple regulatory jurisdictions. For purposes of the Study, certain cost accounting principles and regulatory guidelines for allocating shared common costs were considered for selecting appropriate alternative cost allocation factors for comparing to the customer allocation factor used in the Tier 2 allocation process for allocating Service Company common costs to the regulated utilities. The services provided by the Service Company to the regulated operating companies, for which the associated costs are currently allocated using the Tier 2 customer allocation factor, are essentially the same for each service recipient. Cost accounting principles dictate that cost allocation factors should be based on "cost drivers" or "cost-causation", which means that they should reflect the underlying costs associated with the activities, resources and investment devoted to managing the business. Another goal of cost accounting and the selection of cost allocation factors is to achieve increased uniformity and consistency in cost accounting practices.[1] This is important in the regulated utility industry to insure the appropriate allocation of service company support services rather than the selective use of allocation factors that are simply intended to reduce the recovery of appropriate shared service costs.

Other goals that were considered for selecting appropriate cost allocation factors for comparing to the customer allocation factor included the cost-benefit associated with application of the allocation methodology selected. For example, paragraph B of the National Association of Regulatory Utility Commissioners ("NARUC") Guidelines for Cost Allocations provides that to the maximum extent practicable, in consideration of administrative costs, cost should be collected and classified on a direct basis for each asset, service or product provided. The primary cost driver of common costs, or a relevant proxy in the absence of a primary cost driver, should be identified and used to allocate the cost

[1] See Accounting For Public Utilities, LexisNexis, Cost Allocations, page 19-8 and 48 CFR Chapter 99

between regulated and non-regulated services and products.[2] Cost allocation factors should result in administratively efficient application based on readily available data or metrics. Overly detailed or complex systems can increase the cost of providing services and diminish cost benefits obtained through operations of shared service providers. Time and expense necessary to audit transactions is also an important criterion for selecting common cost allocation factors. Similar to accounting and reporting for shared service transactions, routine auditing of intercompany transactions in conjunction with regulatory proceedings should not impose an extreme cost burden or be so time consuming as to prevent effective system testing.

Overly detailed and complex systems and allocation methods may also result in resistance from regulators or the temptation for constructive confiscation through "cherry picking" cost allocation factors and metrics which produce the lowest regulatory cost of service through the elimination of reasonable and necessary operation and maintenance expense and capital expenditures. This is especially true for service companies that provide services to many regulated utilities in multiple regulatory jurisdictions. Such practices could prevent total cost recovery and subvert the shared services concept, which is designed to prevent duplication of services necessary to provide high quality, reliable service and achieve economies of scope and scale.

Findings and Conclusions

The Study provides the detailed cost analysis by AWWSC Business Unit and function for comparing the use of the number of customers for allocating Service Company costs among the regulated utilities (i.e., the Tier 2 allocations) to the use of alternative cost-causative factors for allocating such costs to the regulated utilities. The selection and use of alternative cost-causative allocation factors, including the use of single and multi-factor allocation factors for allocating common costs when cost-causative relationships were identified during the analysis, and the use of the residual allocation factor as a relevant proxy when a cost-causative relationship or primary cost driver could not be identified for residual costs, are reasonable. As noted in the Study, number of customers was used as a metric for developing alternative allocation factors, both single and multi-factor allocation formulas, for allocating Service Company common costs when the costs to be allocated were incurred primarily due to the number of customers served by the regulated utilities. The services provided by the Service Company to the regulated utilities are essentially the same for each regulated operating company; therefore the application of the alternative allocation factors used in the Study can be applied for allocating Service Company costs to the regulated utilities for comparing to the original cost allocations resulting from application of the customer allocator.

As shown in the Study, reallocation of TAWC's common costs based on the alternative cost-causative factors used in the comparative analysis results in a decrease of $120,501 in TAWC's allocated costs resulting in total TAWC costs of $4,946,578, a decrease in TAWC's total cost of 2.38%. Based on the small decrease in TAWC total Service Company costs resulting from application of the alternative cost-causative factors when compared to the customer allocator, the Study verifies that the use of the number of customers for allocating AWWSC costs among regulated utilities closely approximates the use of cost-causative factors and modifications to the customer allocation methodology are not warranted. Cost allocations to the regulated subsidiaries resulting from the use of the alternative cost allocation factors as described in the Study that result in differences in the amount of allocated common costs of 10% or less when compared to the allocation of such costs based on the number of customers,

[2] See Accounting For Public Utilities, pages 19-7 and 19-8

would be in a "range of reasonableness" and would not warrant changing the existing methodology for allocating Service Company common costs.

Continued use of the customer allocator meets the goal of cost accounting and the selection of cost allocation factors to achieve increased uniformity and consistency in cost accounting practices and should result in lower administrative costs when compared to the more complex and administratively costly application of the alternative cost-causative allocation factors. Continued use of the customer allocator provides not only greater transparency and ease of application but it may result in reducing the time and expense necessary to audit transactions in conjunction with regulatory proceedings and to test the accounting and reporting for shared service transactions resulting from the use of more complex cost allocations.

Continued use of the customer allocator should also result in less volatility in the level of Service Company common costs allocated and charged to the regulated subsidiaries for rate making purposes as compared to other alternative cost allocation factors. This is because the number of customers served by each of the regulated utilities typically varies less on a relative basis from period to period than other more volatile metrics (e.g., number of employees, investment in net plant, revenues) which may fluctuate more due to changes in organizational structure, system operations and maintenance, use of outside services and contractors, capital expenditures, rate structures and sales volumes. In addition, continued use of the customer allocator which reasonably approximates the use of cost-causative factors may lessen the resistance from regulators associated with more complex allocation factors or the temptation for constructive confiscation through "cherry picking" cost allocation factors and metrics which produce the lowest regulatory cost of service through the elimination of reasonable and necessary shared service costs.

Very truly yours,

B L Uffelman

Bernard L. Uffelman
President
Uffelman Advisory Services, LLC

AGREEMENT

Agreement dated January 1, 1989, between AMERICAN WATER WORKS SERVICE COMPANY, INC., a Delaware corporation (hereinafter "Service Company"), and TENNESSEE-AMERICAN WATER COMPANY, a Tennessee corporation (hereinafter "Water Company").

The background of this Agreement is that:

1. Both Service Company and Water Company are subsidiaries of American Water Works Company, Inc., a Delaware corporation (hereinafter "American").

2. Water Company has been organized for and is presently engaged in the business of providing potable water as a public utility in the State of Tennessee.

3. Service Company maintains an organization whose officers and employees are familiar with all facets of the water utility business, including the development, business and property of Water Company, and are experienced in the efficient management, financing, accounting and operation of water utility properties and the extension and improvement thereof. The officers and employees of Service Company are qualified to aid, assist and advise Water Company in its business operations through the services to be performed under this Agreement.

4. Service Company has provided administrative and operating services to Water Company for many years, the past 17 years pursuant to an agreement dated January 1,

1971. Because Water Company is of the opinion that it cannot obtain the same quality and diversification of services on a comparable economic basis elsewhere, it proposes to enter into a new agreement with Service Company more specifically defining the types of services available to it.

5. Service Company has entered or proposes to enter into agreements similar to this agreement with other affiliated water companies (hereinafter collectively "Water Companies").

6. The services to be rendered under this agreement are to be rendered by Service Company to Water Companies at their cost to Service Company, as hereinafter provided.

NOW, THEREFORE, in consideration of the premises and mutual agreements herein contained, the Water Company and Service Company agree that:

ARTICLE 1. PERSONNEL AND SERVICES TO BE PROVIDED

1.1 During the term of this agreement and upon the terms and conditions hereinafter set forth, Service Company shall provide corporate guidance for Water Company. In addition to the guidance provided by the officers and employees of Service Company through the coordination of functional activities for all subsidiaries of American, the officers and employees of Service Company shall furnish and Water Company shall purchase from Service Company, the following services: Accounting, Administration, Communication, Corporate Secretarial, Engineering, Financial, Human Resources,

Information Systems, Operation, Rates and Revenue, Risk Management and Water Quality, together with such other services as Water Company and Service Company may agree; provided, however, that Water Company may perform the service with its own personnel or engage another company or person to provide those services on its behalf. Service Company by mutual consent may engage another Company or person to provide such services on its behalf.

1.2 Service Company shall employ qualified officers and employees and those persons shall be available for election by Water Company to serve as officers of Water Company.

1.3 Without limitation, services to be provided by the Service Company shall be rendered as follows:

A. **Accounting**: Service Company shall assist in the preparation and implementation of accounting methods and procedures to determine that they conform fully to the requirements, rules and regulations of governmental authorities having jurisdiction and review Water Company's monthly financial reports, annual reports and other reports to stockholders and to any governmental authorities. It shall advise and assist in the establishment and maintenance of current record keeping techniques; review accounting procedures, methods and forms; and evaluate systems of internal control for receipt and disbursement of funds, materials and supplies, and other assets. Service Company shall maintain accounting records as required by Water Company. When appropriate, Service Company shall cooperate and consult with Water Company's independent certified public accountants.

Service Company shall assist in the preparation of operating and construction budgets and monitor the control over such budgets by comparing experienced costs to the projections.

Service Company shall prepare or assist in the preparation of federal, state and local tax returns for and to the extent required by Water Company.

B. **Administration**: Service Company shall make qualified employees available to perform or assist in the performance of Water Company's corporate activities. Those employees shall keep themselves informed on all aspects of Water Company's operations and shall regularly visit Water Company's facilities. They shall make recommendations to Water Company for operating expenditures and for additions to and improvements of property, plant and equipment. They shall keep abreast of economic, regulatory, governmental and operational developments and conditions that may affect Water Company; and advise Water Company of any such developments and conditions to the extent that they may be important to Water Company. Service Company shall provide an internal audit staff for periodic audits of accounts, records, policies and procedures of Water Company and submit reports thereon.

C. **Communications**: Service Company shall recommend procedures to promote satisfactory relations with employees, customers, communities and the general public and assist in the preparation of communication materials, (including press releases, brochures, audio visual presentations and speeches) plant tours, public exhibits and displays and other related services to inform the public.

D. Corporate Secretarial: Service Company shall maintain, in such places and manner as may be required by applicable law, documents of Water Company, such as minute books, charters, by-laws, contracts, deeds and other corporate records, and shall administer an orderly program of records retention. It shall maintain, or arrange for the maintenance of, records of stockholders of Water Company, prepare or arrange for the preparation of stock certificates, perform duties relating to the transfer of stock and perform other corporate secretarial functions as required including preparation of notices of stockholder and director meetings and the minutes thereof.

Service Company shall review and may assist in the preparation of documents and reports required by Water Company such as deeds, easements, contracts, charters, franchises, trust indentures and regulatory reports and filings.

E. Engineering: Service Company shall advise, and provide engineering services to assist Water Company in planning for, operating, maintaining and constructing its facilities.

It shall conduct distribution system surveys and hydraulic analyses and prepare or review maps, charts, operating statistics, reports and other pertinent data.

It shall assist Water Company in the proper maintenance and protection of Water Company properties by periodic inspection of its structures, tanks, reservoirs, dams, wells and electrical and mechanical equipment.

The engineering services provided by Service Company shall also include the conduct of field investigations as necessary to

obtain engineering information and, when required, the preparation of studies, reports, designs, drawings, cost estimates, specifications, and contracts for the construction of additions to or improvements of Water Company's source of supply, treatment plant, pumping stations, distribution system, and such other facilities as Water Company may request. Service Company shall provide a Materials Management Program to arrange for the purchase of equipment, materials, and supplies in volume on a basis advantageous to Water Company and assist in the evaluation of new and existing products and application procedures.

F. **Financial**: Service Company shall assist in the development and implementation of financing programs for Water Company, including the furnishing of advice from time to time on securities market conditions and the form and timing of financing; advise concerning arrangements for the sale of its securities; and assist in the preparation of necessary papers, documents, registration statements, prospectuses, petitions, applications and declarations. It shall prepare reports to be filed with, and reply to inquiries made by, security holders and bond and mortgage trustees.

Service Company shall assist Water Company in cash management including arrangements for bank credit lines, establishment of collection policies, and development of temporary investment programs.

Service Company shall provide assistance to Water Company in the preparation of all financial reports.

G. Human Resources: Service Company shall assist in obtaining qualified personnel for Water Company; in establishing appropriate rates of pay for those employees; and in negotiating with bargaining units representing Water Company employees. It shall carry out training programs for the development of personnel and advise and assist Water Company regarding personnel. It shall also advise and assist Water Company in regard to group employee insurance, pension and benefit plans and in the drafting or revising of those plans when required. It will keep Water Company apprised of all employment laws and develop procedures and controls to assure compliance.

H. Information Systems: Service Company shall make available to Water Company electronic data processing services. Those services shall include customer billing and accounting, preparation of financial statements and other reports including those required by Federal and State agencies.

I. Operation: Service Company shall develop and assist in the implementation of operating procedures to promote the efficient and economic operation of Water Company. Periodic operational reviews will be performed by Service Company personnel and any deviations from adopted procedures will be reported to Water Company.

J. Rates and Revenue: Service Company personnel shall make recommendations for changes in rates, rules and regulations and shall assist Water Company in the conduct of proceedings before, and in its compliance with the rulings of, regulatory bodies having jurisdiction over its operation. These personnel

shall keep abreast of economic and regulatory developments and conditions that may affect Water Company; and advise Water Company of any such developments and conditions to the extent that they may be important to Water Company. Rates and Revenue personnel shall assist in the preparation of rate filings or applications and the supporting documents and exhibits requested or required by the Water Company and their respective regulatory commissions. Service Company shall also provide qualified personnel to testify on Water Company's behalf as required during any regulatory proceedings.

K. **Risk Management**: Service Company shall provide a Risk Management Program to review the exposures to accidental loss of the Water Company, recommend efficient methods of protection either through the purchase of insurance, self-insurance or other risk management techniques and arrange for the purchase of insurance coverage. It shall also supervise investigation procedures; review claims; and negotiate and assist in, and evaluate proposals for, settlement at the request of Water Company. It shall assist in the establishment of safety and security programs to avoid or minimize risk and loss.

L. **Water Quality**: Service Company shall assist Water Company to comply with standards of governmental agencies and establish and attain water quality objectives of the Water Company. It shall assist in providing design criteria for processes, coordinating with public agencies, developing approaches and solutions to water quality problems, and providing

technical assistance and general direction for Water Company personnel.

It shall also provide laboratory services for programmed analyses as required by drinking water regulations, and special analyses as required by Water Company.

ARTICLE II. PAYMENT FOR SERVICES

2.1 In consideration for the services to be rendered by Service Company as hereinabove provided, Water Company agrees to pay to Service Company the cost thereof determined as provided in this Article II and in Article III.

2.2 All costs of service rendered by Service Company personnel for Water Company or in common with other Water Companies shall be charged to Water Company based on actual time spent by those personnel as reflected in their daily time sheets or other mutually acceptable means of determination.

2.3 All costs of Service Company incurred in connection with services rendered by Service Company which can be identified and related exclusively to Water Company, shall be charged directly to Water Company.

2.4 All costs incurred in rendering services to Water Company in common with similar services to other Water Companies which cannot be identified and related exclusively to services rendered to a particular Water Company, shall be allocated among all Water Companies so served, or, in the case of costs incurred with respect to services rendered to a particular group of Water

Companies, among the members of such group, based on the number of customers served at the immediately preceding calendar year end.

2.5 Cost for support personnel (secretaries, clerical personnel, clerks, messengers, telephone operators, mail clerks, and other incidental support personnel of the Service Company) as well as the cost of lease payments, depreciation, utilities and other costs associated with leasing office space and equipment by Service Company shall be allocated among the Water Companies on the basis of the proportion of the aggregate cost allocated under Sections 2.3 and 2.4.

ARTICLE III. ALLOWANCE FOR OVERHEAD

3.1 In determining the cost to be assessed by Service Company for the rendering of services to Water Company as herein provided, there shall be added to the salaries of all officers and employees for whose services charges are to be made, a percentage sufficient to cover the general overhead of Service Company, as defined below, properly allocable thereto. Such percentage shall be calculated each month and shall be the ratio of the total general overhead of the Service Company for the month to the total salaries of the employees for whose service charges are to be made to the Water Companies. No general overhead of Service Company shall be added to costs incurred for services of non-affiliated consultants employed by Service Company.

3.2 The term "general overhead" shall include:

(a) pension and insurance premiums paid for the benefit of Service Company employees,

(b) legal and other fees for services rendered to the Service Company,

(c) taxes,

(d) other general office supplies and other similar expenses, and

(e) interest on working capital.

ARTICLE IV. BILLING PROCEDURES AND BOOKS AND RECORDS

4.1 As soon as practicable after the last day of each month, Service Company shall render a bill to Water Company for all amounts due from Water Company for services and expenses for such month plus an amount equal to the estimated cost of such services and expenses for the current month, all computed pursuant to Articles II and III. Such bill shall be in sufficient detail to show separately the charge for each class of service rendered. All amounts so billed shall reflect the credit for payments made on the estimated portion of the prior bill and shall be paid by Water Company within a reasonable time after receipt of the bill therefore.

4.2 Service Company agrees to keep its books and records available at all times for inspection by representatives of Water Company or by regulatory bodies having jurisdiction over Water Company.

4.3 Service Company shall at any time, upon request of Water Company, furnish any and all information required by Water Company with respect to the services rendered by Service Company

hereunder, the costs thereof, and the allocation of such costs among Water Companies.

ARTICLE V. OTHER AGREEMENTS

5.1 It is understood by Water Company that Service Company has entered or may enter into similar agreements with other Water Companies that are affiliated with American to which similar services are to be furnished. Service Company will not enter into agreements to perform similar services for other companies on terms more favorable than those provided herein.

5.2 It is understood by Water Company that Service Company has entered or may enter into an agreement or agreements with American and certain other companies not engaged in the water or sewer service business to which limited services are to be furnished; Water Company consents to such additional agreements, provided, however, that no part of the cost of furnishing such services will be charged to Water Company.

ARTICLE VI. TERM OF AGREEMENT

This agreement shall become effective as of the later of (a) the date first mentioned above or (b) the date the parties receive the last of any necessary approvals of governmental regulatory agencies having jurisdiction in the premises. Upon becoming effective, this agreement shall be the sole agreement between the parties concerning the subject matter hereof and shall supersede all prior agreements, written or oral, including the agreement dated January 1, 1971, which shall terminate on the date this

agreement becomes effective. This agreement shall continue in full force and effect until terminated by either of the parties hereto giving the other party hereto ninety day's notice in writing; provided, however, that this agreement shall terminate as of the date Water Company or Service Company ceases to be an affiliate of American.

IN WITNESS WHEREOF, Service Company and Water Company have caused this agreement to be signed in their respective corporate names by their respective Presidents or Vice Presidents, and impressed with their respective corporate seals attested by their respective Secretaries or Assistant Secretaries, all as of the day and year first above written.

ATTEST:

AMERICAN WATER WORKS SERVICE COMPANY, INC.

By _____
President

ATTEST:

TENNESSEE-AMERICAN WATER COMPANY

By _____
President

American Water Works Service Company, Inc.
Accounting and Service Fee Billing Manual

For questions/comments please contact:

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Manual approved by SVC board of directors on 2/19/2010

American Water Works Service Company, Inc.

Accounting and Service Fee Billing Manual

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Accounting and Service Fee Billing Manual
I-Introduction

Purpose of Accounting and Service Fee Billing Manual

This manual documents the methods by which American Water Works Service Company, Inc. ("Service Company") expenses are accounted for and billed to American Water (AW) subsidiary companies ("Affiliates").

Cost Assignment Principles

Service Company follows certain cost assignment principles, including:

- **Services at Cost** – The Service Company provides its services at cost. There is no profit included in the charges billed to affiliates.

- **Direct Charging of Expenses** – Whenever possible, Service Company expenses are charged directly to the specific affiliate (regulated or non-regulated) that benefits from the underlying work.

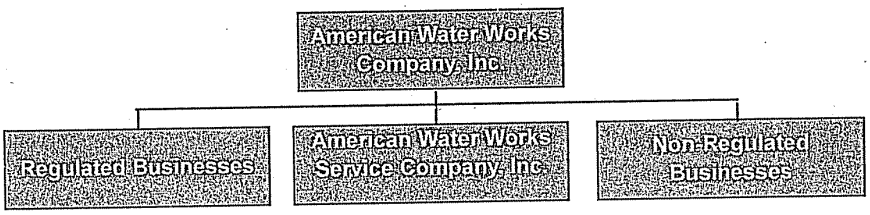
- **Charging common costs** – Service Company expenses that cannot be direct charged to a specific affiliate are allocated via formulas used by Service Company employees for coding all time and expenses.

- **Billing Accuracy** – All efforts are made to ensure that billings are correct. The Service Company performs monthly reviews of costs and allocations for accuracy. Affiliates have the opportunity to review Service Company billings and, where necessary, request adjustment for inaccurate charges.

Accounting and Service Fee Billing Manual
II – Overview of American Water Works Company, Inc.

Organizational Structure

American Water Works Company, Inc. is a publicly traded company listed on the NYSE as "AWK." The following chart sets forth the company's organizational structure:



Regulated Businesses

AW provides water and wastewater services to more than 3.3 million customers (regulated), or connections to our water and wastewater networks in 19 states (as of 12/31/09) through the following operating companies:

Arizona-American Water Company
California-American Water Company
Hawaii-American Water Company
Illinois-American Water Company
Indiana-American Water Company
Iowa-American Water Company
Kentucky-American Water Company
Long Island Water Corporation
Maryland-American Water Company
Michigan-American Water Company
Missouri-American Water Company
New Jersey-American Water Company
New Mexico-American Water Company
Ohio-American Water Company
Pennsylvania-American Water Company
Tennessee-American Water Company
Texas-American Water Company
United Water Virginia, Inc.
Virginia-American Water Company
West Virginia-American Water Company

Non-Regulated Businesses

American Water also provides services that are not subject to economic regulation by state PUCs through Non-Regulated Businesses. Non-Regulated Businesses include:

- Contract Operations Group which enters into public/private partnerships, including O&M, and DBO contracts for the provision of services to water and wastewater facilities for municipalities, the United States military and other customers;

- Applied Water Management Group which works with customers to design, build and operate small water and wastewater treatment plants;

- Homeowner Services Group which provides services to domestic homeowners to protect against the cost of repairing broken or leaking pipes inside and outside their homes; and

- Terratec Environmental Services Inc., which primarily provides wastewater, residuals, transport, disposal and management services to municipal and industrial customers in Ontario, Canada.

Accounting and Service Fee Billing Manual
III – Overview of American Water Works Service Company, Inc.

The Service Company provides the following services to AW affiliates: Internal Audit, Business Development, Business Transformation, Customer Service Center, Communications, Finance, Human Resources, Information Technology, Investor Relations, Legal, Operation Services, Property, Regulatory Services, and Regulated Operations Management. A description of each function is listed below:

Internal Audit – Responsible for performing a broad, comprehensive program of internal auditing within American Water its subsidiaries and affiliates. Internal audit examines and evaluates the adequacy and effectiveness of the system of management controls implemented by American Water management, performs reviews of operational efficiencies and financial accounting to assist the Company in achieving its objectives in accordance with approved policies and organizational goals.

Business Development - Provides coordination, tools, training, and support to American Water subsidiaries by assisting in identifying acquisition opportunities that facilitate the orderly and continued growth of the Company in addition to seeking opportunities that create synergies that benefit customers.

Business Transformation Project – Optimizes and enhance process design and development of new technologies to include training and implementation. After process assessment and re-engineering is complete, the Business Transformation Program will ultimately focus on three areas:

- Business Applications – the software used to manage data (hire/retire, procure to pay, records/reports, asset management, etc.);
- Infrastructure – the foundation of information technology such as servers, storage, security, and disaster recovery;
- Customer Service – projects that enhance customer satisfaction.

External Affairs (Communications) - Produce written and electronic information about American Water and affiliates to include press releases, internal announcements, company advertisements, etc. to customers, employees, communities, investors, and the media.

Finance - Include accounting, treasury, financial planning and reporting, compliance (Sarbanes-Oxley), risk management, income tax department, and Shared Services Center. These groups provide support, guidance and coordination in the preparation of financial statements, tax filings, etc.

Human Resources - Responsible for governance of recruiting, hiring, labor and employee relations, managing compensation and benefits, training, organizational development including involvement in negotiations for new contracts with bargaining units, consistent application of employee discipline, preparation of required reports

to governmental agencies at the state and federal level regarding employees, and development and promulgation of policies and practices affecting employees of American Water.

Benefits Service Center - Provides administrative and operating support for medical, dental, life, flexible spending, COBRA, and pension plans.

Information Technology Services – Responsible for all corporate and regulated subsidiaries technology systems. These hardware and software systems support numerous business processes such as meter reading, customer billing, bill payment management, bill collection, and customer information systems (customer service systems), Enterprise Reporting and Planning systems (back office operation, planning and reporting), communication systems (telephone, cell phones and Blackberrys), field workforce management systems (Service First) and personal computer (PC) networks as well as connectivity systems for all employees using personal computers in the performance of their day-to-day activities.

Investor Relations – Responsible for preparation and distribution of financial information that is periodically released to current or potential holders of financial securities of American Water and/or its subsidiaries.

Legal - Provides legal guidance and support for Corporate and all subsidiaries of American Water. When specialized legal advice or counsel is required, members of the Legal function arrange for and retain qualified legal experts to participate in legal matters.

Regulatory Services – Provides strategic oversight in the preparation of rate applications to ensure adequate revenues, on a timely basis, to recover operating costs, taxes, and financing on capital invested in facilities used by regulated affiliates.

Regulated Operations Management

Provides corporate governance for the Company's regulated affiliates, and the Customer Service Center, organized as follows:

Eastern Division: Provides governance of the following affiliates: Long Island, Edison, Liberty, ETown Services, ETown Properties, Kentucky, Maryland, Tennessee, Virginia, West Virginia, and United Water Virginia. Managed by an Executive VP with direct reporting to the president of Regulated Operations.

Western Division: Provides governance of the following affiliates: California, New Mexico, Arizona, Hawaii, Texas, Illinois, Indiana, Iowa Michigan, Missouri, Ohio, and Texas. Managed by an Executive VP with direct reporting to the president of Regulated Operations.

Stand alone (not in division): New Jersey American Water and Pennsylvania American Water, which combined account for approximately 50% of all regulated revenue, have a direct reporting relationship to the president of Regulated Operations.

Customer Service Center (CSC): Two centers located in Alton, Illinois and Pensacola, FL performs customer service functions for all regulated customers except Michigan. Services include: customer call processing, service order processing, correspondence processing, credit and collections. The CSC also supports billing, collection, and call handling support for a number of O&M contracts.

Shared Services Center - Supports American Water affiliates by performing essential back office services such as accounting, financial reporting, payroll processing and reporting, accounts payable and purchase card services, invoice payments, fixed asset processing, cash management, tax related services including, but not limited to, income and property taxes and additional rates and regulation support in rate cases.

Operation Services – Responsible for developing and implementing a cost-effective capital improvement program, procurement, best operating practices, environmental management and compliance, maintenance services, network (pipe network operation and maintenance), production and water quality support for all subsidiaries. The Office of Risk Management provides physical security, employee health and safety, business continuity, event management and claims management support.

Lab: Employs chemists, lab technicians, analysts, and support employees to perform water quality testing and research. The lab, which is EPA and state certified, uses state of the art water testing equipment to test water, source water, and finished waters from all subsidiaries and is located in Belleville, Illinois.

Supply Chain - Provides purchasing support using strategic sourcing methods to procure products and services for American Water subsidiaries. The function consists of a national team with team members located in various portions of the United States.

Property – Provides facility management services for owned and leased buildings in the Voorhees Corporate Campus. This includes directing and administering facility and space planning and utilization, developing and administering capital and expense budgets for facilities, negotiating leases, completing large scale fit-outs of office space, housekeeping, utilities, mail distribution, reprographics and related functions in addition to providing direction and capital program management to other Service Company locations.

Accounting and Service Fee Billing Manual
IV – Service Company Accounting

The Service Company maintains an accounting ledger in JDEdwards ("JDE") for recording all transactions (labor, expenses, capital assets, and overhead) in a company ledger separate from all other AW affiliates. Monthly financials statements are prepared that summarize MTD and YTD costs, budgets, and reforecasts, with variances and explanations, by category and function – a function will have one or more business units (See Appendix for listings). Accounting details by transaction type are listed below:

Labor: Service Company uses a JDE payroll application "JDE Time and Approval" to track time and attendance by week. Employee's electronically enter hours worked (including vacation, sick, FMLA, etc) and accounting information (i.e. business unit; formula; pay type) and electronically submit the timesheet for approval. Submitted timesheets are electronically routed to authorized approvers via JDE. All time sheets require approval (hours and coding) from an authorized timesheet approver in the employee's home business unit. JDE posts all labor and labor related expenses, in aggregate, in selected business unit's bi-weekly.

Expenses: All expenditures (i.e. standard invoices, purchase orders, electronic disbursements, and p-cards) and journal entries require a preparer to enter coding details (i.e. business unit, object account, and formula) and a reviewer to approve such in accordance with the Company's Delegation of Authority Policy. All expenditures are processed electronically and are automatically routed to the employee's supervisor for approval. All expenses are posted many times daily, in detail, in the business unit selected.

Capital assets: Service Company capitalizes labor and expenses as Non-Utility Plant in accordance with GAAP. The Company requires that all capital projects receive advance approval from a capital committee which requires submission of a business case. For approved capital projects, a "Funding Project" is authorized in PowerPlant (Application used as subsidiary ledger for utility and non-utility plant) by the Capital Management department. The designated project manager can create work orders against the funding project that can be used by Service Company employees to charge time and expenses. Project Manager's also record monthly accruals in PowerPlant for work incurred but not billed or processed. These accruals are posted in the Service Company balance sheet monthly. All expenditures for capital assets (see labor and expense sections above) are posted, in detail, in the ledger of the business unit selected.

Overhead: Expenses for support personnel (administrative assistants, mailroom clerks, etc), pension, medical insurance, taxes, general office supplies, and other similar expenses are recorded in the ledger of the business unit responsible for incurring the charge. All overhead expenditures are posted using the labor and expense processes noted above, and are recorded, in detail, in the ledger of the business unit responsible for the charge using an overhead formula.

Accounting and Service Fee Billing Manual
V – Service Company Planning and Budgeting

Long-Term Plans:

Service Company financial analysts prepare a long-term plan annually. The plans are reviewed by functional leads and the board of directors.

The long-term plans are loaded into Hyperion System 9 and are distributed to affiliates using the same process described in "Annual Budgets" above for use in their long-term plan preparation.

Annual Budgets:

Service Company financial analysts prepare, functional leads review, and the board approves the company's annual budget. Once the budget is approved, it is loaded into JDE and Hyperion System 9 by month in detail (by business unit and object account). Each business unit's total budgeted charges are separated into two types of fees: Capital Fees (each business unit's estimate of expenses that will be billed as capital fees based on historical results and future projections) and Management/Service Fees (difference between total budgeted costs and Capital Fees).

The Service Company finance group prepares and distributes the annual budgeted fees to each affiliate, by function by month, for their use in preparing their annual budgets. The budgeted fees for each affiliate are calculated by business unit using historical results (i.e. percent of business unit charges to each affiliate over prior 12 months) updated for future projections, as necessary. Monthly and YTD reporting (See Section VI for details) provide for comparisons to budget, variances, and material variance explanations.

Quarterly Reforecasts:

Three quarterly reforecasts are prepared every year by Service Company financial analysts and functional leads. The reforecasts are prepared during the last month of each quarter (December excluded) and includes a mix of actual results for previous months and reforecasts for future months – see below for details.

Quarter	Month Prepared	Actual Months	Forecast Months
Q1	Mar	Jan-Feb	Mar-Dec
Q2	Jun	Jan-May	Jun-Dec
Q3	Sep	Jan-Aug	Sep-Dec

Service Company quarterly reforecasts are loaded into JDE and Hyperion System 9 by month and are distributed to affiliates using the same process described in "Annual Budgets" above. Monthly and YTD reporting (See Section VI for details) provide for comparisons to reforecasts, variances, and material variance explanations.

Accounting and Service Fee Billing Manual
VI – Service Company Reporting

On a monthly basis, all functional analysts / leads are provided with reporting of actual expenses (MTD and YTD) compared against plan (original budget) and the most recent reforecast (original budget adjusted quarterly with more current estimates) by function and business unit. All expenditures whether billed as Opex or Capex are included in the report with exception of capital expenditures for Service Company which are charged to a capital work order and charged to CWIP. All functional variances in excess of predefined materiality amounts (determined by the Controller's office annually) must be explained by the functional analyst (coordinated with functional lead when necessary) in the monthly Financial Reporting Package (FRP) and Business Performance Package (BPR). The FRP's require monthly sign-off from the VP of Finance and the BPR's require quarterly sign-off from the president.

After Service Company closes its books each month, all Service Company analysts (along with representation from affiliates) attend a debrief call to review and comment on material variance explanations.

After the monthly debrief call Service Company management presents the FRP to the corporate management team. Financial results, material variances, and other issues are discussed in detail.

Service Company management presents the BPR to the senior management team and board of directors (comprised of Affiliate presidents) quarterly where financial results, KPI's, material variances, and other issues are discussed in detail.

Accounting and Service Fee Billing Manual
VII – Service Company Billing and Clearing

Overview:

Service Company has developed a billing system which direct charges or allocates costs for services provided to both regulated and non-regulated affiliates. The Service Company billing is processed monthly by the general accounting department in the Shared Services Center. This billing includes all Service Company expenses (Opex and Capex), at cost, to affiliates using the "formula" selected for each transaction – See Section IV "Service Company Accounting."

Formulas:

All Service Company transactions (vouchers, journal entries, etc) require a "formula" (also known as "subledger" code) in the account coding. Each "formula" is configured in JDE with the following: affiliate(s) to be charged, percent of charge to be billed to each affiliate (total must equal 100%), and affiliate's account code block.

"Formulas" are also entered in JDE with an end date (month/year). JDE is configured to prevent transactions from using an expired formula during data input.

Three different types of "formulas" exist:

Formulas – Used to bill labor, expenses, and/or overhead* to one or more affiliates with an estimated end date of greater than one year. Formulas can be configured to allocate costs to work order(s) and/or affiliated company GL accounts.

* Formulas can be set to <u>not</u> bill overheads. This would apply to time entry only.

Authorizations – Used to bill and track costs for specific tasks or projects that benefit one or more affiliates (e.g. water quality research for surface water treatment plants, specific rate case, etc) with an estimated end date of approximately one year or less. Authorizations can be configured to allocate costs to work order(s) and/or affiliated company GL accounts.

Work Orders – Used for recording expenditures for approved capital projects that allocate charges to only one affiliate. Work Order numbers are auto-generated by PowerPlant and are created only by a project manager, with supervisor approval, against authorized funding projects. Service Company can only use work orders that the project manager denotes "eligible" for Service Company.

A Formula or Authorization can be configured to allocate costs across regulated and/or unregulated affiliates [See Appendix for listing] (Tier One factor) and/or to one or more regulated affiliates [See Appendix for listing] (Tier Two factor).

Tier One factors represent the split of costs to be allocated to regulated and non-regulated affiliates. These factors (available factors listed below) are based on a review of primary cost drivers for a particular service.

3-Factor Formula (#1) – Includes the primary cost drivers of operating revenues, net property, plant and equipment and employees which are common to the operation of regulated and non-regulated affiliates. The metrics are equally weighted within the formula. Also, these metrics will only include affiliates that are receiving service.

2-Factor Financial Services Formula (#2) – Includes the primary cost drivers of operating revenues and employees. The metrics are equally weighted within the formula. Also, these metrics will only include affiliates that are receiving service.

Revenue Factor (#3) – Use operating revenues as a surrogate for customers counts due to the relative size differences of customers (e.g. two O&M contracts may support significantly different sized customer bases). Factor includes only affiliates that are receiving service.

Personal Computer Factor (#4) – Includes the primary cost driver for ITS services associated with acquiring and supporting PC's. Metric: number of personal computers.

Total Premises Factor (#5) – Includes the primary cost driver for ITS services associated with the operation of AS 400 computers. Metric: number of premises maintained on the AS 400 database.

Employee Factor (#6) – Uses count of active employees for all affiliates receiving services.

Budgeted Capital Projects and Engineering Project Management Factor (#7) - Includes the primary cost driver for services associated with capital projects and costs not directly assignable to task orders. Metric: dollar value of budgeted capital expenditures for the year.

Research Authorization Project Factor (#8) – Includes the primary cost driver for services associated with water quality research projects. Metric: dollar value of budgeted research projects for the year. This metric will only include affiliates that are receiving service.

Purchase Orders and Purchasing Card (P-Card) Factor (#9) – Includes the primary cost driver for transactional services associated with purchasing and

paying invoices for goods and services. Metric: number of purchase orders and P-Card transactions on an annual basis.

Employee and Retiree Factor (#10) – Uses count of active employees and retiree's by affiliate as an allocation basis.

100% Non-regulated Company (#11) – Factor allocates expenses to non-regulated affiliate(s). Specific non-regulated affiliate(s) charged are per request from formula requester.

100% Regulated Company (#12) – Factor allocates all expenses to regulated affiliate(s). Specific regulated affiliate(s) charged are dependent on Tier Two factors (see below).

Tier Two factors are used to allocate regulated company costs (via Tier One factors above) to the regulated affiliates that benefit from the expense. Tier two factors are primarily based on the number of customers served (water and wastewater) at the immediately preceding calendar year end. However, Tier Two allocation factors can be based on other more direct factors such as time worked for an affiliate (e.g. an employee may support two affiliates equally -- 50% for New Jersey American and 50% for Pennsylvania American).

Formula Types:

Direct charge: "Formulas" that charge 100% of all time and expenses to a single affiliate exist for all affiliates. These formulas are used for time/expenses which can be identified and related exclusively to a single company or affiliate -- examples include work in support of an operating company's rate case, engineering design work on an operating company's project and/or the preparation of an operating company's financial statements.

Indirect charge: "Formulas" that allocate costs to more than one affiliate (i.e. costs which cannot be identified and related exclusively to a single affiliate). Examples include employee labor for work supporting multiple affiliates, assessments of new Federal water quality regulations, development of the company-wide materials procurement contracts, creation of company-wide engineering design standards, etc.

Capital of Affiliates: "Formulas" (either direct or indirect) that allocate costs to capital projects. Indirect allocations (i.e. not to a specific workorder) are billed to the "Engineering Dist Clearing O/H" account 18410X on the affiliate's ledger(s) charged (including Service Company). The balance in the Clearing O/H account is allocated to all work orders that received charges for the month using an allocation rate that is revised quarterly. Any balance remaining in the Clearing O/H account at year end (12/31), if any, is fully allocated in December.

Overhead: Include employee benefits (Formula 888888) such as group insurance, pension/PBOP, payroll taxes and general overhead (Formula 999999) such as depreciation, rents, capital lease interest, etc. The benefit and general overheads are tracked separately; however, both types are combined for allocation.

Overhead expenses are "pooled" by physical location (See Appendix for a list of all business units grouped by physical location) for billing. All overhead expenses in each "pool" are separately allocated to affiliates as fees and capital (including Service Company for capital) based on the proportion of direct labor charges (GL account 501200) billed by each "cost pool" (i.e. physical location) monthly.

Billing Process:

Service Company billing is a two-step process that first calculates allocations for all "non-overhead formulas" (all formulas other than 888888 "benefits overhead" and 999999 "general overhead"). The second process calculates overhead allocations using the ratio of direct labor (Object account 501200) allocations (obtained via the first step above) to affiliates multiplied by the pool of overhead expenses by physical location.

The sum of all allocations (via steps one and two above) are system posted directly in affiliate ledgers, detail suppressed, with the exception of AWE which must be manually entered via journal entry because they use a different accounting system. Service fees are posted in JDE by object account that denotes the source of the charge as follows:

Shared Business Service Fees:	Object Acct:
Shared Services Center	534615.16
Customer Services Center	534625.16
Information Technology Services	534635.16
Procurement / Supply Chain	534645.16
Laboratory	534655.16
Benefits Service Center	534665.16

Management Fees:	Object Acct:
Corporate	534600.16
External Affairs / Communications	534601.16
Finance	534602.16
Human Resources	534603.16
Legal	534604.16
Operation Services	534605.16
Property	534606.16
Business Development	534607.16
Business Transformation	534608.16
Audit	534609.16
Regulatory Services	534610.16
Investor Relations	534611.16
Regulated Operations Management	534701.16

Bill Clearing Process:

Service Company billings are cleared through American Water Capital Corporation, Inc. (an affiliate) monthly via an intercompany journal entry to GL Account 231200 (Notes Payable – Cap Corp) posted on the last day of the month. Payments are estimated, for each affiliate, using the prior month actual billing (current month estimate) with adjustment for prior month actual to estimate (previous month funding) true up. For example, on 11/30/08 Service Company received funding from Arizona American of $924k calculated as follows:

Oct08 billing	$973,488
Less: Oct08 estimate (funded on 10/31/08)	(1,022,694)
Net adjustment	(49,206)
Nov08 estimated billings (equal to Oct08 billing)	973,488
Funding on 11/30/08	$924,282

Accounting and Service Fee Billing Manual
VIII - Accounting/Billing for select Service Company expense categories

- **Pension**

The Company maintains noncontributory defined benefit pension plans covering eligible non-union employees. Benefits under the plans are based on the employee's years of service and compensation. The pension plans have been closed for any employees hired on or after January 1, 2006. Union employees hired on or after January 1, 2001 had their accrued benefit frozen and will be able to receive this benefit as a lump sum upon termination or retirement. Union employees (CSC only for Service Company) hired on or after January 1, 2001 and non-union employees hired on or after January 1, 2006 are provided with a 5.25% of base pay defined contribution plan.

The Company's funding policy is to contribute at least the minimum amount required by the Employee Retirement Income Security Act of 1974. Pension plan assets are invested in a number of investments including equity and bond mutual funds, fixed income securities and guaranteed interest contracts with insurance companies.

How budgeted: The actuary prepares projection of annual plan costs using FAS87. The sum of all Service Company pension costs are aggregated in a single cost pool and allocated to the "administrative" business unit for each location in the actuarial report (2008 and prior) changed to function (effective 2009) using the proportion of direct labor dollars budgeted for all employees by function.

How actuals recorded: The annual projected Pension expenses for Service Company (via actuarial report) is allocated to each business unit using the proportion of budgeted direct labor dollars for each business unit for all employees with hire date prior to 1/1/06. The annualized expense is divided by 12 and recorded monthly in GL account 505100.16 "PBOP Operating AG." All PBOP expenses are charged to overhead formula 888888.

- **PBOP (Postretirement benefits other than pensions)**

Service Company maintains postretirement benefit plans providing varying levels of medical and life insurance to eligible retirees. The retiree welfare plans are closed for union employees hired on or after January 1, 2006. The plans had previously closed for non-union employees hired on or after January 1, 2002.

The Company's policy is to fund postretirement benefit costs accrued.

How budgeted: The actuary prepares projection of annual plan costs using FAS106. The sum of all Service Company PBOP costs are aggregated in a single cost pool and allocated to the "administrative" business unit for each physical location in the actuarial report (2008 and prior) changed to function (effective 2009) using the proportion of direct labor dollars for all employees by function.

How actuals recorded: The annual projected PBOP expenses for Service Company (via actuarial report) is allocated to each business unit using the proportion of budgeted direct labor dollars for each business unit for all employees with hire date prior to 1/1/06. The annualized expense is divided by 12 and recorded monthly in GL account 505100.16 "PBOP Operating AG." All PBOP expenses are charged to overhead formula 888888.

- **LTIP "Long-term Incentive Program"**

Service Company participates in a long-term incentive plan for designated employees (currently defined as employees in the salary band L05 and higher) to receive grants (stock options, stock units, stock awards, stock appreciation rights "SARs," or other awards) of equity-based awards. The Compensation Committee of American Water Works Company, Inc. selects the participants to receive grants and determines the number of shares subject to each grant.

How budgeted: Effective in 2009 LTIP costs were budgeted by Service Company – previous to 2009 these costs were budgeted by American Water Works Company, Inc. The sum of all Service Company LTIP costs are aggregated in a single cost pool and allocated to the "administrative" business unit for each function using the proportion of direct labor dollars for employees in the L5 salary band and above by function. Two active cycles are included: 2007-2009 and 2008-2010 (referred to as First and Second grant respectively).

How actuals recorded: Effective in Jun08, LTIP expenses are recorded in two GL accounts: 501716.16 "Comp Exp – Options" and 501718.16 "Comp Exp – RSU's." These expenses are posted to an employee's home business unit (effective Jan09) based on analysis prepared by corporate accounting.

LTIP expenses are charged to formulas allocating time to regulated affiliates (primarily) in the states supported by region/division or all states for corporate.

- **AIP "Annual Incentive Program"**

Annual incentive compensation is made available to all managerial, professional and supervisory employees (including executives but excluding CSC union employees). It is designed to provide incentives for achieving short-term financial and operational goals of the Company.

The target payout (bonus amounts that would be paid assuming 100% achievement of company performance measures) is calculated as a percentage of an employee's annual base salary depending on his/her salary band.

How budgeted: AIP is budgeted for each eligible employee using the rate assigned for their salary level assuming 100% achievement of company performance measures. AIP is budgeted in the employee's assigned business unit. Effective with 2009 budget, FICA tax estimates have also been budgeted for AIP at rate of 6.2% (actual rate Employee Services used on FICA accrual for AIP which started in 2008) to Business Unit 032098 -- CORP-Non-Dept Costs.

How actuals recorded: AIP is posted to the employee's home business unit after each payroll batch is processed in GL account 501711 "IP-Off-Annual-P/R JE." AIP expenses are charged to the formula(s) that the employee charged which can include general overhead (i.e. 999999), non-overhead formulas, and/or work orders.

Quarterly, the SSC Employee Services department reconciles AIP accruals for each employee against an active employee listing calculating AIP earned (employee's salary multiplied by the AIP rate for salary level). A journal entry for any severed/transferred employees and other corrections/adjustments are posted to Business Unit 032098 "Corporate Non-Dept Costs" in GL account 501711 "IP-Off-Annual-P/R JE." FICA tax is also accrued quarterly via manual JE to Business Unit 039998 "Benefits O/H Clearing" in GL account 685325 "FICA."

- **Group Insurance**

Service Company participates in the American Water Voluntary Employee Benefit Association Trust (VEBA) that was established to provide health and welfare benefits to its employees.

Wachovia bank is the recordkeeper for the Group Insurance VEBA trust account.

How budgeted: A global blended group insurance rate is calculated and budgeted monthly in the home business unit for each full-time employee in GL account 504100 "Group Insurance." Budget dollars begin in the hiring month for non-union employees; however, union employees (CSC only) have a three-month budgetary lag from the employee's hire date due to a three-month wait for group insurance benefits to begin.

How actuals recorded: Actual Group Insurance costs by employee are charged to the employee's home business unit (Object 504100 "Group Insurance") each payroll cycle. All Group Insurance expenses are charged to overhead formula 888888.

- **Bypass expenses:**

Select Service Company vendor payments are charged directly to affiliates and are excluded from Service Company cost accounting and billing. These payments are typically for large dollar expenditures such as liability insurance premiums, external financial audit fees, service quality and strategic surveys, ECIS/JDE support and licensing, etc.

Bypass expenses are processed via a single check funded by Service Company that is settled via inter-company clearing monthly.

Appendices

American Water Works Service Company, Inc.
Affiliated Agreements

New Jersey
American Agreement

Agreement between Service Company and Operating Companies
Note: Attached agreement is between Service Company and New Jersey American Water. All agreements with regulated affiliates are similar.

Capital Corp support
agreement.pdf

Agreement between American Water Works Company, Inc. and American Water Capital Corporation, Inc ("AWCC").

American Water Works Service Company, Inc.
Service Company Locations

Office	Location	Services Provided
Belleville Lab	1115 S. Illinois Street Belleville, IL 62220	National trace substance laboratory
Benefits Service Center	131 Woodcrest Road Cherry Hill, NJ 08003	Provides administrative and operating support for medical, dental, life, flexible spending, COBRA, and pension plans.
CITE Building – Information Technology	1000 Voorhees Drive Voorhees, NJ 08043	Information technology support for affiliates
Corporate Headquarters	1025 Laurel Oak Road Voorhees, NJ 08043	Corporate governance functions including executive management, audit, finance, external affairs, human resources,
Customer Service Center	1410 Discovery Parkway Alton, IL 62002 7303 Plantation Road Pensacola, FL 32504	National customer call center and customer billing for affiliates
Haddon Heights Information Technology Services Center	500 Grove Street Haddon Heights, NJ 08035	Information technology support for affiliates
Hershey Information Technology Services Center	800 West Hersheypark Drive Hershey, PA 17033	Information technology support for affiliates
Operations Technical Center	3906 Church Road Mt. Laurel, NJ 08054	Provides purchasing, capital, engineering, operations, and water quality support
Shared Services Center	131 Woodcrest Road Cherry Hill, NJ 08003	Financial, accounting, procurement, cash management and human resource benefits coordination

American Water Works Service Company, Inc.

Affiliate listing

Company Number	Company Name	Division	Initial
2	American Water Works	Non-Reg	AWK
3	AW Service Company	Non-Reg	SC
4	Bluefield Valley (WV)	East	BV
5	California	West	CA
9	Illinois	West	IL
10	Indiana	East	IN
11	Iowa	West	IA
12	Kentucky	East	KY
13	Maryland	East	MD
16	Michigan	East	MI
17	Missouri	West	MO
18	New Jersey	New Jersey	NJ
19	New Mexico	West	NM
21	AW Resources	Non-Reg	AWR
22	Ohio	East	OH
23	Arizona	West	AZ
24	Pennsylvania	Pennsylvania	PA
26	Tennessee	East	TN
27	Virginia	East	VA
28	West Virginia	East	WVA
30	Hawaii	West	HI
31	AWE	Non-Reg	AWE
38	Long Island	East	LI
42	Virginia East (VA)	East	VAE
44	Lake Water (IL)	West	LW
45	AmericanAnglian Canada Corp	Non-Reg	AACC
46	AW Capital Corp	Non-Reg	AWCC
47	American Water Services, LLC	Non-Reg	AWS
50	Texas	West	TX
51	Etown Corp	Non-Reg	
52	Elizabeth Water Company	Reg	
53	Mt. Holly	Reg	
54	Edison	Non-Reg	
55	Liberty	Non-Reg	
56	Etown Services	Non-Reg	
57	Etown Properties	Non-Reg	
75	Am Water Finance LLC	Non-Reg	AWFLLC
80	Laurel Oaks Properties	Non-Reg	LOP
85	Ashbrook Corporation	Non-Reg	ASH
87	Hydro Aerobics, Inc	Non-Reg	HYDRO
90	Thames Water Holdings, Inc	Non-Reg	TWHINC
91	Thames Water North America	Non-Reg	TWNA
92	Thames Water Aqua US	Non-Reg	TWAUS

American Water Works Service Company, Inc.
Business Units and Hierarchy
Effective 1/1/09

Business Unit / Function	Description
032084	SSC-Accounts Payable
032505	SSC-Administration
032560	SSC-Financial Reporting
032570	SSC-General Accounting
032571	SSC-Tax
032572	SSC-Business Support Services
032573	SSC-Planning & Reporting
032574	SSC-Rates & Regulation
032575	SSC-Cash Management
032576	SSC-Facility Services
032577	SSC-Fixed Assets/Job Cost
032578	SSC-Project Management
032579	SSC-Employee Services
032580	SSC-AWE
	Shared Services Center
032007	CORP-Finance
032017	CORP-Planning & Reporting
032027	CORP-Reporting & Compliance
032047	CORP-Income Tax
032057	CORP-Treasury
033007	WE-Finance
033507	CE-Finance
035007	SE-Finance
036507	NE-Finance
	Financial Services
030497	CORP-Admin
034500	SC-Belleville Lab
034517	BVLAB-Water Quality
	Belleville Labs
032009	CORP-Supply Chain-Pass Thru
032010	CORP-Supply Chain-Sourcing
033010	WE-Supply Chain
033510	CE-Supply Chain
035010	SE-Supply Chain
036510	NE-Supply Chain
	Supply Chain
032042	CORP-1000 Voorhees Building

032046	CORP-3906 Church Road
032062	CORP-Building Services
032063	CORP-Building Services Woodcrest
036576	NE-Building Services Woodcrest
	Property
032011	CORP-Chief Operating Officer
032064	CORP-Operational Performance
032066	CORP-Research & Env Excellence
032065	CORP-Asset Management
036550	CORP-COE-Engineering
036551	CORP-COE-Technical Services
032019	CORP-Operational Risk
033019	WE-Operational Risk
033519	CE-Operational Risk
035019	SE-Operational Risk
036519	NE-Operational Risk
032016	CORP-Maintenance Svcs
033016	WE-Maintenance
033516	CE-Maintenance
035016	SE-Maintenance
036516	NE-Maintenance
	Operation Services
032040	Business Transformation -- Admin
032051	CORP-Bsns Trans-Procure To Pay
032052	CORP-Bsns Trans-Recruit To Ret
032053	CORP-Bsns Trans-Record To Rpt
032054	CORP-Bsns Trans-Order To Cash
032055	CORP-Bsns Trans-Plan, Bld, Ret
032056	CORP-Bsns Trans-Ord To Compl
	Business Transformation
032030	CORP-ITS Client Rel Admin
032031	CORP-ITS Client Rel/Helpdesk
032032	CORP-ITS Bus Development
032033	CORP-ITS Desktop Admin
032034	CORP-ITS Appl Adm & Security
032071	CORP-ITS Admin
032072	CORP-ITS PMO
032073	CORP-ITS Infra/Oper Admin
032074	CORP-ITS Production
032075	CORP-ITS Enterprise Servers
032076	CORP-ITS Network Comm
032077	CORP-ITS Telecom
032078	CORP-ITS Core Bus Sys Admin
032079	CORP-ITS Application Developm

032080	CORP-ITS Application Architec
032081	CORP-ITS Quality Assurance
032082	CORP-ITS Tech Architecture
032083	CORP-ITS Strategy/Governance
032093	CORP-ITS Design Authority
033031	WE-ITS Client Relations
033531	CE-ITS Client Relations
035031	SE-ITS Client Relations
036531	NE-ITS Client Relations
	Information Technology Services
032022	CORP-Government Affairs
032025	CORP-External Affairs
032068	CORP-Marketing & Sales
032085	CORP-External Communications
032086	CORP-Internal Communications
032087	CORP-Corp Social Resp
033025	WE-External Affairs
033525	CE-External Affairs
035025	SE-External Affairs
036525	NE-External Affairs
	External Affairs Communication
032002	CORP-HR Comp/Benefits
032003	CORP-HR Talent Development
032004	CORP-HR Labor Relations
032006	CORP-Business Center HR
032013	CORP-HR Systems & Processes
032018	CORP-Human Resources
032028	CORP-ED Human Resources
032038	CORP-WD Human Resources
033018	WE-Human Resources
033518	CE-Human Resources
034018	CCA-Human Resources
035018	SE-Human Resources
036518	NE-Human Resources
037018	CCP-Human Resources ODI
032012	CORP-HR Strategic Staffing
	Human Resources
032014	CORP-Benefits Service Center
	Benefits Service Center
032015	CORP-Legal
033015	WE-Legal
033515	CE-Legal
035015	SE-Legal

036515	NE-Legal
	Legal
032020	CORP-Corporate Bus Development
033020	WE-Business Development
033520	CE-Business Development
035020	SE-Business Development
	Business Development
032069	CORP-Regulatory
	Regulatory
032060	CORP-Audit
	Audit
032037	CORP-Investor Relations
	Investor Relations
032000	CORP-Balance Sheet
032088	CORP-Business Change
032098	CORP-Non-Departmental Costs
039998	Benefits OH Clearing
	Corp Admin
034000	SC-CSC Alton OH Location
034005	CCA-Administration
034070	CCA-Call Handling
034071	CCA-Billing
034072	CCA-Collections
034073	CCA-Operations & Performance
034074	CCA-Business Services
034075	CCA-Education & Development
	Alton
037000	SC-CSC Pensacola OH Location
037005	CCP-Administration
037070	CCP-Call Handling
037071	CCP-Billing
037072	CCP-Collections
037073	CCP-Operations and Support
037074	CCP-Business Services
037075	CCP-Education & Development
	Pensacola
	Customer Services Center
032023	CORP-Eastern Division
035000	SC-Southeast-PA Location
035001	SE-Production

035002	SE-Network
035003	SE-Customer Relations
035005	SE-Administration
035011	SE-Environmental Mgmt
035014	SE-Engineering
036500	SC-Northeastern Reg Location
036501	NE-Production
036502	NE-Network
036503	NE-Customer Field Services
036505	NE-Administration
036511	NE-Environmental Mgmt
036514	NE-Engineering
036520	NE-Business Development
036591	NE-SAP Conversion
	Eastern Operations
032024	CORP - Western Division
033000	SC-Western Region Location
033001	WE-Production
033002	WE-Network
033003	WE-Customer Relations
033004	WE-Technical Services
033005	WE-Administration
033006	WE-Service Delivery
033011	WE-Environmental Mgmt
033014	WE-Engineering
033028	WE-Asset Planning
033105	Western Division Ops
033500	SC-Central Region Location
033501	CE-Production
033502	CE-Network
033503	CE-Customer Relations
033505	CE-Administration
033511	CE-Environmental Mgmt
033514	CE-Engineering
	Western Operations
032026	Reg Ops Admin
	Regulated Operations Admin
	Regulated Operations Management
	American Water Works Service Company, Inc.

American Water Works Service Company, Inc.
Business Units by Location (Overhead cost pools)
Effective 1/1/09

Busn Unit	BU Description	Division	Div. Desc.
032002	CORP-HR Comp/Benefits	0320	SC-Corporate OH Location
032003	CORP-HR Talent Development	0320	SC-Corporate OH Location
032004	CORP-HR Labor Relations	0320	SC-Corporate OH Location
032006	CORP-Business Center HR	0320	SC-Corporate OH Location
032007	CORP-Finance	0320	SC-Corporate OH Location
032011	CORP-Chief Operating Officer	0320	SC-Corporate OH Location
032012	CORP-HR Strategic Staffing	0320	SC-Corporate OH Location
032013	CORP-HR Systems & Processes	0320	SC-Corporate OH Location
032015	CORP-Legal	0320	SC-Corporate OH Location
032017	CORP-Planning & Reporting	0320	SC-Corporate OH Location
032018	CORP-Human Resources	0320	SC-Corporate OH Location
032019	CORP-Operational Risk	0320	SC-Corporate OH Location
032020	CORP-Corporate Bus Development	0320	SC-Corporate OH Location
032022	CORP-Government Affairs	0320	SC-Corporate OH Location
032023	CORP-Eastern Division Ops	0320	SC-Corporate OH Location
032024	Corp-Western Division Ops	0320	SC-Corporate OH Location
032025	CORP-External Affairs	0320	SC-Corporate OH Location
032026	CORP-Regulated Ops	0320	SC-Corporate OH Location
032027	CORP-Reporting & Compliance	0320	SC-Corporate OH Location
032028	CORP-ED Human Resources	0320	SC-Corporate OH Location
032037	CORP-Investor Relations	0320	SC-Corporate OH Location
032038	CORP-WD Human Resources	0320	SC-Corporate OH Location
032040	CORP-Business Transformation	0320	SC-Corporate OH Location
032050	CORP-Backfill Reg App	0320	SC-Corporate OH Location
032051	CORP-Bsns Trans-Procure To Pay	0320	SC-Corporate OH Location
032052	CORP-Bsns Trans-Recruit To Ret	0320	SC-Corporate OH Location
032053	CORP-Bsns Trans-Record To Rpt	0320	SC-Corporate OH Location
032054	CORP-Bsns Trans-Order To Cash	0320	SC-Corporate OH Location
032055	CORP-Bsns Trans-Plan, Bld, Ret	0320	SC-Corporate OH Location
032056	CORP-Bsns Trans-Ord To Compl	0320	SC-Corporate OH Location
032057	CORP-Treasury	0320	SC-Corporate OH Location
032060	CORP-Audit	0320	SC-Corporate OH Location
032062	CORP-Building Services	0320	SC-Corporate OH Location
032064	CORP-Operational Performance	0320	SC-Corporate OH Location
032065	CORP-Asset Management	0320	SC-Corporate OH Location
032066	CORP-Research & Env Excellence	0320	SC-Corporate OH Location
032068	CORP-Marketing	0320	SC-Corporate OH Location
032069	CORP-Regulatory UFS	0320	SC-Corporate OH Location
032085	CORP-External Communications	0320	SC-Corporate OH Location
032086	CORP-Internal Communications	0320	SC-Corporate OH Location
032087	CORP-Corp Social Resp	0320	SC-Corporate OH Location
032088	CORP-Business Change	0320	SC-Corporate OH Location
032089	CORP-AWE Pass-Thru	0320	SC-Corporate OH Location
032090	CORP-Prop Mgmt Development	0320	SC-Corporate OH Location
032098	CORP-Non-Departmental Costs	0320	SC-Corporate OH Location

032099	CORP-Unallocated Adjustments	0320	SC-Corporate OH Location
036531	NE-Eastern CS & S	0320	SC-Corporate OH Location
039998	Benefits OH Clearing	0320	SC-Corporate OH Location
032009	CORP-Supply Chain-Pass Thru	0325	SC-SSC OH Location
032014	CORP-Benefits Service Center	0325	SC-SSC OH Location
032047	CORP-Income Tax	0325	SC-SSC OH Location
032063	CORP-Building Services Woodcre	0325	SC-SSC OH Location
032084	SSC-Accounts Payable	0325	SC-SSC OH Location
032505	SSC-Administration	0325	SC-SSC OH Location
032570	SSC-General Accounting	0325	SC-SSC OH Location
032571	SSC-Tax	0325	SC-SSC OH Location
032572	SSC-Business Support Services	0325	SC-SSC OH Location
032574	SSC-Rates & Regulation	0325	SC-SSC OH Location
032575	SSC-Cash Management	0325	SC-SSC OH Location
032577	SSC-Utility Plant Accounting	0325	SC-SSC OH Location
032578	SSC-Project Management	0325	SC-SSC OH Location
032579	SSC-Employee Services	0325	SC-SSC OH Location
032580	SSC-AWE	0325	SC-SSC OH Location
032010	CORP-Supply Chain-Sourcing	0326	SC-Oper Srv Center OH Location
032046	CORP-3906 Church Road	0326	SC-Oper Srv Center OH Location
036550	CORP-COE-Engineering	0326	SC-Oper Srv Center OH Location
036551	CORP-COE-Technical Services	0326	SC-Oper Srv Center OH Location
033001	WE-Production	0330	SC-Western Region OH Location
033002	WE-Network	0330	SC-Western Region OH Location
033003	WE-Customer Relations	0330	SC-Western Region OH Location
033004	WE-Technical Services	0330	SC-Western Region OH Location
033005	WE-Administration	0330	SC-Western Region OH Location
033006	WE-Service Delivery	0330	SC-Western Region OH Location
033007	WE-Finance	0330	SC-Western Region OH Location
033010	WE-Supply Chain	0330	SC-Western Region OH Location
033011	WE-Environmental Mgmt	0330	SC-Western Region OH Location
033014	WE-Engineering	0330	SC-Western Region OH Location
033015	WE-Legal	0330	SC-Western Region OH Location
033016	WE-Maintenance	0330	SC-Western Region OH Location
033018	WE-Human Resources	0330	SC-Western Region OH Location
033019	WE-Operational Risk	0330	SC-Western Region OH Location
033020	WE-Business Development	0330	SC-Western Region OH Location
033025	WE-External Affairs	0330	SC-Western Region OH Location
033028	WE-Asset Planning	0330	SC-Western Region OH Location
033501	CE-Production	0335	SC-Central Region OH Location
033502	CE-Network	0335	SC-Central Region OH Location
033503	CE-Customer Relations	0335	SC-Central Region OH Location
033505	CE-Administration	0335	SC-Central Region OH Location
033507	CE-Finance	0335	SC-Central Region OH Location
033510	CE-Supply Chain	0335	SC-Central Region OH Location
033511	CE-Environmental Mgmt	0335	SC-Central Region OH Location
033514	CE-Engineering	0335	SC-Central Region OH Location

033515	CE-Legal	0335	SC-Central Region OH Location
033516	CE-Maintenance	0335	SC-Central Region OH Location
033518	CE-Human Resources	0335	SC-Central Region OH Location
033519	CE-Operational Risk	0335	SC-Central Region OH Location
033520	CE-Business Development	0335	SC-Central Region OH Location
033525	CE-External Affairs	0335	SC-Central Region OH Location
033531	CE-Western CS & S	0335	SC-Central Region OH Location
034005	CCA-Administration	0340	SC-CSC Alton OH Location
034018	CCA-Human Resources	0340	SC-CSC Alton OH Location
034070	CCA-Call Handling	0340	SC-CSC Alton OH Location
034071	CCA-Billing	0340	SC-CSC Alton OH Location
034072	CCA-Collections	0340	SC-CSC Alton OH Location
034073	CCA-Operations & Performance	0340	SC-CSC Alton OH Location
034074	CCA-Business Services	0340	SC-CSC Alton OH Location
034075	CCA-Education & Development	0340	SC-CSC Alton OH Location
034517	BVLAB-Water Quality	0345	SC-Belleville Lab OH Location
032016	CORP-Maintenance Services	0350	SC-Southeast Reg OH Location
035001	SE-Production	0350	SC-Southeast Reg OH Location
035002	SE-Network	0350	SC-Southeast Reg OH Location
035003	SE-Customer Relations	0350	SC-Southeast Reg OH Location
035005	SE-Administration	0350	SC-Southeast Reg OH Location
035007	SE-Finance	0350	SC-Southeast Reg OH Location
035010	SE-Supply Chain	0350	SC-Southeast Reg OH Location
035011	SE-Environmental Mgmt	0350	SC-Southeast Reg OH Location
035014	SE-Engineering	0350	SC-Southeast Reg OH Location
035015	SE-Legal	0350	SC-Southeast Reg OH Location
035016	SE-Maintenance	0350	SC-Southeast Reg OH Location
035018	SE-Human Resources	0350	SC-Southeast Reg OH Location
035019	SE-Operational Risk	0350	SC-Southeast Reg OH Location
035020	SE-Business Development	0350	SC-Southeast Reg OH Location
035025	SE-External Affairs	0350	SC-Southeast Reg OH Location
035031	SE-ITS Client Relations	0350	SC-Southeast Reg OH Location
036501	NE-Production	0365	SC-Northeast Reg OH Location
036505	NE-Administration	0365	SC-Northeast Reg OH Location
036507	NE-Finance	0365	SC-Northeast Reg OH Location
036510	NE-Supply Chain	0365	SC-Northeast Reg OH Location
036515	NE-Legal	0365	SC-Northeast Reg OH Location
036516	NE-Maintenance	0365	SC-Northeast Reg OH Location
036518	NE-Human Resources	0365	SC-Northeast Reg OH Location
036519	NE-Operational Risk	0365	SC-Northeast Reg OH Location
036520	NE-Business Development	0365	SC-Northeast Reg OH Location
036525	NE-External Affairs	0365	SC-Northeast Reg OH Location
036576	NE-Building Services Woodcrest	0365	SC-Northeast Reg OH Location
037005	CCP-Administration	0370	SC-CSC Pensacola OH Location
037070	CCP-Call Handling	0370	SC-CSC Pensacola OH Location
037073	CCP-Operations and Support	0370	SC-CSC Pensacola OH Location

037075	CCP-Education & Development	0370	SC-CSC Pensacola OH Location
032030	CORP-ITS Client Rel Admin	0375	SC-ITS O/H Location
032031	CORP-Service Desk	0375	SC-ITS O/H Location
032032	CORP-ITS-BAD-Core Shared	0375	SC-ITS O/H Location
032033	Chg Ctrl & Desktop Automation	0375	SC-ITS O/H Location
032034	CORP-ITS Appl Adm & Security	0375	SC-ITS O/H Location
032035	CORP-ITS Sec Arch & Strategy	0375	SC-ITS O/H Location
032042	CORP-1000 Voorhees Building	0375	SC-ITS O/H Location
032071	CORP-ITS Admin	0375	SC-ITS O/H Location
032072	CORP-ITS PMO	0375	SC-ITS O/H Location
032073	CORP-ITS Infra/Oper Admin	0375	SC-ITS O/H Location
032074	CORP-ITS Production	0375	SC-ITS O/H Location
032075	CORP-Enterprise Server	0375	SC-ITS O/H Location
032076	CORP-Communications	0375	SC-ITS O/H Location
032077	CORP-ITS Security Operations	0375	SC-ITS O/H Location
032078	CORP-ITS Adm Business Appl Dev	0375	SC-ITS O/H Location
032079	CORP-ITS-BAD-Middle Office App	0375	SC-ITS O/H Location
032080	CORP-ITS-BAD-Back Office Apps	0375	SC-ITS O/H Location
032081	CORP-ITS-BAD-Quality&Methodlgy	0375	SC-ITS O/H Location
032082	Client Relationship Management	0375	SC-ITS O/H Location
032083	CORP-ITS-BAD-Field Svc Apps	0375	SC-ITS O/H Location
032093	CORP-ITS-Architecture	0375	SC-ITS O/H Location

American Water Works Service Company, Inc.
Category Listing
Effective 1/1/09

Labor
Pension
Group Insurance
Insurance
Rent
General Office Expense
Maintenance Expense
Depreciation
Taxes Other Than Income
Interest Expense, net
Other

Service Company Cost Causative Factor Analysis Study
Appendix #5 - Tennessee American Cost Causative Summary
Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods,

					Original Allocation Factors			Cost Causative Allocation			Difference	
	A	B	C	D(A+B+C)	E	F	G (E+F)	H	I	J (H+I)	K (J-G)	L (K/G)
Regulated Companies	Actual 2009	Business Trans Charges *	Non-Reg Charges **	Total Charges Examined	Total Direct	Total Allocated	Total	Total Direct	Total Allocated	Total	Total Causative - Original Difference	%age
Tennessee American	5,201,095	(128,003)	(6,014)	5,067,078	820,284	4,246,794	5,067,078	820,284	4,126,294	4,946,578	(120,501)	-2.38%
Other Regulated Companies	223,153,979	(5,561,091)	(248,151)	217,344,736	33,998,867	183,345,869	217,344,736	33,998,867	183,466,369	217,465,236	120,501	0.06%
Total Regulated	228,355,073	(5,689,095)	(254,165)	222,411,814	34,819,151	187,592,663	222,411,814	34,819,151	187,592,663	222,411,814	0	0.00%
Total Non-Regulated	19,856,914	(1,742)	254,165	20,109,336	15,187,344	4,921,993	20,109,337	15,187,344	4,921,993	20,109,337	-	0.00%
Grand Total	248,211,987	(5,690,837)	-	242,521,151	50,006,494	192,514,656	242,521,151	50,006,494	192,514,656	242,521,151	0	0.00%

* Business Transformation charges were excluded from the study because they represent a large non-recurring cost not assignable to causative factor allocation
** Non-Reg Charges represent overheads from two AWE business units that were distributed to regulated companies. We re-allocated them directly to the non-regulated business (AWE

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APPENDIX 5
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APPENDIX 6
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Service Company Cost Causative Factor Analysis Study
Appendix #6 - Tennessee American Cost Causative Business Unit Detail
Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods)

			Original Allocation			Cost Causative Allocation			Difference	
			A	B	C (A+B)	D	E	F (D+E)	G (F-C)	H (G/C)
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total	Direct	Causative Allocated	Causative Total	Caus - Orig Difference	%age
032000	CORP-Balance Sheet	Residual	-	-	-	-	-	-	-	
032088	CORP-Business Change	Residual	-	2,933	2,933	-	2,893	2,893	(40)	-1.36%
032089	CORP-AWE Pass-Thru	Residual	-	-	-	-	-	-	-	
032098	CORP-Non-Departmental Costs	Residual	(241)	28,503	28,262	(241)	29,728	29,486	1,224	4.33%
Total Admin			(241)	31,436	31,195	(241)	32,621	32,379	1,185	3.80%
032060	CORP-Audit	Residual	113	38,051	38,164	113	37,334	37,447	(717)	-1.88%
Total Audit			113	38,051	38,164	113	37,334	37,447	(717)	-1.88%
032014	CORP-Benefits Service Center	Employees	1,337	28,932	30,269	1,337	25,593	26,930	(3,339)	-11.03%
Total Benefit Svc Ctr			1,337	28,932	30,269	1,337	25,593	26,930	(3,339)	-11.03%
032020	CORP-Corporate Bus Development	50% Customers 50% Revenue	231	27,875	28,106	231	23,335	23,566	(4,540)	-16.15%
033020	WE-Business Development	50% Customers 50% Revenue	-	125	125	-	39	39	(86)	-68.97%
033520	CE-Business Development	50% Customers 50% Revenue	147	342	490	147	419	566	76	15.55%
035020	SE-Business Development	50% Customers 50% Revenue	37,754	5,913	43,666	37,754	5,447	43,200	(466)	-1.07%
036520	NE-Business Development	50% Customers 50% Revenue	-	6	6	-	5	5	(2)	-24.54%
Total Business Development			38,132	34,261	72,394	38,132	29,244	67,376	(5,018)	-6.93%
034005	CCA-Administration	Customers	1,607	65,009	66,617	1,607	64,695	66,302	(314)	-0.47%
034070	CCA-Call Handling	Customers	11,497	235,662	247,159	11,497	235,366	246,863	(296)	-0.12%
034071	CCA-Billing	Customers	1,841	158,913	160,753	1,841	158,591	160,432	(322)	-0.20%
034072	CCA-Collections	Customers	24,566	42,167	66,732	24,566	42,066	66,631	(101)	-0.15%
034073	CCA-Operations & Performance	Customers	5,155	121,596	126,751	5,155	121,244	126,399	(352)	-0.28%
034074	CCA-Business Services	Customers	286	29,618	29,904	286	29,573	29,859	(45)	-0.15%
034075	CCA-Education & Development	Customers	156	27,785	27,941	156	27,762	27,918	(23)	-0.08%
037005	CCP-Administration	Customers	-	24,276	24,276	-	24,221	24,221	(55)	-0.23%
037070	CCP-Call Handling	Customers	-	270,189	270,189	-	270,068	270,068	(121)	-0.04%
037073	CCP-Operations and Support	Customers	-	71,835	71,835	-	71,711	71,711	(125)	-0.17%
037075	CCP-Education & Development	Customers	-	16,080	16,080	-	16,060	16,060	(20)	-0.13%
Total Call Center			45,108	1,063,130	1,108,238	45,108	1,061,355	1,106,463	(1,774)	-0.16%
032022	CORP-Government Affairs	Customers	52	11,314	11,365	52	11,289	11,341	(24)	-0.21%
032025	CORP-External Affairs	Customers	179	20,265	20,445	179	20,055	20,234	(211)	-1.03%
032068	CORP-Marketing	Customers	90	30,545	30,635	90	30,438	30,527	(107)	-0.35%
032085	CORP-External Communications	Customers	63	21,439	21,502	63	21,373	21,436	(66)	-0.31%
032086	CORP-Internal Communications	Employees	26	8,338	8,364	26	7,753	7,779	(585)	-7.00%
032087	CORP-Corp Social Resp	Customers	24	10,584	10,608	24	10,542	10,567	(42)	-0.40%
033025	WE-External Affairs	Customers	-	167	167	-	66	66	(101)	-60.56%
033525	CE-External Affairs	Customers	434	949	1,383	434	1,034	1,468	85	6.16%
035025	SE-External Affairs	Customers	10,189	80,259	90,448	10,189	80,074	90,263	(186)	-0.21%
036525	NE-External Affairs	Customers	12	40	52	12	54	66	14	28.09%
Total External Affairs/Communication			11,069	183,900	194,969	11,069	182,678	193,747	(1,223)	-0.63%
032007	CORP-Finance	Residual	319	50,418	50,737	319	49,608	49,927	(810)	-1.60%
032017	CORP-Planning & Reporting	Residual	483	60,700	61,183	483	59,773	60,255	(927)	-1.52%
032027	CORP-Reporting & Compliance	Residual	100	63,379	63,479	100	62,310	62,410	(1,069)	-1.68%
032047	CORP-Income Tax	Residual	1,053	49,664	50,717	1,053	47,729	48,782	(1,935)	-3.82%
032057	CORP-Treasury	Residual	750	42,221	42,971	750	41,454	42,204	(767)	-1.79%
033007	WE-Finance	Residual	-	3,673	3,673	-	3,180	3,180	(493)	-13.43%
033507	CE-Finance	Residual	1,709	3,938	5,646	1,709	4,315	6,023	377	6.68%
035007	SE-Finance	Residual	259,892	114,649	374,541	259,892	112,497	372,389	(2,153)	-0.57%
036507	NE-Finance	Residual	422	122	544	422	224	646	102	18.84%
037777	CORP-IFRS-Finance	Residual	-	2,298	2,298	-	2,260	2,260	(38)	-1.63%
Total Finance			264,727	391,061	655,788	264,727	383,349	648,076	(7,712)	-1.18%
032002	CORP-HR Comp/Benefits	Employees	160	32,088	32,249	160	29,964	30,125	(2,124)	-6.59%
032003	CORP-HR Talent Development	Employees	113	20,724	20,837	113	19,369	19,482	(1,355)	-6.50%
032004	CORP-HR Labor Relations	Employees	59	8,994	9,053	59	8,445	8,505	(548)	-6.06%
032006	CORP-Business Center HR	Employees	107	19,147	19,254	107	17,894	18,000	(1,253)	-6.51%
032013	CORP-HR Systems & Processes	Employees	88	15,969	16,057	88	14,951	15,039	(1,018)	-6.34%
032018	CORP-Human Resources	Employees	61	29,370	29,431	61	27,143	27,204	(2,227)	-7.57%
032028	CORP-ED Human Resources	Employees	2	29,546	29,547	2	28,433	28,435	(1,113)	-3.77%
032038	CORP-WD Human Resources	Employees	189	11,873	12,062	189	11,348	11,537	(525)	-4.35%
033018	WE-Human Resources	Employees	-	6	6	-	4	4	(1)	-22.06%
033518	CE-Human Resources	Employees	91	745	835	91	995	1,085	250	29.95%
034018	CCA-Human Resources	Employees	150	23,923	24,073	150	22,452	22,602	(1,471)	-6.11%
035018	SE-Human Resources	Employees	1,069	4,374	5,443	1,069	3,810	4,880	(564)	-10.36%
036518	NE-Human Resources	Employees	(1)	15	14	(1)	7	5	(9)	-62.06%
Total Human Resources			2,087	196,773	198,860	2,087	184,815	186,902	(11,958)	-6.01%
032037	CORP-Investor Relations	Residual	85	12,264	12,348	85	12,062	12,146	(202)	-1.64%
Total Investor Relations			85	12,264	12,348	85	12,062	12,146	(202)	-1.64%

Service Company Cost Causative Factor Analysis Study
Appendix #6 - Tennessee American Cost Causative Business Unit Detail
Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods)

			Original Allocation			Cost Causative Allocation			Difference	
			A	B	C (A+B)	D	E	F (D+E)	G (F-C)	H (G/C)
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total	Direct	Causative Allocated	Causative Total	Caus - Orig Difference	%age
032030	CORP-ITS Client Rel Admin	Employees	23	5,244	5,268	23	5,053	5,077	(191)	-3.62%
032031	CORP-Service Desk	Employees	128	28,566	28,693	128	27,713	27,840	(853)	-2.97%
032032	CORP-ITS-BAD-Core Shared	Residual	414	28,469	28,883	414	29,077	29,491	608	2.11%
032033	Chg Ctrl & Desktop Automation	Employees	34	6,356	6,390	34	6,141	6,175	(215)	-3.36%
032034	CORP-ITS Appl Adm & Security	Residual	28	5,267	5,294	28	5,256	5,284	(11)	-0.20%
032035	CORP-ITS Sec Arch & Strategy	Residual	22	4,416	4,438	22	4,483	4,505	67	1.52%
032071	CORP-ITS Admin	Residual	196	34,173	34,369	196	34,258	34,454	85	0.25%
032072	CORP-ITS PMO	Residual	148	52,265	52,413	148	52,430	52,578	165	0.31%
032073	CORP-ITS Infra/Oper Admin	Residual	36	8,962	8,997	36	9,038	9,073	76	0.84%
032074	CORP-ITS Production	Premises	3,115	227,970	231,085	3,115	254,809	257,924	26,839	11.61%
032075	CORP-Enterprise Server	Residual	1,073	108,798	109,871	1,073	112,900	113,973	4,102	3.73%
032076	CORP-Communications	50% Employees & 50% Customers	415	90,536	90,951	415	92,681	93,096	2,145	2.36%
032077	CORP-ITS Security Operations	Residual	81	28,476	28,557	81	28,558	28,639	82	0.29%
032078	CORP-ITS Adm Business Appl Dev	Residual	66	13,393	13,459	66	13,498	13,563	105	0.78%
032079	CORP-ITS-BAD-Middle Office App	Residual	2,266	30,439	32,704	2,266	30,931	33,196	492	1.50%
032080	CORP-ITS-BAD-Back Office Apps	Residual	1,825	43,781	45,606	1,825	45,057	46,882	1,276	2.80%
032081	CORP-ITS-BAD-Quality&Methodlgy	Residual	64	17,241	17,305	64	17,360	17,424	118	0.68%
032082	CORP-ITS-BAD-Customer Facing	Residual	266	30,326	30,592	266	30,341	30,607	14	0.05%
032083	CORP-ITS-BAD-Field Svc Apps	Residual	289	36,468	36,756	289	37,934	38,223	1,467	3.99%
032093	CORP-ITS-Architecture	Residual	94	41,216	41,310	94	41,246	41,340	30	0.07%
033531	CE-Western CS & S	Employees	13,855	34,071	47,926	13,855	31,692	45,548	(2,379)	-4.96%
035031	SE-ITS Client Relations	Employees	4,845	2,320	7,165	4,845	2,008	6,853	(312)	-4.36%
036531	NE-Eastern CS & S	Employees	6,985	10,146	17,131	6,985	9,910	16,895	(236)	-1.38%
Total ITS			36,266	888,899	925,165	36,266	922,374	958,640	33,475	3.62%
034517	BVLAB-Water Quality	Customers	-	122,234	122,234	-	120,504	120,504	(1,730)	-1.42%
Total Laboratory			-	122,234	122,234	-	120,504	120,504	(1,730)	-1.42%
032015	CORP-Legal	33% Cust 33% Empl 33% Residual	709	63,818	64,527	709	62,726	63,434	(1,093)	-1.69%
033015	WE-Legal	33% Cust 33% Empl 33% Residual	-	131	131	-	62	62	(69)	-52.55%
033515	CE-Legal	33% Cust 33% Empl 33% Residual	1,005	2,235	3,239	1,005	2,401	3,406	166	5.14%
035015	SE-Legal	33% Cust 33% Empl 33% Residual	47,123	16,541	63,665	47,123	16,086	63,209	(456)	-0.72%
036515	NE-Legal	33% Cust 33% Empl 33% Residual	19	32	51	19	49	68	17	33.15%
Total Legal			48,855	82,758	131,613	48,855	81,324	130,179	(1,434)	-1.09%
032011	CORP-Chief Operating Officer	Residual	466	39,873	40,339	466	39,310	39,776	(563)	-1.40%
032016	CORP-Maintenance Services	Net Plant	3,123	2,284	5,407	3,123	1,998	5,121	(286)	-5.29%
032019	CORP-Operational Risk	50% Employees & 50% Net Plant	2,064	23,135	25,198	2,064	17,297	19,361	(5,838)	-23.17%
032064	CORP-Operational Performance	Residual	934	18,966	19,901	934	17,222	18,156	(1,745)	-8.77%
032065	CORP-Asset Management	Net Plant	1,619	30,825	32,444	1,619	19,892	21,511	(10,932)	-33.70%
033016	WE-Maintenance	Net Plant	-	1,701	1,701	-	969	969	(732)	-43.05%
033019	WE-Operational Risk	50% Employees & 50% Net Plant	-	69	69	-	27	27	(43)	-61.41%
033516	CE-Maintenance	Net Plant	2,034	7,604	9,637	2,034	5,851	7,884	(1,753)	-18.19%
033519	CE-Operational Risk	50% Employees & 50% Net Plant	6,027	8,705	14,732	6,027	6,509	12,535	(2,197)	-14.91%
035016	SE-Maintenance	Net Plant	76,084	13,953	90,037	76,084	9,919	86,003	(4,034)	-4.48%
035019	SE-Operational Risk	50% Employees & 50% Net Plant	1,096	160	1,256	1,096	163	1,259	3	0.26%
036516	NE-Maintenance	Net Plant	4	394	398	4	251	255	(144)	-36.07%
036519	NE-Operational Risk	50% Employees & 50% Net Plant	21	96	117	21	91	112	(5)	-4.36%
036550	CORP-COE-Engineering	Net Plant	17,175	16,050	33,226	17,175	10,665	27,840	(5,386)	-16.21%
036551	CORP-COE-Technical Services	Net Plant	6,968	18,652	25,620	6,968	12,435	19,403	(6,217)	-24.26%
Total Operations Services			117,616	182,467	300,083	117,616	142,598	260,214	(39,870)	-13.29%
032009	CORP-Supply Chain-Pass Thru	Residual	3	10	13	3	6	9	(3)	-27.61%
032010	CORP-Supply Chain-Sourcing	Residual	3,148	79,465	82,613	3,148	73,198	76,346	(6,266)	-7.58%
033010	WE-Supply Chain	Residual	-	24	24	-	7	7	(17)	-72.24%
033510	CE-Supply Chain	Residual	112	1,058	1,170	112	1,056	1,168	(2)	-0.19%
035010	SE-Supply Chain	Residual	3,538	12,881	16,418	3,538	12,242	15,779	(639)	-3.89%
036510	NE-Supply Chain	Residual	0	40	41	0	35	35	(6)	-13.95%
Total Procurement			6,800	93,478	100,278	6,800	86,544	93,344	(6,934)	-6.91%
032042	CORP-1000 Voorhees Building	Residual	241	13,884	14,125	241	14,922	15,163	1,038	7.35%
032046	CORP-3906 Church Road	Residual	3,415	21,312	24,727	3,415	15,312	18,727	(6,000)	-24.27%
032062	CORP-Building Services	Residual	3,597	179,061	182,658	3,597	175,969	179,566	(3,092)	-1.69%
032063	CORP-Building Services Woodcre	Residual	9,490	57,052	66,542	9,490	45,248	54,738	(11,805)	-17.74%
036576	NE-Building Services Woodcrest	Residual	1	2	3	1	4	5	2	86.68%
Total Property			16,745	271,311	288,055	16,745	251,454	268,199	(19,857)	-6.89%
032023	CORP-Eastern Division Ops	Residual	592	19,835	20,427	592	18,989	19,581	(846)	-4.14%
032024	Corp-Western Division Ops	Residual	(8)	203	195	(8)	204	196	1	0.45%
032026	CORP-Regulated Ops	Residual	351	33,424	33,775	351	32,879	33,230	(544)	-1.61%
032066	CORP-Innov & Env Stewardship	Customers	3,679	45,391	49,070	3,679	39,027	42,706	(6,365)	-12.97%
033001	WE-Production	Residual	-	-	-	-	0	0	0	
033002	WE-Network	Residual	-	0	0	-	1	1	0	600.61%
033003	WE-Customer Relations	Customers	-	111	111	-	37	37	(74)	-66.74%

Service Company Cost Causative Factor Analysis Study
Appendix #6 - Tennessee American Cost Causative Business Unit Detail
Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods)

			Original Allocation			Cost Causative Allocation			Difference	
			A	B	C (A+B)	D	E	F (D+E)	G (F-C)	H (G/C)
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total	Direct	Causative Allocated	Causative Total	Caus - Orig Difference	%age
033004	WE-Technical Services	Residual	-	(0)	(0)	-	(0)	(0)	0	-84.37%
033005	WE-Administration	Residual	-	764	764	-	305	305	(458)	-60.02%
033006	WE-Service Delivery	Residual	-	112	112	-	27	27	(85)	-75.79%
033011	WE-Environmental Mgmt	Residual	-	1	1	-	1	1	(0)	-24.00%
033014	WE-Engineering	Residual	-	459	459	-	342	342	(117)	-25.51%
033028	WE-Asset Planning	Residual	-	0	0	-	0	0	0	709.57%
033501	CE-Production	Residual	(2)	(2)	(4)	(2)	2	(1)	4	-81.80%
033502	CE-Network	Residual	382	837	1,219	382	915	1,297	78	6.37%
033503	CE-Customer Relations	Customers	1,555	3,510	5,065	1,555	3,668	5,222	158	3.11%
033505	CE-Administration	Residual	2,798	6,015	8,813	2,798	6,921	9,719	906	10.28%
033511	CE-Environmental Mgmt	Residual	191	412	603	191	480	670	68	11.22%
033514	CE-Engineering	Residual	743	1,602	2,344	743	1,866	2,609	265	11.30%
035001	SE-Production	Residual	(5)	5	(0)	(5)	7	3	3	-2209.45%
035002	SE-Network	Residual	7,642	3,955	11,598	7,642	3,724	11,366	(232)	-2.00%
035003	SE-Customer Relations	Customers	91,289	42,077	133,367	91,289	41,037	132,326	(1,040)	-0.78%
035005	SE-Administration	Residual	60,161	35,038	95,200	60,161	33,074	93,235	(1,964)	-2.06%
035011	SE-Environmental Mgmt	Residual	(3)	3	(0)	(3)	4	1	2	-1916.96%
035014	SE-Engineering	Residual	3,721	2,174	5,895	3,721	2,071	5,793	(102)	-1.74%
035503	ED-Customer Relations	Customers	16	78,569	78,586	16	78,177	78,194	(392)	-0.50%
036501	NE-Production	Residual	30	52	82	30	107	136	55	67.23%
036502	NE-Network	Residual	-	-	-	-	-	-	-	
036505	NE-Administration	Residual	-	14	14	-	1	1	(13)	-93.37%
Total Regulated Operations			173,133	274,561	447,694	173,133	263,865	436,998	(10,696)	-2.39%
032050	CORP-Backfill Reg App	Residual	0	0	0	0	(0)	0	(0)	-46.88%
032069	CORP-Regulatory UFS	Residual	94	14,990	15,084	94	14,791	14,885	(199)	-1.32%
Total Regulatory Services			94	14,990	15,084	94	14,791	14,885	(199)	-1.32%
032084	SSC-Accounts Payable	# Invoices/Trans	(76)	36,660	36,584	(76)	25,582	25,506	(11,078)	-30.28%
032505	SSC-Administration	Residual	2,360	51,156	53,516	2,360	47,494	49,854	(3,662)	-6.84%
032570	SSC-General Accounting	Residual	34,506	47,533	82,040	34,506	45,363	79,869	(2,170)	-2.65%
032571	SSC-Tax	Residual	762	25,922	26,684	762	24,689	25,451	(1,233)	-4.62%
032572	SSC-Business Support Services	Residual	1,150	26,567	27,717	1,150	24,931	26,082	(1,635)	-5.90%
032574	SSC-Rates & Regulation	Residual	7,011	23,561	30,573	7,011	21,262	28,274	(2,299)	-7.52%
032575	SSC-Cash Operations	Customers	5,916	34,562	40,479	5,916	32,304	38,220	(2,258)	-5.58%
032577	SSC-Utility Plant Accounting	Net Plant	4,335	34,787	39,122	4,335	22,605	26,940	(12,182)	-31.14%
032578	SSC-Project Management	Residual	327	6,422	6,749	327	5,954	6,281	(467)	-6.93%
032579	SSC-Employee Services	Employees	2,067	49,118	51,185	2,067	43,604	45,672	(5,514)	-10.77%
032580	SSC-AWE	Charged 100% to Non Reg	-	-	-	-	-	-	-	
Total Shared Services			58,359	336,288	394,647	58,359	293,789	352,148	(42,499)	-10.77%
Grand Total			820,284	4,246,794	5,067,078	820,284	4,126,294	4,946,578	(120,501)	-2.38%

Service Company Cost Causative Factor Analysis Study

Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Admin	032000	CORP-Balance Sheet	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Admin	032088	CORP-Bus Change	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Admin	032089	CORP-AWE Pass-Thru	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Admin	032098	CORP-Non-Departmental Costs	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Audit	032060	CORP-Audit	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Benefit Svc Ctr	032014	CORP-Benefits Service Center	Employees	HR performs services for employees, therefore the "employee" factor was used.
Business Development	032020	CORP-Corporate Bus Development	50% Customers 50% Revenue	Business Development activity is intended to create economies of scale and growth in the number of customers serviced and by increasing the amount of revenue received, therefore a factor was used that combined equally the "customer" and "revenue" factors.
Business Development	033020	WE-Business Development	50% Customers 50% Revenue	Business Development activity is intended to create economies of scale and growth in the number of customers serviced and by increasing the amount of revenue received, therefore a factor was used that combined equally the "customer" and "revenue" factors.
Business Development	033520	CE-Business Development	50% Customers 50% Revenue	Business Development activity is intended to create economies of scale and growth in the number of customers serviced and by increasing the amount of revenue received, therefore a factor was used that combined equally the "customer" and "revenue" factors.
Business Development	035020	SE-Business Development	50% Customers 50% Revenue	Business Development activity is intended to create economies of scale and growth in the number of customers serviced and by increasing the amount of revenue received, therefore a factor was used that combined equally the "customer" and "revenue" factors.
Business Development	036520	NE-Business Development	50% Customers 50% Revenue	Business Development activity is intended to create economies of scale and growth in the number of customers serviced and by increasing the amount of revenue received, therefore a factor was used that combined equally the "customer" and "revenue" factors.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Business Transformation	032040	CORP-Business Transformation	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Business Transformation	032051	CORP-Procure to Pay	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Business Transformation	032052	CORP-Recruit to Retire	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Business Transformation	032053	CORP - Record to Report	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Business Transformation	032054	CORP - Order to Cash	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Business Transformation	032055	CORP - Plan to Build & Maintain	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Business Transformation	032056	CORP - Service Order to Complete	Remove	Business Transformation project charges were excluded from the study. These charges represented one-time capitalized charges for a comprehensive planning study and were not part of normal operating expenses
Call Center	034005	CCA-Administration	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	034070	CCA-Call Handling	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	034071	CCA-Billing	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	034072	CCA-Collections	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	034073	CCA-Operations & Performance	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	034074	CCA-Business Services	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Call Center	034075	CCA-Education & Development	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	037005	CCP-Administration	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	037070	CCP-Call Handling	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	037073	CCP-Operations and Support	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
Call Center	037075	CCP-Education & Development	Customers	The Customer Service Center exists to provide service to customers, therefore the "customer" factor was used.
External Affairs/Communication	032022	CORP-Government Affairs	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	032025	CORP-External Affairs	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	032068	CORP-Marketing	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	032085	CORP-External Communications	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	032086	CORP-Internal Communications	Employees	The Internal Communications business unit provides services to employees, therefore the "employee" factor was used.
External Affairs/Communication	032087	CORP-Corp Social Responsibility	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	033025	WE-External Affairs	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	033525	CE-External Affairs	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	035025	SE-External Affairs	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.
External Affairs/Communication	036525	NE-External Affairs	Customers	The External Affairs and External Communications business units provide services that are primarily directed toward the education and advisement of customers, therefore the "customer" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Finance	032007	CORP-Accounting	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	032017	CORP-Planning & Reporting	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	032027	CORP-Reporting & Compliance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	032047	CORP-Income Tax	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	032057	CORP-Treasury	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	033007	WE-Finance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	033507	CE-Finance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	035007	SE-Finance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	036507	NE-Finance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Finance	037777	CORP-IFRS-Finance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Human Resources	032002	CORP-HR Comp/Benefits	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	032003	CORP-HR Talent Development	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	032004	CORP-HR Labor Relations	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	032006	CORP-HR Org Development	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	032013	CORP-HR Systems & Processes	Employees	HR performs services for employees, therefore the "employee" factor was used.

Service Company Cost Causative Factor Analysis Study
Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Human Resources	032018	CORP-Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	032028	CORP-ED Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	032038	CORP-WD Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	033018	WE-Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	033518	CE-Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	034018	CCA-Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	035018	SE-Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Human Resources	036518	NE-Human Resources	Employees	HR performs services for employees, therefore the "employee" factor was used.
Investor Relations	032037	CORP-Investor Relations	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032030	CORP-ITS Client Relations Admin	Employees	The ITS Client Relations and Desktop Application business units provide support to employees related to desktop computer applications, telephone, and other employee software or hardware related issues, therefore the "employee" factor was used.
ITS	032031	CORP-ITS Client Relations/Helpdesk	Employees	The ITS Client Relations and Desktop Application business units provide support to employees related to desktop computer applications, telephone, and other employee software or hardware related issues, therefore the "employee" factor was used.
ITS	032032	CORP-ITS Business Development	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032033	CORP-ITS Desktop Administration	Employees	The ITS Client Relations and Desktop Application business units provide support to employees related to desktop computer applications, telephone, and other employee software or hardware related issues, therefore the "employee" factor was used.
ITS	032034	CORP-ITS Appl Adm & Security	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032035	CORP-ITS Sec Arch & Strategy	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
ITS	032071	CORP-ITS Admin	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032072	CORP-ITS PMO	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032073	CORP-ITS Infra/Oper Admin	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032074	CORP-ITS Production	Premises	CORP-ITS Production manages the billing software application. The number of bills produced is primarily driven by the number of customer premises, therefore the "premises" factor was used.
ITS	032075	CORP-ITS Enterprise Servers	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032076	CORP-ITS Network Communications	50% Employees & 50% Customers	This business unit manages and maintains the network capabilities to provide mass communications to both employees and customers, therefore a factor was used that combined equally the "employee" and "customer" factors.
ITS	032077	CORP-ITS Telecom	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032078	CORP-ITS Core Bus Systems Admin	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032079	CORP-ITS Application Development	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032080	CORP-ITS Application Architecture	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032081	CORP-ITS Quality Assurance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032082	CORP-ITS Tech Architecture	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	032083	CORP-ITS Strategy/Governance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
ITS	032093	CORP-ITS-Architecture	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
ITS	033531	CE-Western CS & S	Employees	The ITS Client Relations and Desktop Application business units provide support to employees related to desktop computer applications, telephone, and other employee software or hardware related issues, therefore the "employee" factor was used.
ITS	035031	SE-ITS Client Relations	Employees	The ITS Client Relations and Desktop Application business units provide support to employees related to desktop computer applications, telephone, and other employee software or hardware related issues, therefore the "employee" factor was used.
ITS	036531	NE-Eastern CS & S	Employees	The ITS Client Relations and Desktop Application business units provide support to employees related to desktop computer applications, telephone, and other employee software or hardware related issues, therefore the "employee" factor was used.
Laboratory	034517	BVLAB-Water Quality	Customers	The Belleville Lab performs water quality testing, much of which is determined by the number of customers that are served, therefore the "customer" factor was used.
Legal	032015	CORP-Legal	33% Cust 33% Empl 33% Residual	The Legal business units handle employee-related matters, customer-related matters, and other corporate matters; therefore a factor was used that combined equally the "employee" factor, "customer" factor, and the "residual" factor to allocate the activity costs respectively.
Legal	033015	WE-Legal	33% Cust 33% Empl 33% Residual	The Legal business units handle employee-related matters, customer-related matters, and other corporate matters; therefore a factor was used that combined equally the "employee" factor, "customer" factor, and the "residual" factor to allocate the activity costs respectively.
Legal	033515	CE-Legal	33% Cust 33% Empl 33% Residual	The Legal business units handle employee-related matters, customer-related matters, and other corporate matters; therefore a factor was used that combined equally the "employee" factor, "customer" factor, and the "residual" factor to allocate the activity costs respectively.
Legal	035015	SE-Legal	33% Cust 33% Empl 33% Residual	The Legal business units handle employee-related matters, customer-related matters, and other corporate matters; therefore a factor was used that combined equally the "employee" factor, "customer" factor, and the "residual" factor to allocate the activity costs respectively.
Legal	036515	NE-Legal	33% Cust 33% Empl 33% Residual	The Legal business units handle employee-related matters, customer-related matters, and other corporate matters; therefore a factor was used that combined equally the "employee" factor, "customer" factor, and the "residual" factor to allocate the activity costs respectively.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Operation Services	032011	CORP-Chief Operating Officer	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Operation Services	032016	CORP-Maintenance Services	Net Plant	This business unit manages the maintenance of plant assets, therefore the "net plant" factor was used.
Operation Services	032019	CORP-Operational Risk	50% Employees & 50% Net Plant	This business unit focuses on safeguarding employees and physical facilities, therefore a factor was used that combined equally the "employee" and "net plant" factors.
Operation Services	032064	CORP-Operational Performance	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Operation Services	032065	CORP-Asset Management	Net Plant	This business unit provides planning, strategy, and operational support for maintaining the reliability of plant assets, therefore the "net plant" factor was used.
Operation Services	033016	WE-Maintenance	Net Plant	This business unit manages the maintenance of plant assets, therefore the "net plant" factor was used.
Operation Services	033019	WE-Operational Risk	50% Employees & 50% Net Plant	This business unit focuses on safeguarding employees and physical facilities, therefore a factor was used that combined equally the "employee" and "net plant" factors.
Operation Services	033516	CE-Maintenance	Net Plant	This business unit manages the maintenance of plant assets, therefore the "net plant" factor was used.
Operation Services	033519	CE-Operational Risk	50% Employees & 50% Net Plant	This business unit focuses on safeguarding employees and physical facilities, therefore a factor was used that combined equally the "employee" and "net plant" factors.
Operation Services	035016	SE-Maintenance	Net Plant	This business unit manages the maintenance of plant assets, therefore the "net plant" factor was used.
Operation Services	035019	SE-Operational Risk	50% Employees & 50% Net Plant	This business unit focuses on safeguarding employees and physical facilities, therefore a factor was used that combined equally the "employee" and "net plant" factors.
Operation Services	036516	NE-Maintenance	Net Plant	This business unit manages the maintenance of plant assets, therefore the "net plant" factor was used.
Operation Services	036519	NE-Operational Risk	50% Employees & 50% Net Plant	This business unit focuses on safeguarding employees and physical facilities, therefore a factor was used that combined equally the "employee" and "net plant" factors.
Operation Services	036550	CORP-COE-Engineering	Net Plant	The Corp Center of Engineering Excellence and Engineering Technical Services provide engineering asset design and construction management services, therefore the "net plant" factor was used.
Operation Services	036551	CORP-COE-Technical Services	Net Plant	The Corp Center of Engineering Excellence and Engineering Technical Services provide engineering asset design and construction management services, therefore the "net plant" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Procurement	032009	CORP-Supply Chain-Pass Thru	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Procurement	032010	CORP-Supply Chain-Sourcing	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Procurement	033010	WE-Supply Chain	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Procurement	033510	CE-Supply Chain	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Procurement	035010	SE-Supply Chain	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Procurement	036510	NE-Supply Chain	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Property	032042	CORP-1000 Voorhees Building	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Property	032046	CORP-3906 Church Road	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Property	032062	CORP-Building Services	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Property	032063	CORP-Building Services Woodcrest	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Property	036576	NE-Building Services Woodcrest	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	032023	CORP-Eastern Division Ops	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	032024	CORP-Western Division Ops	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Regulated Operations	032026	CORP-Regulated Ops	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	032066	CORP-Innovation & Technology	Customers	This business unit performs water quality research, working in coordination with the Belleville Lab which performs water quality testing, much of which is determined by the number of customers that are served, therefore the "customer" factor was used.
Regulated Operations	033001	WE-Production	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033002	WE-Network	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033003	WE-Customer Relations	Customers	This business unit works in coordination with the national Customer Service Center to provide service to customers, therefore the "customer" factor was used.
Regulated Operations	033004	WE-Technical Services	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033005	WE-Administration	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033006	WE-Service Delivery	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033011	WE-Environmental Mgmt	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033014	WE-Engineering	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033028	WE-Asset Planning	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033501	CE-Production	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033502	CE-Network	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Regulated Operations	033503	CE-Customer Relations	Customers	This business unit works in coordination with the national Customer Service Center to provide service to customers, therefore the "customer" factor was used.
Regulated Operations	033505	CE-Administration	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033511	CE-Environmental Mgmt	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	033514	CE-Engineering	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	035001	SE-Production	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	035002	SE-Network	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	035003	SE-Customer Relations	Customers	This business unit works in coordination with the national Customer Service Center to provide service to customers, therefore the "customer" factor was used.
Regulated Operations	035005	SE-Administration	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	035011	SE-Environmental Mgmt	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	035014	SE-Engineering	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	035503	ED-Customer Relations	Customers	This business unit works in coordination with the national Customer Service Center to provide service to customers, therefore the "customer" factor was used.
Regulated Operations	036501	NE-Production	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulated Operations	036502	NE-Network	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.

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Appendix #7 - Service Company Business Unit Cost Causative Factor Allocation Schedule

Function	BU#	Business Unit Description	Allocation Factor	Allocation Reason
Regulated Operations	036505	NE-Administration	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulatory Services	032050	CORP-Backfill Reg App	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Regulatory Services	032069	CORP-Regulatory	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032084	SSC-Accounts Payable	# Invoices/Trans	SSC-P2P is responsible for paying vendor invoices, therefore the "invoice" factor was used.
Shared Services	032505	SSC-Administration	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032570	SSC-General Accounting	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032571	SSC-Tax	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032572	SSC-Business Support Services	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032574	SSC-Rates & Regulation	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032575	SSC-Cash Operations	Customers	Cash Management is responsible for resolving customer payment matters, therefore the "customer" factor was used.
Shared Services	032577	SSC-Utility Plant Accounting	Net Plant	SSC-Fixed Assets is responsible for accounting for the plant assets, therefore the "net plant" factor was used.
Shared Services	032578	SSC-Project Management	Residual	A factor meeting the study criteria and having a clear relationship between this business unit and a causative factor could not be determined, therefore a "residual" factor was used.
Shared Services	032579	SSC-Employee Services	Employees	SSC Employee Services is responsible for payments to employees for labor and benefits, therefore the "employee" factor was used.
Shared Services	032580	SSC-AWE	Charged 100% to Non Reg	SSC-AWE is responsible for the general accounting matters for the non-regulated business. All of its costs were allocated to the non-regulated business (AWE) in the study.

Service Company Cost Causative Factor Analysis Study

Appendix #8 - Total Service Company Cost Causative Business Unit Detail

Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods,

			Original Allocation		
			A	*B*	*C (A+B)*
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total
032000	CORP-Balance Sheet	Residual	-	-	-
032088	CORP-Business Change	Residual	-	130,270	130,270
032089	CORP-AWE Pass-Thru	Residual	-	-	-
032098	CORP-Non-Departmental Costs	Residual	(5,943)	1,321,296	1,315,353
Total Admin			**(5,943)**	**1,451,566**	**1,445,623**
032060	CORP-Audit	Residual	10,193	1,647,307	1,657,500
Total Audit			**10,193**	**1,647,307**	**1,657,500**
032014	CORP-Benefits Service Center	Employees	43,755	1,286,557	1,330,312
Total Benefit Svc Ctr			**43,755**	**1,286,557**	**1,330,312**
032020	CORP-Corporate Bus Development	50% Customers 50% Revenue	20,381	1,172,811	1,193,193
033020	WE-Business Development	50% Customers 50% Revenue	152,986	67,405	220,391
033520	CE-Business Development	50% Customers 50% Revenue	645,748	83,655	729,403
035020	SE-Business Development	50% Customers 50% Revenue	483,468	65,622	549,090
036520	NE-Business Development	50% Customers 50% Revenue	2	283	284
Total Business Development			**1,302,585**	**1,389,775**	**2,692,361**
034005	CCA-Administration	Customers	4,320	2,862,381	2,866,701
034070	CCA-Call Handling	Customers	8,315	10,280,383	10,288,698
034071	CCA-Billing	Customers	5,820	7,026,876	7,032,696
034072	CCA-Collections	Customers	948,022	1,863,162	2,811,184
034073	CCA-Operations & Performance	Customers	54,559	5,369,145	5,423,703
034074	CCA-Business Services	Customers	917	1,310,626	1,311,543
034075	CCA-Education & Development	Customers	10,593	1,230,970	1,241,564
037005	CCP-Administration	Customers	-	1,074,665	1,074,665
037070	CCP-Call Handling	Customers	-	11,938,074	11,938,074
037073	CCP-Operations and Support	Customers	-	3,173,850	3,173,850
037075	CCP-Education & Development	Customers	-	711,952	711,952
Total Call Center			**1,032,546**	**46,842,083**	**47,874,629**
032022	CORP-Government Affairs	Customers	3,815	489,756	493,571
032025	CORP-External Affairs	Customers	15,083	841,977	857,060
032068	CORP-Marketing	Customers	7,439	1,329,117	1,336,555
032085	CORP-External Communications	Customers	4,607	935,436	940,042
032086	CORP-Internal Communications	Employees	1,973	363,315	365,287
032087	CORP-Corp Social Resp	Customers	2,209	470,677	472,886
033025	WE-External Affairs	Customers	240,383	596,128	836,511
033525	CE-External Affairs	Customers	514,192	830,421	1,344,613
035025	SE-External Affairs	Customers	105,413	491,154	596,567
036525	NE-External Affairs	Customers	36,698	285,190	321,888
Total External Affairs/Communication			**931,811**	**6,633,170**	**7,564,980**
032007	CORP-Finance	Residual	25,518	2,144,268	2,169,786
032017	CORP-Planning & Reporting	Residual	40,333	2,575,615	2,615,948
032027	CORP-Reporting & Compliance	Residual	7,622	2,777,612	2,785,234
032047	CORP-Income Tax	Residual	55,108	2,209,332	2,264,440
032057	CORP-Treasury	Residual	100,951	1,780,731	1,881,682

Service Company Cost Causative Factor Analysis Study
Appendix #8 - Total Service Company Cost Causative Business Unit Detail
Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods,

			Original Allocation		
			A	*B*	*C (A+B)*
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total
033007	WE-Finance	Residual	1,488,943	795,328	2,284,271
033507	CE-Finance	Residual	2,341,260	2,069,651	4,410,910
035007	SE-Finance	Residual	2,618,260	1,487,894	4,106,154
036507	NE-Finance	Residual	1,053,459	1,162,273	2,215,732
037777	CORP-IFRS-Finance	Residual	-	101,776	101,776
Total Finance			**7,731,453**	**17,104,480**	**24,835,933**
032002	CORP-HR Comp/Benefits	Employees	17,250	1,378,133	1,395,382
032003	CORP-HR Talent Development	Employees	10,024	889,103	899,127
032004	CORP-HR Labor Relations	Employees	3,940	385,687	389,627
032006	CORP-Business Center HR	Employees	9,375	816,296	825,671
032013	CORP-HR Systems & Processes	Employees	6,772	682,724	689,496
032018	CORP-Human Resources	Employees	4,768	1,247,693	1,252,461
032028	CORP-ED Human Resources	Employees	93,079	405,141	498,219
032038	CORP-WD Human Resources	Employees	609,426	1,157,954	1,767,380
033018	WE-Human Resources	Employees	102,088	125,589	227,677
033518	CE-Human Resources	Employees	181,914	570,371	752,285
034018	CCA-Human Resources	Employees	465	1,062,479	1,062,944
035018	SE-Human Resources	Employees	8,932	69,277	78,209
036518	NE-Human Resources	Employees	839	15,536	16,374
Total Human Resources			**1,048,871**	**8,805,981**	**9,854,853**
032037	CORP-Investor Relations	Residual	7,000	518,485	525,486
Total Investor Relations			**7,000**	**518,485**	**525,486**
032030	CORP-ITS Client Rel Admin	Employees	1,484	233,613	235,097
032031	CORP-Service Desk	Employees	9,108	1,271,642	1,280,750
032032	CORP-ITS-BAD-Core Shared	Residual	41,351	1,265,150	1,306,501
032033	Chg Ctrl & Desktop Automation	Employees	1,945	282,475	284,420
032034	CORP-ITS Appl Adm & Security	Residual	753	234,071	234,824
032035	CORP-ITS Sec Arch & Strategy	Residual	1,452	196,234	197,687
032071	CORP-ITS Admin	Residual	7,862	1,519,883	1,527,745
032072	CORP-ITS PMO	Residual	14,352	2,322,767	2,337,119
032073	CORP-ITS Infra/Oper Admin	Residual	2,300	397,772	400,072
032074	CORP-ITS Production	Premises	234,888	10,128,259	10,363,147
032075	CORP-Enterprise Server	Residual	66,968	4,834,613	4,901,580
032076	CORP-Communications	50% Employees & 50% Customers	39,637	4,055,851	4,095,489
032077	CORP-ITS Security Operations	Residual	5,407	1,266,171	1,271,578
032078	CORP-ITS Adm Business Appl Dev	Residual	5,625	595,205	600,829
032079	CORP-ITS-BAD-Middle Office App	Residual	162,358	1,349,976	1,512,334
032080	CORP-ITS-BAD-Back Office Apps	Residual	44,890	1,945,751	1,990,641
032081	CORP-ITS-BAD-Quality&Methodlgy	Residual	8,085	766,218	774,303
032082	CORP-ITS-BAD-Customer Facing	Residual	32,804	1,347,825	1,380,629
032083	CORP-ITS-BAD-Field Svc Apps	Residual	34,264	1,620,404	1,654,668
032093	CORP-ITS-Architecture	Residual	9,483	1,831,736	1,841,220
033531	CE-Western CS & S	Employees	1,216,040	2,219,841	3,435,880
035031	SE-ITS Client Relations	Employees	61,741	22,644	84,386
036531	NE-Eastern CS & S	Employees	110,520	386,328	496,848
Total ITS			**2,113,318**	**40,094,429**	**42,207,747**

Service Company Cost Causative Factor Analysis Study
Appendix #8 - Total Service Company Cost Causative Business Unit Detail
Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods,

			Original Allocation		
			A	*B*	*C (A+B)*
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total
034517	BVLAB-Water Quality	Customers	-	5,294,252	5,294,252
Total Laboratory			**-**	**5,294,252**	**5,294,252**
032015	CORP-Legal	33% Cust 33% Empl 33% Residual	66,542	2,687,056	2,753,599
033015	WE-Legal	33% Cust 33% Empl 33% Residual	687,289	350,739	1,038,028
033515	CE-Legal	33% Cust 33% Empl 33% Residual	613,141	1,540,670	2,153,811
035015	SE-Legal	33% Cust 33% Empl 33% Residual	855,440	201,764	1,057,205
036515	NE-Legal	33% Cust 33% Empl 33% Residual	397,271	169,975	567,246
Total Legal			**2,619,683**	**4,950,205**	**7,569,888**
032011	CORP-Chief Operating Officer	Residual	35,703	1,642,804	1,678,507
032016	CORP-Maintenance Services	Net Plant	39,067	40,488	79,555
032019	CORP-Operational Risk	50% Employees & 50% Net Plant	197,811	1,005,193	1,203,004
032064	CORP-Operational Performance	Residual	131,425	832,444	963,869
032065	CORP-Asset Management	Net Plant	423,379	1,363,316	1,786,694
033016	WE-Maintenance	Net Plant	222,726	328,292	551,018
033019	WE-Operational Risk	50% Employees & 50% Net Plant	74,881	270,108	344,989
033516	CE-Maintenance	Net Plant	683,325	588,020	1,271,346
033519	CE-Operational Risk	50% Employees & 50% Net Plant	532,565	596,277	1,128,842
035016	SE-Maintenance	Net Plant	290,513	431,897	722,410
035019	SE-Operational Risk	50% Employees & 50% Net Plant	23,868	1,696	25,564
036516	NE-Maintenance	Net Plant	50,418	71,476	121,894
036519	NE-Operational Risk	50% Employees & 50% Net Plant	126,157	279,079	405,237
036550	CORP-COE-Engineering	Net Plant	731,916	715,817	1,447,732
036551	CORP-COE-Technical Services	Net Plant	1,018,585	828,864	1,847,449
Total Operations Services			**4,582,339**	**8,995,772**	**13,578,110**
032009	CORP-Supply Chain-Pass Thru	Residual	285	385	669
032010	CORP-Supply Chain-Sourcing	Residual	253,399	3,380,352	3,633,751
033010	WE-Supply Chain	Residual	22,384	195,865	218,249
033510	CE-Supply Chain	Residual	88,732	195,210	283,942
035010	SE-Supply Chain	Residual	60,839	143,858	204,697
036510	NE-Supply Chain	Residual	195	2,208	2,403
Total Procurement			**425,834**	**3,917,877**	**4,343,711**
032042	CORP-1000 Voorhees Building	Residual	15,340	616,788	632,127
032046	CORP-3906 Church Road	Residual	267,553	929,376	1,196,929
032062	CORP-Building Services	Residual	322,623	6,776,069	7,098,692
032063	CORP-Building Services Woodcre	Residual	301,707	2,551,301	2,853,008
036576	NE-Building Services Woodcrest	Residual	12,738	32,250	44,988
Total Property			**919,961**	**10,905,784**	**11,825,745**
032023	CORP-Eastern Division Ops	Residual	283,560	374,552	658,113
032024	Corp-Western Division Ops	Residual	561	7,864	8,425
032026	CORP-Regulated Ops	Residual	27,339	1,382,402	1,409,741
032066	CORP-Innov & Env Stewardship	Customers	410,802	2,051,135	2,461,937
033001	WE-Production	Residual	(25)	26	1
033002	WE-Network	Residual	(698)	735	37

Service Company Cost Causative Factor Analysis Study

Appendix #8 - Total Service Company Cost Causative Business Unit Detail

Adjusted 2009 Actual Service Company Charges (Original and Cost Causative Allocation Methods,

			Original Allocation		
			A	*B*	*C (A+B)*
BU#	Business Unit Description	Causative Designation	Direct	Original Allocated	Original Total
033003	WE-Customer Relations	Customers	284,930	110,164	395,094
033004	WE-Technical Services	Residual	2	(2)	(0)
033005	WE-Administration	Residual	819,365	442,260	1,261,625
033006	WE-Service Delivery	Residual	79,206	328,931	408,136
033011	WE-Environmental Mgmt	Residual	24,226	3,869	28,095
033014	WE-Engineering	Residual	423,600	104,167	527,767
033028	WE-Asset Planning	Residual	(403)	425	21
033501	CE-Production	Residual	444	1,243	1,687
033502	CE-Network	Residual	682,110	276,035	958,145
033503	CE-Customer Relations	Customers	520,378	2,902,514	3,422,893
033505	CE-Administration	Residual	1,708,364	1,431,366	3,139,730
033511	CE-Environmental Mgmt	Residual	375,355	95,083	470,437
033514	CE-Engineering	Residual	1,452,798	312,034	1,764,832
035001	SE-Production	Residual	(78)	82	4
035002	SE-Network	Residual	494,873	40,982	535,855
035003	SE-Customer Relations	Customers	1,416,760	508,542	1,925,302
035005	SE-Administration	Residual	872,337	373,451	1,245,788
035011	SE-Environmental Mgmt	Residual	(45)	47	2
035014	SE-Engineering	Residual	162,126	24,569	186,695
035503	ED-Customer Relations	Customers	7,206	972,726	979,932
036501	NE-Production	Residual	84,387	173,324	257,710
036502	NE-Network	Residual	-	(0)	(0)
036505	NE-Administration	Residual	(494)	1,528	1,034
Total Regulated Operations			**10,128,985**	**11,920,052**	**22,049,037**
032050	CORP-Backfill Reg App	Residual	(1)	(1)	(2)
032069	CORP-Regulatory UFS	Residual	6,502	642,911	649,414
Total Regulatory Services			**6,502**	**642,910**	**649,412**
032084	SSC-Accounts Payable	# Invoices/Trans	(76,953)	1,632,196	1,555,244
032505	SSC-Administration	Residual	93,250	2,278,290	2,371,541
032570	SSC-General Accounting	Residual	762,727	2,132,245	2,894,972
032571	SSC-Tax	Residual	27,828	1,153,442	1,181,270
032572	SSC-Business Support Services	Residual	107,252	1,138,273	1,245,525
032574	SSC-Rates & Regulation	Residual	724,169	1,050,093	1,774,261
032575	SSC-Cash Operations	Customers	117,397	1,538,854	1,656,252
032577	SSC-Utility Plant Accounting	Net Plant	69,588	1,718,741	1,788,329
032578	SSC-Project Management	Residual	10,642	285,938	296,580
032579	SSC-Employee Services	Employees	84,357	2,263,906	2,348,263
032580	SSC-AWE	Charged 100% to Non Reg	-	-	-
Total Shared Services			**1,920,258**	**15,191,979**	**17,112,236**
Grand Total			**34,819,151**	**187,592,663**	**222,411,814**

Factor Breakdown	Business Units		Dollars	
Causative Allocated	77	50%	$ 114,021,979	61%
Residual	76	50%	$ 73,570,684	39%
Total	**153**	**100%**	**$ 187,592,663**	**100%**

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing has been served via U.S. Mail, overnight delivery and/or electronic mail, on this the 28th day of December, 2010, upon the following:

Ryan L. McGehee, Esq.
OFFICE OF THE ATTORNEY GENERAL,
CONSUMER ADVOCATE AND PROTECTION DIVISION
425 5th Avenue North, 2nd Floor
Nashville, TN 37243
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J. Richard Collier, Esq.
Kelly Cashman-Grams, Esq.
TENNESSEE REGULATORY AUTHORITY
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AMERICAN WATER

Title: **Tax Sharing Policy**

Functional Area: **Corporate Tax**

Policy Number: **AW Policy Template.doc**

SCOPE

This policy applies to American Water Works Company, Inc. ("Parent") and its Subsidiaries (together "American Water" or the "Company") as members of an "Affiliated Group" that files a U.S. consolidated income tax return and in certain states they file a combined, consolidated or unitary return ("Combined Filing").

To the extent its members were members of another Affiliated Group prior to the one existing as of 2007 ("prior Affiliated Group") and the Parent of such Prior Affiliated Group is a member of the Affiliated Group, the policy will apply to the Parent and other members of the Prior Affiliated Group as required to compute any allocation not covered by any Tax Sharing Agreement it had in place for previous taxable year.

POLICY STATEMENT

Business Objective: The objective of this policy is to establish a method for allocating consolidated or combined tax liabilities of the Affiliated Group among its members, for reimbursing the Parent for payment of such liability, for compensating any party for use of its losses or tax credits, and provide for the allocation and payment of any addition to tax, refund arising from a carry back of losses, or tax credits from subsequent tax year. The consolidated or combined tax liability for a taxable period shall include the estimated tax installments due for such taxable period.

Section:

1. Each Subsidiary shall be required to pay to Parent an amount equal to the federal income tax liability that would have been payable by the Subsidiary for such year if it had filed a separate income tax return for such year and all prior years. In computing separate return tax liability, no account shall be taken of any deduction, loss or credit of any member to the extent that such member has previously received payment or to any lower tax rate available to the Subsidiary.

2. The Parent will compensate each Subsidiary for any tax benefits (e.g., losses, tax credits, etc.) computed using the Percentage Method. The compensation will be limited to the reduction in federal income tax that the Subsidiaries with taxable income achieved. Loss companies will be compensated in full unless the sum of separate taxable losses exceeds the sum of separate taxable incomes, in which case compensation will be prorated based on the ratio that the separate taxable loss bears to the sum of all taxable losses, multiplied against the sum of taxable incomes.

3. Parent shall calculate each member's federal income tax payable on a separate company basis for the purposes of determining any payment due under Section 1 in a manner consistent with the tax elections, methods of accounting and other positions taken on the consolidated federal income tax return. Parent shall additionally determine the extent of any compensation payable to a Subsidiary under Section 2.

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4. Federal income tax payable by each member calculated in accordance with Sections 1 and 2 inclusive (above) represents federal income tax computed on a regular basis. The amount of consolidated Alternative Minimum Tax ("AMT") allocated to a member is determined by multiplying the consolidated AMT by a fraction, the numerator of which is the separate adjusted AMT of the member for the year, and the denominator of which is the sum of each member's separate adjusted AMT for the year. The separate adjusted AMT of a member for a consolidated return year for this purpose is the excess (if any) of: (1) The consolidated AMT for the year; over (2) The consolidated AMT for the year, computed by excluding the member's items of income, gain, deduction, and loss, and the member's credits. If, in computing a member's separate adjusted AMT, there is no consolidated AMT when computed without that member's items, the AMT allocation must be increased by the excess (if any) of the consolidated regular tax computed without the member's items, over consolidated Tentative Minimum Tax ("TMT") computed without the member's items.

5. The amount of the consolidated Minimum Tax Credit ("MTC") allocated to a member is determined by reducing a member's allocable share of the consolidated adjusted net minimum tax by any amount allowed in a subsequent consolidated return year as a consolidated MTC. The member's allocable share of consolidated adjusted net minimum tax for a year that is allowable as a consolidated MTC in a subsequent taxable year is determined by multiplying the consolidated adjusted net minimum tax for the year allowable as a consolidated MTC by a fraction, the numerator of which is the member's allocable share of that consolidated adjusted net minimum tax and the denominator of which is the total amount of that consolidated adjusted net minimum tax.

6. All state and local income and franchise tax liabilities will be computed on a separate company basis with the exception of those states where the Affiliated Group files a combined, consolidated or unitary return ("Combined Filing"). If there is a Combined Filing or there are consolidated additional taxes then the tax liabilities will be allocated following the same method(s) covered by this policy, unless their use is not reasonable due to either the method of computing the tax or it is not appropriate for purposes of financial reporting for regulatory purposes.

7. If the consolidated or combined tax liability is adjusted for any taxable period, whether by means of an amended return, claim for refund, after a tax audit, or otherwise, the liability of each member shall be recomputed to give effect to such adjustments. In the case of a refund, the Parent shall make payment to each Subsidiary for its share of the refund, and in the case of an increase in tax liability; each Subsidiary shall pay to the Parent its allocable share of such increased tax liability. To the extent the adjustment results in interest and/or penalties being imposed, they will also be allocated in accordance with Sections 1 and 2 above. The interest or penalty will be computed using the effective rate actually applied to the adjustment. The differences in rates applied to payments and refunds by the Internal Revenue Service or other taxing jurisdiction will be ignored for this purpose.

8. The Parent will collect payments due and make payments to Subsidiaries by the use of withdrawals and deposits directly from each Subsidiaries bank account or by adjusting balances due to or from members of the Affiliated Group. Any amounts paid by a Subsidiary on account of a separate return or separate estimated tax payments that are

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credited against the consolidated tax liability of the Affiliated Group shall be included in determining the payments due from such subsidiary. Any overpayment of estimated tax should be refunded to the subsidiary. Parent will have the sole responsibility of making any required payments to the Internal Revenue Service or state in satisfaction of the consolidated or combined income tax liability of the Affiliated Group for each fiscal year.

9. If part or all of an unused loss or tax credit is allocated to a member of the Affiliated Group and is carried back or carried forward to a year in which such member filed a separate return or a consolidated return with a Prior Affiliated Group, any refund or reduction in tax liability arising from the carry back or carryover shall be retained by such member. Notwithstanding the above, only the Parent shall determine whether an election shall be made not to carry back part or all of a Consolidated Net Operating Loss ("CNOL") for any tax year.

10. In the event that a member is to leave the group through a sale of its stock, any outstanding intercompany amount receivable or payable relating to federal income taxes will be adjusted to reflect that member's economic tax position as reflected under federal tax rules (e.g., if a departing member would be allocated tax losses under the tax rules which would leave with that member, then to the extent that the departing member has been paid either in cash or through the creation of a receivable for those losses, such prior settlement will be reversed).

11. If any party ceases to be a member of the same affiliated group, or if the Affiliated Group to which the Parent and Subsidiaries belong elects not to file a consolidated federal return for any taxable year, this policy shall continue to be effective with respect to any period during the tax year in which termination occurred for which the income of the Subsidiaries are includable in a consolidated return.

MONITORING

Corporate Tax Department is responsible for compliance monitoring, implementation, calculation, and revisions to this policy.

REPORTING/METRICS

Tax Sharing adjustments will be calculated twice a year unless cash flow needs require additional adjustments not to exceed 4 times a year. The Corporate Tax Department will monitor the needs on a quarterly basis. An increase in the frequency will be determined by the Chief Financial Officer.

CONSEQUENCE OF NON-COMPLIANCE

Any employee who violates or circumvents this policy may be subject to disciplinary action up to and including termination

WAIVER

Any deviation or waiver from or exception to this policy requires the prior, written approval of the Senior Vice President and Chief Financial Officer, or his or her designee

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REFERENCES

None

DEFINITIONS

Percentage Method: Method used to determine the amount of tax benefits each subsidiary will receive, based on each subsidiary's portion of taxable income.

Alternative Minimum Tax ("AMT"): A tax calculation that adds certain tax preference items back into adjusted gross income.

Tentative Minimum Tax ("TMT"): Tentative minimum tax is the AMT rate of tax multiplied by alternative minimum taxable income, less the AMT foreign tax credit.

Minimum Tax Credit ("MTC"): Adjusted net minimum tax imposed for all prior taxable years.

REVIEW/UPDATE

This policy will be reviewed and revised as necessary, not to exceed 3 year intervals.

Approved by: American Water Board or Functional Executive(s)

Original Adopted: _____

Revised Adopted: N/A

Date of Last Review: N/A

Effective Date: _____

Prepared By: Corporate Tax Department

Disclaimer

American Water reserves the right to change, revise or discontinue this Policy for any reason whatsoever. No employee, manager or other agent of American Water, other than the Service Company Board (and, if applicable, the executive having authority to approve this policy) has the authority to enter into any agreement contrary to this Policy.

This policy is not intended to create any contractual rights or duties and will be applied at the Company's sole discretion.

Employment with the Company is "at-will". That means that either you or the Company can terminate employment at any time, for any reason or no reason at all, with or without cause or notice.

Neither this policy nor any oral statement will create a right of continued employment. Any employment contract must be in writing and must be signed by the President of American Water, or his or her designee.

This Policy supersedes and voids all previous policies and practices, which may be inconsistent in any way with that stated herein.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Linda Bridwell

Other Participating Employees: SSC Rates

Question:

74. Please ***Identify*** and provide a copy of all management audits completed since January 1, 2010, including any directed by the TRA or any other state regulatory agency, performed by or for ***TAWC***, ***AWWSC***, ***AWWC*** or any subsidiary or affiliate of ***AWWC*** other than the ***Schumaker Report.***

Response:

Other than the Schumaker Report for TAW filed in Docket 09-00086 and 10-00189, there have not been any other completed management audits for TAWC or any affiliate, or the Service Company since January 1, 2010.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Linda C. Bridwell

Other Participating Employees: SSC Rates, AWWSC

Question:

75. Provide all ***Documents*** that constitute, relate to, or refer to the terms of any contracts (including all attachments and amendments thereto) in effect at any time since January 1, 2006 between ***TAWC*** and ***AWWC***, ***AWWSC***, ***AWR***, ***AWCC***, or any subsidiary or affiliate of any of them.

Response:

Please refer to the attachment.

FINANCIAL SERVICES AGREEMENT

THIS AGREEMENT, dated as of June 15, 2000, by and between Tennessee-American Water Company (the "Company") and American Water Capital Corp. ("AWCC").

BACKGROUND

The Company currently performs its own financial services.

However, the Company has determined that it can obtain these services more efficiently through the consolidation of certain necessary management and staff functions with those performed for other entities that may enter into agreement with AWCC substantially similar to this one ("Co-Participants").

AWCC is dedicated to performing such consolidated functions.

Accordingly, the parties have determined to enter into this Agreement for the provision of financial services by AWCC to the Company and for the proper determination and allocation of the costs of providing such services.

Therefore, the parties agree as follows:

AGREEMENT

1. Services. AWCC will provide, either directly or through arrangements with third parties for the benefit of the Company, such financial services as the Company and AWCC may from time to time agree, including but not limited to those more fully described in Appendix I attached to this Agreement.

2. Costs. In consideration of the provision of the services contemplated by paragraph 1, the Company agrees to pay AWCC a portion of the costs and appropriate overhead incurred by AWCC in providing those services, as follows. The costs incurred by AWCC in connection with its bank credit lines and short-term public borrowings will be divided among the Co-Participants in proportion to the maximum principal amount that each Co-Participant requests be made available to it during the course of a year. The costs incurred by AWCC in connection with each long-term borrowing by AWCC will be divided among each Co-Participant in proportion to the principal amount of that borrowing that is loaned to that Co-Participant. AWCC's overhead will be allocated among the Co-Participants in the same proportion as each Co-Participant's long-term and maximum, requested short-term borrowings and investments in a calendar year bear to all of the long and maximum short-term borrowings and investments by all Co-Participants during the same year.

3. Statements. AWCC will prepare and deliver to the Company monthly statements of the services provided by AWCC and amounts payable to AWCC, giving effect to

all the provisions of this Agreement. The Company shall pay the net amount shown on its statement within thirty (30) days after the billing date.

4. Inspection. Upon reasonable notice, AWCC will make available to the Company for its inspection AWCC's books, records, bills, accounts and any other documents which describe or support the costs allocated to the Company under this Agreement.

5. Obligations Not Joint. AWCC and the Company expressly agree: (a) that the obligations of the Company and each Co-Participant to AWCC are several and not joint; (b) that the Company will not be responsible to any Co-Participant, to AWCC or to any assignee or creditor of AWCC for any payment in excess of payments due by the Company to AWCC under this Agreement or a Note in the form attached to this Agreement; and (c) that no Co-Participant will be responsible to the Company, to any other Co-Participant, to AWCC or to any assignee or creditor of AWCC for any payment in excess of payments due by that Co-Participant to AWCC under any agreement substantially similar to this Agreement or under any Note attached to that other agreement. AWCC covenants and agrees that it will require, as a condition to its entering into any such other agreement with a Co-Participant, that such other agreement contains the same provision as that contained in the immediately preceding sentence.

6. Notes. The Company's borrowings under this Agreement will be evidenced by one or more promissory notes in the form of Exhibit A or Exhibit B attached to this Agreement.

7. Non-Exclusivity. Nothing in this Agreement prohibits or restricts the Company from borrowing from third parties, or obtaining services described in this Agreement from third parties, whenever and on whatever terms it deems appropriate.

8. Effectiveness. This Agreement shall be effective as of June 15, 2000, provided that, if prior approval by the regulatory commission of any jurisdiction is required before this Agreement may become effective as to the Company, or before AWCC may provide a particular service hereunder to the Company, this Agreement shall not be effective as to the Company or as to that service, as the case may be, unless and until the required approval has been obtained. Unless and until this Agreement becomes effective as to the Company in whole or in part, the Company shall not be entitled to the benefits of, nor shall it have any rights or duties under, this Agreement. This Agreement may be amended or rescinded only by written instrument signed by the Company and AWCC.

9. Termination. The Company may terminate its participation in this Agreement by giving ten (10) days prior written notice of such termination to AWCC; and (b) AWCC may terminate this Agreement by giving ninety (90) days prior written notice of such termination to the Company. Termination of this Agreement will not affect: (a) the Company's obligations under any Promissory Notes; (b) any party's obligations with respect to any amounts owing under Sections 2 and 3 of this Agreement (including such amounts attributable to obligations of any terminating party under any Promissory Notes that remain outstanding after this Agreement is terminated as to that party); or (c) AWCC's obligations to repay any investments made by a Company pursuant to Appendix I.

10. Copies. This Agreement may be executed by the parties in one or more copies and each executed copy shall be considered an original.

In witness of the foregoing, each of the Company and AWCC has caused its respective corporate seal to be affixed to this Agreement and has caused this Agreement to be signed on its behalf by its duly authorized officers.

ATTEST:

By: _____
Herbert A. Miller, Jr.
Secretary

TENNESSEE-AMERICAN WATER COMPANY

By: _____
William F. L'Ecuyer
President

ATTEST:

By: _____
Title: W. Timothy Pohl
Vice President and Secretary

AMERICAN WATER CAPITAL CORP.

By: _____
Name and Title: Joseph F. Hartnett, Jr.
Vice President and Treasurer

APPENDIX I

DESCRIPTION OF FINANCIAL SERVICES

Set forth below is a list of the services which AWCC agrees to provide to the Company upon its request pursuant to the Agreement to which this Appendix is attached.

1. Short-Term Loans. AWCC will provide Short-Term Loans to the Company pursuant to the terms set forth in the promissory notes to be issued by the Company to AWCC, each substantially in the form attached to this Agreement as Exhibit A.

2. Long-Term Borrowings. AWCC will provide loans other than Short-Term Loans to the Company pursuant to the terms set forth in the promissory notes to be issued by the Company to AWCC, each substantially in the form attached hereto as Exhibit B.

3. Cash Management. Cash not required by the Company to pay its daily disbursements or to pay when due the principal of and interest on, the Company's borrowings from AWCC other than Short-Term Loans will be used by AWCC first to reduce the outstanding principal balance of the Company's Short-Term Loans owing to AWCC and any excess will be deemed to be invested with AWCC and will earn a daily rate of interest that is equal to the interest income earned by AWCC on those funds. Upon the request of that Company, AWCC shall execute one or more promissory notes in favor of the Company, in form and substance substantially similar to the Promissory Note attached as Exhibit A to the Agreement as evidence of such investment.

EXHIBIT A
PROMISSORY NOTE
FOR SHORT-TERM LOANS

$_____ _____, 2000

FOR VALUE RECEIVED, [NAME OF COMPANY], a _____ corporation (herein "Borrower") hereby promises to pay ON DEMAND to the order of American Water Capital Corp., a Delaware corporation ("Lender"), in same day funds at its offices at Voorhees, New Jersey or such other place as Lender may from time to time designate, the principal sum of _____ dollars ($_____) (the "Maximum Principal Sum"), or such lesser amount as shall equal the aggregate unpaid principal amount of the loans made by Lender to Borrower (other than loans evidenced by a promissory note under which the principal amount is due and payable in one or more scheduled installments more than one year after the date of its issue), together with interest thereon from the date hereof until paid in full. Interest will be charged on the unpaid outstanding principal balance of this Note at a rate per annum equal to Lender's actual cost of funds to make such loan, such rate to change as Lender's actual cost of funds changes. Interest on borrowings shall be due and payable on the first business day of each month, commencing with the first business day of the month after the month in which this Note is executed. In the absence of manifest error, the records maintained by Lender of the amount and term, if any, of borrowings hereunder shall be deemed conclusive.

Borrower may borrow, repay and reborrow hereunder in amounts which do not, in the aggregate outstanding at any time, exceed the Maximum Principal Sum.

The occurrence of one or more of any of the following shall constitute an event of default hereunder:

(a) Borrower shall fail to make any payment of principal and/or interest due hereunder or under any other promissory note between Lender and Borrower within five business days after the same shall become due and payable, whether at maturity or by acceleration or otherwise;

(b) Borrower shall apply for or consent to the appointment of a receiver, trustee or liquidator of itself or any of its property, admit in writing its inability to pay its debts as they mature, make a general assignment for the benefit of creditors, be adjudicated a bankrupt or insolvent or file a voluntary petition in bankruptcy or a petition or an answer seeking reorganization or an arrangement with creditors or to take advantage of any bankruptcy, reorganization, insolvency, readjustment of debt, dissolution or liquidation of law or statute, or an answer admitting the material allegations of a petition filed against it in any proceeding under any such law, or if action shall be taken by Borrower for the purposes of effecting any of the foregoing; or

(c) Any order, judgment or decree shall be entered by any court of competent jurisdiction, approving a petition seeking reorganization of Borrower or all or a substantial part of the assets of Borrower, or appointing a receiver, trustee or liquidator of

Borrower or any of its property, and such order, judgment or decree shall continue unstayed and in effect for any period of sixty (60) days.

Upon the occurrence of any event of default, the entire unpaid principal sum hereunder plus all interest accrued thereon plus all other sums due and payable to Lender hereunder shall, at the option of Lender, become due and payable immediately. In addition to the foregoing, upon the occurrence of any event of default, Lender may forthwith exercise singly, concurrently, successively or otherwise any and all rights and remedies available to Lender by law, equity, statute or otherwise.

Borrower hereby waivers presentment, demand, notice of nonpayment, protest, notice of protest or other notice of dishonor in connection with any default in the payment of, or any enforcement of the payment of, all amounts due hereunder. To the extent permitted by law, Borrower waives the right to any stay of execution and the benefit of all exemption laws now or hereafter in effect.

Following the occurrence of any event of default, Borrower will pay upon demand all costs and expenses (including all amounts paid to attorneys, accountants, and other advisors employed by Lender), incurred by Lender in the exercise of any of its rights, remedies or powers hereunder with respect to such event of default, and any amount thereof not paid promptly following demand therefor shall be added to the principal sum hereunder and will bear interest at the contract rate set forth herein from the date of such demand until paid in full. In connection with and as part of the foregoing, in the event that this Note is placed in the hands of an attorney for the collection of any sum payable hereunder, Borrower agrees to pay reasonable attorneys' fees for the collection of the amount being claimed hereunder, as well as all costs, disbursements and allowances provided by law.

If for any reason one or more of the provisions of this Note or their application to any entity or circumstances shall be held to be invalid, illegal or unenforceable in any respect or to any extent, such provisions shall nevertheless remain valid, legal and enforceable in all such other respects and to such extent as may be permissible. In addition, any such invalidity, illegality or unenforceability shall not affect any other provisions of this Note, but this Note shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

This Note inures to the benefit of Lender and binds Borrower and Lender's and Borrower's respective successors and assigns, and the words "Lender" and "Borrower" whenever occurring herein shall be deemed and construed to include such respective successors and assigns.

This Promissory Note is one of the promissory notes referred to in the Financial Services Agreement dated as of June 15, 2000 between Borrower and Lender to which reference is made for a statement of additional rights and obligations of the parties hereto.

IN WITNESS WHEREOF, Borrower has executed this Promissory Note the day and year first written above.

[BORROWER]

By:_____
Name and Title:

EXHIBIT B
PROMISSORY NOTE
FOR LONG-TERM BORROWINGS

$_____ _____, 2000

FOR VALUE RECEIVED, [NAME OF COMPANY], a _____ corporation (herein "Borrower") hereby promises to pay to the order of American Water Capital Corp., a Delaware corporation ("Lender"), in same day funds at its offices at _____ or such other place as Lender may from time to time designate, the principal sum of _____ dollars ($_____), together with interest thereon from the date hereof until paid in full. Interest shall be charged on the unpaid outstanding principal balance hereof at a rate per annum equal to the rate paid and to be paid by Lender with respect to the borrowings it made in order to provide funds to Borrower hereunder. Interest on borrowings shall be due and payable in immediately available funds on the same business day on which the Lender must pay interest on the borrowings it made in order to provide funds to the Borrower hereunder. The principal amount hereof shall be due and payable hereunder at such times and in such amounts and in such installments hereunder as the Lender must pay with respect to the borrowings it made in order to provide funds to the Borrower hereunder. Lender has provided Borrower with a copy of the documentation evidencing the borrowings made by Lender in order to provide funds to Borrower hereunder. In the absence of manifest error, such documentation and the records maintained by Lender of the amount and term, if any, of borrowings hereunder shall be deemed conclusive.

The occurrence of one or more of any of the following shall constitute an event of default hereunder:

(a) Borrower shall fail to make any payment of principal and/or interest due hereunder or under any other promissory note between Lender and Borrower within five business days after the same shall become due and payable, whether at maturity or by acceleration or otherwise;

(b) Borrower shall apply for or consent to the appointment of a receiver, trustee or liquidator of itself or any of its property, admit in writing its inability to pay its debts as they mature, make a general assignment for the benefit of creditors, be adjudicated a bankrupt or insolvent or file a voluntary petition in bankruptcy or a petition or an answer seeking reorganization or an arrangement with creditors or to take advantage of any bankruptcy, reorganization, insolvency, readjustment of debt, dissolution or liquidation of law or statute, or an answer admitting the material allegations of a petition filed against it in any proceeding under any such law, or if action shall be taken by Borrower for the purposes of effecting any of the foregoing; or

(c) Any order, judgment or decree shall be entered by any court of competent jurisdiction, approving a petition seeking reorganization of Borrower or all or a substantial part of the assets of Borrower, or appointing a receiver, trustee or liquidator of Borrower or any of its property, and such order, judgment or decree shall continue unstayed and in effect for any period of sixty (60) days.

Upon the occurrence of any event of default, the entire unpaid principal sum hereunder plus all interest accrued thereon plus all other sums due and payable to Lender hereunder shall, at the option of Lender, become due and payable immediately. In addition to the foregoing, upon the occurrence of any event of default, Lender may forthwith exercise singly, concurrently, successively or otherwise any and all rights and remedies available to Lender by law, equity, statute or otherwise.

Borrower hereby waivers presentment, demand, notice of nonpayment, protest, notice of protest or other notice of dishonor in connection with any default in the payment of, or any enforcement of the payment of, all amounts due hereunder. To the extent permitted by law, Borrower waives the right to any stay of execution and the benefit of all exemption laws now or hereafter in effect.

Following the occurrence of any event of default, Borrower will pay upon demand all costs and expenses (including all amounts paid to attorneys, accountants, and other advisors employed by Lender), incurred by Lender in the exercise of any of its rights, remedies or powers hereunder with respect to such event of default, and any amount thereof not paid promptly following demand therefor shall be added to the principal sum hereunder and will bear interest at the contract rate set forth herein from the date of such demand until paid in full. In connection with and as part of the foregoing, in the event that this Note is placed in the hands of an attorney for the collection of any sum payable hereunder, Borrower agrees to pay reasonable attorneys' fees for the collection of the amount being claimed hereunder, as well as all costs, disbursements and allowances provided by law.

If for any reason one or more of the provisions of this Note or their application to any entity or circumstances shall be held to be invalid, illegal or unenforceable in any respect or to any extent, such provisions shall nevertheless remain valid, legal and enforceable in all such other respects and to such extent as may be permissible. In addition, any such invalidity, illegality or unenforceability shall not affect any other provisions of this Note, but this Note shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

This Note inures to the benefit of Lender and binds Borrower and Lender's and Borrower's respective successors and assigns, and the words "Lender" and "Borrower" whenever occurring herein shall be deemed and construed to include such respective successors and assigns.

This Promissory Note is one of the promissory notes referred to in the Financial Services Agreement dated as of June 15, 2000 between Borrower and Lender to which reference is made for a statement of additional rights and obligations of Lender and Borrower.

IN WITNESS WHEREOF, Borrower has executed this Promissory Note the day and year first written above.

[BORROWER]

By:_____
Name and Title:

PROMISSORY NOTE
FOR SHORT-TERM LOANS

$10,910,000.00 June 15, 2000

FOR VALUE RECEIVED, TENNESSEE-AMERICAN WATER COMPANY, a Tennessee corporation (herein "Borrower") hereby promises to pay ON DEMAND to the order of American Water Capital Corp., a Delaware corporation ("Lender"), in same day funds at its offices at Voorhees, New Jersey or such other place as Lender may from time to time designate, the principal sum of TEN MILLION NINE-HUNDRED TEN THOUSAND dollars ($10,910,000.00) (the "Maximum Principal Sum"), or such lesser amount as shall equal the aggregate unpaid principal amount of the loans made by Lender to Borrower (other than loans evidenced by a promissory note under which the principal amount is due and payable in one or more scheduled installments more than one year after the date of its issue), together with interest thereon from the date hereof until paid in full. Interest will be charged on the unpaid outstanding principal balance of this Note at a rate per annum equal to Lender's actual cost of funds to make such loan, such rate to change as Lender's actual cost of funds changes. Interest on borrowings shall be due and payable on the first business day of each month, commencing with the first business day of the month after the month in which this Note is executed. In the absence of manifest error, the records maintained by Lender of the amount and term, if any, of borrowings hereunder shall be deemed conclusive.

Borrower may borrow, repay and reborrow hereunder in amounts which do not, in the aggregate outstanding at any time, exceed the Maximum Principal Sum.

The occurrence of one or more of any of the following shall constitute an event of default hereunder:

(a) Borrower shall fail to make any payment of principal and/or interest due hereunder or under any other promissory note between Lender and Borrower within five business days after the same shall become due and payable, whether at maturity or by acceleration or otherwise;

(b) Borrower shall apply for or consent to the appointment of a receiver, trustee or liquidator of itself or any of its property, admit in writing its inability to pay its debts as they mature, make a general assignment for the benefit of creditors, be adjudicated a bankrupt or insolvent or file a voluntary petition in bankruptcy or a petition or an answer seeking reorganization or an arrangement with creditors or to take advantage of any bankruptcy, reorganization, insolvency, readjustment of debt, dissolution or liquidation of law or statute, or an answer admitting the material allegations of a petition filed against it in any proceeding under any such

law, or if action shall be taken by Borrower for the purposes of effecting any of the foregoing; or

(c) Any order, judgment or decree shall be entered by any court of competent jurisdiction, approving a petition seeking reorganization of Borrower or all or a substantial part of the assets of Borrower, or appointing a receiver, trustee or liquidator of Borrower or any of its property, and such order, judgment or decree shall continue unstayed and in effect for any period of sixty (60) days.

Upon the occurrence of any event of default, the entire unpaid principal sum hereunder plus all interest accrued thereon plus all other sums due and payable to Lender hereunder shall, at the option of Lender, become due and payable immediately. In addition to the foregoing, upon the occurrence of any event of default, Lender may forthwith exercise singly, concurrently, successively or otherwise any and all rights and remedies available to Lender by law, equity, statute or otherwise.

Borrower hereby waivers presentment, demand, notice of nonpayment, protest, notice of protest or other notice of dishonor in connection with any default in the payment of, or any enforcement of the payment of, all amounts due hereunder. To the extent permitted by law, Borrower waives the right to any stay of execution and the benefit of all exemption laws now or hereafter in effect.

Following the occurrence of any event of default, Borrower will pay upon demand all costs and expenses (including all amounts paid to attorneys, accountants, and other advisors employed by Lender), incurred by Lender in the exercise of any of its rights, remedies or powers hereunder with respect to such event of default, and any amount thereof not paid promptly following demand therefor shall be added to the principal sum hereunder and will bear interest at the contract rate set forth herein from the date of such demand until paid in full. In connection with and as part of the foregoing, in the event that this Note is placed in the hands of an attorney for the collection of any sum payable hereunder, Borrower agrees to pay reasonable attorneys' fees for the collection of the amount being claimed hereunder, as well as all costs, disbursements and allowances provided by law.

If for any reason one or more of the provisions of this Note or their application to any entity or circumstances shall be held to be invalid, illegal or unenforceable in any respect or to any extent, such provisions shall nevertheless remain valid, legal and enforceable in all such other respects and to such extent as may be permissible. In addition, any such invalidity, illegality or unenforceability shall not affect any other provisions of this Note, but this Note shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

This Note inures to the benefit of Lender and binds Borrower and Lender's and Borrower's respective successors and assigns, and the words "Lender" and

"Borrower" whenever occurring herein shall be deemed and construed to include such respective successors and assigns.

This Promissory Note is one of the promissory notes referred to in the Financial Services Agreement dated as of June 15, 2000, between Borrower and Lender to which reference is made for a statement of additional rights and obligations of the parties hereto.

IN WITNESS WHEREOF, Borrower has executed this Promissory Note the day and year first written above.

TENNESSEE-AMERICAN WATER COMPANY

By: _____
William F. L'Ecuyer
President

AGREEMENT FOR SUPPORT SERVICES

BETWEEN

AMERICAN WATER RESOURCES, INC.

AND

TENNESSEE AMERICAN WATER COMPANY

May 1, 2004

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AGREEMENT FOR SUPPORT SERVICES

BETWEEN

AMERICAN WATER RESOURCES, INC.
AND
TENNESSEE AMERICAN WATER COMPANY

This Service Agreement, dated as of the 1st day of May, 2004 (the "Agreement"), is by and between the AMERICAN WATER RESOURCES, INC. (AWR), a corporation organized and existing under the laws of the Commonwealth of Virginia, with its principal office located at 1025 Laurel Oak Road, Voorhees, New Jersey 08043, and TENNESSEE AMERICAN WATER COMPANY (Utility), a corporation organized and existing under the laws of the State of Tennessee, with its principal office located at 1101 Broad Street, Chattanooga, Tennessee, 37401.

WHEREAS, AWR provides certain services to utility customers, as more particularly described on Appendix A which is attached hereto and incorporated herein by reference, which list may be modified or amended from time to time by AWR (hereinafter the "Programs"); and

WHEREAS, Utility is the owner of a public water supply system; and

WHEREAS, many of Utility's residential customers may desire to and qualify to participate in one or more of AWR's Programs; and

WHEREAS, Utility desires to make certain or all of the Programs available to its customers upon the terms and conditions contained herein; and

WHEREAS, AWR desires to contract with Utility for certain customer support services for the Programs; and

WHEREAS, Utility possesses the necessary ability and experience to provide such customer support services and is willing to provide such services for the Programs upon the

terms and conditions contained herein; and

WHEREAS, it is the mutual desire of the parties to enter into this Agreement providing for the customer support for the Programs;

NOW, THEREFORE, for and in consideration of the mutual promises set forth herein, and subject to the terms and conditions herein stated, AWR and Utility agree as follows:

SECTION 1. Definitions.

The following words and phrases when used in this Agreement shall have the following meaning:

"Agreement" means this Agreement between AWR and Utility.

"Force Majeure" means those events set forth in Section 13 of this Agreement.

"Fully Distributed Costs" means costs determined in a manner that complies with the standards and procedures for the apportionment of special, joint, and common costs between the Utility and any non-regulated entity in accordance with applicable regulations of the State commission or board having jurisdiction over the operations of Utility, except taxes as discussed in Section 5. A fully distributed costing methodology apportions the total costs of a group of services or products, including the authorized rate of return, among the individual services or products in that group.

Should the commission or board having jurisdiction over operations of Utility assign different costs than Utility has assigned, such commission or board assigned costs, once such assignment is final and non-appealable, shall be the Fully Distributed Costs, until such time as such commission or board assigns different costs, at which time such newly assigned costs shall be the Fully Distributed Costs. Whether to appeal a decision of the commission or board shall be in Utility's sole discretion.

"Services" means all of the duties, obligations, and services as defined herein to be provided by Utility that are related to the performance and operation of AWR's Programs.

SECTION 2. Appointment of Utility.

AWR hereby engages and appoints Utility to provide certain customer support services for the Programs.

SECTION 3. Term; Termination.

3.1 Term. The term of this Agreement shall commence on April 15, 2004, and be for a period of one (1) year unless sooner terminated or extended as hereinafter provided.

3.2 Renewal. The Agreement will automatically renew itself for periods of one (1) year, each following one after the other, unless either party gives written notice of termination to the other party in accordance with Section 3.3.1.1.

3.3 Termination.

3.3.1 Termination Without Cause:

3.3.1.1 Procedure - After the initial one (1) year term, this Agreement may be terminated without cause or penalty by either party upon giving the other party sixty (60) days written notice in advance of the date upon which the termination becomes effective. This Agreement shall automatically terminate at such time as either party, or its successor is no longer an affiliate of American Water Works Company, Inc.

3.3.1.2 Transition Services Following Termination Without Cause - Upon termination of the Agreement without cause, Utility shall continue to provide services to AWR, at AWR's request, for a period of not longer than sixty (60) days during AWR's transition to another service provider. Such transition services shall be provided under and subject to the same terms and provisions of this Agreement, including compensation.

3.3.2 Termination Upon Material Breach - Either party to the Agreement may terminate this Agreement upon material breach by the other party. The non-breaching party shall provide written notice of such breach to the other party, setting forth in detail the alleged failure and/or deficiency, and, if such breach is not corrected within thirty (30) days from receipt of written notice by certified mail, this Agreement shall be terminated.

SECTION 4. Compensation.

4.1 Fee. The fee paid to Utility by AWR for Services rendered pursuant to this Agreement shall be equal to one hundred and fifteen (115%) percent of the Fully Distributed Costs incurred by Utility in providing the Services except for billing and collection services. The Fee for billing and collection services rendered by Utility as set forth in Paragraph 6.1.3 below shall be at a rate of $.405 per customer per billing period and apply in the aggregate to customers participating in one or more of AWR's Programs. The $.405 rate may be adjusted from time to time as determined by the agency having regulatory authority over Utility to be consistent with any other such billing and collection service rates charged by Utility, under tariff, to others.

4.2 Allocation by Regulating Authority. Notwithstanding the fee schedule contained in Section 4.1, should the agency having regulatory authority over Utility disallow any cost of the Utility in excess of the Fully Distributed Costs as a result of the services provided to AWR pursuant hereto, AWR shall reimburse Utility for such disallowed costs, within thirty (30) days of receipt of notice of same and the fees due pursuant hereto shall be adjusted to reflect such allocation by such regulatory authority.

4.3 Reporting and Payments.

4.3.1 Utility shall maintain detailed records of all costs incurred in providing services to AWR. Utility will make such detailed records available for AWR's periodic review upon request by AWR, during normal business hours, at Utility's principal office.

4.3.2 Utility shall invoice AWR monthly or quarterly, at Utility's discretion, for the fee for services on or about the tenth business day of each billing period during the term of this Agreement. The invoice shall detail the services provided and the costs incurred. AWR shall pay such fee to Utility within fifteen (15) days of the date of the invoice.

SECTION 5. Taxes.

Any tax or other amount which Utility may be required to pay to or collect for a government agency upon or with respect to the Services rendered hereunder, or the use or delivery of any products or parts thereof on behalf of AWR, except income taxes, will be billed to AWR as separately stated charges and will be paid by AWR in addition to the fees paid pursuant to Section 4. In the event AWR disputes the taxability of an item hereunder, Utility will continue to collect such tax unless and until AWR provides Utility with documentation authorized and prescribed by the taxing authority, such as a certificate of exemption, relieving Utility from liability for the collection and payment of such tax.

SECTION 6. Scope of Services.

6.1 Utility agrees that it shall provide the following customer support services for the Programs in accordance with the terms and provisions of this Agreement:

6.1.1 Distribution of Promotional Materials. Upon request of AWR, Utility shall manage and direct the distribution of informational and promotional materials regarding the Program to its customers. Such materials shall be developed by AWR and provided to Utility in

sufficient quantities and in a timely manner so as not to impede any planned distribution efforts by Utility. The materials shall be distributed as a part of Utility's normal billing process, unless arrangements are made, at least sixty (60) days in advance, for a special mailing. The materials provided by AWR must be satisfactory in form and content to Utility, and nothing in this Agreement shall require Utility to distribute any materials that are not satisfactory to Utility. Utility shall make all reasonable efforts to promptly notify AWR when additional quantities of promotional materials are needed. Utility shall have the sole discretion to determine the customers who will receive the informational and promotional materials for the Program.

6.1.2 Notification of Claim. Should a Utility associate, as a part of his/her normal duties, determine that a Utility customer has a covered occurrence with the Customer's water or sewer service line, the Utility associate shall notify AWR by calling a toll-free telephone number to be supplied by AWR. AWR shall then engage a qualified contractor to provide the covered services to the customer. AWR shall timely provide the necessary information to cause Utility's customer records to reflect when coverage is available.

6.1.3 Billing and Collection. AWR shall provide Utility with a list of enrolled customers in its Programs who have chosen to have charges from AWR included on their bill from Utility, and shall keep such list up to date. Utility shall include such charges on the customer's bill and collect such charges from the customer until such time as the customer or AWR notifies Utility that the customer is no longer receiving service from AWR or has elected a different payment option. Utility shall forward collected payments from enrolled customers to AWR within fifteen days following the end of each calendar month for amounts collected during such month. All payments made by the customer shall be credited first to payment of any amount owed for utility service furnished by Utility; any remainder shall first be credited to

payment of any amount owed for utility service furnished by someone other than Utility but shown as a line item on the bill sent to the customer by Utility; and any remainder shall then be credited to payment of any amount owed to AWR. Utility shall not interrupt, cease or refuse utility service to a customer for non-payment of amounts owed to AWR. AWR shall be responsible for all collection efforts for non-payment by Utility customers for AWR Programs.

6.1.4 Other Services. Utility shall perform such other and further services as are agreed to in a Service Order in the form attached hereto as **Exhibit 1** executed by the parties during the Term hereof.

SECTION 7. Provision of Information.

Except as provided herein, any specifications, diagrams, sketches, models, examples, tools, computer or other apparatus, programs, software, technical or business information, written, oral or otherwise (all thereinafter collectively referred to as "Confidential Information"), furnished by one party (hereinafter referred to as the "Disclosing Party") to the other party (hereinafter referred to as the "Receiving Party") under this Agreement or in contemplation of this Agreement will remain the property of the Disclosing Party and will be held Confidential by the Receiving Party. All copies of such information will be returned to the Disclosing Party upon request. The Receiving Party, and any individual assigned by the Receiving Party will not permit the duplication, use or disclosure of the Confidential Information whether such disclosure be oral, written, in the form of computer tapes, drawings or other medium to any person other than the Receiving Party's employees, agents or representatives who must have such information to provide the Services, unless otherwise specifically authorized in writing by the Disclosing Party.

Confidential Information does not include any information which, at the time of disclosure, is generally known by the public, is rightfully obtained from third parties, is independently developed by the Receiving Party and any individual assigned by the Receiving Party outside the scope of its performance herein, or had been in the possession of the Receiving Party and any individual assigned by the Receiving Party prior to its commencement of the performance of its services.

The Receiving Party and any individual assigned by the Receiving Party agrees that: (1) this covenant not to disclose our use Confidential Information shall survive termination of this Agreement; and (2) it shall be liable for any and all breaches of such covenant by the Receiving Party, it employees, agents or representatives, whether such breach occurs during or after the term of this Agreement.

The Receiving Party shall take such steps as may be necessary in order to limit access to the Confidential Information on a need-to-know basis and assure compliance by the employees, agents and representatives to whom such information is given.

The provisions of this section shall survive termination of this Agreement.

It is understood that the Receiving Party may be required to furnish information to judicial, regulatory, or administrative bodies. In such an event, the Receiving Party will promptly notify the Disclosing Party of such requirement and will cooperate with the Disclosing Party should the Disclosing Party desire to seek a protective order to prevent the public disclosure of its information.

SECTION 8. Compliance with Laws.

Both parties agree to comply with the provisions of the Fair Labor Standards Act of 1938, as amended, and all other applicable federal and state laws, rules, regulations and codes with

which they are obligated to comply in the performance of this Agreement, including the procurement of permits and certificates where needed. Both parties further agree not to discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, age or handicap, and to comply with all applicable federal and state laws, orders, rules and regulations on this subject during the performance of this Agreement.

This Agreement shall be subject to any and all applicable federal, state and local laws, regulations, and ordinances, as well as any applicable tariffs. To the extent necessary, the parties agree to amend this Agreement to conform to the requirements of any such laws, regulations, ordinances, or tariffs.

AWR shall provide Utility with evidence reasonably requested by Utility to demonstrate compliance herewith.

SECTION 9. Insurance.

9.1 AWR shall, during the term of this Agreement, maintain the following insurance coverages with respect to the Programs, and shall include Utility as an Additional Insured:

9.1.1 Comprehensive General Liability, including Products and Completed Operations, and Contractual Liability with limit of $2,000,000, combined single limit.

9.1.2 Comprehensive Automobile Liability with limit of $2,000,000, combined single limit.

9.1.3 Excess Comprehensive General and Automobile Liability with limit of $2,000,000, excess of $2,000,000.

9.2 AWR shall cause each contractor it engages to perform services under the Programs (collectively "Repair Contractors"), during the term of this Agreement, to maintain the

following insurance coverages with respect to the Programs, which coverages in subsections 9.2.1-9.2.3 shall include Utility as an Additional Insured:

9.2.1 Comprehensive General Liability, including Products and Completed Operations, and Contractual Liability with limit of $1,000,000, combined single limit.

9.2.2 Comprehensive Automobile Liability with limit of $1,000,000, combined single limit.

9.2.3 Excess Comprehensive General and Automobile Liability with limit of $1,000,000, excess of $1,000,000.

9.2.4 Workers Compensation coverage with Statutory Limits.

9.3 AWR shall, and shall cause its Repair Contractors to, furnish Utility with certificates of insurance evidencing coverage as required by this Paragraph.

SECTION 10. Obligations of AWR.

10.1 Development of Informational Materials. AWR shall be responsible for developing, producing, and printing all informational materials for the Programs, and supplying such materials to Utility. AWR shall provide Utility with the opportunity to review and approve all such materials in advance of any distribution to Utility's customers.

10.2 Training. AWR shall provide all necessary training and information to Utility personnel as is necessary to allow Utility to fully perform hereunder. Such training will be specific to educating Utility employees in the operation, terms, and conditions of the Programs. Utility shall make the necessary arrangements to provide a location for such training at or near Utility's facilities.

10.3 Contractors. AWR shall be responsible for engaging qualified independent contractors to perform the services included in the Programs. AWR shall contract with and

maintain a sufficient number of contractors to perform promised services under the Programs, during the term of this Agreement. The cost of all services provided by such contractors shall be paid by AWR. Nothing in this Agreement shall be deemed to create any obligation on the part of Utility to undertake performance of any such services or pay for such services by the contractors engaged by AWR.

10.4 Administration. AWR shall be responsible for coordinating all administrative activities for the Programs and its customers including, but not limited to, enrollments, billings, accounting, marketing, financial analysis and reporting. AWR shall promptly notify Utility of customer enrollments in the Programs, including any changes in enrollment or billing status.

SECTION 11. Joint Obligations of the Parties.

11.1 AWR and Utility agree to cooperate to review existing planning, management and operations practices for the Programs.

SECTION 12. Arbitration.

It is the stated intent and purpose of both parties at all times to reach agreement by negotiation between AWR and Utility, without recourse to arbitration. In the event, however, that such dispute or difference is not settled, either party may request that the matter be referred to arbitration. The demand for arbitration must be submitted to the American Arbitration Association within sixty (60) calendar days after the date of such request, in which case the arbitration shall cover and resolve any then existing controversy or claim between the parties hereto which directly or indirectly arises out of or relates to this Agreement. The arbitration shall be conducted in the Chattanooga, Tennessee in accordance with the rules and procedures then existing under the Commercial Arbitration Rules of the American Arbitration Association, provided that notwithstanding anything to the contrary contained in such Rules the following

shall apply: The arbitration board shall consist of three arbitrators. AWR shall choose one arbitrator and Utility shall choose one arbitrator. If the two arbitrators appointed by the parties fail to agree within five (5) business days upon the selection of a third arbitrator, the third arbitrator shall be selected from a list of arbitrators supplied by the American Arbitration Association or otherwise in accordance with such Rules. After the appointments of the third arbitrator, the arbitration board shall meet as necessary for the purpose of reaching a determination in the dispute or difference, and the decision of the majority of the board, submitted in writing, to AWR and Utility shall be final and binding upon both parties. Judgment upon any decision rendered by such arbitration board may be entered in any court having jurisdiction. Each party shall bear the expense of its own arbitrators and witnesses, and the expenses of the third arbitrator and any general expenses of the arbitration shall be born equally by both parties.

SECTION 13. Force Majeure.

If, because of any act or occurrence beyond the reasonable control of either party, including, without limitation, acts of God, legislation or lawful regulations of any governmental body, court orders, fire, flood, explosion, strikes, labor disputes or shortage, wars or civil commotion, either party is reasonably prevented from performing any or all of its obligations hereunder, and if the party unable to perform shall be required to resume performance of its obligations under this Agreement upon the termination of the aforementioned Force Majeure, any time or date limitations shall be extended to the extent such party is so prevented.

SECTION 14. Assignments.

This Agreement shall not be assigned by either party without the prior written consent of the other party unless such assignment shall be to an affiliate or successor of either party.

SECTION 15. Amendments.

This Agreement may be modified only by a written amendment signed by both parties.

SECTION 16. Notices.

All notices provided for in this Agreement shall be in writing and shall be deemed to have been given when hand delivered or deposited in the U.S. mail, postage prepaid, registered or certified, return receipt requested, as follows:

If to AWR:

American Water Resources, Inc.
1025 Laurel Oak Road
Voorhees, New Jersey 08043
Attention: Walter Lynch, President

If to Utility:

Tennessee American Water Company
1101 Broad Street
Chattanooga, Tennessee 37401
Attention: David B. Schultz, President

SECTION 17. Governing Law.

This Agreement, including the validity thereof and the rights and obligations of the parties thereunder, shall be construed in accordance with, and governed by the laws of the State of Tennessee.

SECTION 18. Indemnification.

18.1 AWR shall, and shall cause its Repair Contractors to, defend, indemnify and hold harmless Utility, its officers, directors, employees and agents from and against any and all liability, including liability to third parties, for personal injury, including death, property damage, or other actions, damages, fines, penalties, claims, demands, judgments, losses, costs, expenses, suits and actions (including reasonable attorney's fees), for personal injury, including death, property damage or other injury, to the extent caused by or arising out of negligence or wrongful or willful misconduct on the part of AWR, its Repair Contractors, or their respective officers, employees, agents, contractors, and subcontractors in connection with the services rendered to Utility by AWR pursuant to the terms of this Agreement.

18.2 Utility shall defend, indemnify and hold harmless AWR, its officers, directors, employees and agents from and against any and all liability, including liability to third parties, for personal injury, including death, property damage, or other actions, damages, fines, penalties, claims, demands, judgments, losses, costs, expenses, suits and actions (including reasonable attorney's fees), for personal injury, including death, property damage or other injury, to the extent caused by or arising out of negligence or wrongful or willful misconduct on the part of Utility, its officers, employees, agents, contractors, and subcontractors in connection with the services rendered to AWR by Utility pursuant to the terms of this Agreement.

SECTION 19. No Waiver.

The failure of a party to insist on strict performance of any or all of the terms of this Agreement, or to exercise any right or remedy under this Agreement, shall not constitute a waiver or relinquishment of any nature regarding such right or remedy or any other right or remedy. No waiver of any breach or default hereunder shall be considered valid unless in writing and signed by the party giving such waiver, and no such waiver shall be deemed a waiver of any subsequent breach or default of the same or similar nature.

SECTION 20. Severability.

In case one or more of the covenants, terms or provisions contained in this Agreement shall be held invalid, illegal, or unenforceable in any respect, the validity of the remaining covenants, terms, and provisions contained herein shall be in no way affected, prejudiced, or disturbed and the remaining covenants, terms, and provisions shall remain in full force and effect.

SECTION 21. No Third-Party Beneficiaries.

No customer of the Programs, contractors of AWR, or any other third party shall be deemed a third-party beneficiary of this Agreement.

SECTION 22. Independent Contractor.

It is understood that the relationship of Utility to AWR is that of an independent contractor and not that of an employee and or agent of AWR. None of the employees or agents of Utility shall be considered employees of AWR. None of the employees or agents of AWR shall be considered employees of Utility. Each party shall be wholly responsible and liable for the employment taxes and withholdings due as a result of their performance hereunder.

SECTION 23. Complete Agreement.

This Agreement sets forth the entire understanding of the parties, which supersedes and merges all prior proposals, understandings and all other agreements, oral or written, between the parties relating to the subject matter hereof and my not be modified except in a writing executed by both parties.

SECTION 24. Titles and Headings.

Titles and headings to sections or paragraphs herein are inserted merely for convenience of reference and are not intended to be a part of or to affect the meaning or interpretation of this Agreement.

SECTION 25. Counterparts.

This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

SECTION 26. Condition Precedent.

This Agreement may be conditioned upon any necessary approval of the Tennessee Regulatory Authority.

SECTION 27. Limitation of Liability.

NEITHER PARTY WILL BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL OR INDIRECT DAMAGES, WHETHER ARISING OUT

OF BREACH OF WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT LIABILITY OR OTHERWISE, ATTRIBUTABLE TO OR RESULTING FROM ITS PERFORMANCE HEREUNDER. In no event will Utility's liability for damages caused by its failure to supply material or perform services in a proper or timely manner exceed the amount paid by AWR to Utility for such materials or services.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives, as of the day and year first above written.

ATTEST:

Secretary

(SEAL)

AMERICAN WATER RESOURCES, INC.

By: President

ATTEST:

Secretary

(SEAL)

TENNESSEE AMERICAN WATER COMPANY

By: President

APPENDIX A

Water Line Protection Program:

For a periodic fee, Utility customers may enroll in the Water Line Protection Program that, subject to its terms and conditions, provides a service to repair customer-owned water lines that leak or break due to normal wear and tear.

Sewer Line Protection Program:

For a periodic fee, Utility customers may enroll in the Sewer Line Protection Program that, subject to its terms and conditions, provides a service to clear or repair blocked customer-owned sewer lines that become clogged or blocked due to normal wear and usage.

Exhibit 1

SERVICE ORDER

American Water Resources, Inc. (AWR) hereby engages Tennessee American Water Company (Utility) to perform the following services, pursuant to the Agreement for Support Services executed between the parties on May 1, 2004:

Water and Sewer Line Protection Programs:

1. Distribution of Promotional Materials. See Section 6.1.1 for scope of services.

2. Repair Service Initiation. See Section 6.1.2 for scope of services.

3. Distribution of Customer Surveys. From time to time, AWR may develop customer surveys designed to measure customer satisfaction with the Programs, and if necessary, make Program enhancements. AWR shall submit such survey materials to Utility for review and comment prior to distribution to customers.

4. Billing and Collecting. Utility shall bill each of its customers who AWR identifies as having requested service and billing from Utility by a line item on the customer's water bill. AWR shall furnish reasonable evidence that a customer has requested the service to Utility upon Utility's request. Utility shall collect payments from the enrolled customers and forward same to AWR within fifteen days following the end of each calendar month for amounts collected during such month. All payments made by the customer shall be credited first to payment of any amount owed for utility service furnished by Utility; any remainder shall first be credited to payment of any amount owed for utility service furnished by someone other than Utility but shown as a line item on the bill sent to the customer by Utility; and any remainder shall then be credited to payment of any amount owed to AWR. Utility shall not interrupt, cease or refuse utility service to a customer for non-payment of amounts owed to AWR. AWR shall be responsible for all collection efforts for non-payment by Utility customers for AWR Programs.

AMERICAN WATER RESOURCES, INC.

By: _____
President

TENNESSEE AMERICAN WATER COMPANY

By: _____
President

AGREEMENT

Agreement dated January 1, 1989, between AMERICAN WATER WORKS SERVICE COMPANY, INC., a Delaware corporation (hereinafter "Service Company"), and TENNESSEE-AMERICAN WATER COMPANY, a Tennessee corporation (hereinafter "Water Company").

The background of this Agreement is that:

1. Both Service Company and Water Company are subsidiaries of American Water Works Company, Inc., a Delaware corporation (hereinafter "American").

2. Water Company has been organized for and is presently engaged in the business of providing potable water as a public utility in the State of Tennessee.

3. Service Company maintains an organization whose officers and employees are familiar with all facets of the water utility business, including the development, business and property of Water Company, and are experienced in the efficient management, financing, accounting and operation of water utility properties and the extension and improvement thereof. The officers and employees of Service Company are qualified to aid, assist and advise Water Company in its business operations through the services to be performed under this Agreement.

4. Service Company has provided administrative and operating services to Water Company for many years, the past 17 years pursuant to an agreement dated January 1,

1971. Because Water Company is of the opinion that it cannot obtain the same quality and diversification of services on a comparable economic basis elsewhere, it proposes to enter into a new agreement with Service Company more specifically defining the types of services available to it.

5. Service Company has entered or proposes to enter into agreements similar to this agreement with other affiliated water companies (hereinafter collectively "Water Companies").

6. The services to be rendered under this agreement are to be rendered by Service Company to Water Companies at their cost to Service Company, as hereinafter provided.

NOW, THEREFORE, in consideration of the premises and mutual agreements herein contained, the Water Company and Service Company agree that:

ARTICLE 1. PERSONNEL AND SERVICES TO BE PROVIDED

1.1 During the term of this agreement and upon the terms and conditions hereinafter set forth, Service Company shall provide corporate guidance for Water Company. In addition to the guidance provided by the officers and employees of Service Company through the coordination of functional activities for all subsidiaries of American, the officers and employees of Service Company shall furnish and Water Company shall purchase from Service Company, the following services: Accounting, Administration, Communication, Corporate Secretarial, Engineering, Financial, Human Resources,

Information Systems, Operation, Rates and Revenue, Risk Management and Water Quality, together with such other services as Water Company and Service Company may agree; provided, however, that Water Company may perform the service with its own personnel or engage another company or person to provide those services on its behalf. Service Company by mutual consent may engage another Company or person to provide such services on its behalf.

1.2 Service Company shall employ qualified officers and employees and those persons shall be available for election by Water Company to serve as officers of Water Company.

1.3 Without limitation, services to be provided by the Service Company shall be rendered as follows:

A. Accounting: Service Company shall assist in the preparation and implementation of accounting methods and procedures to determine that they conform fully to the requirements, rules and regulations of governmental authorities having jurisdiction and review Water Company's monthly financial reports, annual reports and other reports to stockholders and to any governmental authorities. It shall advise and assist in the establishment and maintenance of current record keeping techniques; review accounting procedures, methods and forms; and evaluate systems of internal control for receipt and disbursement of funds, materials and supplies, and other assets. Service Company shall maintain accounting records as required by Water Company. When appropriate, Service Company shall cooperate and consult with Water Company's independent certified public accountants.

Service Company shall assist in the preparation of operating and construction budgets and monitor the control over such budgets by comparing experienced costs to the projections.

Service Company shall prepare or assist in the preparation of federal, state and local tax returns for and to the extent required by Water Company.

B. **Administration**: Service Company shall make qualified employees available to perform or assist in the performance of Water Company's corporate activities. Those employees shall keep themselves informed on all aspects of Water Company's operations and shall regularly visit Water Company's facilities. They shall make recommendations to Water Company for operating expenditures and for additions to and improvements of property, plant and equipment. They shall keep abreast of economic, regulatory, governmental and operational developments and conditions that may affect Water Company; and advise Water Company of any such developments and conditions to the extent that they may be important to Water Company. Service Company shall provide an internal audit staff for periodic audits of accounts, records, policies and procedures of Water Company and submit reports thereon.

C. **Communications**: Service Company shall recommend procedures to promote satisfactory relations with employees, customers, communities and the general public and assist in the preparation of communication materials, (including press releases, brochures, audio visual presentations and speeches) plant tours, public exhibits and displays and other related services to inform the public.

D. **Corporate Secretarial**: Service Company shall maintain, in such places and manner as may be required by applicable law, documents of Water Company, such as minute books, charters, by-laws, contracts, deeds and other corporate records, and shall administer an orderly program of records retention. It shall maintain, or arrange for the maintenance of, records of stockholders of Water Company, prepare or arrange for the preparation of stock certificates, perform duties relating to the transfer of stock and perform other corporate secretarial functions as required including preparation of notices of stockholder and director meetings and the minutes thereof.

Service Company shall review and may assist in the preparation of documents and reports required by Water Company such as deeds, easements, contracts, charters, franchises, trust indentures and regulatory reports and filings.

E. **Engineering**: Service Company shall advise, and provide engineering services to assist Water Company in planning for, operating, maintaining and constructing its facilities.

It shall conduct distribution system surveys and hydraulic analyses and prepare or review maps, charts, operating statistics, reports and other pertinent data.

It shall assist Water Company in the proper maintenance and protection of Water Company properties by periodic inspection of its structures, tanks, reservoirs, dams, wells and electrical and mechanical equipment.

The engineering services provided by Service Company shall also include the conduct of field investigations as necessary to

obtain engineering information and, when required, the preparation of studies, reports, designs, drawings, cost estimates, specifications, and contracts for the construction of additions to or improvements of Water Company's source of supply, treatment plant, pumping stations, distribution system, and such other facilities as Water Company may request. Service Company shall provide a Materials Management Program to arrange for the purchase of equipment, materials, and supplies in volume on a basis advantageous to Water Company and assist in the evaluation of new and existing products and application procedures.

F. **Financial**: Service Company shall assist in the development and implementation of financing programs for Water Company, including the furnishing of advice from time to time on securities market conditions and the form and timing of financing; advise concerning arrangements for the sale of its securities; and assist in the preparation of necessary papers, documents, registration statements, prospectuses, petitions, applications and declarations. It shall prepare reports to be filed with, and reply to inquiries made by, security holders and bond and mortgage trustees.

Service Company shall assist Water Company in cash management including arrangements for bank credit lines, establishment of collection policies, and development of temporary investment programs.

Service Company shall provide assistance to Water Company in the preparation of all financial reports.

G. **Human Resources**: Service Company shall assist in obtaining qualified personnel for Water Company; in establishing appropriate rates of pay for those employees; and in negotiating with bargaining units representing Water Company employees. It shall carry out training programs for the development of personnel and advise and assist Water Company regarding personnel. It shall also advise and assist Water Company in regard to group employee insurance, pension and benefit plans and in the drafting or revising of those plans when required. It will keep Water Company apprised of all employment laws and develop procedures and controls to assure compliance.

H. **Information Systems**: Service Company shall make available to Water Company electronic data processing services. Those services shall include customer billing and accounting, preparation of financial statements and other reports including those required by Federal and State agencies.

I. Operation: Service Company shall develop and assist in the implementation of operating procedures to promote the efficient and economic operation of Water Company. Periodic operational reviews will be performed by Service Company personnel and any deviations from adopted procedures will be reported to Water Company.

J. **Rates and Revenue**: Service Company personnel shall make recommendations for changes in rates, rules and regulations and shall assist Water Company in the conduct of proceedings before, and in its compliance with the rulings of, regulatory bodies having jurisdiction over its operation. These personnel

shall keep abreast of economic and regulatory developments and conditions that may affect Water Company; and advise Water Company of any such developments and conditions to the extent that they may be important to Water Company. Rates and Revenue personnel shall assist in the preparation of rate filings or applications and the supporting documents and exhibits requested or required by the Water Company and their respective regulatory commissions. Service Company shall also provide qualified personnel to testify on Water Company's behalf as required during any regulatory proceedings.

K. **Risk Management**: Service Company shall provide a Risk Management Program to review the exposures to accidental loss of the Water Company, recommend efficient methods of protection either through the purchase of insurance, self-insurance or other risk management techniques and arrange for the purchase of insurance coverage. It shall also supervise investigation procedures; review claims; and negotiate and assist in, and evaluate proposals for, settlement at the request of Water Company. It shall assist in the establishment of safety and security programs to avoid or minimize risk and loss.

L. **Water Quality**: Service Company shall assist Water Company to comply with standards of governmental agencies and establish and attain water quality objectives of the Water Company. It shall assist in providing design criteria for processes, coordinating with public agencies, developing approaches and solutions to water quality problems, and providing

technical assistance and general direction for Water Company personnel.

It shall also provide laboratory services for programmed analyses as required by drinking water regulations, and special analyses as required by Water Company.

ARTICLE II. PAYMENT FOR SERVICES

2.1 In consideration for the services to be rendered by Service Company as hereinabove provided, Water Company agrees to pay to Service Company the cost thereof determined as provided in this Article II and in Article III.

2.2 All costs of service rendered by Service Company personnel for Water Company or in common with other Water Companies shall be charged to Water Company based on actual time spent by those personnel as reflected in their daily time sheets or other mutually acceptable means of determination.

2.3 All costs of Service Company incurred in connection with services rendered by Service Company which can be identified and related exclusively to Water Company, shall be charged directly to Water Company.

2.4 All costs incurred in rendering services to Water Company in common with similar services to other Water Companies which cannot be identified and related exclusively to services rendered to a particular Water Company, shall be allocated among all Water Companies so served, or, in the case of costs incurred with respect to services rendered to a particular group of Water

Companies, among the members of such group, based on the number of customers served at the immediately preceding calendar year end.

2.5 Cost for support personnel (secretaries, clerical personnel, clerks, messengers, telephone operators, mail clerks, and other incidental support personnel of the Service Company) as well as the cost of lease payments, depreciation, utilities and other costs associated with leasing office space and equipment by Service Company shall be allocated among the Water Companies on the basis of the proportion of the aggregate cost allocated under Sections 2.3 and 2.4.

ARTICLE III. ALLOWANCE FOR OVERHEAD

3.1 In determining the cost to be assessed by Service Company for the rendering of services to Water Company as herein provided, there shall be added to the salaries of all officers and employees for whose services charges are to be made, a percentage sufficient to cover the general overhead of Service Company, as defined below, properly allocable thereto. Such percentage shall be calculated each month and shall be the ratio of the total general overhead of the Service Company for the month to the total salaries of the employees for whose service charges are to be made to the Water Companies. No general overhead of Service Company shall be added to costs incurred for services of non-affiliated consultants employed by Service Company.

3.2 The term "general overhead" shall include:

(a) pension and insurance premiums paid for the benefit of Service Company employees,

(b) legal and other fees for services rendered to the Service Company,

(c) taxes,

(d) other general office supplies and other similar expenses, and

(e) interest on working capital.

ARTICLE IV. BILLING PROCEDURES AND BOOKS AND RECORDS

4.1 As soon as practicable after the last day of each month, Service Company shall render a bill to Water Company for all amounts due from Water Company for services and expenses for such month plus an amount equal to the estimated cost of such services and expenses for the current month, all computed pursuant to Articles II and III. Such bill shall be in sufficient detail to show separately the charge for each class of service rendered. All amounts so billed shall reflect the credit for payments made on the estimated portion of the prior bill and shall be paid by Water Company within a reasonable time after receipt of the bill therefore.

4.2 Service Company agrees to keep its books and records available at all times for inspection by representatives of Water Company or by regulatory bodies having jurisdiction over Water Company.

4.3 Service Company shall at any time, upon request of Water Company, furnish any and all information required by Water Company with respect to the services rendered by Service Company

hereunder, the costs thereof, and the allocation of such costs among Water Companies.

ARTICLE V. OTHER AGREEMENTS

5.1 It is understood by Water Company that Service Company has entered or may enter into similar agreements with other Water Companies that are affiliated with American to which similar services are to be furnished. Service Company will not enter into agreements to perform similar services for other companies on terms more favorable than those provided herein.

5.2 It is understood by Water Company that Service Company has entered or may enter into an agreement or agreements with American and certain other companies not engaged in the water or sewer service business to which limited services are to be furnished; Water Company consents to such additional agreements, provided, however, that no part of the cost of furnishing such services will be charged to Water Company.

ARTICLE VI. TERM OF AGREEMENT

This agreement shall become effective as of the later of (a) the date first mentioned above or (b) the date the parties receive the last of any necessary approvals of governmental regulatory agencies having jurisdiction in the premises. Upon becoming effective, this agreement shall be the sole agreement between the parties concerning the subject matter hereof and shall supersede all prior agreements, written or oral, including the agreement dated January 1, 1971, which shall terminate on the date this

agreement becomes effective. This agreement shall continue in full force and effect until terminated by either of the parties hereto giving the other party hereto ninety day's notice in writing; provided, however, that this agreement shall terminate as of the date Water Company or Service Company ceases to be an affiliate of American.

IN WITNESS WHEREOF, Service Company and Water Company have caused this agreement to be signed in their respective corporate names by their respective Presidents or Vice Presidents, and impressed with their respective corporate seals attested by their respective Secretaries or Assistant Secretaries, all as of the day and year first above written.

ATTEST:

AMERICAN WATER WORKS SERVICE COMPANY, INC.

By _____
President

ATTEST:

Stephen N. Chambers

TENNESSEE-AMERICAN WATER COMPANY

By _____
President

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Donald J. Petry

Other Participating Employees: AWWSC External Affairs, Kathryn Hart, CD Rates

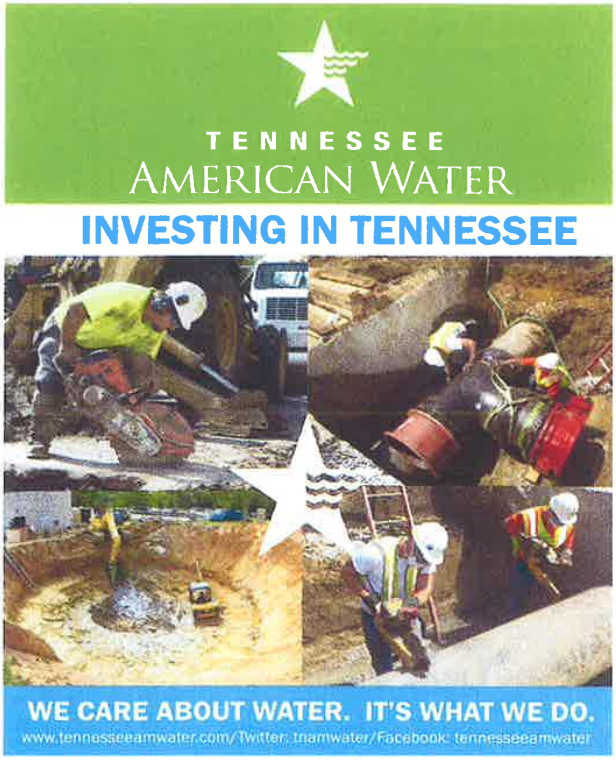
Question:

76. Please ***Identify*** and provide copies (in the original medium and format) of all advertisements that were placed, displayed, or distributed in any area served by ***TAWC*** and which were paid for by ***TAWC*** or any ***TAWC Parent or Affiliate*** since January 1, 2010 to date.

Response:

Please see attachment for the advertisements the Company has placed since January 1, 2010.

Please note that the Company placed a logo banner ad on the *Chattanoogan.com* web site. The Company does not archive prior banner ads and, therefore, cannot locate a copy of the advertisement. In addition, the Company placed an ad as part of its Yellow Page listing but is unable to locate a copy of that in its original at this time. The Company will supplement this request if it is located.


TENNESSEE
AMERICAN WATER
INVESTING IN TENNESSEE
WE CARE ABOUT WATER. IT'S WHAT WE DO.
www.tennesseeamwater.com/ Twitter: tnamwater/Facebook: tennesseeamwater

WE ARE INVESTED IN CHATTANOOGA

Tennessee American Water congratulates the Chattanooga Area Chamber of Commerce on 125 years.

Great things started in 1887. Tennessee American Water is invested in the future of Chattanooga. From improving infrastructure to sponsoring community organizations and events, we have been dedicated to meeting the needs of our customers in Tennessee since 1887.

TENNESSEE
AMERICAN WATER

WE CARE ABOUT WATER. IT'S WHAT WE DO.
(866) 736-6420 • www.tennesseeamwater.com

TENNESSEE
AMERICAN WATER

A QUALITY ACHIEVEMENT

Tennessee American Water is 100% compliant in meeting federal and state water quality standards.
At Tennessee American Water, we conduct more than 5,800 water quality tests each year. We think about the quality of your drinking water every day...so you don't have to.

WE CARE ABOUT WATER. IT'S WHAT WE DO.
www.tawc.com

TAW_R_COCDR1#076Attachment
Page 3 of 11

TENNESSEE
AMERICAN WATER

FROM RIVER TO TAP...

WE'RE THERE FOR YOU 24 HOURS A DAY, 7 DAYS A WEEK

We treat and deliver 39 million gallons of water each day; we have a strong commitment to investing in our infrastructure; and—like a good neighbor—we help our communities by supporting local organizations, environmental initiatives and low-income assistance programs.

WE CARE ABOUT WATER. IT'S WHAT WE DO.

www.tawc.com

TENNESSEE
AMERICAN WATER

GREAT AMERICAN VALUE

LESS THAN A PENNY A GALLON

When you consider the many uses for water—drinking, cooking, cleaning, bathing and fire protection, among others—Tennessee American Water provides tremendous value. And we're proud to deliver that value to homes and businesses day after day.

WE CARE ABOUT WATER. IT'S WHAT WE DO.

www.tawc.com

April 23 1926
Looking Between Cylinders of Nordberg
Providing quality water service to
Chattanooga for 125 years
GOOD MORNING,
CHATTANOOGA"
TENNESSEE
AMERICAN WATER
WE CARE ABOUT WATER. IT'S WHAT WE DO.
(866) 736-6420 • www.tennesseeamwater.com

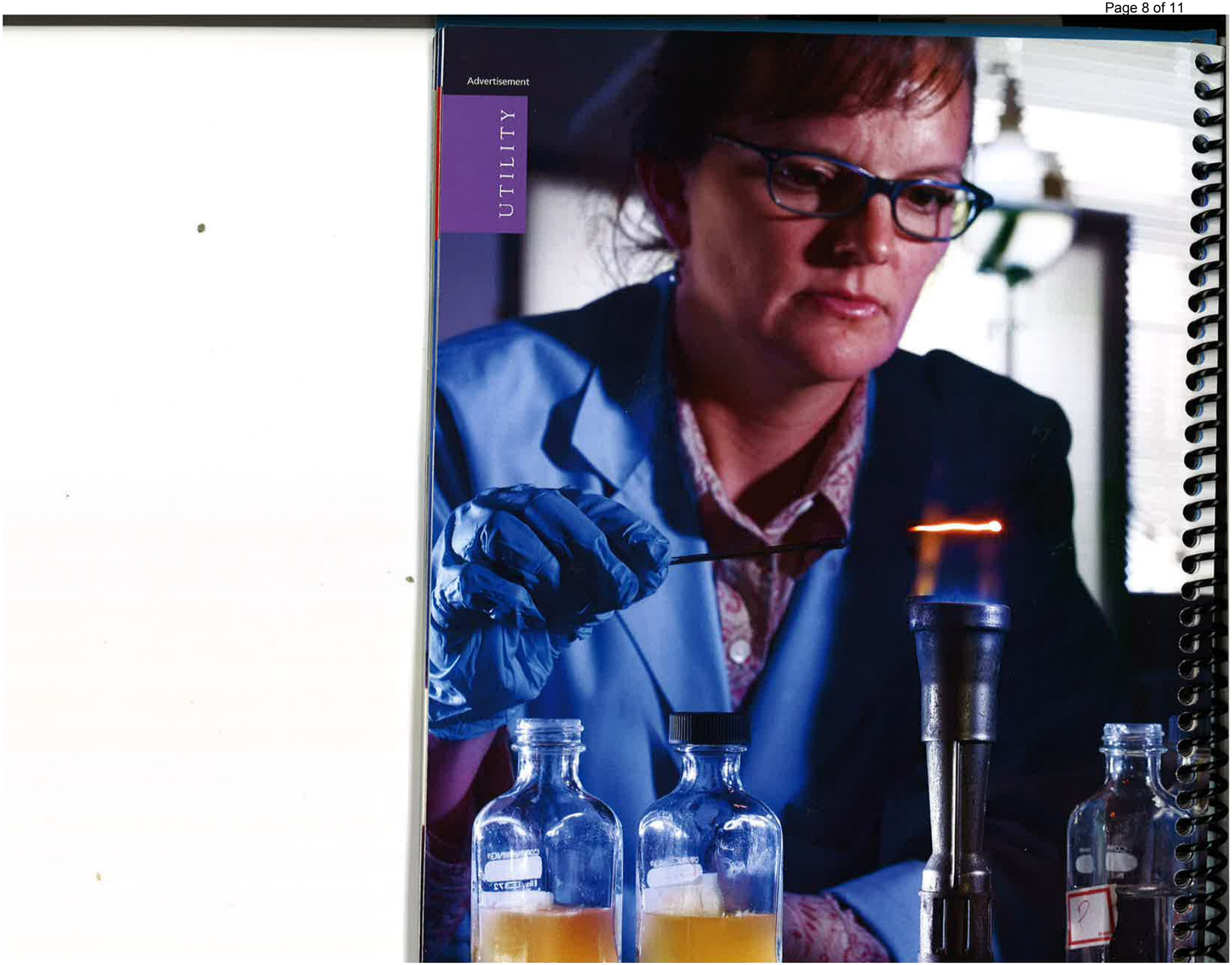
Showcasing The Renaissance City Of The South®

CHATTANOOGA

Celebrating 20 Years

2010 PLANNER

with 20 GREAT REASONS *to live and do business* IN CHATTANOOGA


Advertisement
UTILITY

TENNESSEE AMERICAN WATER

The Delivery of Drinking Water

THE CONVENIENCE OF DRINKING WATER DELIVERED DIRECTLY TO THE HOME HAS BEEN A FACT OF LIFE IN CHATTANOOGA SINCE 1850, when pipes were installed to bring water from artesian wells to the homes of Chattanooga's 2,500 inhabitants.

In 1856 the area's first water company, Chattanooga Water Corporation, was established and in 1863 the Union Army took possession of the existing system. Under the direction of General Ulysses S. Grant, a steam boiler and pump were built at the foot of Pine Street to take water from the Tennessee River. Wooden storage tanks were built on the side of Cameron Hill and approximately two miles of six-inch pipes were installed.

After the war, a group of local business people purchased the system at public auction and formed the Chattanooga Water Company. On March 11, 1868, Chattanooga Water Company was granted a charter of incorporation by the Tennessee legislature. Later, the firm was sold to Colonel George H. Hazelhurst and became the Lookout Water Company. It supplied most of the city's water. A nine million gallon reservoir on Cameron Hill and a pumping station at the corner of Water and Pine Streets were erected. Water was pumped from the river to the reservoir. It then flowed into the distribution system by gravity. Water mains were installed and Chattanooga had its first fire protection service.

Water quality concerns associated with the city runoff forced the water company to relocate its intakes upstream of the city. Unable to finance such a major project, Lookout Water Company, as well as another local company, Mountain Springs Water Company, were sold in 1887 to the American Water Works and Guarantee Company, the forerunner of American Water Works Company, Inc. Both systems were

CHATTANOOGA WATER TIMELINE

- 1856 Chattanooga's first water company established
- 1863 Union forces seize water system, install first storage tanks
- 1868 First pumping station built
- 1892 Filtered water service begins
- 1973 Water provider becomes known as Tennessee American Water
- 2009 9-year recipient of the Director's Award by the Partnership for safe drinking water

consolidated to become the City Water Company of Chattanooga and rapid progress was made. A new pumping station was built at the mouth of Citico Creek, miles of water mains were installed and new storage facilities and filters were added. In 1892, Chattanooga became the second city in the south to have filtered water. The name was changed once again in 1973 to Tennessee American Water Company.

Many improvements have been made since the 1850s. Today, Tennessee American Water's system includes 1,280 miles of water main, 23 water storage tanks, 5,065 fire hydrants, 29 pumping stations and a 65 mgd award-winning water treatment facility ensuring that safe, reliable water service is available to the residents of Chattanooga.

Service

On any given day, a typical single-family home in Chattanooga will use approximately 70 gallons of water for daily activities, such as drinking, cooking and washing. When people turn on the faucet, they expect to have clean water they can drink or use at any time. Having access to safe, reliable water service is a cornerstone of our modern way of life. So just how does the water get from the Tennessee River to the tap?

Chattanooga's water source is the Tennessee River, which provides Tennessee American Water with an adequate water supply throughout the year. The water in the Tennessee River comes from watersheds throughout the Tennessee Valley. Watersheds serve as natural funnels delivering water to the river. Watersheds are comprised of rivers, creeks and streams transported by forests, hills and mountains, eventually ending up in the Tennessee River. As water travels through watersheds, it picks up natural and manmade contaminants.

The untreated water in the river, while safe for recreational activities like swimming and fishing, does not meet Safe Drinking Water standards for human consumption set by the federal government; therefore, consuming water straight from the Tennessee River is not recommended.

The Safe Drinking Water Act (SDWA) is the federal law that imposes regulations on the quality of drinking water which water suppliers must adhere to. The United States Environmental Protection Agency (USEPA) is responsible for administering the SDWA. Tennessee American Water ensures that the drinking water our customers receive is as good as, or better than, EPA standards. We are regulated by the US EPA and the Tennessee Department of Environment and Conservation (TDEC).

To ensure the water collected from the Tennessee River is free of contaminants and meets stringent water quality standards set by the US Environmental Protection Agency, Tennessee American Water must employ a complex water treatment process that involves clarification and filtration.

TENNESSEE AMERICAN WATER TODAY

- 1,280 miles of water main
- 23 Water Storage Tanks
- Over 5,000 fire hydrants
- 29 pumping stations
- 65 mgd treatment facility

Quality

From the moment water is collected from the Tennessee River at Tennessee American Water's treatment plant on Citico Drive the process of creating quality water for its customers begins. Everyday Tennessee American Water tests the water before and after it is treated to ensure it meets USEPA and TDEC standards. In the treatment facility, water goes through six basic treatment steps:

1. Disinfection - Chlorine is added to kill bacteria or other microorganisms in the water.

2. Coagulation - Special compounds are added to the water to help accumulate the silt and other particles from the water.

3. Sedimentation - The particles accumulated during coagulation become heavy and settle to the

bottom of the sedimentation vessel.

4. Filtration - Following sedimentation, the clarified water passes through filters containing fine sand and granular activated carbon to remove very small particles and unpleasant taste and odor-causing compounds.

5. Final Chemical Treatment - Following filtration, and before water is distributed to customers, the water is treated with approved chemicals in accordance with state and federal regulations. Chlorine is added as a disinfectant for the water during distribution; fluoride is added for dental health; and corrosion control chemicals are added to help prevent corrosion of home plumbing.

6. Storage - Water is placed in a closed tank or reservoir to be used in meeting the constantly changing water needs of the community.

Once the water is treated, Tennessee American Water will either store the water in a variety of elevated and ground storage tanks or it is immediately delivered to homes and businesses.

Tennessee American Water has been an active participant in the Partnership for Safe Water program from the American Water Works Association (AWWA). The Partnership's mission is to "improve the quality of drinking water delivered to customers of public water supplies by optimizing system operations." Tennessee American Water's Citico treatment facility has received the Director's Award for the last nine years for the facilities' adherence to the high operating standards of the Partnership. The commitment to producing the highest quality water available, strenuous attention to controlling costs, and human necessity makes water service the most valuable utility service available to the citizens of Chattanooga.

Value

Investor-owned utilities are closely regulated by public utility commissions. They are the subject of a long, open and transparent process and in the end, the rates are set by the regulator. This formal process for hearing rate requests includes informing the public; intervention by interested parties; presentation of evidence and hearings, testimony and rebuttal; orders from administrative law judges and rights to appeal.

A main driver of increasing rates is capital investment, or the money water providers need to repair and upgrade the water supply infrastructure.

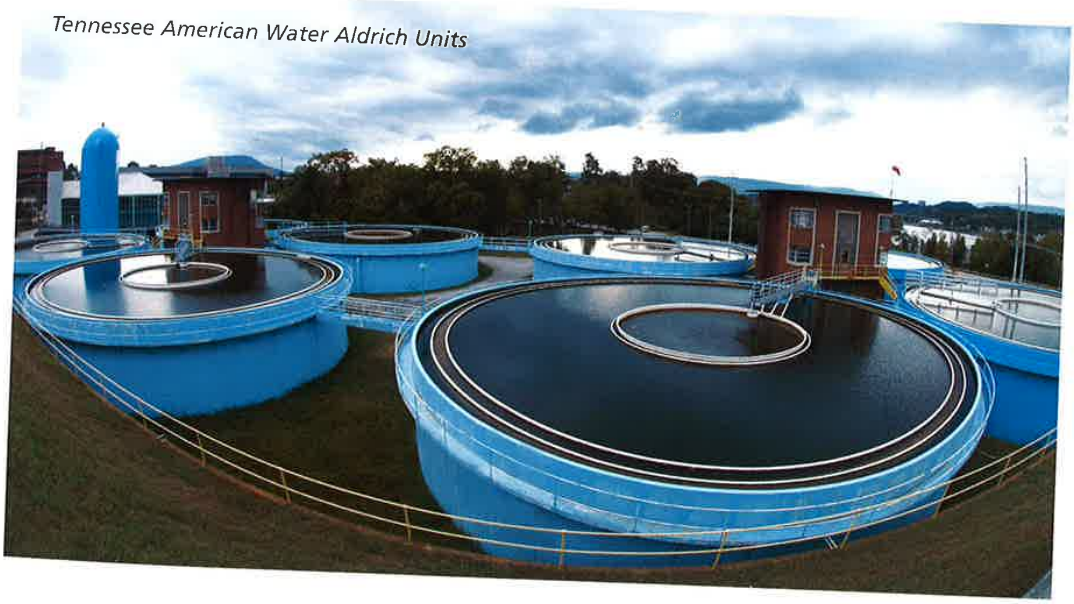
Replacing aging infrastructure is a challenge the whole water industry faces. The EPA estimates that approximately $335 billion of capital spending will be necessary between 2007 and 2026 to replace aging infrastructure and to comply with quality standards to ensure quality water systems across the United States. In addition, another $300 to $400 billion will be required for wastewater.

American Water is committed to consistently providing customers with high-quality drinking water, as well as reliable water and wastewater services. For the foreseeable future, the company estimates it will invest nearly a billion dollars annually to replace aging infrastructure.

Even though there is a significant cost to bring water to customers' taps, water is typically the cheapest commodity in the American household. To put this in perspective, in most of the states American Water serves, the water costs about or is less than one penny per gallon. Compared with other utilities or bottled water, it is a great value.

20

Tennessee American Water Aldrich Units



STORY BY Kimberly M. Dalton

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Donald J. Petry

Other Participating Employees: Scott Rungren, CD Rates

Question:

77. Provide a detailed listing of all payments for the advertisements identified in response to the previous Request, showing the amount, date, person or entity making the payment, and person or entity to which payment was made.

Response:

Please see the attachment for a listing of the requested advertisements.

The listing includes the advertisements placed on the Chattanoogan.com web site and the Yellow Pages, discussed in the response to Item 76 of this same data request, although the Company was not able to provide copies of those ads for the reasons noted in that response.

Tennessee American Water Company
COCDR1-077
Advertising Payments

Payee	Remark	2010	2011	2012	Grand Total
ATT ADVERTISING SOLS	Yellow Page Ad		254.10		254.10
AGC of East TN Inc	Advertisment in mag.			675.00	675.00
Chattanooga Magazine	Business Profile	1,100.00			1,100.00
Chattanooga Metropolitan Airport	2/15-5/14/11 AD		2,175.00		2,175.00
Chattanooga Metropolitan Airport	5/15-8/14/11 AD		2,175.00		2,175.00
Chattanooga Metropolitan Airport	ADS 8/15-11/14/		2,175.00		2,175.00
Chattanooga Metropolitan Airport	ADVERTISING	2,400.00			2,400.00
Chattanooga Metropolitan Airport	ADVERTISING QTR	2,400.00			2,400.00
Chattanooga Metropolitan Airport	DEC 2010-FEB 20		2,400.00		2,400.00
Chattanooga Metropolitan Airport	QTR ADVERTISING	2,400.00			2,400.00
Chattanooga Metropolitan Airport	TN AW INV # 121			2,175.00	2,175.00
Chattanoogan.com	BANNER 03/24/10	980.00			980.00
CMC Publications LLC	HALF PG ADD			1,050.00	1,050.00
CMC Publications LLC	TN AW INV # 572		1,550.00		1,550.00
		9,280.00	10,729.10	3,900.00	23,909.10

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Linda C. Bridwell

Other Participating Employees: CSC

Question:

78. Please ***Identify*** for each year since January 1, 2010, the number of employees by position at the National Call Centers and for each position set forth the unburdened base hourly wage or salary rate (without overheads). In the event there is more than one base hourly rate for each position, provide the average and median base hourly rates for each such position.

Response:

Please refer to the confidential attachment.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Linda Bridwell

Other Participating Employees: Karen Cooper, CSC

Question:

79. ***Identify*** and provide all ***Documents*** constituting, reporting, or referring to call center operating statistics and reports that are prepared for management of ***TAWC***, ***AWWSC***, or any other subsidiary or affiliate of ***AWWC*** relating to, referring to, or concerning the efficiency, effectiveness, or other aspects of the operations of the call centers, including, without limitation, such information for operations related to ***Non-Regulated Service***s or other activities of non-regulated operations and companies served by the call centers.

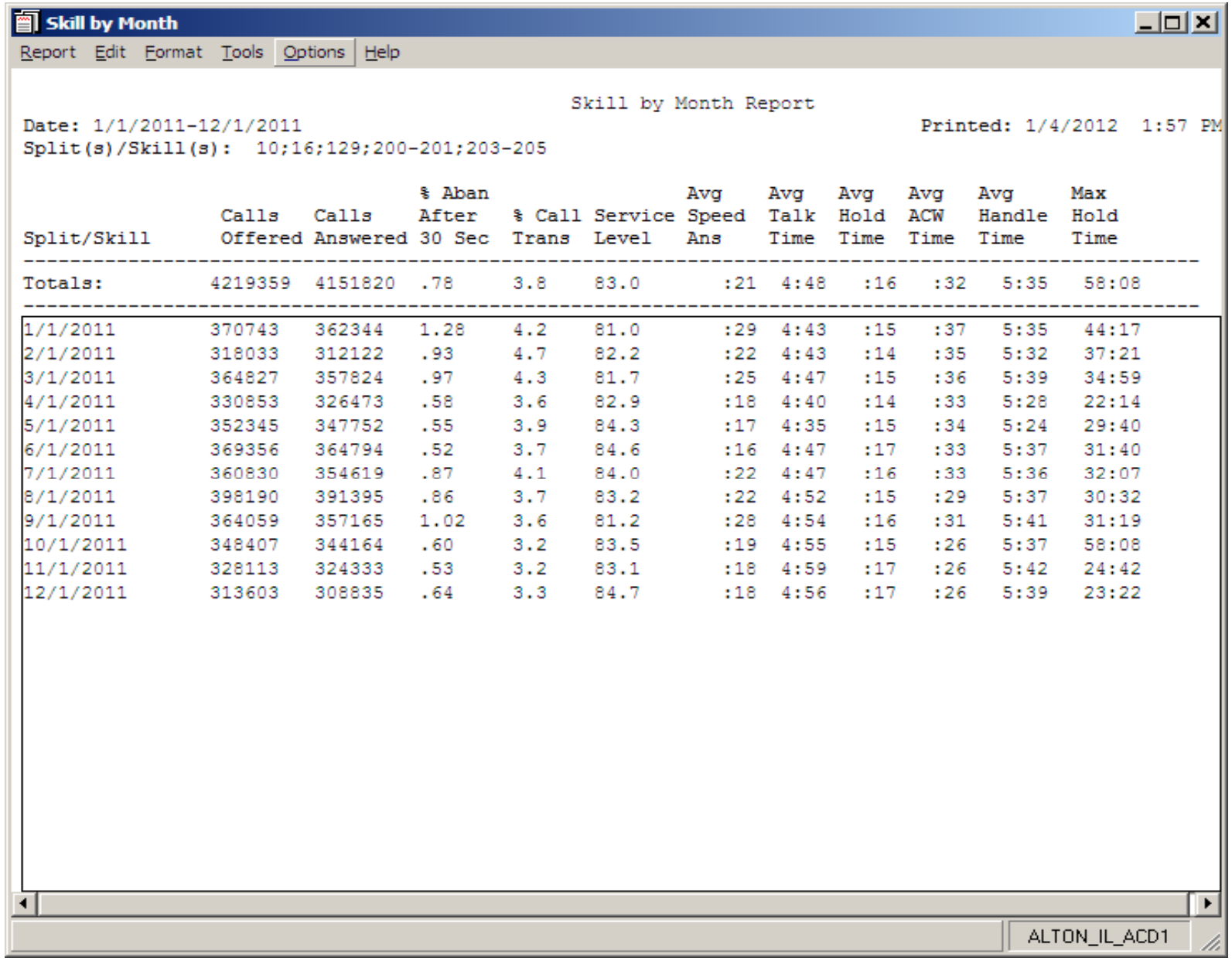
Response:

There are three primary documents to monitor and track operational productivity and service quality at the call centers: 1) CSC Managing Directors Report, 2) Service Level Targets Report, and 3) Call Handling Data - Skill by Month Report. These three reports are attached to this response.

Monthly Customer Service Indicators Totals

												MONTH		YEAR-TO-DATE	
Monthly Customer Service Indicators Totals	**Unit**	**Jan-11 Actual**	**Feb-11 Actual**	**Mar-11 Actual**	**Apr-11 Actual**	**May-11 Actual**	**Jun-11 Actual**	**Jul-11 Actual**	**Aug-11 Actual**	**Sep-11 Actual**	**Oct-11 Actual**	**#REF! Actual**	**#REF! Actual**	**Actual**	**Comment**
Calls Offered to Queue	#	370,743	318,033	364,827	330,853	352,345	369,356	360,830	398,190	364,059	348,407	328,113	313,603	4,219,359	Centerwide - not broken out by state
% Service Level < 30 seconds	%	81.02%	82.22%	81.75%	82.86%	84.32%	84.63%	83.95%	83.25%	81.20%	83.48%	83.12%	84.70%	83.01%	Centerwide - not broken out by state
Avg Speed to Answer	m:ss	0:29	0:22	0:25	0:18	0:17	0:16	0:22	0:22	0:28	0:19	0:18	0:18	0:21	Centerwide - not broken out by state
Avg Handle Time	m:ss	5:35	5:32	5:39	5:28	5:24	5:37	5:36	5:37	5:41	5:37	5:42	5:39	5:35	Centerwide - not broken out by state
Written Correspondence Answered w/in 3 days	%	99.90%	99.33%	98.93%	99.94%	99.32%	99.99%	100.00%	99.16%	99.43%	97.83%	98.96%	97.74%	99.28%	Centerwide - not broken out by state
1st Call Effectiveness	%	92.36%	91.77%	91.58%	91.86%	91.56%	91.17%	90.17%	90.06%	90.67%	90.40%	90.08%	90.51%	91.00%	
% Customer Inquire Response within 3 day	%	95.68%	94.05%	93.69%	95.29%	94.92%	94.94%	94.57%	94.86%	94.77%	94.12%	94.88%	98.29%	95.37%	
Public Utility Commissions Complaints Opened	No.	434	392	522	644	518	454	509	576	537	519	491	445	6041	
Service Orders Completed as Scheduled	%	98.34%	98.74%	99.18%	98.13%	97.79%	97.69%	97.43%	97.91%	97.62%	97.94%	97.55%	98.16%	98.03%	
Shut Offs Worked as % of Issued	%	82.23%	87.08%	90.20%	91.48%	92.34%	92.51%	89.37%	91.26%	89.70%	91.74%	89.83%	88.50%	89.78%	
% Unscheduled Est. Readings	%	12.22%	16.81%	1.08%	0.85%	1.15%	1.41%	1.07%	1.10%	1.09%	0.91%	1.00%	1.06%	3.28%	Includes E & O read types
% Scheduled Est. Readings	%	0.00%	0.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.01%	PA only
# Executive Complaints Opened	No.	38	31	41	40	35	29	38	29	39	49	32	20	421	

TAW_R_COCDR1#079Attachment
Page 1 of 21


Skill by Month
Report Edit Format Tools Options Help
Skill by Month Report
Date: 1/1/2011-12/1/2011
Printed: 1/4/2012 1:57 PM
Split(s)/Skill(s): 10;16;129;200-201;203-205
Split/Skill | Calls Offered | Calls Answered | % Aban After 30 Sec | % Call Trans | Service Level | Avg Speed Ans | Avg Talk Time | Avg Hold Time | Avg ACW Time | Avg Handle Time | Max Hold Time
Totals: 4219359 4151820 .78 3.8 83.0 :21 4:48 :16 :32 5:35 58:08
1/1/2011 370743 362344 1.28 4.2 81.0 :29 4:43 :15 :37 5:35 44:17
2/1/2011 318033 312122 .93 4.7 82.2 :22 4:43 :14 :35 5:32 37:21
3/1/2011 364827 357824 .97 4.3 81.7 :25 4:47 :15 :36 5:39 34:59
4/1/2011 330853 326473 .58 3.6 82.9 :18 4:40 :14 :33 5:28 22:14
5/1/2011 352345 347752 .55 3.9 84.3 :17 4:35 :15 :34 5:24 29:40
6/1/2011 369356 364794 .52 3.7 84.6 :16 4:47 :17 :33 5:37 31:40
7/1/2011 360830 354619 .87 4.1 84.0 :22 4:47 :16 :33 5:36 32:07
8/1/2011 398190 391395 .86 3.7 83.2 :22 4:52 :15 :29 5:37 30:32
9/1/2011 364059 357165 1.02 3.6 81.2 :28 4:54 :16 :31 5:41 31:19
10/1/2011 348407 344164 .60 3.2 83.5 :19 4:55 :15 :26 5:37 58:08
11/1/2011 328113 324333 .53 3.2 83.1 :18 4:59 :17 :26 5:42 24:42
12/1/2011 313603 308835 .64 3.3 84.7 :18 4:56 :17 :26 5:39 23:22
ALTON_IL_ACD1

AMERICAN WATER

CSC 2011 Quarterly SLT Performance — Eastern Division

Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter			Actual 2nd Quarter			Actual 3rd Quarter		
Call Handling															
Annualized Calls/Customer	Total Calls Received at Switch /Total Customers	≤ 1.36 Calls/Customer /Year	Ensure processes & practices are appropriate to resolve customer needs.	Shared	Total Calls Received at Switch/ Active Customer Count Telephone Switch Data	Location	Total Calls Received	Calls/ Cust	Annualized Calls/ Customer	Total Calls Received	Calls/ Cust	Annualized Calls/ Customer	Total Calls Received	Calls/ Cust	Annualized Calls/ Customer
						Indiana	142,115	0.45	1.88	148,345	0.47	1.90	157,541	0.50	1.89
						Kentucky	85,147	0.61	2.22	83,203	0.60	2.29	89,335	0.64	2.38
						Maryland	1,134	0.22	0.99	1,185	0.23	0.93	1,175	0.22	0.91
						New York	17,133	0.23	0.95	15,978	0.21	0.95	21,513	0.29	0.95
						Ohio	29,820	0.54	2.10	27,500	0.50	2.10	28,620	0.51	2.09
						Tennessee	51,617	0.64	2.49	49,804	0.62	2.51	57,553	0.71	2.56
						Virginia	25,294	0.42	1.68	25,027	0.42	1.71	25,647	0.43	1.71
						West Virginia	107,646	0.68	2.45	105,117	0.59	2.49	117,291	0.66	2.53
						Division Total	459,906	0.52	1.85	456,159	0.50	1.85	498,675	0.55	1.88
CSR Service Order Accuracy	% correct SO/issued Based on 6% random sample evaluation	≥90%	Ensure Customer Satisfaction and Reduction of SO Errors to State Ops	CSC	CSC Performance Reporting Team Sampling Procedures and Reporting Processes	Indiana	89.7%			90.6%			90.0%		
						Kentucky	90.3%			91.0%			90.0%		
						Maryland	92.3%			90.5%			93.8%		
						New York	89.5%			92.6%			85.0%		
						Ohio	88.5%			89.8%			88.9%		
						Tennessee	88.2%			92.2%			88.9%		
						Virginia	89.8%			88.0%			91.1%		
						West Virginia	88.1%			89.6%			88.1%		
						Division Total	89.2%			90.4%			89.3%		
QA Scores for CSR	QA Scores per CSR	≥89% score based on QA review	Ensure quality contacts for all External Customers	CSC	QA Department Scoring using QA process to measure both "Technical" and "Customer Care Skills" (8+ Calls per CSR per Month)	Indiana	90.7%			90.3%			92.1%		
						Kentucky	91.3%			91.1%			90.2%		
						Maryland	82.3%			90.3%			81.9%		
						New York	88.2%			92.3%			90.9%		
						Ohio	90.6%			92.3%			92.0%		
						Tennessee	92.0%			88.5%			89.4%		
						Virginia	92.3%			87.3%			93.1%		
						West Virginia	91.3%			88.6%			91.0%		
						Division Total	91.1%			89.9%			91.2%		
First Call Effectiveness (ECIS System Calculation)	% of Calls handled on initial call	≥85%	Ensure External Customer issues being addressed on first attempt	CSC	System calculation: First Call Effectiveness PCT1CEFF report in ECIS. Customer not calling back for same problem within 30 days.	Location	ECIS Data			ECIS Data			ECIS Data		
						Indiana	93%			92%			90%		
						Kentucky	93%			93%			91%		
						Maryland	94%			95%			94%		
						New York	92%			92%			92%		
						Ohio	92%			92%			90%		
						Tennessee	93%			92%			90%		
						Virginia	92%			92%			90%		
						West Virginia	91%			92%			90%		
						Division Total	93%			92%			90%		
ORC Data Input First Call Effectiveness (Based on Customer Responses)	% of customers who contacted AW only once about their mose recent concem or request	≥85%	Ensure external customer issues being address on first attempt	CSC	Quarterly Service Quality Survey Results on Q21 (How many different times did you contact AW about your most recent or concern?)	Location	Serv Qual Report			ECIS Data			ECIS Data		
						Indiana	81%			79%			81%		
						Kentucky	76%			76%			81%		
						Maryland	Maryland and Virginia results combined								
						New York	71%			72%			82%		
						Ohio	79%			78%			82%		
						Tennessee	68%			81%			71%		

TAW_R_COCDR1#079Attachment

AMERICAN WATER

CSC 2011 Quarterly SLT Performance — Eastern Division

Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter	Actual 2nd Quarter	Actual 3rd Quarter
						Virginia	85%	82%	86%
						West Virginia	68%	76%	76%
						Division Total	76%	78%	79%
ORC Data Input Satisfaction with Overall Outcome of Service Contact		85%	Ensure AW Customers value the interactions provided by the CSC.	TBD	Quarterly Service Quality Survey Results on Q19 as a customer reflected overall measurement. (Overall how satisfied were you with the outcome of your service contact?)	Location	Serv Qual Report	ECIS Data	ECIS Data
						Indiana	89%	90%	89%
						Kentucky	92%	86%	89%
						Maryland	Maryland and Virginia results combined		
						New York	70%	81%	84%
						Ohio	80%	85%	90%
						Tennessee	91%	88%	89%
						Virginia	87%	88%	96%
						West Virginia	82%	87%	86%
						Division Total	86%	88%	87%
ORC Data Input Satisfaction with Performance of CSR's Results - AW Service Quality Survey		85%	Ensure AW Customers value the interactions provided by the CSC.	TBD	Evaluated Quarterly by using q# Q7f as a customer reflected measurement (How would you rate the CSR on overall performance?)	Location	Serv Qual Report	ECIS Data	ECIS Data
						Indiana	88%	92%	95%
						Kentucky	87%	88%	97%
						Maryland	Maryland and Virginia results combined		
						New York	94%	92%	85%
						Ohio	81%	87%	93%
						Tennessee	89%	91%	93%
						Virginia	84%	96%	98%
						West Virginia	88%	93%	93%
						Division Total	87%	91%	94%
Special Handling	Orders applied to Special Handling Crew	TBD	Ensure CSC and states are doing their part	Shared	TBD	TBD			
Billing									
% Billing Corrections to Active Accounts		Total Bill Corrections to water service not greater than 2.5% of	Increased billing accuracy and customer	Shared	Total # of water adjustments issued for billing error, misread, overestimate, backbilling, & stopped meter combined with number of cancel/rebills. This total will	Indiana	1.2%	0.3%	0.3%
						Kentucky	1.3%	0.5%	0.5%
						Maryland	0.4%	0.7%	0.8%
						New York	0.1%	0.1%	0.1%
						Ohio	1.1%	0.7%	0.5%
						Tennessee	0.1%	0.4%	0.8%

TAW_R_COCDR1#079Attachment

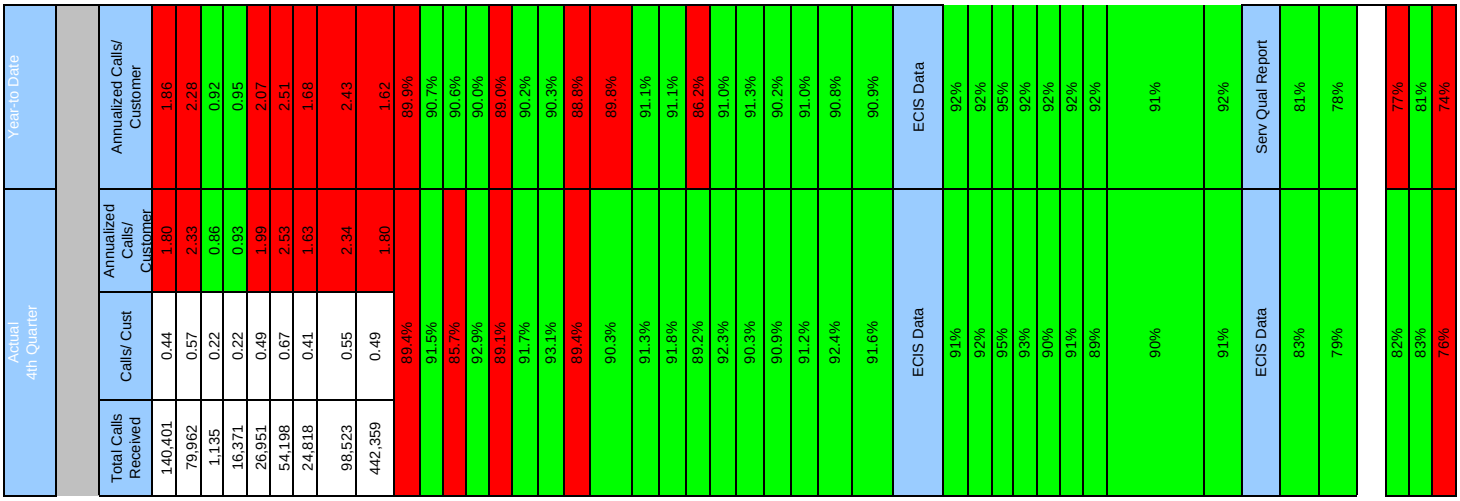
Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter		Actual 2nd Quarter		Actual 3rd Quarter	
		active accounts	satisfaction.		not be greater than 2.5% of the total active accounts as of month end.	Virginia	0.6%		1.0%		0.4%	
						West Virginia	0.8%		0.2%		0.0%	
						Division Total	1.0%		0.3%		0.4%	
Collections												
						Location	% Reduction	$ Reduction	% Reduction	$ Reduction	% Reduction	$ Reduction
						Indiana	41.4%	$303,373	43.1%	$287,201	28.8%	$222,958
						Kentucky	54.6%	$118,247	70.0%	$183,512	37.8%	$130,600

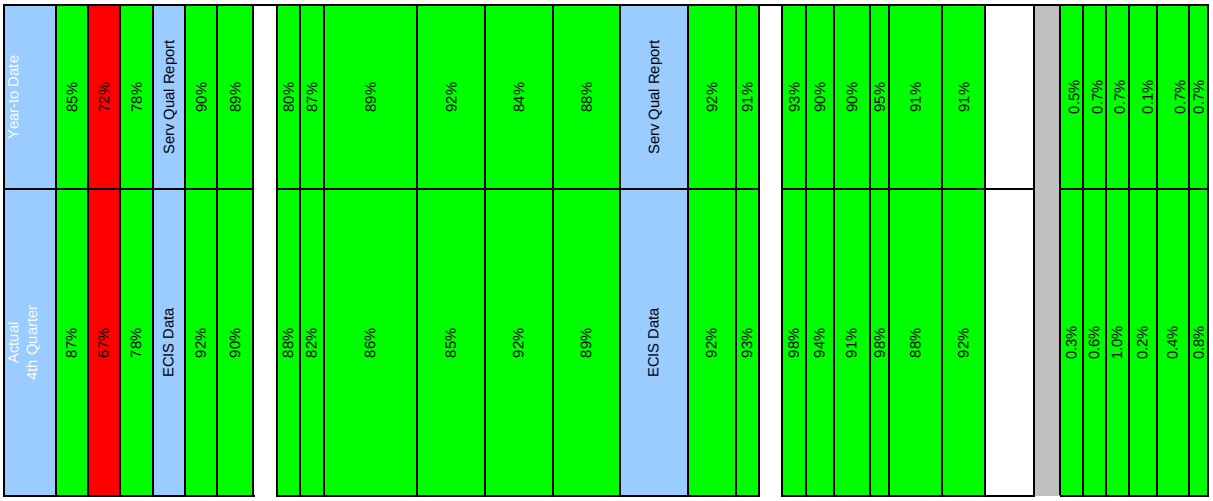
AMERICAN WATER

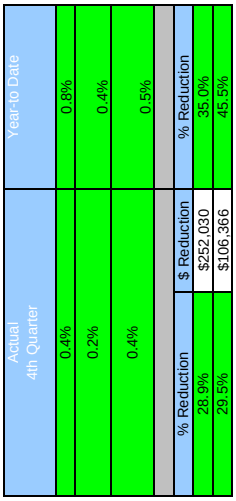
CSC 2011 Quarterly SLT Performance

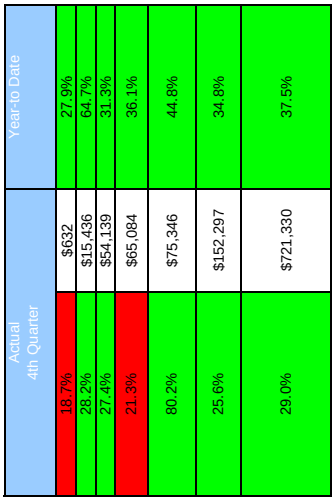
Eastern Division

Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter		Actual 2nd Quarter		Actual 3rd Quarter	
Reduction in Eligible Charged Off Dollars (Closed Account Greater than 30 days to Charge Off)		25% Reduction within a cycle	Increase AW effectiveness of collecting prior to write-off including but not limited to Third Party collection Agency and Collections CSRs transfers.	CSC	The cycle is prior month's Agency & No Agency batch to reporting month final charge off. The data is provided by the Collections Batch Total Data.	Maryland	43.6%	$2,871	33.2%	$1,538	6.0%	$264
						New York	161.8%	$82,899	35.0%	$18,692	44.6%	$30,938
						Ohio	32.3%	$59,083	33.5%	$47,451	32.8%	$62,534
						Tennessee	39.2%	$91,133	34.2%	$86,463	54.8%	$123,948
						Virginia	39.0%	$59,724	28.7%	$33,761	38.2%	$40,018
						West Virginia	45.7%	$205,908	35.4%	$200,232	35.2%	$163,146
						Division Total	45.7%	$921,238	41.6%	$858,852	35.6%	$774,4[illegible]


Actual
4th Quarter
Year-to Date
Total Calls Received
Calls/ Cust
Annualized Calls/ Customer
Annualized Calls/ Customer
140,401
0.44
1.80
1.86
79,962
0.57
2.33
2.28
1,135
0.22
0.86
0.92
16,371
0.22
0.93
0.95
26,951
0.49
1.99
2.07
54,198
0.67
2.53
2.51
24,818
0.41
1.63
1.68
98,523
0.55
2.34
2.43
442,359
0.49
1.80
1.62
89.4%
89.9%
91.5%
90.7%
85.7%
90.6%
92.9%
90.0%
89.1%
89.0%
91.7%
90.2%
93.1%
90.3%
89.4%
88.8%
90.3%
89.8%
91.3%
91.1%
91.8%
91.1%
89.2%
86.2%
92.3%
91.0%
90.3%
91.3%
90.9%
90.2%
91.2%
91.0%
92.4%
90.8%
91.6%
90.9%
ECIS Data
ECIS Data
91%
92%
92%
92%
95%
95%
93%
92%
90%
92%
91%
92%
89%
92%
90%
91%
91%
92%
ECIS Data
Serv Qual Report
83%
81%
79%
78%
82%
77%
83%
81%
76%
74%


Year-to Date
85%
72%
78%
Serv Qual Report
90%
89%
80%
87%
89%
92%
84%
88%
Serv Qual Report
92%
91%
93%
90%
90%
95%
91%
91%
0.5%
0.7%
0.7%
0.1%
0.7%
0.7%
Actual
4th Quarter
87%
67%
78%
ECIS Data
92%
90%
88%
82%
86%
85%
92%
89%
ECIS Data
92%
93%
98%
94%
91%
98%
88%
92%
0.3%
0.6%
1.0%
0.2%
0.4%
0.8%


Year-to Date
0.8%
0.4%
0.5%
% Reduction
35.0%
45.5%
Actual
4th Quarter
0.4%
0.2%
0.4%
$ Reduction
$252,030
$106,366
% Reduction
28.9%
29.5%



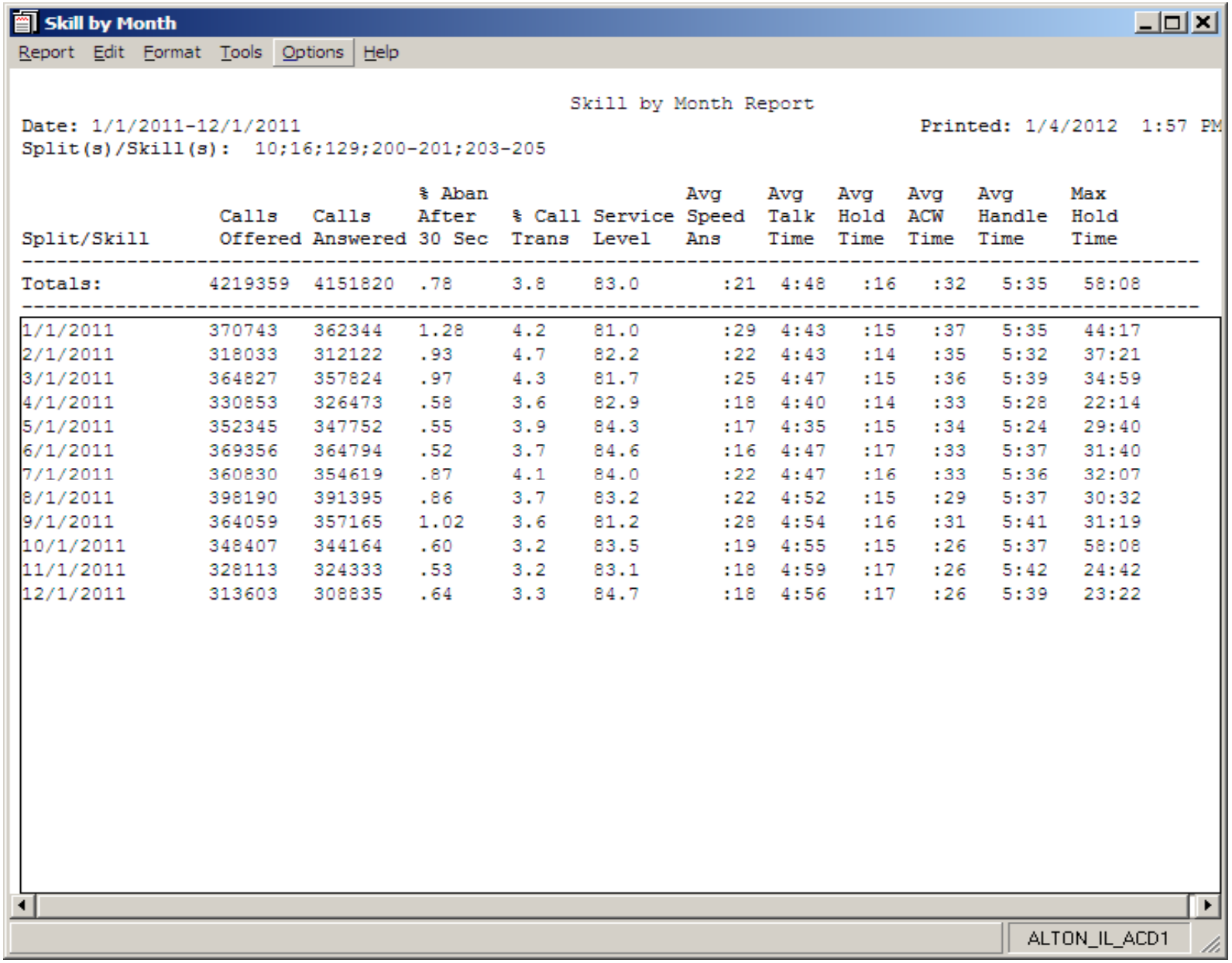
Actual 4th Quarter		Year-to Date
18.7%	$632	27.9%
28.2%	$15,436	64.7%
27.4%	$54,139	31.3%
21.3%	$65,084	36.1%
80.2%	$75,346	44.8%
25.6%	$152,297	34.8%
29.0%	$721,330	37.5%

Eastern Division - Customer Service Indicators

Tennessee American Eastern Division - Customer Service Indicators	Unit	Jan-11 Actual	Feb-11 Actual	Mar-11 Actual	Apr-11 Actual	May-11 Actual	Jun-11 Actual	Jul-11 Actual	Aug-11 Actual	Sep-11 Actual	Oct-11 Actual	Month Nov-12 Actual	Month Dec-12 Actual	YEAR-TO-DATE Actual	Comment
1st Call Effectiveness	%	93.78%	93.26%	92.35%	92.88%	92.51%	92.16%	90.12%	89.33%	90.53%	90.63%	90.21%	91.11%	91.52%	
% Customer Inquire Response within 3 day	%	96.54%	95.39%	94.77%	96.54%	96.63%	96.75%	96.54%	94.27%	95.48%	93.49%	94.81%	93.30%	95.35%	
Public Utility Commissions Complaints Opened	No.	1	1	2	0	0	2	4	2	1	4	0	0	17	
Service Orders Completed as Scheduled	%	96.39%	98.79%	99.11%	99.46%	99.55%	99.61%	97.97%	98.48%	98.92%	98.44%	97.29%	94.80%	98.24%	
Shut Offs Worked as % of Issued	%	75.35%	94.26%	97.11%	95.65%	93.76%	89.48%	88.32%	89.12%	85.67%	93.22%	86.30%	82.75%	89.31%	
% Unscheduled Est. Readings	%	21.10%	0.47%	0.56%	0.52%	1.54%	4.93%	2.25%	0.69%	0.60%	0.69%	0.79%	1.14%	2.99%	Includes E & O read types
# Executive Complaints Opened	No.	0	0	0	0	0	0	0	0	0	0	0	0	0	

Eastern Division Totals Eastern Division - Customer Service Indicators	Unit	Jan-11 Actual	Feb-11 Actual	Mar-11 Actual	Apr-11 Actual	May-11 Actual	Jun-11 Actual	Jul-11 Actual	Aug-11 Actual	Sep-11 Actual	Oct-11 Actual	Month Nov-12 Actual	Month Dec-12 Actual	YEAR-TO-DATE Actual	Comment
1st Call Effectiveness	%	93.54%	92.41%	92.44%	92.67%	92.30%	91.57%	90.00%	89.73%	90.86%	90.86%	90.16%	90.80%	91.42%	
% Customer Inquire Response within 3 day	%	95.26%	93.29%	93.84%	94.29%	95.42%	95.41%	94.93%	94.68%	94.87%	92.46%	95.45%	95.55%	94.66%	
Public Utility Commissions Complaints Opened	No.	130	116	113	121	101	126	101	132	122	100	116	100	1378	
Service Orders Completed as Scheduled	%	97.84%	99.01%	99.09%	99.23%	98.81%	98.65%	98.26%	98.95%	98.68%	98.44%	97.91%	98.21%	98.59%	
Shut Offs Worked as % of Issued	%	88.51%	95.42%	97.77%	96.74%	96.55%	95.33%	95.13%	95.49%	94.33%	96.64%	93.85%	94.56%	94.95%	
% Unscheduled Est. Readings	%	7.25%	10.69%	1.04%	0.67%	1.04%	1.32%	1.02%	1.03%	1.15%	0.96%	0.97%	0.96%	2.33%	Includes E & O read types
# Executive Complaints Opened	No.	5	3	4	3	3	4	3	0	1	1	1	4	32	

Customer Service Indicators	Definition
Calls Offered to Queue	The number of inbound customer calls offered to queue. A call enters the queue once it is passed from the automated system and is placed in line to speak with a CSR.
1st Call Effectiveness	First call effectiveness is achieved by the CSR when the selected utility contact type is closed on the same day it was created, it is not transferred to another CSR or supervisor and no other contact of the same type for the same account is created within the period of the report. Excludes contact types - BNKRT, CONST, RJPMT, PUC and OUTCL.
% Service Level < 30 seconds	The percentage of calls answered within 30 seconds.
% Customer Inquire Response within 3 day	The percentage of utility contacts closed within three days of creation. Does not include auto close utility contacts.
Avg Speed to Answer	The average amount of time a caller waits in queue before connecting to an agent.
Avg Handle Time	The average amount of time it takes a CSR to handle a call. Avg. Talk Time + Avg. Hold Time + Avg. ACW Time
IVR Self-Service Calls	The percentage of calls handled successfully by the IVR.
Written Correspondence Answered w/in 3 days	The percentage of correspondence that is completed within 3 days.
Public Utility Commissions Complaints Opened	The number of PUC complaints opened in a month.
Service Orders Completed as Scheduled	The percentage of service orders completed before the expiration date.
Shut Offs Worked as % of Issued	The percentage of Shut Off service orders completed before the assigned expiry period.
% Unscheduled Est. Readings	The percentage of estimated reads that were unscheduled. Unscheduled estimates/ total reads. (Est. read type codes E & O) (MO - E,O,C,T)
% Scheduled Est. Readings	The percentage of estimated reads that were scheduled. Scheduled estimates/ total reads.
# Executive Complaints Opened	The number of executive complaints opened in a month.


Skill by Month
Report Edit Format Tools Options Help
Skill by Month Report
Date: 1/1/2011-12/1/2011
Printed: 1/4/2012 1:57 PM
Split(s)/Skill(s): 10;16;129;200-201;203-205
Split/Skill | Calls Offered | Calls Answered | % Aban After 30 Sec | % Call Trans | Service Level | Avg Speed Ans | Avg Talk Time | Avg Hold Time | Avg ACW Time | Avg Handle Time | Max Hold Time
Totals: 4219359 4151820 .78 3.8 83.0 :21 4:48 :16 :32 5:35 58:08
1/1/2011 370743 362344 1.28 4.2 81.0 :29 4:43 :15 :37 5:35 44:17
2/1/2011 318033 312122 .93 4.7 82.2 :22 4:43 :14 :35 5:32 37:21
3/1/2011 364827 357824 .97 4.3 81.7 :25 4:47 :15 :36 5:39 34:59
4/1/2011 330853 326473 .58 3.6 82.9 :18 4:40 :14 :33 5:28 22:14
5/1/2011 352345 347752 .55 3.9 84.3 :17 4:35 :15 :34 5:24 29:40
6/1/2011 369356 364794 .52 3.7 84.6 :16 4:47 :17 :33 5:37 31:40
7/1/2011 360830 354619 .87 4.1 84.0 :22 4:47 :16 :33 5:36 32:07
8/1/2011 398190 391395 .86 3.7 83.2 :22 4:52 :15 :29 5:37 30:32
9/1/2011 364059 357165 1.02 3.6 81.2 :28 4:54 :16 :31 5:41 31:19
10/1/2011 348407 344164 .60 3.2 83.5 :19 4:55 :15 :26 5:37 58:08
11/1/2011 328113 324333 .53 3.2 83.1 :18 4:59 :17 :26 5:42 24:42
12/1/2011 313603 308835 .64 3.3 84.7 :18 4:56 :17 :26 5:39 23:22
ALTON_IL_ACD1

AMERICAN WATER

CSC 2011 Quarterly SLT Performance — Eastern Division

Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter			Actual 2nd Quarter			Actual 3rd Quarter		
Call Handling															
Annualized Calls/Customer	Total Calls Received at Switch /Total Customers	≤ 1.36 Calls/Customer /Year	Ensure processes & practices are appropriate to resolve customer needs.	Shared	Total Calls Received at Switch/ Active Customer Count Telephone Switch Data	Location	Total Calls Received	Calls/ Cust	Annualized Calls/ Customer	Total Calls Received	Calls/ Cust	Annualized Calls/ Customer	Total Calls Received	Calls/ Cust	Annualized Calls/ Customer
						Indiana	142,115	0.45	1.88	148,345	0.47	1.90	157,541	0.50	1.89
						Kentucky	85,147	0.61	2.22	83,203	0.60	2.29	89,335	0.64	2.38
						Maryland	1,134	0.22	0.99	1,185	0.23	0.93	1,175	0.22	0.91
						New York	17,133	0.23	0.95	15,978	0.21	0.95	21,513	0.29	0.95
						Ohio	29,820	0.54	2.10	27,500	0.50	2.10	28,620	0.51	2.09
						Tennessee	51,617	0.64	2.49	49,804	0.62	2.51	57,553	0.71	2.56
						Virginia	25,294	0.42	1.68	25,027	0.42	1.71	25,647	0.43	1.71
						West Virginia	107,646	0.68	2.45	105,117	0.59	2.49	117,291	0.66	2.53
						Division Total	459,906	0.52	1.85	456,159	0.50	1.85	498,675	0.55	1.88
CSR Service Order Accuracy	% correct SO/issued Based on 6% random sample evaluation	≥90%	Ensure Customer Satisfaction and Reduction of SO Errors to State Ops	CSC	CSC Performance Reporting Team Sampling Procedures and Reporting Processes	Indiana	89.7%			90.6%			90.0%		
						Kentucky	90.3%			91.0%			90.0%		
						Maryland	92.3%			90.5%			93.8%		
						New York	89.5%			92.6%			85.0%		
						Ohio	88.5%			89.8%			88.9%		
						Tennessee	88.2%			92.2%			88.9%		
						Virginia	89.8%			88.0%			91.1%		
						West Virginia	88.1%			89.6%			88.1%		
						Division Total	89.2%			90.4%			89.3%		
QA Scores for CSR	QA Scores per CSR	≥89% score based on QA review	Ensure quality contacts for all External Customers	CSC	QA Department Scoring using QA process to measure both "Technical" and "Customer Care Skills" (8+ Calls per CSR per Month)	Indiana	90.7%			90.3%			92.1%		
						Kentucky	91.3%			91.1%			90.2%		
						Maryland	82.3%			90.3%			81.9%		
						New York	88.2%			92.3%			90.9%		
						Ohio	90.6%			92.3%			92.0%		
						Tennessee	92.0%			88.5%			89.4%		
						Virginia	92.3%			87.3%			93.1%		
						West Virginia	91.3%			88.6%			91.0%		
						Division Total	91.1%			89.9%			91.2%		
First Call Effectiveness (ECIS System Calculation)	% of Calls handled on initial call	≥85%	Ensure External Customer issues being addressed on first attempt	CSC	System calculation: First Call Effectiveness PCT1CEFF report in ECIS. Customer not calling back for same problem within 30 days.	Location	ECIS Data			ECIS Data			ECIS Data		
						Indiana	93%			92%			90%		
						Kentucky	93%			93%			91%		
						Maryland	94%			95%			94%		
						New York	92%			92%			92%		
						Ohio	92%			92%			90%		
						Tennessee	93%			92%			90%		
						Virginia	92%			92%			90%		
						West Virginia	91%			92%			90%		
						Division Total	93%			92%			90%		
ORC Data Input First Call Effectiveness (Based on Customer Responses)	% of customers who contacted AW only once about their mose recent concern or request	≥85%	Ensure external customer issues being address on first attempt	CSC	Quarterly Service Quality Survey Results on Q21 (How many different times did you contact AW about your most recent or concern?)	Location	Serv Qual Report			ECIS Data			ECIS Data		
						Indiana	81%			79%			81%		
						Kentucky	76%			76%			81%		
						Maryland	Maryland and Virginia results combined								
						New York	71%			72%			82%		
						Ohio	79%			78%			82%		
						Tennessee	68%			81%			71%		

TAW_R_COCDR1#079Attachment

AMERICAN WATER

CSC 2011 Quarterly SLT Performance — Eastern Division

Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter	Actual 2nd Quarter	Actual 3rd Quarter
						Virginia	85%	82%	86%
						West Virginia	68%	76%	76%
						Division Total	76%	78%	79%
ORC Data Input Satisfaction with Overall Outcome of Service Contact		85%	Ensure AW Customers value the interactions provided by the CSC.	TBD	Quarterly Service Quality Survey Results on Q19 as a customer reflected overall measurement. (Overall how satisfied were you with the outcome of your service contact?)	Location	Serv Qual Report	ECIS Data	ECIS Data
						Indiana	89%	90%	89%
						Kentucky	92%	86%	89%
						Maryland	Maryland and Virginia results combined		
						New York	70%	81%	84%
						Ohio	80%	85%	90%
						Tennessee	91%	88%	89%
						Virginia	87%	88%	96%
						West Virginia	82%	87%	86%
						Division Total	86%	88%	87%
ORC Data Input Satisfaction with Performance of CSR's Results - AW Service Quality Survey		85%	Ensure AW Customers value the interactions provided by the CSC.	TBD	Evaluated Quarterly by using q# Q7f as a customer reflected measurement (How would you rate the CSR on overall performance?)	Location	Serv Qual Report	ECIS Data	ECIS Data
						Indiana	88%	92%	95%
						Kentucky	87%	88%	97%
						Maryland	Maryland and Virginia results combined		
						New York	94%	92%	85%
						Ohio	81%	87%	93%
						Tennessee	89%	91%	93%
						Virginia	84%	96%	98%
						West Virginia	88%	93%	93%
						Division Total	87%	91%	94%
Special Handling	Orders applied to Special Handling Crew	TBD	Ensure CSC and states are doing their part	Shared	TBD	TBD			
Billing									
% Billing Corrections to Active Accounts		Total Bill Corrections to water service not greater than 2.5% of	Increased billing accuracy and customer	Shared	Total # of water adjustments issued for billing error, misread, overestimate, backbilling, & stopped meter combined with number of cancel/rebills. This total will	Indiana	1.2%	0.3%	0.3%
						Kentucky	1.3%	0.5%	0.5%
						Maryland	0.4%	0.7%	0.8%
						New York	0.1%	0.1%	0.1%
						Ohio	1.1%	0.7%	0.5%
						Tennessee	0.1%	0.4%	0.8%

TAW_R_COCDR1#079Attachment

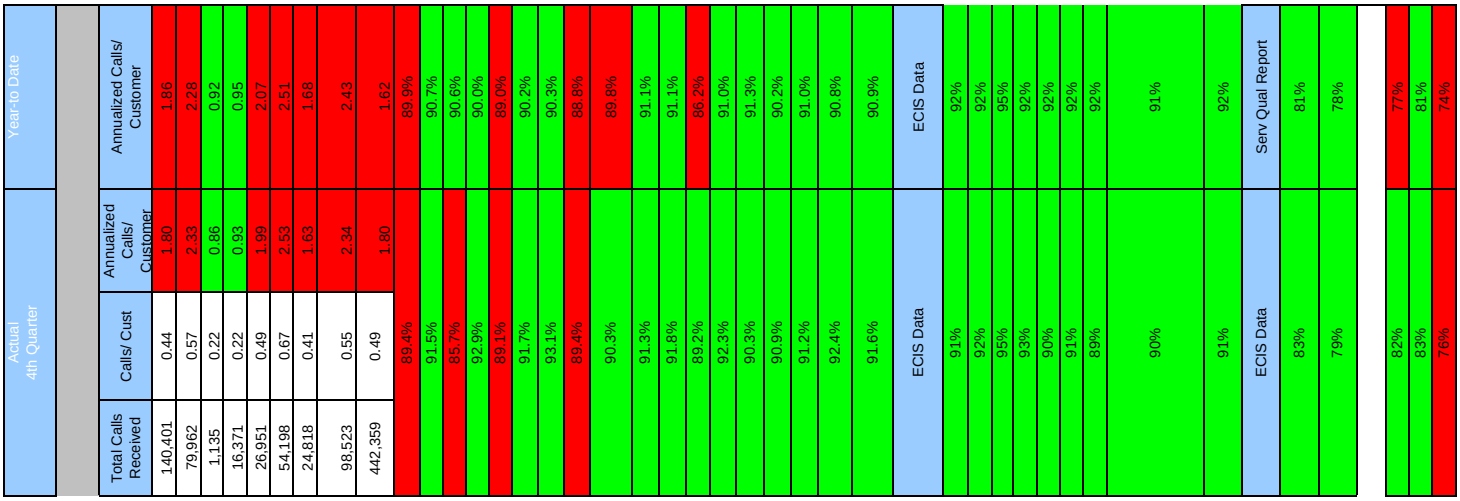
Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter		Actual 2nd Quarter		Actual 3rd Quarter	
		active accounts	satisfaction.		not be greater than 2.5% of the total active accounts as of month end.	Virginia	0.6%		1.0%		0.4%	
						West Virginia	0.8%		0.2%		0.0%	
						Division Total	1.0%		0.3%		0.4%	
Collections												
						Location	% Reduction	$ Reduction	% Reduction	$ Reduction	% Reduction	$ Reduction
						Indiana	41.4%	$303,373	43.1%	$287,201	28.8%	$222,958
						Kentucky	54.6%	$118,247	70.0%	$183,512	37.8%	$130,669

AMERICAN WATER

CSC 2011 Quarterly SLT Performance

Eastern Division

Metric	Calculation	Target	Goal	Ownership	Measurement Defined/ Data Source	Location	Actual 1st Quarter		Actual 2nd Quarter		Actual 3rd Quarter	
Reduction in Eligible Charged Off Dollars (Closed Account Greater than 30 days to Charge Off)		25% Reduction within a cycle	Increase AW effectiveness of collecting prior to write-off including but not limited to Third Party collection Agency and Collections CSRs transfers.	CSC	The cycle is prior month's Agency & No Agency batch to reporting month final charge off. The data is provided by the Collections Batch Total Data.	Maryland	43.6%	$2,871	33.2%	$1,538	6.0%	$264
						New York	161.8%	$82,899	35.0%	$18,692	44.6%	$30,938
						Ohio	32.3%	$59,083	33.5%	$47,451	32.8%	$62,534
						Tennessee	39.2%	$91,133	34.2%	$86,463	54.8%	$123,948
						Virginia	39.0%	$59,724	28.7%	$33,761	38.2%	$40,018
						West Virginia	45.7%	$205,908	35.4%	$200,232	35.2%	$163,146
						Division Total	45.7%	$921,238	41.6%	$858,852	35.6%	$774,4[illegible]


Actual
4th Quarter
Year-to Date
Total Calls Received
Calls/ Cust
Annualized Calls/ Customer
Annualized Calls/ Customer
140,401
0.44
1.80
1.86
79,962
0.57
2.33
2.28
1,135
0.22
0.86
0.92
16,371
0.22
0.93
0.95
26,951
0.49
1.99
2.07
54,198
0.67
2.53
2.51
24,818
0.41
1.63
1.68
98,523
0.55
2.34
2.43
442,359
0.49
1.80
1.62
89.4%
89.9%
91.5%
90.7%
85.7%
90.6%
92.9%
90.0%
89.1%
89.0%
91.7%
90.2%
93.1%
90.3%
89.4%
88.8%
90.3%
89.8%
91.3%
91.1%
91.8%
91.1%
89.2%
86.2%
92.3%
91.0%
90.3%
91.3%
90.9%
90.2%
91.2%
91.0%
92.4%
90.8%
91.6%
90.9%
ECIS Data
ECIS Data
91%
92%
92%
92%
95%
95%
93%
92%
90%
92%
91%
92%
89%
92%
90%
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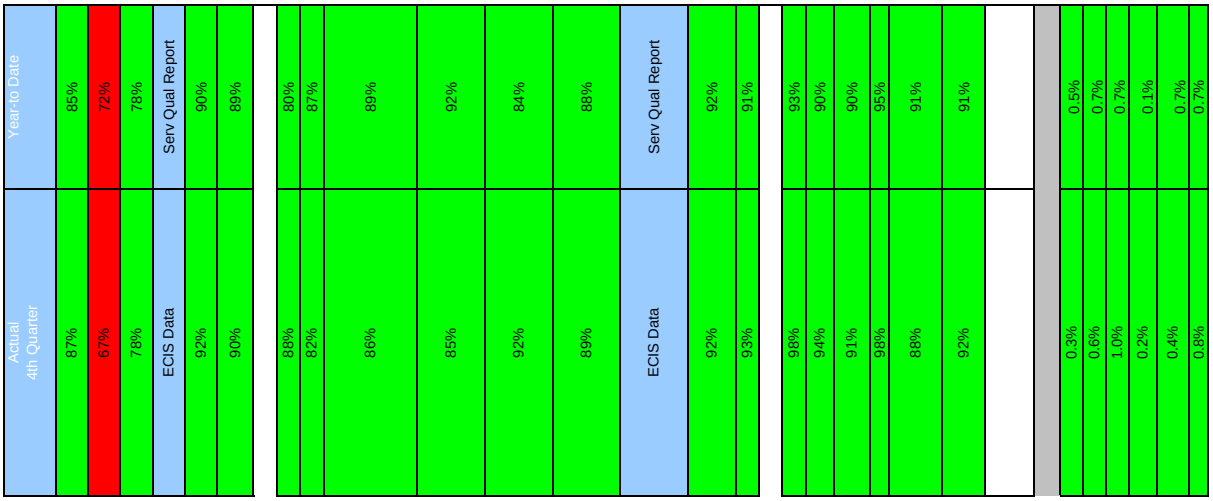
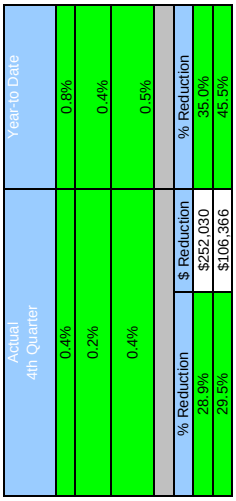
81%
76%
74%


Year-to Date
85%
72%
78%
Serv Qual Report
90%
89%
80%
87%
89%
92%
84%
88%
Serv Qual Report
92%
91%
93%
90%
90%
95%
91%
91%
0.5%
0.7%
0.7%
0.1%
0.7%
0.7%
Actual
4th Quarter
87%
67%
78%
ECIS Data
92%
90%
88%
82%
86%
85%
92%
89%
ECIS Data
92%
93%
98%
94%
91%
98%
88%
92%
0.3%
0.6%
1.0%
0.2%
0.4%
0.8%


Actual
4th Quarter
0.4%
0.2%
0.4%
% Reduction
28.9%
29.5%
Year-to Date
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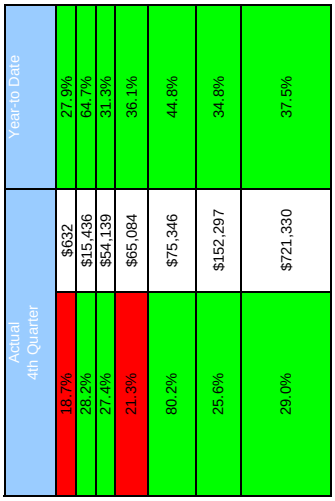
0.4%
0.5%
$ Reduction
$252,030
$106,366
% Reduction
35.0%
45.5%


Actual
4th Quarter
Year-to Date
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28.2%
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31.3%
21.3%
$65,084
36.1%
80.2%
$75,346
44.8%
25.6%
$152,297
34.8%
29.0%
$721,330
37.5%

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary VerDouw

Other Participating Employees: Linda C. Bridwell

Question:

80. Please produce a copy of all trade articles, journals, treatises, speeches and publications of any kind in any way utilized or relied upon by any of ***TAWC***'s proposed expert witnesses in evaluating, reaching conclusions, or formulating an opinion in the captioned matter as well as all articles, journals, speeches, or books written or co-written by any of the ***TAWC*** witnesses.

Response:

Information relied upon by Gary M. VerDouw in his testimony:

Pension Tracker:

1) CRS Report for Congress, Summary of the Pension Protection Act of 2006
2) Technical Explanation of H.R. 4, the "Pension Protection Act of 2006," as passed by the House on July 28, 2006, and considered by the Senate on August 3, 2006. Document can also be found at the following web address: http://www.jct.gov/x-38-06.pdf

DSIC:

1) The American Society of Civil Engineers 2009 Report Card for America's Drinking Water Infrastructure.
2) Two USEPA Reports discussed in VerDouw testimony on Page 45, which already references applicable websites footnoted therein. No copies are attached.
3) Various state DSIC statutes or regulations or Commission/Authority Orders that provide for recovery of operating cost increases/decreases occurring between base rate cases. These documents have been provided in response to Item 28 and Item 30 of this same data request, respectively.
4) TRA Director Roberson Concurrence and Dissent of September 30, 2011.

Purchased Power and Chemical Charge:

1) Various state statutes or regulations or Commission/Authority Orders that provide for recovery of operating cost increases/decreases occurring between base rate cases. These documents have been provided in response to Item 31 and Item 33 of this same data request, respectively.
2) Review of Company Witness Kerry A. Heid submitted in Indiana American rate case docketed as Cause No. 43187.

The relevant pages of articles relied upon by Dr. Vander Weide have been provided in response to Item 7 and Item 8 of the Consumer Advocate and Protection Division First Data Request in this proceeding. Articles published by Dr. Vander Weide, to the extent they are available, are attached and are detailed in the curriculum vitae attached to his testimony.

Articles published by Linda Bridwell are attached to this response.

Mr. Herbert has not published any articles. He has relied upon the American Water Works Association Manuals M1 and M31 which are available on their website.

Information relied upon by Mr. Chelius are provided in response to Item 32 of the Tennessee Regulatory Authority's First Data Request in this proceeding. Articles published by Mr. Chelius are not in possession of the Company but will be made available at a supplemental filing if they are received.

Mr Allen published a number of manuals when he was an instructor that are not in his possession and are no longer available as updated editions have been published of which he is not an author.

Mr. Keathley, Mr. Petry, Ms. Schwarzell, and Mr. Rogers have not published any articles, journals or speeches.

 Order Code RL33703

CRS Report for Congress
Received through the CRS Web

Summary of the Pension Protection Act of 2006

October 23, 2006

Patrick Purcell
Specialist in Social Legislation
Domestic Social Policy Division

Summary of the Pension Protection Act of 2006

Summary

On July 28, 2006, the House of Representatives passed H.R. 4, the Pension Protection Act, by a vote of 279-131. The bill was passed by the Senate on August 3 by a vote of 93-5 and was signed into law by the President as P.L. 109-280 on August 17, 2006. The Pension Protection Act is the most comprehensive reform of the nation's pension laws since the enactment of the Employee Retirement Income Security Act of 1974 (ERISA, P.L. 93-406). It establishes new funding requirements for defined benefit pensions and includes reforms that will affect cash balance pension plans, defined contribution plans, and deferred compensation plans for executives and highly compensated employees.

Prompted by the default in recent years of several large defined benefit pension plans and the increasing deficit of Pension Benefit Guaranty Corporation (PBGC), the Bush Administration in January 2005 advanced a proposal for pension funding reform, which was designed to increase the minimum funding requirements for pension plans and strengthen the pension insurance system.

In 2005, major pension reform bills were introduced in both the Senate and the House of Representatives. In the Senate, Senator Charles Grassley, Chairman of the Finance Committee, introduced S. 1783, the Pension Security and Transparency Act. In the House, Representative John Boehner, then Chairman of the Committee on Education and the Workforce, introduced H.R. 2830, the Pension Protection Act, which subsequently was renumbered as H.R. 4. The legislation ultimately passed by the House and Senate and signed into law by the President on August 17, 2006, was based mainly on these two bills, with the final version being the result of conference negotiations between the House and Senate that began in March 2006 and continued through July.

This report summarizes the main provisions of the Pension Protection Act (PPA) as they affect single-employer defined benefit plans, multiemployer defined benefit plans, and defined contribution plans. It will not be updated.

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Summary of the Pension Protection Act of 2006

On July 28, 2006, the House of Representatives passed H.R. 4, the Pension Protection Act, by a vote of 279-131. The bill was passed by the Senate on August 3 by a vote of 93-5 and was signed into law by the President as P.L. 109-280 on August 17, 2006. The Pension Protection Act is the most comprehensive reform of the nation's pension laws since the enactment of the Employee Retirement Income Security Act of 1974 (ERISA, P.L. 93-406). It establishes new funding requirements for defined benefit pensions and includes reforms that will affect cash balance pension plans, defined contribution plans, and deferred compensation plans for executives and highly compensated employees.

Prompted by the default in recent years of several large defined benefit pension plans and the increasing deficit of Pension Benefit Guaranty Corporation (PBGC), the Bush Administration in January 2005 advanced a proposal for pension funding reform, which was designed to increase the minimum funding requirements for pension plans and strengthen the pension insurance system. The Administration pointed out several weaknesses of the rules that were then in place:

- Sponsors of underfunded plans were not required to make additional contributions — called *deficit reduction contributions* — as long as their plans were at least 90% funded.

- Because the interest rates used to calculate current pension plan liabilities were averaged over a four-year period and asset values used to calculate minimum funding requirements could be averaged over five years, neither plan assets nor liabilities were measured accurately.

- Plans that were underfunded were sometimes able to amortize their funding shortfalls over periods as long as 30 years.[1]

- Some sponsors of underfunded pensions were able to avoid making contributions to their plans for several years because they had made contributions beyond the required minimum in the past. The use of these so-called "credit balances" led to greater underfunding of pension plans, according to the Administration's analysis.

The possibility that the termination of defined benefit pension plans with large unfunded liabilities might eventually lead to the insolvency of PBGC — created by

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[1] Liabilities arising from plan amendments that increased benefits under the plan could be amortized over 30 years.

Congress in 1974 to insure defined benefit pension plans of private-sector employers — lent a particular urgency to the effort to mandate improved pension plan funding. Although the PBGC receives no appropriations from Congress, it is generally acknowledged that if the agency were to become financially insolvent — threatening the retirement income of the 44 million Americans who have earned benefits under defined benefit pension plans — Congress would have little choice but to step in and engineer a financial bailout of the agency.[2] In 2000, the PBGC recorded a $9.7 billion surplus, but several years of falling interest rates and declining stock prices and the termination of several large, underfunded pension plans led to a rapid deterioration in the PBGC's financial position. Nine of the ten largest pension plan claims for PBGC insurance occurred between 2001 and 2005. (See **Table 1**.) These nine claims accounted for 63% of the total dollar value of claims made on the PBGC since the agency began operating in 1975. By 2005, the PBGC had a funding deficit of $22.7 billion, only slightly lower than the record deficit of $23.3 billion that the agency posted in 2004.

Table 1. Ten Largest Claims Against the PBGC, 1975-2005

Name of firm	Year of termination	Claim, in millions	Vested participants	Percentage of all PBGC claims
United Airlines	2005	$7,094	122,541	22.7%
Bethlehem Steel	2003	3,654	97,015	11.5
U.S. Airways	2003, 2005	2,862	58,823	9.0
LTV Steel	2002-2004	1,960	80,961	6.2
National Steel	2003	1,161	35,404	3.7
Pan American Air	1991, 1992	841	37,485	2.7
Weirton Steel	2004	690	9,196	2.2
Trans World Airlines	2001	668	34,257	2.1
Kemper Insurance	2005	566	12,221	1.8
Kaiser Aluminum	2004	566	17,591	1.8
Top 10 claims (total)		**$20,062**	**505,494**	**63.3%**
All other claims (total)		**11,646**	**1,178,762**	**36.7**
All claims on PBGC		**31,708**	**1,684,256**	**100.0**

Source: Pension Benefit Guaranty Corporation, *Pension Insurance Data Book, 2005*, p. 32.

In 2005, major pension reform bills were introduced in both the Senate and the House of Representatives. In the Senate, Senator Charles Grassley, Chairman of the Finance Committee, introduced S. 1783, the Pension Security and Transparency Act.

[2] The PBGC receives revenue mainly from the premiums paid to it by companies that sponsor defined benefit pensions and investment returns on the assets in its trust fund.

In the House, Representative John Boehner, then Chairman of the Committee on Education and the Workforce, introduced H.R. 2830, the Pension Protection Act, which subsequently was renumbered as H.R. 4. The legislation ultimately passed by the House and Senate and signed into law by the President on August 17, 2006, was based mainly on these two bills, with the final version being the result of conference negotiations between the House and Senate that began in March 2006 and continued through July. This report summarizes the main provisions of the Pension Protection Act (PPA) as they affect single-employer defined benefit plans, multiemployer defined benefit plans, and defined contribution plans.

Single-Employer Plans

Since the passage of the Employee Retirement Income Security Act (ERISA) in 1974, federal law has required companies that sponsor defined benefit pension plans for their employees to prefund the pension benefits that the plan participants earn each year. If a plan is underfunded, the plan sponsor must amortize (pay off with interest) this unfunded liability over a period of years. The Pension Protection Act (PPA) establishes new rules for determining whether a defined benefit pension plan is fully funded, the contribution needed to fund the benefits that plan participants will earn in the current year, and the contribution to the plan that is required if previously earned benefits are not fully funded. In general, the new rules become effective in 2008, but many provisions of the law will be phased in over several years.

Minimum funding standards for single-employer plans. Pension plan liabilities extend many years into the future. Determining whether a pension is adequately funded requires converting a future stream of pension payments into the amount that would be needed today to pay off those liabilities all at once. This amount — the "present value" of the plan's liabilities — is then compared with the value of the plan's assets. An underfunded plan is one in which the value of the plan's assets falls short of the present value of its liabilities by more than the percentage allowed under law. Converting a future stream of payments (or income) into a present value requires the future payments (or income) to be discounted using an appropriate interest rate. Other things being equal, the *higher* the interest rate, the *smaller* the present value of the future payments (or income), and vice versa.

Beginning in 2008, the PPA introduces new funding requirements for single-employer defined benefit pension plans. The law establishes new rules for calculating plan assets and liabilities, and it eliminates deficit-reduction contributions for underfunded plans. When it is fully phased in, the law will require plan funding to be equal to 100% of the plan's liabilities. Any unfunded liability will have to be amortized over seven years. Sponsors of severely underfunded plans that are at risk of defaulting on their obligations will be required to fund their plans according to special rules that will result in higher employer contributions to the plan. Plan sponsors will continue to be allowed to use credit balances to offset required contributions, but only if the plan is funded at 80% or more. The value of credit balances will have to be adjusted to reflect changes in the market value of plan assets since the date the contributions that created the credit balances were made.

Under the PPA, a plan sponsor's minimum required contribution will be based on the plan's *target normal cost* and the difference between the plan's *funding target* and the value of the plan's assets. The plan's target normal cost is the present value of all benefits that plan participants will accrue during the year. The funding target is the present value of all benefits, including early retirement benefits, already accrued by plan participants as of the beginning of the plan year. If a plan's assets are less than the funding target, the plan has an *unfunded liability*. This liability, less any permissible credit balances, must be amortized in annual installments over seven years. The plan sponsor's minimum required annual contribution is the plan's target normal cost for the plan year, but not less than zero. The 100% funding target will be phased in at 92% in 2008, 94% in 2009, 96% in 2010, and 100% in 2011 and later years. The phase-in will not apply to plans that are already underfunded to the extent that they are subject to the deficit reduction contribution rules in 2007. Those plans will have a 100% funding target beginning in 2008.

Federal law prescribes the interest rate that pension plans must use to calculate the present value of plan liabilities. The PPA requires plans to discount future liabilities using three different interest rates, depending on the length of time until the liabilities must be paid. The interest rates correspond to the length of time until the obligations are due to be paid. A short-term interest rate will be used to calculate the present value of liabilities that will come due within five years. A mid-term interest rate will be used for liabilities that will come due in 5 to 15 years, and a long-term interest rate will be applied to liabilities that will come due in more than 15 years. The Secretary of the Treasury will determine these rates, which will be derived from a "yield curve" of investment-grade corporate bonds averaged over the most recent 24 months.[3] The yield curve requirement will be phased in over three years beginning in 2007. It will replace the four-year average of corporate bond rates established under Pension Funding Equity Act of 2004 (P.L. 108-218), which expired on December 31, 2005.[4]

"At risk" plans. The PPA introduces a new concept to be applied in determining a plan sponsor's required contribution to the plan. Pension plans that are determined to be at risk of defaulting on their liabilities will be required to use specific actuarial assumptions in determining plan liabilities that will increase the plan sponsor's required contributions to the plan. A plan will be deemed at-risk if it is unable to pass either of two tests. Under the first test, a plan is deemed to be at-risk if it is less than 70% funded under the "worst-case scenario" assumptions that (1) the employer is not permitted to use credit balances to reduce its cash contribution and (2) employees will retire at the earliest possible date and will choose to take the most expensive form of benefit. If a plan does not pass this test, it will be deemed to be at-risk *unless* it is at least 80% funded under standard actuarial assumptions. This latter test will be phased in over four years, with the minimum funding

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[3] A yield curve is a graph that shows interest rates on bonds plotted against the maturity date of the bond. Normally, long-term bonds have higher yields than short-term bonds because both credit risk and inflation risk rise as the maturity dates extend further into the future. Consequently, the yield curve usually slopes upward from left to right.

[4] The PPA extends the interest rates permissible under P.L. 108-218 through 2007 for purposes of the current liability calculation.

requirement starting at 65% in 2008 and rising to 70% in 2009, 75% in 2010, and 80% in 2011. If a plan passes either of these two tests, it will not be deemed to be at-risk; however, it will still be required to make up its funding shortfall over no more than seven years. Plans that have been in at-risk status for at least two of the last four years also will be subject to an additional "loading factor" of 4% of the plan's liabilities plus $700 per participant, which will be added to the plan sponsor's required contribution to the plan. Plan years prior to 2008 will not count for this determination. Plans with 500 or fewer participants in the preceding year would be exempt from the at-risk funding requirements.

Mortality tables. To estimate a pension plan's future obligations, the plan's actuaries use mortality tables to project the number of participants who will claim benefits and the average length of time that participants and their surviving beneficiaries will receive pension payments. Under the PPA, the Secretary of the Treasury will prescribe the mortality tables to be used for these estimates. Large plans may petition the IRS to use a plan-specific mortality table.

Valuation of plan assets. Under prior law, a plan sponsor could determine the value of a plan's assets using actuarial valuations, which can differ from the current market value of those assets. For example, in an actuarial valuation, the plan's investment returns could be "smoothed" (averaged) over a five-year period, and the average asset value could range from 80% to 120% of the fair market value. Averaging asset values over a period of years is permitted because pension plans are considered long-term commitments, and averaging reduces volatility in the measurement of plan assets that can be caused by year-to-year fluctuations in interest rates and the rate of return on investments. Averaging asset values therefore reduces the year-to-year volatility in the plan sponsor's required minimum contributions to a defined benefit pension plan. The PPA narrows the range for actuarial valuations to no less than 90% and no more than 110% of fair market value, and it reduces the maximum smoothing period to two years. Plans with more than 100 participants will be required to use the first day of the plan year as the basis for calculations of plan assets and liabilities. Plans with 100 or fewer participants can choose another date.

Plan contributions and credit balances. Within certain limits, plan sponsors will continue to be able to offset required current contributions with previous contributions. However, these so-called "credit balances" can be used to reduce the plan sponsor's minimum required contribution to the plan only if the plan's assets are at least 80% of the funding target, not counting prefunding balances that have arisen since the new law became effective. Existing credit balances and new prefunding balances must both be subtracted from assets in determining the "adjusted funding target attainment" percentage that is used to determine whether certain benefits can be paid and whether benefit increases are allowed. Credit balances also have to be adjusted for investment gains and losses since the date of the original contribution that created the credit balance. Credit balances must be separated into two categories: balances carried over from 2007 and balances resulting from contributions in 2008 and later years.

Benefit limitations in underfunded plans. The PPA places limits on (1) plan amendments that would increase benefits, (2) benefit accruals, and (3) benefit

distribution options (such as lump sums) in single-employer defined benefit plans that fail to meet specific funding thresholds.

Shutdown benefits. Shutdown benefits are payments made to employees when a plant or factory is shut down. These benefits typically are negotiated between employers and labor unions, and usually they are not prefunded. The PPA prohibits shut-down benefits and other "contingent event benefits" from being paid by pension plans that are funded at less than 60% of full funding unless the employer makes a prescribed additional contribution.[5] The PBGC guarantee for such benefits will be phased in over a five-year period commencing when the event occurs, but this provision is not applicable for the first five years of a plan's existence.

Restrictions on benefit accruals. The PPA requires benefit accruals to cease in plans funded at less than 60%. Once a plan is funded above 60%, the employer — and the union in a collectively bargained plan — must then decide how to credit past service accruals. This provision does not apply during the first five years of a plan's existence, or if the employer makes an additional contribution prescribed by the statute.

Restrictions on benefit increases. Plan amendments that increase benefits are prohibited if the plan is funded at less than 80% of the full funding level, unless the employer makes additional contributions to fully fund the new benefits. Benefit increases include increases in the rate of benefit accrual or a change in the rate at which benefits become vested. This provision is not applicable for the first five years of a plan's existence.

Restrictions on lump-sum distributions. Lump-sum distributions are prohibited if the plan is funded at less than 60% of the full funding level or if the plan sponsor is in bankruptcy and the plan is less than 100% funded. If the plan is funded at more than 60% but less than 80%, the plan may distribute as a lump sum no more than half of the participant's accrued benefit.

Nonqualified deferred compensation. Executives and other highly compensated employees are sometimes covered under employer-sponsored retirement plans that are separate from those that cover rank-and-file employees. Because the benefits under these plans often exceed the limits prescribed by ERISA, they do not qualify for the favorable tax treatment that most pensions covering rank-and-file employees are qualified to receive. Thus, these deferred compensation plans for executives are commonly referred to as "nonqualified plans." Provided that they meet certain requirements under the Internal Revenue Code (IRC), nonqualified plans are sometimes permitted to set aside funds to prefund deferred compensation for executives without the funds being treated as income to the plan participants in the

---

[5] In 2004, the 6th U.S. Circuit Court of Appeals ruled that the PBGC could set a plan termination date that would prevent the agency from being liable for shutdown benefits. In March 2005, the U.S. Supreme Court declined to hear the case, leaving the Circuit Court's decision in place.

year that the contribution to the trust is made.[6] The PPA establishes rules for taxing amounts set aside to prefund nonqualified deferred compensation for executives during a "restricted period." A restricted period occurs if (1) the plan sponsor's defined benefit plan is in at-risk status, (2) the plan sponsor is in bankruptcy, or (3) the plan sponsor's defined benefit plan is terminated in an involuntary or distress termination. Amounts set aside to prefund nonqualified deferred compensation for the plan sponsor's chief executive officer and four highest-compensated officers during a restricted period will be treated as taxable income to these individuals and will be subject to a 20% excise tax.

Notice to participants. The PPA requires plan sponsors to notify participants of restrictions on shutdown benefits, lump-sum distributions, or suspension of benefit accruals within 30 days of the plan being subject to any of these restrictions. The restrictions on benefits in underfunded plans are effective in 2008, but not before 2010 for collectively bargained plans.

Calculating lump-sum distributions. Federal law requires defined benefit pensions to offer participants the option to receive their accrued benefits in the form of an annuity — a series of monthly payments guaranteed for life. Many defined benefit plans also offer participants the option to take their accrued benefits as a single lump sum at the time they separate from the employer. The amount of a lump-sum distribution from a defined benefit pension is inversely related to the interest used to calculate the present value of the benefit that has been accrued under the plan: the higher the interest rate, the smaller the lump sum, and vice versa. Under prior law, lump-sum distributions were calculated using the average interest rate on 30-year Treasury bonds. The PPA replaces the 30-year Treasury bond interest rate as the interest rate for calculating lump-sum distributions from defined benefit plans.[7]

Beginning in 2008, plan sponsors must calculate lump-sum distributions using a three-segment interest rate yield curve, derived from the rates of return on investment-grade corporate bonds of varying maturities. Plan participants of different ages will have their lump-sum distributions calculated using different interest rates. Other things being equal, a lump-sum distribution paid to a worker who is near the plan's normal retirement age will be calculated using a lower interest rate than will be used for a younger worker. As a result, all else being equal, an older worker will receive a larger lump sum than a similarly situated younger worker. The interest rates used to calculate lump sums will be based on *current* bond rates rather than the three-year *weighted average* rate used to calculate the plan's funding target. The new rules for calculating lump sums will be phased in over five years. Plans funded at less than 60% will be prohibited from paying lump-sum distributions. Plans funded at 60% to 80% can pay no more than half of an accrued benefit as a lump-sum distribution.

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[6] Unlike the pension trusts established for qualified plans, which are protected from the claims of creditors if the plan sponsor enters bankruptcy, trusts established to prefund nonqualified deferred compensation arrangements usually are not protected in bankruptcy.

[7] This is also sometimes referred to as the "417(e)" rate after IRC §417(e).

The PPA also establishes a new interest rate floor for testing whether a lump sum paid from a defined benefit plan complies with the limitations under IRC §415(b). In general, IRC §415(b) limits the annual single-life annuity payable from a defined benefit plan to the lesser of 100% of average compensation or $175,000 (in 2006). Benefits paid as a lump sum or other optional form must be converted to an equivalent annuity value for purposes of applying this limit. The PPA requires plans making this calculation to use an interest rate that is no lower than the highest of (1) 5.5%, (2) the rate that results in a benefit of no more than 105% of the benefit that would be provided if the interest rate required for determining a lump-sum distribution were used, or (3) the interest rate specified in the plan documents. This provision is effective for plan years beginning after 2005.

Cash balance plans and other hybrid plans. The PPA clarifies that cash balance plans do not discriminate against older workers as long as benefits are fully vested after three years of service and interest credits do not exceed a market rate of return.[8] The law also provides that the age discrimination test is met if a participant's accrued benefit is not less than the accrued benefit of any other employee similarly situated in all respects except age.[9] The accrued benefit can be tested on the basis of an annuity payable at normal retirement age, a hypothetical account balance, or the current value of the accumulated percentage of the employee's final average pay. The law prohibits *wear-away* of benefits accrued before the conversion of a plan to a cash balance plan if the conversion occurred after June 29, 2005.[10] Earlier conversions may still be subject to legal challenge under the laws in effect at the time of the conversion. These provisions are effective beginning in 2008.

Under prior law, there were circumstances under which the employer that sponsored a cash balance plan was required to pay a departing employee an amount that exceeded the nominal value of the employee's cash balance account.[11] The PPA eliminates this requirement (called "whipsaw") by allowing lump-sum distributions from cash balance plans to be equal to the hypothetical account balances. This is effective for distributions made after the date of enactment. Beginning in 2008, cash balance plans and other hybrid plans would be required to fully vest participants in their accrued benefits after no more than three years of service. With respect to cash

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[8] See CRS Report RL30196, *Pension Issues: Cash-Balance Plans*, by Patrick Purcell, and CRS Report RS22214, *Cash Balance Pension Plans: Selected Legal Issues and the Pension Protection Act of 2006*, by Erika Lunder and Jennifer Staman.

[9] To be "similarly situated" means that the employees are identical with respect to length of service, compensation, and other factors that would affect accrued pension benefits.

[10] A "wear-away" period or "benefit plateau" occurs if a plan participant accrues no new benefits for a period of time after the conversion to a cash balance plan. This can occur if the employer establishes the employee's initial benefit under the cash balance plan at an amount that is less than the value of the benefit he or she had accrued prior to the conversion. If the employee terminates service prior to the end of the wear-away period, he or she is entitled to the benefit amount accrued before the conversion if it exceeds the nominal value of the employee's cash balance account.

[11] This occurs when the interest rate credited to amounts in the cash balance plan is higher than the interest rate required for calculating lump-sum distributions under IRC §417(e).

balance plans and other hybrid plans, the PPA is prospective only and would not affect the legal status of hybrid plans established before the law was enacted.

Pension Benefit Guaranty Corporation. The Pension Benefit Guaranty Corporation (PBGC) was established by the Employee Retirement Income Security Act of 1974 (ERISA) to insure pension benefits under private-sector defined benefit pension plans. The PBGC receives no appropriations from Congress. It is funded by premiums paid by plan sponsors and investment returns on the assets held in its trust fund. The PBGC does not have the legal authority to set its own premiums, which are set in law by Congress. The PBGC receives two types of premiums from plans sponsored by individual employers: a per-capita premium that is charged to all single-employer defined benefit plans and a variable premium charged to underfunded plans equal to $9 per $1,000 of underfunding (0.9%). The Deficit Reduction Act of 2005 (P.L. 109-171) increased the per capita premium from $19 per year to $30 per year, beginning in 2007. Future premiums will be indexed to average national wage growth. The flat-rate premium for multiemployer plans is $8 per person and will be indexed to wage growth in future years.

Under prior law, an underfunded plan was exempted from the variable-rate premium of $9 per $1,000 of underfunding if it was not underfunded in any two consecutive years out of the previous three years. Under the PPA, the variable premium will be assessed on all underfunded plans, regardless of the plan's funding status in earlier years. For employers with 25 or fewer employees, the variable premium is capped at $5. The variable-rate premium must be computed using a three-segment yield curve beginning in 2008. The PPA makes permanent a surcharge premium for certain distress terminations, which was added by the Deficit Reduction Act of 2005 and was to expire in 2010. A surcharge of $1,250 per participant will be assessed for three years against any firm that terminates an underfunded pension plan during bankruptcy if it later emerges from bankruptcy. The PPA also authorizes the PBGC to pay interest on overpayment of premiums, effective upon enactment.

The PPA requires the director of the Pension Benefit Guaranty Corporation to be appointed by the President, subject to confirmation by the Senate Committee on Finance and Senate Committee on Health, Education, Labor and Pensions.

Limit on tax deductions for employer contributions. Beginning in 2008, the maximum deductible employer contribution to a defined benefit plan will be (1) the plan's target normal cost plus (2) 150% of the funding target plus (3) an allowance for future pay or benefit increases minus (4) the value of the plan's assets. In 2006 and 2007, the deduction limit will be to 150% of the plan's current liability minus the value of the plan's assets. Contributions in excess of this limit are subject to a 10% excise tax. The PPA also repeals the alternative maximum deductible contribution as determined using an interest rate of 90% to 105% of the four-year weighted average rate on 30-year Treasury bonds.

Combined limit under IRC §404(a)(7). Section 404(a)(7) of the Internal Revenue Code establishes limits on employer tax deductions for contributions made in connection with one or more defined contribution plans *and* one or more defined benefit plans. One effect of these limits is that large contributions to a defined benefit plan can result in the employer's contributions to the defined contribution

plan being nondeductible for that year. The PPA revises the law such that the combined contribution limit under §404(a)(7) will be determined without regard to defined benefit plans that are insured by the PBGC. In addition, only employer contributions to a defined contribution plan that exceed 6% of participant compensation will be subject to the limit. Employees' elective deferrals will continue to be disregarded from the deduction limits.

Multiemployer Plans

Multiemployer plans are collectively bargained plans maintained by several employers — usually within the same industry — and a labor union. Multiemployer defined benefit plans are subject to funding requirements that differ from those for single-employer plans. Most of the funding requirements for multiemployer plans that were in effect before enactment of the PPA remain in effect under the new law. The PPA establishes a new set of rules for improving the funding of multiemployer plans that the law defines as being in "endangered" or "critical" status. These new requirements will remain in effect through 2014.

The PPA establishes new requirements for multiemployer plans that are seriously underfunded. A plan's actuaries will have 90 days after the start of the plan year to certify the funding status of the plan for that year and to project its funding status for the following six years. If the plan is underfunded, it will have 30 days after the actuarial certification to notify participants and approximately eight months to develop a funding schedule to present to the parties of the plan's collective bargaining agreement. The schedule must be designed to meet the statutory funding requirements before the end of the funding improvement period. For multiemployer plans in "critical status," the law makes changes in the *anti-cutback rules* of ERISA to give plans the right to eliminate or reduce some benefit payment options and early retirement benefits for plan participants who have not yet retired. The law also establishes new disclosure requirements for multiemployer plans.

Funding requirements for multiemployer plans. The PPA requires plans to amortize over 15 years (rather than 30 years, as under prior law) any increases in plan liabilities that are due to benefit increases or to changes in the actuarial assumptions used by the plan. Amounts already being amortized under the old amortization schedule need not be recalculated.

The PPA increases the limit on tax-deductible employer contributions to multiemployer plans to 140% of the plan's current liability (up from 100%), and it eliminates the 25%-of-compensation combined limit on contributions to defined benefit and defined contribution plans. These provisions are effective beginning with the 2006 tax year. The law will allow the Internal Revenue Service (IRS) to permit multiemployer plans that project a funding deficiency within 10 years to extend the amortization schedule for paying off its liabilities by five years, with a further five-year extension permissible. It requires such plans to adopt a recovery plan and to use specific interest rates for plan funding calculations.

Requirements for underfunded multiemployer plans. The PPA establishes mandatory procedures, effective through 2014, to improve the funding of seriously underfunded multiemployer plans. Under the PPA, a plan is considered

to be *endangered* if it is less than 80% funded *or* if the plan is projected to have a funding deficiency within seven years. A plan that is less than 80% funded *and* is projected to have a funding deficiency within seven years is considered to be *seriously endangered*. An endangered plan has one year to implement a "funding improvement plan" designed to reduce the amount of under-funding. Endangered plans have 10 years to improve their funding. They must improve their funding percentage by one-third of the difference between 100% funding and the plan's funded percentage from the earlier of (1) two years after the adoption of the funding improvement plan or (2) the first plan year after the expiration of collective bargaining agreements that cover at least 75% of the plan's active participants.

Seriously endangered plans that are less than 70% funded will have 15 years to improve their funding. They must improve their funding percentage by one-fifth of the difference between 100% funding and the plan's funded percentage from the earlier of (1) two years after the adoption of the funding improvement plan or (2) the first plan year after the expiration of collective bargaining agreements that cover at least 75% of the plan's active participants. A plan that is endangered or seriously endangered may not increase benefits. If the parties to the collective bargaining agreement are not able to agree on a funding improvement plan, a default funding schedule will apply. This schedule would reduce future benefit accruals. Additional contribution requirements will apply only if they are needed to achieve the funding improvement required by the law. A plan is not endangered in any plan year in which the required funding percentages are met.

A multiemployer plan is considered to be in *critical status* if (1) it is less than 65% funded and has a projected funding deficiency within five years or will be unable to pay benefits within seven years; (2) it has a projected funding deficiency within four years or will be unable to pay benefits within five years (regardless of its funded percentage); or (3) its liabilities for inactive participants are greater than its liabilities for active participants, its contributions are less than carrying costs, and a funding deficiency is projected within five years. A plan in critical status has one year to develop a rehabilitation plan designed to reduce the amount of underfunding. The plan sponsors will not be required to make "lump-sum" contributions that normally are required to meet the minimum funding standard when a plan has an accumulated funding deficiency. Employers will not be subject to an excise tax if a funding deficiency occurs as long as the plan is meeting its obligations under the rehabilitation plan and under the collective bargaining agreements negotiated to improve plan funding.

Reductions in adjustable benefits. In general, ERISA prohibits reductions in accrued, vested benefits. These provisions of ERISA are commonly called "anti-cutback" rules. The PPA changes the ERISA anti-cutback rules so that plans in critical status are permitted to reduce or eliminate early retirement subsidies and other "adjustable benefits" to help improve their funding status *if* this is agreed to by the bargaining parties. Benefits payable at normal retirement age *cannot* be reduced, and plans are not permitted to cut any benefits of participants who retired before they were notified that the plan is in critical status. Adjustable benefits include certain optional forms of benefit payment, disability benefits, early retirement benefits, joint and survivor annuities (if the survivor benefit exceeds 50%), and

benefit increases adopted or effective less than five years before the plan entered critical status.

The plan must notify all affected parties within 30 days after a determination is made that the plan is in critical status. Beginning 30 days after this notification, a 5% employer surcharge will apply to keep plan funding from deteriorating while the rehabilitation plan is being developed. This surcharge increases to 10% in the second year and stays in effect until the rehabilitation plan has been approved. During this period, increases in benefits and reductions in contributions are prohibited. The surcharge is no longer required beginning on the effective date of a collective bargaining agreement that includes a rehabilitation plan.

A plan has 10 years to move out of critical status from the earlier of (1) two years after adoption of the rehabilitation plan or (2) the first plan year after the beginning of collective bargaining agreements covering 75% of active participants. If the parties to the collective bargaining agreements fail to agree on a funding improvement plan, a default schedule will apply that assumes no increases in contributions — unless necessary to exit critical status — after benefit accruals and adjustable benefits have been reduced to the extent permitted by law. A plan exits critical status if it no longer projects a funding deficiency within 10 years.

Disclosure requirements. The PPA requires annual funding notices to be sent out 120 days after the end of the plan year, rather than within 11½ months after the end of the plan year, as under prior law. The Department of Labor will post information from plans' annual reports on its website, and plans will be required to provide certain information to participants on request. For plans in endangered or critical status, the plan actuary must certify that the funding improvement is on schedule. Annual reports must contain information on funding improvement plans or rehabilitation plans. Notification must be provided to participants, beneficiaries, bargaining parties, the PBGC, and the Secretary of Labor within 30 days after the plan determines that it is in endangered or critical status.

Defined Contribution Plans

Economic Growth and Tax Relief Reconciliation Act of 2001. The PPA makes permanent the higher benefit limits in defined benefit plans, higher contribution limits for individual retirement accounts and defined contribution plans, and catch-up contributions for workers 50 and older that were included in the Economic Growth and Tax Relief Reconciliation Act of 2001 (P.L. 107-16). These provisions had been scheduled to expire on December 31, 2010.

Coverage and nondiscrimination. Federal law prohibits tax-qualified retirement plans from discriminating in favor of highly compensated employees (HCEs) with regard to coverage, amount of benefits, or availability of benefits. A "highly compensated employee" is defined in law as any employee who owns 5% or more of the company or whose compensation exceeds $100,000 (indexed to inflation). An employer can elect to count as HCEs only those employees who rank in the top 20% of compensation in the firm, but it must include all 5% owners.

To be tax-qualified, a §401(k) plan must satisfy one of two tests: either the proportion of non-highly compensated employees (NHCEs) covered by the plan must be at least 70% of the proportion of highly compensated employees (HCEs) covered by the plan, or the average contribution percentage for NHCEs must be at least 70% of the average contribution percentage for HCEs.[12] Contributions to a plan cannot discriminate in favor of HCEs. Plans that have after-tax contributions or matching contributions are subject to the "actual contribution percentage" (ACP) test, which measures the contribution rate to HCE accounts relative to the contribution rate to NHCE accounts. Some §403(b) plans are subject to nondiscrimination rules; §457 plans generally are not. The actual contribution percentage of HCEs in a §401(k) plan generally cannot exceed the limits shown in **Table 2**.

Table 2. Maximum Average 401(k) Contributions for Highly Compensated Employees

Non-highly compensated employees (NHCEs)	Highly compensated employees (HCEs)
Maximum average deferral and match	*Maximum average deferral and match*
2% of pay or less	NHCE percentage x 2
2% to 8% of pay	NHCE percentage + 2%
8% of pay or more	NHCE percentage x 1.25

Note: "Deferral and match" equals the sum of employer and employee contributions.

Any of three "safe-harbor" designs are deemed to satisfy the ACP test automatically for employer matching contributions (up to 6% of compensation):

- The employer matches 100% of employee elective deferrals up to 3% of compensation, and 50% of elective deferrals between 3% and 5% of compensation, and all employer matching contributions are fully vested.

- Employer-matching contributions can follow any other matching formula that results in total matching contributions that are no less than under the first design. All employer-matching contributions vest immediately.

- The employer automatically contributes an amount equal to at least 3% of pay for all eligible NHCEs. Employer contributions vest immediately.

All §401(k) plans must satisfy an "actual deferral percentage" (ADP) test, which measures employees' elective-deferral rates. The same numerical limits are used as

[12] For the purposes of the latter test, the average contribution percentage is defined as all employer contributions divided by total compensation. A third test — that at least 70% of NHCEs must be covered by the plan — will automatically satisfy the first test listed above.

under the ACP test. Three "safe-harbor" designs, similar to the safe-harbor designs for the ACP test, are deemed to satisfy the ADP test automatically. In addition, "cross-testing" allows defined contribution plans to satisfy the nondiscrimination tests based on projected account balances at retirement age, rather than current contribution rates. This permits bigger contributions for older workers. Because higher-paid employees receive proportionally smaller Social Security benefits relative to earnings than lower-paid workers, employers are permitted to make larger contributions on earnings in excess of the Social Security wage base ($94,200 in 2006). Regulations limit the size of the *permitted disparity* in favor of workers whose earnings are above the wage base.

Automatic enrollment "safe harbor". The PPA creates a "safe harbor" from nondiscrimination testing for plans that adopt automatic enrollment, provided the plans meet certain requirements. The requirements include notifying employees of the amount of pay to be deferred, the investments into which the deferrals will be deposited, and that the employee has the right to change the amount deferred or the investments into which the money is deferred or to opt out of the arrangement altogether.[13] A plan with automatic enrollment will be deemed to satisfy the nondiscrimination rules for elective deferrals and matching contributions if it provides a minimum matching contribution of 100% of elective deferrals up to 1% of compensation, plus 50% of elective deferrals between 1% and 6% percent of compensation.

The nondiscrimination safe harbor that existed prior to the PPA (described above) will continue to be available for all §401(k) plans, including those with automatic enrollment. To qualify for the automatic enrollment safe harbor, the contribution rate for automatic enrollees must be at least 3% during the first year of participation, 4% during the second year, 5% during the third year, and 6% thereafter. The plan may specify a higher contribution up to a maximum of 10%. The automatic enrollment arrangement will not have to apply to employees already participating in the plan. Employees must be fully vested in employer contributions after no more than two years, rather than the immediate vesting rule for other safe harbor §401(k) plans. The distribution restrictions under IRC §401(k)(2) also will apply to automatic contribution plans.

An employee who is automatically enrolled will have 90 days to opt out of the plan and withdraw any contributions made on his or her behalf, plus the earnings on those contributions. These amounts will be taxed in the year the employee receives them, but they will not be subject to the 10% extra tax that ordinarily would apply to distributions received before age 59½. This rule also will apply to §403(b) plans and §457(b) plans that adopt automatic enrollment.

Plans that opt for automatic enrollment must choose a set of default investments for participants who have not designated their specific investment choices. Under the PPA, an automatic enrollment plan will be granted protection from fiduciary

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[13] Specifically, a plan with an automatic enrollment feature would be deemed to satisfy the average deferral percentage (ADP) and average contribution percentages (ACP) tests. Qualified automatic enrollment plans also would be deemed not to be "top heavy" plans.

liability under ERISA §404(c) for its default investments, provided that automatic contributions are invested in accordance with regulations to be issued by the Department of Labor and that the plan notifies employees of their right to change the investments or to opt out of the plan. The PPA clarifies that ERISA preempts any state law that would prohibit automatic enrollment, provided that the plan notifies affected employees annually of their rights in the plan.[14] The automatic enrollment provisions of the PPA are effective for plan years starting in 2008, except the ERISA preemption of state law, which is effective on the date of enactment.

Investment advice. The PPA permits certain fiduciaries of a retirement plan to receive compensation in exchange for providing investment advice to plan participants without violating the ban on "prohibited transactions" established by ERISA. Different rules for investment advice will apply for employer-sponsored plans and individual retirement accounts (IRAs). A fiduciary that is a registered investment company, bank, insurance company, or registered broker-dealer will be allowed to provide investment advice to participants without engaging in a prohibited transaction, provided that the advisor charges a flat fee or if its recommendations are based on a computer model that has been certified by an independent third party. An annual audit of the investment advice arrangement will be required. The advisors must disclose their fee arrangements to plan participants and inform them of their affiliations with investments they recommend and with the developer of the computer model. These provisions of the PPA will be effective after December 31, 2006.

With respect to individual retirement accounts, investment advice that is based on a computer model will be exempted from the prohibited transaction rules only if the model complies with guidelines to be developed by the Department of Labor. If the Secretary of Labor determines that no suitable computer models exist, he or she is directed to write regulations that will allow investment professionals to provide objective and unbiased investment advice to IRA owners.

Hedge funds. The PPA provides that investment funds and limited partnerships (including hedge funds) will not be treated as plan fiduciaries under ERISA if investments by ERISA-covered plans account for less than 25% of assets of the investment fund or limited partnership. Investments of governmental and foreign plans, which are not subject to ERISA, will not be taken into account in this calculation, as they were under prior law.[15]

Miscellaneous Provisions

"DB(k)"plans. Beginning in 2010, the PPA authorizes a new "eligible combined plan" for employers with fewer than 500 employees that would contain a 401(k) component and a defined benefit component. The defined benefit component must provide either a benefit equal to 1% of final average pay for each year of service

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[14] This preemption applies only to ERISA plans. Since state and local plans are not subject to ERISA, they remain bound by any state laws prohibiting automatic payroll deductions.

[15] The PPA adds §3(42) to ERISA adopting a 25% threshold to determine if the underlying assets of an entity are plan assets subject to Title I of ERISA. Certain interests held by foreign or governmental plans are excluded when determining if the 25% threshold is met.

up to 20 years or a cash balance plan that increases its benefit with the participant's age. The 401(k) component must include automatic enrollment with a contribution of 4% of pay and a fully vested employer matching contribution equal to 50% of the first 4% of employee pay deferred. Nonelective employer contributions will be permitted but are not required. Benefits under the defined benefit component and nonelective employer contributions under the defined contribution component would have to be vested after no more than three years of service, and matching contributions would have to be 100% vested immediately. Coverage and nondiscrimination tests would have to be satisfied without regard to contributions or benefits under any other plan and without regard to the permitted disparity between highly compensated employees and non-highly compensated employees. The ACP and ADP tests would be deemed satisfied for these plans. Cash balance plans would also have to meet the vesting requirements for those types of plans under IRC §411(a)(13)(B) and the interest credit requirements under IRC §411(b)(5)(B)(I), as added to the tax code by the PPA.

Spousal protections. The PPA directs the Department of Labor to issue regulations to clarify that a court order does not fail to be a Qualified Domestic Relations Order (QDRO) merely because of the time it was issued, or because it modified a prior court order or QDRO. The PPA also requires plans to offer a 75% survivor annuity option if the plan's survivor annuity is less than 75%, and to offer a 50% survivor annuity option if the plan's survivor annuity is greater than 75%.

Rollovers of accrued benefits. Effective in 2008, plan distributions can be rolled over directly to a Roth IRA. Any taxable portion of the rollover amount will be taxed at the time of the rollover. Rollovers are subject to the Roth IRA conversion rules, which restrict conversions of traditional IRAs to Roth IRAs to taxpayers with adjusted gross income of no more than $100,000, whether single or married filing jointly. Effective in 2007, the PPA permits a non-spouse beneficiary of a qualified plan to roll over benefits to an IRA so that the IRA can satisfy the minimum distribution requirements applicable to inherited IRAs. The law also expands the portability of after-tax amounts by allowing rollovers between different types of employer-sponsored plans. The PPA also permits after-tax contributions to a qualified plan to be rolled over into another qualified plan or into a §403(b) plan.

The EGTRRA of 2001 accelerated the vesting schedule of employer matching contributions to defined contribution plans so that they must be fully vested in no more than three years under cliff vesting or no more than six years under graded vesting. The PPA applies these same vesting schedules to all employer contributions made in plan years after 2006 for employees who have at least one hour of service after the effective date.

Permissive service credits. Employees of state and local governments sometimes are permitted to purchase service credit in a public employee pension plan. By making a contribution to the pension plan, they are granted credit for a period of service under the plan, just as if they had contributed to the plan during that period. These contributions to fund the benefit attributable to the period of service are in addition to any regular employee contributions under the plan. The PPA expands the provisions of the Internal Revenue Code regarding permissive service credits under state and local governmental plans to include the purchase of additional

credits for years where service credit already has been given and for other periods, regardless of whether service was performed.

Reporting and disclosure. The PPA requires all single-employer defined benefit plans to distribute an annual funding notice to participants no later than 120 days after the end of the plan year. Small plans with 100 or fewer participants can distribute the notice when they file the annual Form 5500 with the IRS. Effective in 2008, the Department of Labor will be required to display information from the Form 5500 annual report in electronic form within 90 days after receiving it, and companies that maintain an intranet site for employees must display the Form 5500 information on that site. A simplified Form 5500 will be made available for plans with 25 or fewer participants.

Under prior law, employers were required to file an additional form (called a "4010 filing," after ERISA §4010) if the plan's aggregate unfunded vested benefits exceeded $50 million. Beginning in 2008, the PPA amends ERISA §4010(b)(1) to require this filing of financial and actuarial information for any PBGC-insured plan that has a funding percentage of less than 80%.

The PPA requires plan sponsors to provide participants in defined contribution plans with quarterly benefits statements if the investments are participant-directed and annual statements if the investments are not participant-directed. Participants in defined benefit plans must receive a benefit statement at least once every three years.

Distress and involuntary terminations. In the event that a defined benefit plan terminates while it is underfunded (a distress termination under ERISA §4041(c)) or is subject to an involuntary termination under ERISA §4042, the plan sponsor must provide to plan participants the same information that the plan is required to submit to the PBGC — subject to confidentiality limitations — within 15 days of the PBGC filing. This requirement applies to notices of intent to terminate and involuntary termination determinations.

Diversification requirements. The PPA requires defined contribution plans that hold publicly traded employer securities to allow participants to diversify account balances invested in those securities and to offer participants at least three alternative investments. All participants must be allowed to diversify out of employer stock purchased through their own elective deferrals and after-tax contributions. Participants with three or more years of service must be allowed to diversify the investment of employer contributions made on their behalf. This rule will be phased in over three years for securities acquired before 2007, except for participants who are age 55 or older and who have three years of service, for whom it applies immediately. These provisions do not apply to employee stock ownership plans (ESOPs) that have no elective deferrals, after-tax employee contributions, or matching contributions and that are not part of another qualified plan. The new diversification rules are effective for plan years beginning after 2006, or a later date for collectively bargained plans.

Indian tribal governments. The PPA provides that a plan is to be treated as a governmental plan if it is maintained by an Indian tribal government or a subdivision, agency, or instrumentality of a tribal government. To be treated as a

governmental plan, and thus not subject to ERISA, all of the participants must be employees whose services are substantially in the performance of essential governmental functions, but not in the performance of commercial activities, whether or not those activities are essential government functions.

Saver's credit. The Retirement Savings Tax Credit — also called the "saver's credit" — is a nonrefundable tax credit available to low- and middle-income taxpayers who contribute to a qualified retirement savings plan. The maximum credit is 50% of contributions up to $2,000, which would result in a tax credit of $1,000. The saver's credit was created by the EGTRRA of 2001 and was scheduled to expire after 2006. Section 812 of PPA bill makes the Retirement Savings Tax Credit permanent and section 833 of the law amends IRC §25B to index the eligible income levels to inflation in increments of $500.[16]

Phased retirement. The PPA provides that, beginning in 2007, a defined benefit plan may allow in-service distributions to a participant who has reached age 62, even if normal retirement age is later than age 62.

Hardship distributions. The PPA requires the Secretary of the Treasury to issue regulations permitting hardship withdrawals for a person who is the participant's beneficiary under the plan, even if that beneficiary is not the participant's spouse or dependent.

Distributions to qualified reservists. The PPA allows IRAs and §401(k) plans to make distributions to "qualified reservists" called up to active duty for 180 days or longer. The 10% tax on distributions before age 59½ would not apply to these distributions. During the two years immediately following the period of active duty, the reservist can redeposit into an IRA an amount equal to the qualified reservist distribution. This provision applies only if the reservist is called up to active duty after September 11, 2001, and before December 31, 2007.

Distributions to public safety employees. Effective on enactment of the new law, public safety employees are exempt from the 10% tax on distributions before age 59½ if the distribution is made after a separation from service that occurs at age 50 or later. In addition, after 2006, retired public safety employees can exclude from income up to $3,000 per year in distributions from governmental plans used to purchase health insurance or long-term care insurance.

Nondiscrimination testing for governmental plans. Effective upon enactment, all governmental plans, including federal, state, and local plans, are exempt from nondiscrimination testing. Under prior law, only state and local governmental plans were exempted.

Retiree health benefits. The PPA amends IRC §420 to expand the ability of defined benefit plan sponsors to transfer surplus plan assets to retiree health plans.

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[16] For more information, see CRS Report RS21795, *The Retirement Savings Tax Credit: A Fact Sheet*, by Patrick Purcell.

Split tax refunds. The PPA provides that beginning in 2007, taxpayers can direct the IRS to deposit tax refunds directly into an IRA, subject to the annual maximum contribution.

Indexing of IRA limits. The PPA indexes to inflation the gross income levels for making deductible IRA contributions and for making contributions to a Roth IRA.

Tax-free IRA distributions for charitable contributions. In 2006 and 2007, IRA owners age 70½ and older can receive up to $100,000 tax-free from an IRA if it is contributed to a charitable organization.

Plan amendments. Plan amendments to implement the PPA are to be made by the end of the 2009 plan year. Governmental plans have an additional two years to make amendments.

Glossary

At-risk plan. Under the Pension Protection Act, a plan is considered to be at risk of default on its obligations if it fails to meet at least one of two tests. Under the first test, a plan is deemed to be at risk if it is less than 70% funded under the "worst case scenario" assumptions that (1) the sponsor is not permitted to use credit balances to reduce its cash contributions and (2) employees will retire at the earliest date they are eligible and will choose the form of benefit that is most expensive to the plan. If a plan does not pass this test, it will be deemed at risk of default unless it is at least 80% funded under standard actuarial assumptions.

Cash balance plan. A cash balance plan is an employer-sponsored retirement plan that has some characteristics of both defined benefit and defined contribution (DC) plans. The employer credits each employee with a specific percentage of pay each year and applies interest to these amounts at a rate of interest that the employer chooses. The benefit is therefore defined as an "account balance," as in a DC plan. A cash balance plan differs from a DC plan, however, in that the employer retains control of the funds held by the plan and chooses how to invest these funds. The account balance in a cash balance plan is merely an accounting of the employee's accrued benefit under the plan. It is not an individual account owned by the employee. Because the employee is required to receive a benefit that is no less than the amount of pay credits and interest credits that have been applied to his or her "account," cash balance plans are legally defined benefit plans and are insured by the Pension Benefit Guaranty Corporation.

Credit balance. A credit balance is a credit against a plan sponsor's required minimum contribution to a defined benefit plan in the current year as a result of having contributed more than the required minimum amount in a past year.

Critical status. Under the Pension Protection Act (PPA), a multiemployer plan is considered to be in critical status if (1) it is less than 65% funded and is projected to have a funding deficiency within five years or to be unable to pay benefits within seven years; (2) it is projected to have a funding deficiency within four years or to be unable to pay benefits within five years, regardless of its funding percentage; or (3)

it has liabilities for inactive participants that exceed its liabilities for active participants, its contributions are less than carrying costs, and a funding deficiency is projected within five years. Plans in critical status are subject to special requirements under the PPA to ensure that they improve their funding.

Defined benefit plan. A defined benefit (DB) plan is an employer-sponsored retirement plan in which employee benefits are based on factors such as length of service and average salary. Benefits in a DB plan are prefunded and pension assets are held in a trust fund under the control of the employer. By law, defined benefit plans must offer benefits in the form of an annuity, although they also may offer optional forms of payment, such as a lump-sum distribution. In a DB plan, the employer bears the investment risk. If the pension trust is not adequately funded to pay the benefits promised, the employer may be required to contribute more money to the plan. Defined benefit plans are insured by the Pension Benefit Guaranty Corporation.

Defined contribution plan. A defined contribution (DC) plan is an employer-sponsored retirement plan in which the employer contributes a specific dollar amount or percentage of pay into a retirement account for the employee. In some DC plans, such as §401(k) plans, the employee also defers some of his or her salary into the account. In participant-directed plans, the employee controls how the money in the retirement account is invested. In a DC plan, the employee bears the investment risk. The benefit under the plan is whatever amount is held in the retirement account, which depends on the amounts contributed and investment gains and losses. Defined contribution plans are *not* insured by the Pension Benefit Guaranty Corporation.

Distress termination. The sponsor of a defined benefit plan that does not have enough money to pay the full benefits it owes to participants and beneficiaries may terminate the plan if the sponsor is financially distressed and is unable to fund the plan. The PBGC will then take over the plan as trustee and use its own assets and any remaining assets in the plan to pay pension benefits to current and future retirees within the legal limits. The PBGC also will try to collect additional funds from the employer and will share a portion of its recoveries with participants and beneficiaries. The PBGC has legal authority to perfect liens on property of sponsors that are not in bankruptcy, but it does not have preferred standing among creditors of plan sponsors that have entered bankruptcy proceedings.

Endangered status. Under the Pension Protection Act, a multiemployer plan is considered to be endangered if it is less than 80% funded *or* if the plan is projected to have a funding deficiency within seven years. A plan that is less than 80% funded *and* is projected to have a funding deficiency within seven years is considered to be seriously endangered. Endangered and seriously endangered plans are subject to special requirements under the PPA to ensure that they improve their funding.

Funding target. Under the Pension Protection Act, a plan's funding target is equal to the present value of all benefits already accrued by plan participants as of the beginning of the plan year. A fully funded plan is one in which the plan's assets are at least equal to the funding target plus the plan's target normal cost for the current year.

Involuntary termination. An involuntary termination is a termination of an underfunded pension plan that is initiated by the PBGC to protect the interests of plan participants.

Multiemployer plan. A multiemployer plan is a collectively bargained plan maintained by more than one employer, usually within the same or related industries, and a labor union. These plans also are sometimes referred to as "Taft-Hartley plans," after the Taft-Hartley Act of 1947 (P.L. 80-101).

Nonqualified retirement plan. Nonqualified plans are designed to provide benefits to company owners, executives, and highly compensated employees. Unlike qualified plans, nonqualified plans are not required to cover rank-and-file employees, and neither the amount that can be contributed to the plan nor the amount of benefits that they can pay are limited by law. Because nonqualified plans are not required to meet the standards set in law for qualified plans, they do not receive the preferential tax treatment that is accorded to qualified plans. Moreover, any assets that are set aside to prefund benefits under a nonqualified plan are subject to the claims of the plan sponsor's creditors in the event that the plan sponsor enters bankruptcy.

Pension Benefit Guaranty Corporation (PBGC). The PBGC is a government-sponsored corporation created by the Employee Retirement Income Security Act (ERISA) of 1974 to insure the benefits promised to workers in private-sector defined benefit pension plans. The PBGC receives no appropriations from Congress. It is funded by mandatory insurance premiums paid by private-sector employers that sponsor defined benefit pensions and by investment earnings on the assets it holds in its trust fund. The PBGC has no authority to establish the amount of its premiums, which are set in law by Congress. The maximum benefit guaranteed by the PBGC also is established by law and is indexed annually to national average wage growth.

Qualified retirement plan. A plan that meets requirements specified in the Internal Revenue Code with respect to eligibility, participation, and benefits is qualified to receive preferential tax treatment. Specifically, in a qualified plan (1) the employer can deduct from income the amount that it contributes to the plan as a business expense, (2) the amount that the employer contributes to the plan on behalf of plan participants is not treated as income to the participants, and (3) the investment earnings of a qualified pension trust are not taxed as income to either the employer or the plan participants. A qualified retirement plan may be either a defined benefit plan or a defined contribution plan. Assets held in trust by a qualified retirement plan are protected from creditors' claims if the plan sponsor enters bankruptcy.

Smoothing. Plan sponsors attempt to reduce year-to-year fluctuations in the value of plan assets and plan liabilities by averaging ("smoothing") asset values and the interest rate used to calculate plan liabilities over longer periods. Under the Pension Protection Act (PPA), asset values may be averaged over a 24-month period, but the resulting value may be no less than 90% and no more than 110% of the assets' current market value. Under the PPA, the interest rates used to calculate the present value of plan liabilities will be derived from a two-year weighted average of interest rates on investment-grade corporate bonds.

Standard termination. ERISA allows the sponsor of a fully funded defined benefit pension plan to terminate the plan if the sponsor wishes to do so. A termination of a fully funded plan is called a standard termination. As of the date of the termination, benefit accruals cease and all participants are fully vested in their accrued benefits. The sponsor purchases annuities from an insurer to pay benefits under the plan and the PBGC's insurance coverage of the plan ends.

Target normal cost. Under the Pension Protection Act, a defined benefit plan's target normal cost for a year is the present value of benefits expected to be accrued in the current year, including benefits that are attributable to increases in compensation.

Yield curve. A yield curve is a graph showing the relationship between the interest rate of a bond and the time to maturity, when the lender must be repaid. Long-term interest rates usually are higher than short-term interest rates because the lender is taking on the risks of default by the borrower and devaluation of currency through the effects of inflation for a longer period. Therefore, if interest rates are plotted on the vertical axis and time to maturity is plotted on the horizontal axis, the yield curve typically slopes upward, moving from left to right.

TECHNICAL EXPLANATION OF H.R. 4, THE "PENSION PROTECTION ACT OF 2006," AS PASSED BY THE HOUSE ON JULY 28, 2006, AND AS CONSIDERED BY THE SENATE ON AUGUST 3, 2006

Prepared by the Staff
of the
JOINT COMMITTEE ON TAXATION

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INTRODUCTION

This document,[1] prepared by the staff of the Joint Committee on Taxation, provides a technical explanation of the "Pension Protection Act of 2006," as passed by the House of Representatives on July 28, 2006, and as considered by the Senate on August 3, 2006.

[1] This document may be cited as follows: Joint Committee on Taxation, *Technical Explanation of H.R. 4, the "Pension Protection Act of 2006," as Passed by the House on July 28, 2006, and as Considered by the Senate on August 3, 2006* (JCX-38-06), August 3, 2006.

TITLE I: REFORM OF FUNDING RULES FOR SINGLE-EMPLOYER DEFINED BENEFIT PENSION PLANS[2]

A. Minimum Funding Standards for Single-Employer Defined Benefit Pension Plans (secs. 302-308 of ERISA, and sec. 412 and new sec. 430 of the Code)

Present Law

In general

Single-employer defined benefit pension plans are subject to minimum funding requirements under the Employee Retirement Income Security Act of 1974 ("ERISA") and the Internal Revenue Code (the "Code").[3] The amount of contributions required for a plan year under the minimum funding rules is generally the amount needed to fund benefits earned during that year plus that year's portion of other liabilities that are amortized over a period of years, such as benefits resulting from a grant of past service credit. The amount of required annual contributions is determined under one of a number of acceptable actuarial cost methods. Additional contributions are required under the deficit reduction contribution rules in the case of certain underfunded plans. No contribution is required under the minimum funding rules in excess of the full funding limit (described below).

General minimum funding rules

Funding standard account

As an administrative aid in the application of the funding requirements, a defined benefit pension plan is required to maintain a special account called a "funding standard account" to which specified charges and credits are made for each plan year, including a charge for normal cost and credits for contributions to the plan. Other charges or credits may apply as a result of decreases or increases in past service liability as a result of plan amendments, experience gains or losses, gains or losses resulting from a change in actuarial assumptions, or a waiver of minimum required contributions.

In determining plan funding under an actuarial cost method, a plan's actuary generally makes certain assumptions regarding the future experience of a plan. These assumptions

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[2] Some provisions that are identical or similar to the pension provisions in the bill were contained in other bills reported by the House Committees on Ways and Means and Education and the Workforce and the Senate Committees on Finance and Health, Education, Labor and Pensions, or passed by the House or the Senate during the 109th Congress. These bills include H.R. 2830, S. 1953, and S. 1783.

[3] Multiemployer defined benefit pension plans are also subject to the minimum funding requirements, but the rules for multiemployer plans differ in various respects from the rules applicable to single-employer plans. Governmental plans and church plans are generally exempt from the minimum funding requirements.

typically involve rates of interest, mortality, disability, salary increases, and other factors affecting the value of assets and liabilities. If the plan's actual unfunded liabilities are less than those anticipated by the actuary on the basis of these assumptions, then the excess is an experience gain. If the actual unfunded liabilities are greater than those anticipated, then the difference is an experience loss. Experience gains and losses for a year are generally amortized as credits or charges to the funding standard account over five years.

If the actuarial assumptions used for funding a plan are revised and, under the new assumptions, the accrued liability of a plan is less than the accrued liability computed under the previous assumptions, the decrease is a gain from changes in actuarial assumptions. If the new assumptions result in an increase in the plan's accrued liability, the plan has a loss from changes in actuarial assumptions. The accrued liability of a plan is the actuarial present value of projected pension benefits under the plan that will not be funded by future contributions to meet normal cost or future employee contributions. The gain or loss for a year from changes in actuarial assumptions is amortized as credits or charges to the funding standard account over ten years.

If minimum required contributions are waived (as discussed below), the waived amount (referred to as a "waived funding deficiency") is credited to the funding standard account. The waived funding deficiency is then amortized over a period of five years, beginning with the year following the year in which the waiver is granted. Each year, the funding standard account is charged with the amortization amount for that year unless the plan becomes fully funded.

If, as of the close of a plan year, the funding standard account reflects credits at least equal to charges, the plan is generally treated as meeting the minimum funding standard for the year. If, as of the close of the plan year, charges to the funding standard account exceed credits to the account, then the excess is referred to as an "accumulated funding deficiency." Thus, as a general rule, the minimum contribution for a plan year is determined as the amount by which the charges to the funding standard account would exceed credits to the account if no contribution were made to the plan. For example, if the balance of charges to the funding standard account of a plan for a year would be $200,000 without any contributions, then a minimum contribution equal to that amount would be required to meet the minimum funding standard for the year to prevent an accumulated funding deficiency.

Credit balances

If credits to the funding standard account exceed charges, a "credit balance" results. A credit balance results, for example, if contributions in excess of minimum required contributions are made. Similarly, a credit balance may result from large net experience gains. The amount of the credit balance, increased with interest at the rate used under the plan to determine costs, is applied against charges to the funding standard account, thus reducing required contributions.

Funding methods and general concepts

A defined benefit pension plan is required to use an acceptable actuarial cost method to determine the elements included in its funding standard account for a year. Generally, an actuarial cost method breaks up the cost of benefits under the plan into annual charges consisting

of two elements for each plan year. These elements are referred to as: (1) normal cost; and (2) supplemental cost.

The plan's normal cost for a plan year generally represents the cost of future benefits allocated to the year by the funding method used by the plan for current employees and, under some funding methods, for separated employees. Specifically, it is the amount actuarially determined that would be required as a contribution by the employer for the plan year in order to maintain the plan if the plan had been in effect from the beginning of service of the included employees and if the costs for prior years had been paid, and all assumptions as to interest, mortality, time of payment, etc., had been fulfilled. The normal cost will be funded by future contributions to the plan: (1) in level dollar amounts; (2) as a uniform percentage of payroll; (3) as a uniform amount per unit of service (e.g., $1 per hour); or (4) on the basis of the actuarial present values of benefits considered accruing in particular plan years.

The supplemental cost for a plan year is the cost of future benefits that would not be met by future normal costs, future employee contributions, or plan assets. The most common supplemental cost is that attributable to past service liability, which represents the cost of future benefits under the plan: (1) on the date the plan is first effective; or (2) on the date a plan amendment increasing plan benefits is first effective. Other supplemental costs may be attributable to net experience losses, changes in actuarial assumptions, and amounts necessary to make up funding deficiencies for which a waiver was obtained. Supplemental costs must be amortized (i.e., recognized for funding purposes) over a specified number of years, depending on the source. For example, the cost attributable to a past service liability is generally amortized over 30 years.

Normal costs and supplemental costs under a plan are computed on the basis of an actuarial valuation of the assets and liabilities of a plan. An actuarial valuation is generally required annually and is made as of a date within the plan year or within one month before the beginning of the plan year. However, a valuation date within the preceding plan year may be used if, as of that date, the value of the plan's assets is at least 100 percent of the plan's current liability (i.e., the present value of benefits under the plan, as described below).

For funding purposes, the actuarial value of plan assets may be used, rather than fair market value. The actuarial value of plan assets is the value determined on the basis of a reasonable actuarial valuation method that takes into account fair market value and is permitted under Treasury regulations. Any actuarial valuation method used must result in a value of plan assets that is not less than 80 percent of the fair market value of the assets and not more than 120 percent of the fair market value. In addition, if the valuation method uses average value of the plan assets, values may be used for a stated period not to exceed the five most recent plan years, including the current year.

In applying the funding rules, all costs, liabilities, interest rates, and other factors are required to be determined on the basis of actuarial assumptions and methods, each of which is reasonable (taking into account the experience of the plan and reasonable expectations), or which, in the aggregate, result in a total plan contribution equivalent to a contribution that would

be determined if each assumption and method were reasonable. In addition, the assumptions are required to offer the actuary's best estimate of anticipated experience under the plan.[4]

Additional contributions for underfunded plans

In general

Under special funding rules (referred to as the "deficit reduction contribution" rules),[5] an additional charge to a plan's funding standard account is generally required for a plan year if the plan's funded current liability percentage for the plan year is less than 90 percent.[6] A plan's "funded current liability percentage" is generally the actuarial value of plan assets as a percentage of the plan's current liability.[7] In general, a plan's current liability means all liabilities to employees and their beneficiaries under the plan, determined on a present-value basis.

The amount of the additional charge required under the deficit reduction contribution rules is the sum of two amounts: (1) the excess, if any, of (a) the deficit reduction contribution (as described below), over (b) the contribution required under the normal funding rules; and (2) the amount (if any) required with respect to unpredictable contingent event benefits. The amount of the additional charge cannot exceed the amount needed to increase the plan's funded current liability percentage to 100 percent (taking into account the expected increase in current liability due to benefits accruing during the plan year).

The deficit reduction contribution is generally the sum of (1) the "unfunded old liability amount," (2) the "unfunded new liability amount," and (3) the expected increase in current

[4] Under present law, certain changes in actuarial assumptions that decrease the liabilities of an underfunded single-employer plan must be approved by the Secretary of the Treasury.

[5] The deficit reduction contribution rules apply to single-employer plans, other than single-employer plans with no more than 100 participants on any day in the preceding plan year. Single-employer plans with more than 100 but not more than 150 participants are generally subject to lower contribution requirements under these rules.

[6] Under an alternative test, a plan is not subject to the deficit reduction contribution rules for a plan year if (1) the plan's funded current liability percentage for the plan year is at least 80 percent, and (2) the plan's funded current liability percentage was at least 90 percent for each of the two immediately preceding plan years or each of the second and third immediately preceding plan years.

[7] In determining a plan's funded current liability percentage for a plan year, the value of the plan's assets is generally reduced by the amount of any credit balance under the plan's funding standard account. However, this reduction does not apply in determining the plan's funded current liability percentage for purposes of whether an additional charge is required under the deficit reduction contribution rules.

liability due to benefits accruing during the plan year.[8] The "unfunded old liability amount" is the amount needed to amortize certain unfunded liabilities under 1987 and 1994 transition rules. The "unfunded new liability amount" is the applicable percentage of the plan's unfunded new liability. Unfunded new liability generally means the unfunded current liability of the plan (i.e., the amount by which the plan's current liability exceeds the actuarial value of plan assets), but determined without regard to certain liabilities (such as the plan's unfunded old liability and unpredictable contingent event benefits). The applicable percentage is generally 30 percent, but decreases by .40 of one percentage point for each percentage point by which the plan's funded current liability percentage exceeds 60 percent. For example, if a plan's funded current liability percentage is 85 percent (i.e., it exceeds 60 percent by 25 percentage points), the applicable percentage is 20 percent (30 percent minus 10 percentage points (25 multiplied by .4)).[9]

A plan may provide for unpredictable contingent event benefits, which are benefits that depend on contingencies that are not reliably and reasonably predictable, such as facility shutdowns or reductions in workforce. The value of any unpredictable contingent event benefit is not considered in determining additional contributions until the event has occurred. The event on which an unpredictable contingent event benefit is contingent is generally not considered to have occurred until all events on which the benefit is contingent have occurred.

Required interest rate and mortality table

Specific interest rate and mortality assumptions must be used in determining a plan's current liability for purposes of the special funding rule. For plans years beginning before January 1, 2004, and after December 31, 2005, the interest rate used to determine a plan's current liability must be within a permissible range of the weighted average of the interest rates on 30-year Treasury securities for the four-year period ending on the last day before the plan year begins.[10] The permissible range is generally from 90 percent to 105 percent (120 percent for plan years beginning in 2002 or 2003).[11] The interest rate used under the plan generally must be consistent with the assumptions which reflect the purchase rates that would be used by insurance companies to satisfy the liabilities under the plan.[12]

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[8] The deficit reduction contribution may also include an additional amount as a result of the use of a new mortality table prescribed by the Secretary of the Treasury in determining current liability for plan years beginning after 2006, as described below.

[9] In making these computations, the value of the plan's assets is reduced by the amount of any credit balance under the plan's funding standard account.

[10] The weighting used for this purpose is 40 percent, 30 percent, 20 percent and 10 percent, starting with the most recent year in the four-year period. Notice 88-73, 1988-2 C.B. 383.

[11] If the Secretary of the Treasury determines that the lowest permissible interest rate in this range is unreasonably high, the Secretary may prescribe a lower rate, but not less than 80 percent of the weighted average of the 30-year Treasury rate.

[12] Code sec. 412(b)(5)(B)(iii)(II); ERISA sec. 302(b)(5)(B)(iii)(II). Under Notice 90-11, 1990-1 C.B. 319, the interest rates in the permissible range are deemed to be consistent with the assumptions

Under the Pension Funding Equity Act of 2004 ("PFEA 2004"),[13] a special interest rate applies in determining current liability for plan years beginning in 2004 or 2005.[14] For these years, the interest rate used must be within a permissible range of the weighted average of the rates of interest on amounts invested conservatively in long-term investment-grade corporate bonds during the four-year period ending on the last day before the plan year begins. The permissible range for these years is from 90 percent to 100 percent. The interest rate is to be determined by the Secretary of the Treasury on the basis of two or more indices that are selected periodically by the Secretary and are in the top three quality levels available.

In determining current liability, the 1983 Group Annuity Mortality Table has been used since 1995.[15] Under present law, the Secretary of the Treasury may prescribe other tables to be used based on the actual experience of pension plans and projected trends in such experience. In addition, the Secretary of the Treasury is required to periodically review (at least every five years) any tables in effect and, to the extent the Secretary determines necessary, update such tables to reflect the actuarial experience of pension plans and projected trends in such experience.[16] Under Prop. Treas. Reg. 1.412(l)(7)-1, beginning in 2007, RP-2000 Mortality Tables are used with improvements in mortality (including future improvements) projected to the current year and with separate tables for annuitants and nonannuitants.[17]

Other rules

Full funding limitation

No contributions are required under the minimum funding rules in excess of the full funding limitation. The full funding limitation is the excess, if any, of (1) the accrued liability under the plan (including normal cost), over (2) the lesser of (a) the market value of plan assets or (b) the actuarial value of plan assets.[18] However, the full funding limitation may not be less

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reflecting the purchase rates that would be used by insurance companies to satisfy the liabilities under the plan.

[13] Pub. L. No. 108-218 (2004).

[14] In addition, under PFEA 2004, if certain requirements are met, reduced contributions under the deficit reduction contribution rules apply for plan years beginning after December 27, 2003, and before December 28, 2005, in the case of plans maintained by commercial passenger airlines, employers primarily engaged in the production or manufacture of a steel mill product or in the processing of iron ore pellets, or a certain labor organization.

[15] Rev. Rul. 95-28, 1995-1 C.B. 74. Separate mortality tables are required to be used with respect to disabled participants.

[16] Code sec. 412(l)(7)(C)(ii)(III); ERISA sec. 302(d)(7)(C)(ii)(III).

[17] Separate tables continue to apply with respect to disabled participants.

[18] For plan years beginning before 2004, the full funding limitation was generally defined as the excess, if any, of (1) the lesser of (a) the accrued liability under the plan (including normal cost) or (b) a

than the excess, if any, of 90 percent of the plan's current liability (including the expected increase in current liability due to benefits accruing during the plan year) over the actuarial value of plan assets. In general, current liability is all liabilities to plan participants and beneficiaries accrued to date, whereas the accrued liability under the full funding limitation may be based on projected future benefits, including future salary increases.

Timing of plan contributions

In general, plan contributions required to satisfy the funding rules must be made within 8½ months after the end of the plan year. If the contribution is made by such due date, the contribution is treated as if it were made on the last day of the plan year.

In the case of a plan with a funded current liability percentage of less than 100 percent for the preceding plan year, estimated contributions for the current plan year must be made in quarterly installments during the current plan year.[19] The amount of each required installment is generally 25 percent of the lesser of (1) 90 percent of the amount required to be contributed for the current plan year or (2) 100 percent of the amount required to be contributed for the preceding plan year.[20] If a required installment is not made, interest applies for the period of underpayment at a rate of the greater of (1) 175 percent of the Federal mid-term rate, or (2) the plan rate.

Funding waivers

Within limits, the Secretary of the Treasury is permitted to waive all or a portion of the contributions required under the minimum funding standard for a plan year (a "waived funding deficiency").[21] A waiver may be granted if the employer (or employers) responsible for the contribution could not make the required contribution without temporary substantial business hardship and if requiring the contribution would be adverse to the interests of plan participants in the aggregate. Generally, no more than three waivers may be granted within any period of 15 consecutive plan years.

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percentage (170 percent for 2003) of the plan's current liability (including the current liability normal cost), over (2) the lesser of (a) the market value of plan assets or (b) the actuarial value of plan assets, but in no case less than the excess, if any, of 90 percent of the plan's current liability over the actuarial value of plan assets. Under the Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA"), the full funding limitation based on 170 percent of current liability is repealed for plan years beginning in 2004 and thereafter. The provisions of EGTRRA generally do not apply for years beginning after December 31, 2010.

[19] Code sec. 412(m); ERISA sec. 302(e).

[20] If quarterly contributions are required with respect to a plan, the amount of a quarterly installment must also be sufficient to cover any shortfall in the plan's liquid assets (a "liquidity shortfall").

[21] Code sec. 412(d); ERISA sec. 303. Under similar rules, the amortization period applicable to an unfunded past service liability or loss may also be extended.

The IRS is authorized to require security to be provided as a condition of granting a waiver of the minimum funding standard if the sum of the plan's accumulated funding deficiency and the balance of any outstanding waived funding deficiencies exceeds $1 million.

Failure to make required contributions

An employer is generally subject to an excise tax if it fails to make minimum required contributions and fails to obtain a waiver from the IRS.[22] The excise tax is 10 percent of the amount of the accumulated funding deficiency. In addition, a tax of 100 percent may be imposed if the accumulated funding deficiency is not corrected within a certain period.

If the total of the contributions the employer fails to make (plus interest) exceeds $1 million and the plan's funded current liability percentage is less than 100 percent, a lien arises in favor of the plan with respect to all property of the employer and the members of the employer's controlled group. The amount of the lien is the total amount of the missed contributions (plus interest).

Explanation of Provision

Interest rate required for plan years beginning in 2006 and 2007

For plan years beginning after December 31, 2005, and before January 1, 2008, the provision applies the present-law funding rules, with an extension of the interest rate applicable in determining current liability for plan years beginning in 2004 and 2005. Thus, in determining current liability for funding purposes for plan years beginning in 2006 and 2007, the interest rate used must be within the permissible range (90 to 100 percent) of the weighted average of the rates of interest on amounts invested conservatively in long-term investment-grade corporate bonds during the four-year period ending on the last day before the plan year begins.

Funding rules for plan years beginning after 2007 - in general

For plan years beginning after December 31, 2007, in the case of single-employer defined benefit plans, the provision repeals the present-law funding rules (including the requirement that a funding standard account be maintained) and provides a new set of rules for determining minimum required contributions.[23] Under the provision, the minimum required contribution to a single-employer defined benefit pension plan for a plan year generally depends on a comparison of the value of the plan's assets with the plan's funding target and target normal cost. As described in more detail below, under the provision, credit balances generated under present law

[22] Code sec. 4971. An excise tax applies also if a quarterly installment is less than the amount required to cover the plan's liquidity shortfall.

[23] A delayed effective date applies to certain plans as discussed in Items C, D and E below. Changes to the funding rules for multiemployer plans are discussed in Title II below. Governmental plans and church plans continue to be exempt from the funding rules to the extent provided under present law.

are carried over (into a "funding standard carryover balance") and generally may be used in certain circumstances to reduce otherwise required minimum contributions. In addition, as described more fully below, contributions in excess of the minimum contributions required under the provision for plan years beginning after 2007 generally are credited to a prefunding balance that may be used in certain circumstances to reduce otherwise required minimum contributions. To facilitate the use of such balances to reduce minimum required contributions, while avoiding use of such balances for more than one purpose, in some circumstances the value of plan assets is reduced by the prefunding balance and/or the funding standard carryover balance.

The minimum required contribution for a plan year, based on the value of plan assets (reduced by any prefunding balance and funding standard carryover balance) compared to the funding target, is shown in the following table:

If:	***The minimum required contribution is:***
the value of plan assets (reduced by any prefunding balance and funding standard carryover balance) is less than the funding target,	the sum of: (1) target normal cost; (2) any shortfall amortization charge; and (3) any waiver amortization charge.
the value of plan assets (reduced by any prefunding balance and funding standard carryover balance) equals or exceeds the funding target,	the target normal cost, reduced (but not below zero) by the excess of (1) the value of plan assets (reduced by any prefunding balance and funding standard carryover balance), over (2) the funding target.

Under the provision, a plan's funding target is the present value of all benefits accrued or earned as of the beginning of the plan year. A plan's target normal cost for a plan year is the present value of benefits expected to accrue or be earned during the plan year. A shortfall amortization charge is generally the sum of the amounts required to amortize any shortfall amortization bases for the plan year and the six preceding plan years. A shortfall amortization base is generally required to be established for a plan year if the plan has a funding shortfall for a plan year.[24] A shortfall amortization base may be positive or negative, i.e., an offsetting amortization base is established for gains. In general, a plan has a funding shortfall if the plan's funding target for the year exceeds the value of the plan's assets (reduced by any prefunding balance and funding standard carryover balance). A waiver amortization charge is the amount required to amortize a waived funding deficiency.

The provision specifies the interest rates and mortality table that must be used in determining a plan's target normal cost and funding target, as well as certain other actuarial

[24] Under a special rule, discussed below, a shortfall amortization base does not have to be established if the value of a plan's assets (reduced by any prefunding balance, but only if the employer elects to use any portion of the prefunding balance to reduce required contributions for the year) is at least equal to the plan's funding target for the plan year.

assumptions, including special assumptions ("at-risk" assumptions) for a plan in at-risk status. A plan is in at-risk status for a year if the value of the plan's assets (reduced by any prefunding and funding standard carryover balances) for the preceding year was less than (1) 80 percent of the plan's funding target determined without regard to the at-risk assumptions, and (2) 70 percent of the plan's funding target determined using the at-risk assumptions. Under a transition rule, instead of 80 percent, the following percentages apply: 65 percent for 2008, 70 percent for 2009, and 75 percent for 2010.

Target normal cost

Under the provision, the minimum required contribution for a plan year generally includes the plan's target normal cost for the plan year. A plan's target normal cost is the present value of all benefits expected to accrue or be earned under the plan during the plan year (the "current" year). For this purpose, an increase in any benefit attributable to services performed in a preceding year by reason of a compensation increase during the current year is treated as having accrued during the current year.

If the value of a plan's assets (reduced by any funding standard carryover balance and prefunding balance) exceeds the plan's funding target for a plan year, the minimum required contribution for the plan year is target normal cost reduced by such excess (but not below zero).

Funding target and shortfall amortization charges

In general

If the value of a plan's assets (reduced by any funding standard carryover balance and prefunding balance) is less than the plan's funding target for a plan year, so that the plan has a funding shortfall,[25] the minimum required contribution is generally increased by a shortfall amortization charge. As discussed more fully below, the shortfall amortization charge is the aggregate total (not less than zero) of the shortfall amortization installments for the plan year with respect to any shortfall amortization bases for the plan year and the six preceding plan years.

Funding target

A plan's funding target for a plan year is the present value of all benefits accrued or earned under the plan as of the beginning of the plan year. For this purpose, all benefits (including early retirement or similar benefits) are taken into account. Benefits accruing in the

[25] Under a special rule, in determining a plan's funding shortfall, the value of plan assets is not reduced by any funding standard carryover balance or prefunding balance if, with respect to the funding standard carryover balance or prefunding balance, there is in effect for the year a binding written with the Pension Benefit Guaranty Corporation which provides that such balance is not available to reduce the minimum required contribution for the plan year.

plan year are not taken into account in determining the plan's funding target, regardless of whether the valuation date for the plan year is later than the first day of the plan year.[26]

Shortfall amortization charge

The shortfall amortization charge for a plan year is the aggregate total (not less than zero) of the shortfall amortization installments for the plan year with respect to any shortfall amortization bases for that plan year and the six preceding plan years. The shortfall amortization installments with respect to a shortfall amortization base for a plan year are the amounts necessary to amortize the shortfall amortization base in level annual installments over the seven-plan-year period beginning with the plan year. The shortfall amortization installment with respect to a shortfall amortization base for any plan year in the seven-year period is the annual installment determined for that year for that shortfall amortization base. Shortfall amortization installments are determined using the appropriate segment interest rates (discussed below).

Shortfall amortization base and phase-in of funding target

A shortfall amortization base is determined for a plan year based on the plan's funding shortfall for the plan year. The funding shortfall is the amount (if any) by which the plan's funding target for the year exceeds the value of the plan's assets (reduced by any funding standard carryover balance and prefunding balance).

The shortfall amortization base for a plan year is (1) the plan's funding shortfall, minus (2) the present value, determined using the segment interest rates (discussed below), of the aggregate total of the shortfall amortization installments and waiver amortization installments that have been determined for the plan year and any succeeding plan year with respect to any shortfall amortization bases and waiver amortization bases for preceding plan years.

A shortfall amortization base may be positive or negative, depending on whether the present value of remaining installments with respect to prior year amortization bases is more or less than the plan's funding shortfall. In either case, the shortfall amortization base is amortized over seven years. Shortfall amortization installments for a particular plan year with respect to positive and negative shortfall amortization bases are netted in determining the shortfall amortization charge for the plan year, but the resulting shortfall amortization charge cannot be less than zero. Thus, negative amortization installments may not offset waiver amortization installments or normal cost.

Under a special rule, a shortfall amortization base does not have to be established for a plan year if the value of a plan's assets (reduced by any prefunding balance, but only if the employer elects to use any portion of the prefunding balance to reduce required contributions for the year) is at least equal to the plan's funding target for the plan year. For purposes of the special rule, a transition rule applies for plan years beginning after 2007 and before 2011. The transition rule does not apply to a plan that (1) is not in effect for 2007, or (2) is subject to the

[26] Benefits accruing during the plan year are taken into account in determining normal cost for the plan year.

present-law deficit reduction contribution rules for 2007 (i.e., a plan covering more than 100 participants and with a funded current liability below the applicable threshold).

Under the transition rule, a shortfall amortization base does not have to be established for a plan year during the transition period if the value of plan assets (reduced by any prefunding balance, but only if the employer elects to use the prefunding balance to reduce required contributions for the year) for the plan year is at least equal to the applicable percentage of the plan's funding target for the year. The applicable percentage is 92 percent for 2008, 94 percent for 2009, and 96 percent for 2010. However, the transition rule does not apply to a plan for any plan year after 2008 unless, for each preceding plan year after 2007, the plan's shortfall amortization base was zero (i.e., the plan was eligible for the special rule each preceding year).

Early deemed amortization of funding shortfalls for preceding years

If a plan's funding shortfall for a plan year is zero (i.e., the value of the plan's assets, reduced by any funding standard carryover balance and prefunding balance, is at least equal to the plan's funding target for the year), any shortfall amortization bases for preceding plan years are eliminated. That is, for purposes of determining any shortfall amortization charges for that year and succeeding years, the shortfall amortization bases for all preceding years (and all shortfall amortization installments determined with respect to such bases) are reduced to zero.

Waiver amortization charges

The provision retains the present-law rules under which the Secretary of the Treasury may waive all or a portion of the contributions required under the minimum funding standard for a plan year (referred to as a "waived funding deficiency").[27] If a plan has a waived funding deficiency for any of the five preceding plan years, the minimum required contribution for the plan year is increased by the waiver amortization charge for the plan year.

The waiver amortization charge for a plan year is the aggregate total of the waiver amortization installments for the plan year with respect to any waiver amortization bases for the five preceding plan years. The waiver amortization installments with respect to a waiver amortization base for a plan year are the amounts necessary to amortize the waiver amortization base in level annual installments over the five-year plan period beginning with the succeeding plan year. The waiver amortization installment with respect to that waiver amortization base for any plan year in the five-year period is the annual installment determined for the shortfall amortization base. Waiver amortization installments are determined using the appropriate segment interest rates (discussed below). The waiver amortization base for a plan year is the amount of the waived funding deficiency (if any) for the plan year.

If a plan's funding shortfall for a plan year is zero (i.e., the value of the plan's assets, reduced by any funding standard carryover balance and prefunding balance, is at least equal to the plan's funding target for the year), any waiver amortization bases for preceding plan years

[27] In the case of single-employer plans, the provision repeals the present-law rules under which the amortization period applicable to an unfunded past service liability or loss may be extended.

are eliminated. That is, for purposes of determining any waiver amortization charges for that year and succeeding years, the waiver amortization bases for all preceding years (and all waiver amortization installments determined with respect to such bases) are reduced to zero.

Actuarial assumptions used in determining a plan's target normal cost and funding target

Interest rates

The provision specifies the interest rates that must be used in determining a plan's target normal cost and funding target. Under the provision, present value is determined using three interest rates ("segment" rates), each of which applies to benefit payments expected to be made from the plan during a certain period. The first segment rate applies to benefits reasonably determined to be payable during the five-year period beginning on the first day of the plan year; the second segment rate applies to benefits reasonably determined to be payable during the 15-year period following the initial five-year period; and the third segment rate applies to benefits reasonably determined to be payable the end of the 15-year period. Each segment rate is a single interest rate determined monthly by the Secretary of the Treasury on the basis of a corporate bond yield curve, taking into account only the portion of the yield curve based on corporate bonds maturing during the particular segment rate period.

The corporate bond yield curve used for this purpose is to be prescribed on a monthly basis by the Secretary of the Treasury and reflect the average, for the 24-month period ending with the preceding month, of yields on investment grade corporate bonds with varying maturities and that are in the top three quality levels available. The yield curve should reflect the average of the rates on all bonds in the top three quality levels on which the yield curve is based.

The Secretary of the Treasury is directed to publish each month the corporate bond yield curve and each of the segment rates for the month. In addition, such Secretary is directed to publish a description of the methodology used to determine the yield curve and segment rates, which is sufficiently detailed to enable plans to make reasonable projections regarding the yield curve and segment rates for future months, based on a plan's projection of future interest rates.

Under the provision, the present value of liabilities under a plan is determined using the segment rates for the "applicable month" for the plan year. The applicable month is the month that includes the plan's valuation date for the plan year, or, at the election of the plan sponsor, any of the four months preceding the month that includes the valuation date. An election of a preceding month applies to the plan year for which it is made and all succeeding plan years unless revoked with the consent of the Secretary of the Treasury.

Solely for purposes of determining minimum required contributions, in lieu of the segment rates described above, an employer may elect to use interest rates on a yield curve based on the yields on investment grade corporate bonds for the month preceding the month in which the plan year begins (i.e., without regard to the 24-month averaging described above). Such an election may be revoked only with consent of the Secretary of the Treasury.

The provision provides a transition rule for plan years beginning in 2008 and 2009 (other than for plans first effective after December 31, 2007). Under this rule, for plan years beginning in 2008, the first, second, or third segment rate with respect to any month is the sum of: (1) the

product of the segment rate otherwise determined for the month, multiplied by 33-⅓ percent; and (2) the product of the applicable long-term corporate bond rate,[28] multiplied by 66-⅔ percent. For plan years beginning in 2009, the first, second, or third segment rate with respect to any month is the sum of: (1) the product of the segment rate otherwise determined for the month, multiplied by 66⅔ percent; and (2) the product of applicable long-term corporate bond rate multiplied by 33⅓ percent. An employer may elect not to have the transition rule apply with respect to a plan. Such an election may be revoked only with consent of the Secretary of the Treasury.

Under the provision, certain amounts are determined using the plan's "effective interest rate" for a plan year. The effective interest rate with respect to a plan for a plan year is the single rate of interest which, if used to determine the present value of the benefits taken into account in determining the plan's funding target for the year, would result in an amount equal to the plan's funding target (as determined using the first, second, and third segment rates).

Mortality table

Under the provision, the Secretary of the Treasury is directed to prescribe by regulation the mortality tables to be used in determining present value or making any computation under the funding rules.[29] Such tables are to be based on the actual experience of pension plans and projected trends in such experience. In prescribing tables, the Secretary is to take into account results of available independent studies of mortality of individuals covered by pension plans. In addition, the Secretary is required (at least every 10 years) to revise any table in effect to reflect the actual experience of pension plans and projected trends in such experience.

The provision also provides for the use of a separate mortality table upon request of the plan sponsor and approval by the Secretary of the Treasury in accordance with procedures described below. In order for the table to be used: (1) the table must reflect the actual experience of the pension plans maintained by the plan sponsor and projected trends in general mortality experience, and (2) there must be a sufficient number of plan participants, and the pension plans must have been maintained for a sufficient period of time, to have credible information necessary for that purpose. A separate mortality table can be a mortality table constructed by the plan's enrolled actuary from the plan's own experience or a table that is an adjustment to the table prescribed by the Secretary which sufficiently reflects the plan's experience. Except as provided by the Secretary, a separate table may not be used for any plan unless (1) a separate table is established and used for each other plan maintained by the plan sponsor and, if the plan sponsor is a member of a controlled group, each member of the

[28] The applicable long-term corporate bond rate is a rate that is from 90 to 100 percent of the weighted average of the rates of interest on amounts invested conservatively in long-term investment-grade corporate bonds during the four-year period ending on the last day before the plan year begins as determined by the Secretary under the method in effect for 2007.

[29] As under present law, separate mortality tables are required to be used with respect to disabled participants.

controlled group,[30] and (2) the requirements for using a separate table are met with respect to the table established for each plan, taking into account only the participants of that plan, the time that plan has been in existence, and the actual experience of that plan. In general, a separate plan may be used during the period of consecutive year plan years (not to exceed 10) specified in the request. However, a separate mortality table ceases to be in effect as of the earlier of (1) the date on which there is a significant change in the participants in the plan by reason of a plan spinoff or merger or otherwise, or (2) the date on which the plan actuary determines that the table does not meet the requirements for being used.

A plan sponsor must submit a separate mortality table to the Secretary for approval at least seven months before the first day of the period for which the table is to be used. A mortality table submitted to the Secretary for approval is treated as in effect as of the first day of the period unless the Secretary, during the 180-day period beginning on the date of the submission, disapproves of the table and provides the reasons that the table fails to meet the applicable criteria. The 180-day period is to be extended upon mutual agreement of the Secretary and the plan sponsor.

Other assumptions

Under the provision, in determining any present value or making any computation, the probability that future benefits will be paid in optional forms of benefit provided under the plan must be taken into account (including the probability of lump-sum distributions determined on the basis of the plan's experience and other related assumptions). The assumptions used to determine optional forms of benefit under a plan may differ from the assumptions used to determine present value for purposes of the funding rules under the provision. Differences in the present value of future benefit payments that result from the different assumptions used to determine optional forms of benefit under a plan must be taken into account in determining any present value or making any computation for purposes of the funding rules.

The provision generally does not require other specified assumptions to be used in determining the plan's target normal cost and funding target except in the case of at-risk plans (discussed below). However, similar to present law, the determination of present value or other computation must be made on the basis of actuarial assumptions and methods, each of which is reasonable (taking into account the experience of the plan and reasonable expectations), and which, in combination, offer the actuary's best estimate of anticipated experience under the plan.[31]

[30] For example, the Secretary may deem it appropriate to provide an exception in the case of a small plan.

[31] The provision retains the present-law rule under which certain changes in actuarial assumptions that decrease the liabilities of an underfunded single-employer plan must be approved by the Secretary of the Treasury.

Special assumptions for at-risk plans

The provision applies special assumptions ("at-risk" assumptions) in determining the funding target and normal cost of a plan in at-risk status. Whether a plan is in at-risk status for a plan year depends on its funding target attainment percentage for the preceding year. A plan's funding target attainment percentage for a plan year is the ratio, expressed as a percentage, that the value of the plan's assets (reduced by any funding standard carryover balance and prefunding balance) bears to the plan's funding target for the year. For this purpose, the plan's funding target is determined using the actuarial assumptions for plans that are not at-risk.

Under the provision, a plan is in at-risk status for a year if, for the preceding year: (1) the plan's funding target attainment percentage, determined without regard to the at-risk assumptions, was less than 80 percent (with a transition rule discussed below), and (2) the plan's funding target attainment percentage, determined using the at-risk assumptions (without regard to whether the plan was in at-risk status for the preceding year), was less than 70 percent. Under a transition rule applicable for plan years beginning in 2008, 2009, and 2010, instead of 80 percent, the following percentages apply: 65 percent for 2008, 70 percent for 2009, and 75 percent for 2010. In the case of plan years beginning in 2008, the plan's funding target attainment percentage for the preceding plan year may be determined using such methods of estimation as the Secretary of Treasury may provide.

Under the provision, the at-risk rules do not apply if a plan had 500 or fewer participants on each day during the preceding plan year. For this purpose, all defined benefit pension plans (other than multiemployer plans) maintained by the same employer (or a predecessor employer), or by any member of such employer's controlled group, are treated as a single plan, but only participants with respect to such employer or controlled group member are taken into account.

If a plan is in at-risk status, the plan's funding target and normal cost are determined using the assumptions that: (1) all employees who are not otherwise assumed to retire as of the valuation date, but who will be eligible to elect benefits in the current and 10 succeeding years, are assumed to retire at the earliest retirement date under plan, but not before the end of the plan year; and (2) all employees are assumed to elect the retirement benefit available under the plan at the assumed retirement age that results in the highest present value. In some cases, a loading factor also applies.

The at-risk assumptions are not applied to certain employees of specified automobile manufacturers for purposes of determining whether a plan is in at-risk status, i.e., whether the plan's funding target attainment percentage, determined using the at-risk assumptions, was less than 70 percent for the preceding plan year. An employee is disregarded for this purpose if: (1) the employee is employed by a specified automobile manufacturer; (2) the employee is offered, pursuant to a bona fide retirement incentive program, a substantial amount of additional cash compensation, substantially enhanced retirement benefits under the plan, or materially reduced employment duties, on the condition that by a specified date no later than December 31, 2010, the employee retires (as defined under the terms of the plan; (3) the offer is made during 2006 pursuant to a bona fide retirement incentive program and requires that the offer can be accepted no later than a specified date (not later than December 31, 2006); and (4) the employee does not accept the offer before the specified date on which the offer expires. For this purpose, a

specified automobile manufacturer is (1) any automobile manufacturer and (2) any manufacturer of automobile parts that supplies parts directly to an automobile manufacturer and which, after a transaction or series of transactions ending in 1999, ceased to be a member of the automobile manufacturer's controlled group.

The funding target of a plan in at-risk status for a plan year is generally the sum of: (1) the present value of all benefits accrued or earned as of the beginning of the plan year, determined using the at-risk assumptions described above, and (2) in the case of a plan that has also been in at-risk status for at least two of the four preceding plans years, a loading factor. The loading factor is the sum of (1) $700 times the number of participants in the plan, plus (2) four percent of the funding target determined without regard to the loading factor.[32] The at-risk funding target is in no event less than the funding target determined without regard to the at-risk rules.

The target normal cost of a plan in at-risk status for a plan year is generally the sum of: (1) the present value of benefits expected to accrue or be earned under the plan during the plan year, determined using the special assumptions described above, and (2) in the case of a plan that has also been in at-risk status for at least two of the four preceding plans years, a loading factor of four percent of the target normal cost determined without regard to the loading factor.[33] The at-risk target normal is in no event less than at-risk normal cost determined without regard to the at-risk rules.

If a plan has been in at-risk status for fewer than five consecutive plan years, the amount of a plan's funding target for a plan year is the sum of: (1) the amount of the funding target determined without regard to the at-risk rules, plus (2) the transition percentage for the plan year of the excess of the amount of the funding target determined under the at-risk rules over the amount determined without regard to the at-risk rules. Similarly, if a plan has been in at-risk status for fewer than five consecutive plan years, the amount of a plan's target normal cost for a plan year is the sum of: (1) the amount of the target normal cost determined without regard to the at-risk rules, plus (2) the transition percentage for the plan year of the excess of the amount of the target normal cost determined under the at-risk rules over the amount determined without regard to the at-risk rules. The transition percentage is the product of 20 percent times the number of consecutive plan years for which the plan has been in at-risk status. In applying this rule, plan years beginning before 2008 are not taken into account.

[32] This loading factor is intended to reflect the cost of purchasing group annuity contracts in the case of termination of the plan.

[33] Target normal cost for a plan in at-risk status does not include a loading factor of $700 per plan participant.

Funding standard carryover balance or prefunding balance

In general

The provision preserves credit balances that have accumulated under present law (referred to as "funding standard carryover balances"). In addition, for plan years beginning after 2007, new credit balances (referred to as "prefunding balances") result if an employer makes contributions greater than those required under the new funding rules. In general, under the bill, employers may choose whether to count funding standard carryover balances and prefunding balances in determining the value of plan assets or to use the balances to reduce required contributions, but not both. In this regard, the provision provides more favorable rules with respect to the use of funding standard carryover balances.

Under the provision, if the value of a plan's assets (reduced by any prefunding balance) is at least 80 percent of the plan's funding target (determined without regard to the at-risk rules) for the preceding plan year,[34] the plan sponsor may elect to credit all or a portion of the funding standard carryover balance or prefunding balance against the minimum required contribution for the current plan year (determined after any funding waiver), thus reducing the amount that must be contributed for the current plan year.

The value of plan assets is generally reduced by any funding standard carryover balance or prefunding balance for purposes of determining minimum required contributions, including a plan's funding shortfall, and a plan's funding target attainment percentage (discussed above). However, the plan sponsor may elect to permanently reduce a funding standard carryover balance or prefunding balance, so that the value of plan assets is not required to be reduced by that amount in determining the minimum required contribution for the plan year. Any reduction of a funding standard carryover balance or prefunding balance applies before determining the balance that is available for crediting against minimum required contributions for the plan year.

Funding standard carryover balance

In the case of a single-employer plan that is in effect for a plan year beginning in 2007 and, as of the end of the 2007 plan year, has a positive balance in the funding standard account maintained under the funding rules as in effect for 2007, the plan sponsor may elect to maintain a funding standard carryover balance. The funding standard carryover balance consists of a beginning balance in the amount of the positive balance in the funding standard account as of the end of the 2007 plan year, decreased (as described below) and adjusted to reflect the rate of net gain or loss on plan assets.

For subsequent years (i.e., as of the first day of each plan year beginning after 2008), the funding standard carryover balance of a plan is decreased (but not below zero) by the sum of: (1) any amount credited to reduce the minimum required contribution for the preceding plan year, plus (2) any amount elected by the plan sponsor as a reduction in the funding standard carryover

[34] In the case of plan years beginning in 2008, the percentage for the preceding plan year may be determined using such methods of estimation as the Secretary of Treasury may provide.

balance (thus reducing the amount by which the value of plan assets must be reduced in determining minimum required contributions).

Prefunding balance

The plan sponsor may elect to maintain a prefunding balance, which consists of a beginning balance of zero for the 2008 plan year, increased and decreased (as described below) and adjusted to reflect the rate of net gain or loss on plan assets.

For subsequent years, i.e., as of the first day of plan year beginning after 2008 (the "current" plan year), the plan sponsor may increase the prefunding balance by an amount, not to exceed (1) the excess (if any) of the aggregate total employer contributions for the preceding plan year, over (2) the minimum required contribution for the preceding plan year. For this purpose, any excess contribution for the preceding plan year is adjusted for interest accruing for the periods between the first day of the current plan year and the dates on which the excess contributions were made, determined using the effective interest rate of the plan for the preceding plan year and treating contributions as being first used to satisfy the minimum required contribution.

The amount by which the aggregate total employer contributions for the preceding plan year exceeds the minimum required contribution for the preceding plan year is reduced (but not below zero) by the amount of contributions an employer would need to make to avoid a benefit limitation that would otherwise be imposed for the preceding plan year under the provisions of the provision relating to benefit limitations for single-employer plans.[35] Thus, contributions needed to avoid a benefit limitation do not result in an increase in the plan's prefunding balance.[36]

As of the first day of each plan year beginning after 2008, the prefunding balance of a plan is decreased (but not below zero) by the sum of: (1) any amount credited to reduce the minimum required contribution for the preceding plan year, plus (2) any amount elected by the plan sponsor as a reduction in the prefunding balance (thus reducing the amount by which the value of plan assets must be reduced in determining minimum required contributions). As discussed above, if any portion of the prefunding balance is used to reduce a minimum required contribution, the value of plan assets must be reduced by the prefunding balance in determining whether a shortfall amortization base must be established for the plan year (i.e., whether the value of plan assets for a plan year is less than the plan's funding target for the plan year). Thus, the prefunding balance may not be included in the value of plan assets in order to avoid a shortfall amortization base for a plan year and also used to reduce the minimum required contribution for the same year.

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[35] Any contribution that may be taken into account in satisfying the requirement to make additional contributions with respect to more than one type of benefit limitation is taken into account only once for purposes of this reduction.

[36] The benefit limitations are discussed in Part B below.

Other rules

In determining the prefunding balance or funding standard carryover balance as of the first day of a plan year, the plan sponsor must adjust the balance in accordance with regulations prescribed by the Secretary of the Treasury to reflect the rate of return on plan assets for the preceding year. The rate of return is determined on the basis of the fair market value of the plan assets and must properly take into account, in accordance with regulations, all contributions, distributions, and other plan payments made during the period.

To the extent that a plan has a funding standard carryover balance of more than zero for a plan year, none of the plan's prefunding balance may be credited to reduce a minimum required contribution, nor may an election be made to reduce the prefunding balance for purposes of determining the value of plan assets. Thus, the funding standard carryover balance must be used for these purposes before the prefunding balance may be used.

Any election relating to the prefunding balance and funding standard carryover balance is to be made in such form and manner as the Secretary of the Treasury prescribes.

Other rules and definitions

Valuation date

Under the provision, all determinations made with respect to minimum required contributions for a plan year (such as the value of plan assets and liabilities) must be made as of the plan's valuation date for the plan year. In general, the valuation date for a plan year must be the first day of the plan year. However, any day in the plan year may be designated as the plan's valuation date if, on each day during the preceding plan year, the plan had 100 or fewer participants.[37] For this purpose, all defined benefit pension plans (other than multiemployer plans) maintained by the same employer (or a predecessor employer), or by any member of such employer's controlled group, are treated as a single plan, but only participants with respect to such employer or controlled group member are taken into account.

Value of plan assets

Under the provision, the value of plan assets is generally fair market value. However, the value of plan assets may be determined on the basis of the averaging of fair market values, but only if such method: (1) is permitted under regulations; (2) does not provide for averaging of fair market values over more than the period beginning on the last day of the 25th month preceding the month in which the plan's valuation date occurs and ending on the valuation date (or similar period in the case of a valuation date that's not the first day of a month); and (3) does not result in a determination of the value of plan assets that at any time is less than 90 percent or

[37] In the case of a plan's first plan year, the ability to use a valuation date other than the first day of the plan year is determined by taking into account the number of participants the plan is reasonably expected to have on each day during that first plan year.

more than 110 percent of the fair market value of the assets at that time. Any averaging must be adjusted for contributions and distributions as provided by the Secretary of the Treasury.

If a required contribution for a preceding plan year is made after the valuation date for the current year, the contribution is taken into account in determining the value of plan assets for the current plan year. For plan years beginning after 2008, only the present value of the contribution is taken into account, determined as of the valuation date for the current plan year, using the plan's effective interest rate for the preceding plan year. In addition, any required contribution for the current plan year is not taken into account in determining the value of plan assets. If any contributions for the current plan year are made before the valuation date, plan assets as of the valuation date does not include (1) the contributions, and (2) interest on the contributions for the period between the date of the contributions and the valuation date, determined using the plan's effective interest rate for the current plan year.

Timing rules for contributions

As under present law, the due date for the payment of a minimum required contribution for a plan year is generally 8½ months after the end of the plan year. Any payment made on a date other than the valuation date for the plan year must be adjusted for interest accruing at the plan's effective interest rate for the plan year for the period between the valuation date and the payment date. Quarterly contributions must be made during a plan year if the plan had a funding shortfall for the preceding plan year (that is, if the value of the plan's assets, reduced by the funding standard carryover balance and prefunding balance, was less than the plan's funding target for the preceding plan year).[38] If a quarterly installment is not made, interest applies for the period of underpayment at the rate of interest otherwise applicable (i.e., the plan's effective interest rate) plus 5 percentage points.

Excise tax on failure to make minimum required contributions

The provision retains the present-law rules under which an employer is generally subject to an excise tax if it fails to make minimum required contributions and fails to obtain a waiver from the IRS.[39] The excise tax is 10 percent of the aggregate unpaid minimum required contributions for all plan years remaining unpaid as of the end of any plan year. In addition, a tax of 100 percent may be imposed if any unpaid minimum required contributions remain unpaid after a certain period.

[38] The provision retains the present-law rules under which the amount of any quarterly installment must be sufficient to cover any liquidity shortfall.

[39] The provision retains the present-law rules under which a lien in favor of the plan with respect to property of the employer (and members of the employer's controlled group) arises in certain circumstances in which the employer fails to make required contributions.

Conforming changes

The provision makes various technical and conforming changes to reflect the new funding requirements.

Effective Date

The extension of the interest rate applicable in determining current liability for plan years beginning in 2004 and 2005 is effective for plan years beginning after December 31, 2005, and before January 1, 2008. The modifications to the single-employer plan funding rules are effective for plan years beginning after December 31, 2007.

B. Benefit Limitations Under Single-Employer Defined Benefit Pension Plans (new secs. 101(j) and 206(g) and (h) of ERISA, and new secs. 436-437 of the Code)

Present Law

Plant shutdown and other unpredictable contingent event benefits

A plan may provide for unpredictable contingent event benefits, which are benefits that depend on contingencies other than age, service, compensation, death or disability or that are not reliably and reasonably predictable as determined by the Secretary. Some of these benefits are commonly referred to as "plant shutdown" benefits. Under present law, unpredictable contingent event benefits generally are not taken into account for funding purposes until the event has occurred.

Defined benefit pension plans are not permitted to provide "layoff" benefits (i.e., severance benefits).[40] However, defined benefit pension plans may provide subsidized early retirement benefits, including early retirement window benefits.[41]

Limitation on certain benefit increases while funding waivers in effect

Within limits, the IRS is permitted to waive all or a portion of the contributions required under the minimum funding standard for a plan year.[42] In the case of a single-employer plan, a waiver may be granted if the employer responsible for the contribution could not make the required contribution without temporary substantial business hardship for the employer (and members of the employer's controlled group) and if requiring the contribution would be adverse to the interests of plan participants in the aggregate.

If a funding waiver is in effect for a plan, subject to certain exceptions, no plan amendment may be adopted that increases the liabilities of the plan by reason of any increase in benefits, any change in the accrual of benefits, or any change in the rate at which benefits vest under the plan.[43]

Security for certain plan amendments

In the case of a single-employer defined benefit pension plan, if a plan amendment increasing current liability is adopted and the plan's funded current liability percentage is less than 60 percent (taking into account the effect of the amendment, but disregarding any

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[40] Treas. Reg. sec. 1.401-1(b)(1)(i).

[41] See, e.g., Treas. Reg. secs. 1.401(a)(4)-3(f)(4) and 1.411(a)-7(c).

[42] Code sec. 412(d); ERISA sec. 303.

[43] Code sec. 412(f); ERISA sec. 304(b)(1).

unamortized unfunded old liability), the employer and members of the employer's controlled group must provide security in favor of the plan.[44] The amount of security required is the excess of: (1) the lesser of (a) the amount by which the plan's assets are less than 60 percent of current liability, taking into account the benefit increase, or (b) the amount of the benefit increase and prior benefit increases after December 22, 1987, over (2) $10 million. The amendment is not effective until the security is provided.

The security must be in the form of a surety bond, cash, certain U.S. government obligations, or such other form as is satisfactory to the Secretary of the Treasury and the parties involved. The security is released after the funded liability of the plan reaches 60 percent.

Prohibition on benefit increases during bankruptcy

Subject to certain exceptions, if an employer maintaining a single-employer defined benefit pension plan is involved in bankruptcy proceedings, no plan amendment may be adopted that increases the liabilities of the plan by reason of any increase in benefits, any change in the accrual of benefits, or any change in the rate at which benefits vest under the plan.[45] This limitation does not apply if the plan's funded current liability percentage is at least 100 percent, taking into account the amendment.

Restrictions on benefit payments due to liquidity shortfalls

In the case of a single-employer plan with a funded current liability percentage of less than 100 percent for the preceding plan year, estimated contributions for the current plan year must be made in quarterly installments during the current plan year. If quarterly contributions are required with respect to a plan, the amount of a quarterly installment must also be sufficient to cover any shortfall in the plan's liquid assets (a "liquidity shortfall"). In general, a plan has a liquidity shortfall for a quarter if the plan's liquid assets (such as cash and marketable securities) are less than a certain amount (generally determined by reference to disbursements from the plan in the preceding 12 months).

If a quarterly installment is less than the amount required to cover the plan's liquidity shortfall, limits apply to the benefits that can be paid from a plan during the period of underpayment. During that period, the plan may not make any prohibited payment, defined as: (1) any payment in excess of the monthly amount paid under a single life annuity (plus any social security supplement provided under the plan) to a participant or beneficiary whose annuity starting date occurs during the period; (2) any payment for the purchase of an irrevocable commitment from an insurer to pay benefits (e.g., an annuity contract); or (3) any other payment specified by the Secretary of the Treasury by regulations.[46]

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[44] Code sec. 401(a)(29); ERISA sec. 307.

[45] Code sec. 401(a)(33); ERISA sec. 204(i).

[46] Code sec. 401(a)(32); ERISA sec. 206(e).

Explanation of Provision

Plant shutdown and other unpredictable contingent event benefits

Under the provision, if a participant is entitled to an unpredictable contingent event benefit payable with respect to any event occurring during any plan year, the plan must provide that such benefits may not be provided if the plan's adjusted funding target attainment percentage for that plan year: (1) is less than 60 percent; or (2) would be less than 60 percent taking into account the occurrence of the event. For this purpose, the term unpredictable contingent event benefit means any benefit payable solely by reason of: (1) a plant shutdown (or similar event, as determined by the Secretary of the Treasury); or (2) any event other than attainment of any age, performance of any service, receipt or derivation of any compensation, or the occurrence of death or disability.

The determination of whether the limitation applies is made in the year the unpredictable contingent event occurs. For example, suppose a plan provides for benefits upon the occurrence of a plant shutdown, and a plant shut down occurs in 2010. Taking into account the plan shutdown, the plan's adjusted funding target attainment percentage is less than 60 percent. Thus, the limitation applies, and benefits payable solely by reason of the plant shutdown may not be paid (unless the employer makes contributions to the plan as described below), regardless of whether the benefits will be paid in the 2010 plan year or a later plan year.[47]

The limitation ceases to apply with respect to any plan year, effective as of the first day of the plan year, if the plan sponsor makes a contribution (in addition to any minimum required contribution for the plan year) equal to: (1) if the plan's adjusted funding target attainment percentage is less than 60 percent, the amount of the increase in the plan's funding target for the plan year attributable to the occurrence of the event; or (2) if the plan's adjusted funding target attainment percentage would be less than 60 percent taking into account the occurrence of the event, the amount sufficient to result in a adjusted funding target attainment percentage of 60 percent.

The limitation does not apply for the first five years a plan (or a predecessor plan) is in effect.

Plan amendments increasing benefit liabilities

Certain plan amendments may not take effect during a plan year if the plan's adjusted funding target attainment percentage for the plan year: (1) is less than 80 percent; or (2) would be less than 80 percent taking into account the amendment.[48] In such a case, no amendment may take effect if it has the effect of increasing the liabilities of the plan by reason of any increase in

[47] Benefits already being paid as a result of a plant shutdown or other event that occurred in a preceding year are not affected by the limitation.

[48] Under the provision, the present-law rules limiting benefit increases while an employer is in bankruptcy continue to apply.

benefits, the establishment of new benefits, any change in the rate of benefit accrual, or any change in the rate at which benefits vest under the plan. The limitation does not apply to an amendment that provides for an increase in benefits under a formula which is not based on compensation, but only if the rate of increase does not exceed the contemporaneous rate of increase in average wages of the participants covered by the amendment.

The limitation ceases to apply with respect to any plan year, effective as of the first day of the plan year (or, if later, the effective date of the amendment), if the plan sponsor makes a contribution (in addition to any minimum required contribution for the plan year) equal to: (1) if the plan's adjusted funding target attainment percentage is less than 80 percent, the amount of the increase in the plan's funding target for the plan year attributable to the amendment; or (2) if the plan's adjusted funding target attainment percentage would be less than 80 percent taking into account the amendment, the amount sufficient to result in a adjusted funding target attainment percentage of 80 percent.

The limitation does not apply for the first five years a plan (or a predecessor plan) is in effect.

Prohibited payments

A plan must provide that, if the plan's adjusted funding target attainment percentage for a plan year is less than 60 percent, the plan will not make any prohibited payments after the valuation date for the plan year.

A plan must also provide that, if the plan's adjusted funding target attainment percentage for a plan year is 60 percent or greater, but less than 80 percent, the plan may not pay any prohibited payments exceeding the lesser of: (1) 50 percent of the amount otherwise payable under the plan, and (2) the present value of the maximum PBGC guarantee with respect to the participant (determined under guidance prescribed by the PBGC, using the interest rates and mortality table applicable in determining minimum lump-sum benefits). The plan must provide that only one payment under this exception may be made with respect to any participant during any period of consecutive plan years to which the limitation applies. For this purpose, a participant and any beneficiary of the participant (including an alternate payee) is treated as one participant. If the participant's accrued benefit is allocated to an alternate payee and one or more other persons, the amount that may be distributed is allocated in the same manner unless the applicable qualified domestic relations order provides otherwise.

In addition, a plan must provide that, during any period in which the plan sponsor is in bankruptcy proceedings, the plan may not pay any prohibited payment. However, this limitation does not apply on or after the date the plan's enrolled actuary certifies that the adjusted funding target attainment percentage of the plan is not less than 100 percent.

For purposes of these limitations, "prohibited payment" is defined as under the present-law rule restricting distributions during a period of a liquidity shortfall and means (1) any payment in excess of the monthly amount paid under a single life annuity (plus any social security supplement provided under the plan) to a participant or beneficiary whose annuity starting date occurs during the period, (2) any payment for the purchase of an irrevocable

commitment from an insurer to pay benefits (e.g., an annuity contract), or (3) any other payment specified by the Secretary of the Treasury by regulations.

The prohibited payment limitation does not apply to a plan for any plan year if the terms of the plan (as in effect for the period beginning on September 1, 2005, and ending with the plan year) provide for no benefit accruals with respect to any participant during the period.

Cessation of benefit accruals

A plan must provide that, if the plan's adjusted funding target attainment percentage is less than 60 percent for a plan year, all future benefit accruals under the plan must cease as of the valuation date for the plan year. The limitation applies only for purposes of the accrual of benefits; service during the freeze period is counted for other purposes. For example, if accruals are frozen under the provision, service earned during the freeze period still counts for vesting purposes. Or, as another example, suppose a plan provides that payment of benefits begins when a participant terminates employment after age 55 and with 25 years of service. Under this example, if a participant who is age 55 and has 23 years of service when the freeze on accruals becomes applicable terminates employment two years later, the participant has 25 years of service for this purpose and thus can begin receiving benefits. However (assuming the freeze on accruals is still in effect), the amount of the benefit is based on the benefit accrued before the freeze (i.e., counting only 23 years of service).

The limitation ceases to apply with respect to any plan year, effective as of the first day of the plan year, if the plan sponsor makes a contribution (in addition to any minimum required contribution for the plan year) equal to the amount sufficient to result in an adjusted funding target attainment percentage of 60 percent.

The limitation does not apply for the first five years a plan (or a predecessor plan) is in effect.

Adjusted funding target attainment percentage

In general

The term "funding target attainment percentage" is defined as under the minimum funding rules, i.e., the ratio, expressed as a percentage, that the value of the plan's assets (reduced by any funding standard carryover balance and prefunding balance) bears to the plan's funding target for the year (determined without regard to at-risk status). A plan's adjusted funding target attainment percentage is determined in the same way, except that the value of the plan's assets and the plan's funding target are both increased by the aggregate amount of purchases of annuities for employees other than highly compensated employees made by the plan during the two preceding plan years.

Special rule for fully funded plans

Under a special rule, if a plan's funding target attainment percentage is at least 100 percent, determined by not reducing the value of the plan's assets by any funding standard carryover balance or prefunding balance, the value of the plan's assets is not so reduced in

determining the plan's funding target attainment percentage for purposes of whether the benefit limitations apply. Under a transition rule for a plan year beginning after 2007 and before 2011, the "applicable percentage" for the plan year is substituted for 100 percent in applying the special rule. For this purpose, the applicable percentage is 92 percent for 2007, 94 percent for 2008, 96 percent for 2009, and 98 percent for 2010. However, for any plan year beginning after 2008, the transition rule does not apply unless the plan's funding target attainment percentage (determined by not reducing the value of the plan's assets by any funding standard carryover balance or prefunding balance) for each preceding plan year in the transition period is at least equal to the applicable percentage for the preceding year.

Presumptions as to funded status

Under the provision, certain presumptions apply in determining whether limitations apply with respect to a plan, subject to certification of the plan's adjusted funding target attainment percentage by the plan's enrolled actuary.

If a plan was subject to a limitation for the preceding year, the plan's adjusted funding target attainment percentage for the current year is presumed to be the same as for the preceding year until the plan actuary certifies the plan's actual adjusted funding target attainment percentage for the current year.

If (1) a plan was not subject to a limitation for the preceding year, but its adjusted funding target attainment percentage for the preceding year was not more than 10 percentage points greater than the threshold for a limitation, and (2) as of the first day of the fourth month of the current plan year, the plan actuary has not certified the plan's actual adjusted funding target attainment percentage for the current year, the plan's funding target attainment percentage is presumed to be reduced by 10 percentage points as of that day and that day is deemed to be the plan's valuation date for purposes of applying the benefit limitation. As a result, the limitation applies as of that date until the actuary certifies the plan's actual adjusted funding target attainment percentage.

In any other case, if the plan actuary has not certified the plan's actual adjusted funding target attainment percentage by the first day of the tenth month of the current plan year, for purposes of the limitations, the plan's adjusted funding target attainment percentage is conclusively presumed to be less than 60 percent as of that day and that day is deemed to be the valuation date for purposes of applying the benefit limitations.[49]

[49] For purposes of applying the presumptions to plan years beginning in 2008, the funding target attainment percentage for the preceding year may be determined using such methods of estimation as the Secretary of Treasury may provide.

Reduction of funding standard carryover and prefunding balances

Election to reduce balances

As discussed above, the value of plan assets is generally reduced by any funding standard carryover or prefunding in determining a plan's funding target attainment percentage. As provided for under the funding rules applicable to single-employer plans, a plan sponsor may elect to reduce a funding standard carryover balance or prefunding balance, so that the value of plan assets is not required to be reduced by that amount in determining the plan's funding target attainment percentage.

Deemed reduction of balances in the case of collectively bargained plans

If a benefit limitation would otherwise apply to a plan maintained pursuant to one or more collective bargaining agreements between employee representatives and one or more employers, the plan sponsor is treated as having made an election to reduce any prefunding balance or funding standard carryover balance by the amount necessary to prevent the benefit limitation from applying. However, the employer is not treated as having made such an election if the election would not prevent the benefit limitation from applying to the plan.

Deemed reduction of balances in the case of other plans

If the prohibited payment limitation would otherwise apply to a plan that is not maintained pursuant to a collective bargaining agreement, the plan sponsor is treated as having made an election to reduce any prefunding balance or funding standard carryover balance by the amount necessary to prevent the benefit limitation from applying. However, the employer is not treated as having made such an election if the election would not prevent the benefit limitation from applying to the plan.

Contributions made to avoid a benefit limitation

Under the provision, an employer may make contributions (in addition to any minimum required contribution) in an amount sufficient to increase the plan's adjusted funding target attainment percentage to a level to avoid a limitation on unpredictable contingent event benefits, a plan amendment increasing benefits, or additional accruals. An employer may not use a prefunding balance or funding standard carryover balance in lieu of such a contribution, and such a contribution does not result in an increase in any prefunding balance.

Instead of making additional contributions to avoid a benefit limitation, an employer may provide security in the form of a surety bond, cash, certain U.S. government obligations, or such other form as is satisfactory to the Secretary of the Treasury and the parties involved. In such a case, the plan's adjusted funding target attainment percentage is determined by treating the security as a plan asset. Any such security may be perfected and enforced at any time after the earlier of: (1) the date on which the plan terminates; (2) if the plan sponsor fails to make a required contribution for any subsequent plan year, the due date for the contribution; or (3) if the plan's adjusted funding target attainment percentage is less than 60 percent for a consecutive period of seven years, the valuation date for the last year in the period. The security will be released (and any related amounts will be refunded with any accrued interest) at such time as the

Secretary of the Treasury may prescribe in regulations (including partial releases by reason of increases in the plan's funding target attainment percentage).

Treatment of plan as of close of prohibited or cessation period

Under the provision, if a limitation on prohibited payments or future benefit accruals ceases to apply to a plan, all such payments and benefit accruals resume, effective as of the day following the close of the period for which the limitation applies.[50] Nothing in this rule is to be construed as affecting a plan's treatment of benefits which would have been paid or accrued but for the limitation.

Notice to participants

The plan administrator must provide written notice to participants and beneficiaries within 30 days: (1) after the plan has become subject to the limitation on unpredictable uncontingent event benefits or prohibited payments; (2) in the case of a plan to which the limitation on benefit accruals applies, after the valuation date for the plan year in which the plan's adjusted target attainment percentage is less than 60 percent (or, if earlier, the date the adjusted target attainment percentage is deemed to be less than 60 percent). Notice must also be provided at such other times as may be determined by the Secretary of the Treasury. The notice may be in electronic or other form to the extent such form is reasonably accessible to the recipient.

If the plan administrator fails to provide the required notice, the Secretary of Labor may impose a civil penalty of up to $1,000 a day from the time of the failure.

Effective Date

The provision generally applies with respect to plan years beginning after December 31, 2007.

In the case of a plan maintained pursuant to one or more collective bargaining agreements between employee representatives and one or more employers ratified before January 1, 2008, the provision does not apply to plan years beginning before the earlier of: (1) the later of (a) the date on which the last collective bargaining agreement relating to the plan terminates (determined without regard to any extension thereof agreed to after the date of enactment), or (b) the first day of the first plan year to which the provision would otherwise apply; or (2) January 1, 2010. For this purpose, any plan amendment made pursuant to a collective bargaining agreement relating to the plan that amends the plan solely to conform to any requirement under the provision is not to be treated as a termination of the collective bargaining agreement.

[50] This rule does not apply to limitations on unpredictable contingent event benefits and plan amendments increasing liabilities.

C. Special Rules for Multiple-Employer Plans of Certain Cooperatives

Present Law

Defined benefit pension plans are required to meet certain minimum funding rules. In some cases, additional contributions are required under the deficit reduction contribution rules if a single-employer defined benefit pension plan is underfunded. Additional contributions generally are not required in the case of a plan with a funded current liability percentage of at least 90 percent. A plan's funded current liability percentage is the value of plan assets as a percentage of current liability. In general, a plan's current liability means all liabilities to employees and their beneficiaries under the plan, determined using specified interest and mortality assumptions. In the case of a plan with a funded current liability percentage of less than 100 percent for the preceding plan year, estimated contributions for the current plan year must be made in quarterly installments during the current plan year.

The PBGC insures benefits under most single-employer defined benefit pension plans in the event the plan is terminated with insufficient assets to pay for plan benefits. The PBGC is funded in part by a flat-rate premium per plan participant, and variable-rate premiums based on the amount of unfunded vested benefits under the plan. A specified interest rate and a specified mortality table apply in determining unfunded vested benefits for this purpose.

A multiple-employer plan is a plan that is maintained by more than one employer and is not maintained pursuant to a collective bargaining agreement.[51] A multiple-employer plan is subject to the minimum funding rules for single-employer plans and to PBGC variable-rate premiums.

Explanation of Provision

The provision provides a delayed effective date for the new single-employer plan funding rules in the case of a plan that was in existence on July 26, 2005, and was an eligible cooperative plan for the plan year including that date. The new funding rules do not apply with respect to such a plan for plan years beginning before the earlier of: (1) the first plan year for which the plan ceases to be an eligible cooperative plan, or (2) January 1, 2017. In addition, in applying the present-law funding rules to an eligible cooperative plan to such a plan for plan years beginning after December 31, 2007, and before the first plan year for which the new funding rules apply, the interest rate used is the interest rate applicable under the new funding rules with respect to payments expected to be made from the plan after the 20-year period beginning on the first day of the plan year (i.e., the third segment rate under the new funding rules).

A plan is treated as an eligible cooperative plan for a plan year if it is maintained by more than one employer and at least 85 percent of the employers are: (1) certain rural cooperatives;[52]

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[51] A plan maintained by more than one employer pursuant to a collective bargaining agreement is referred to as a multiemployer plan.

[52] This is as defined in Code section 401(k)(7)(B) without regard to (iv) thereof and includes (1) organizations engaged primarily in providing electric service on a mutual or cooperative basis, or

or (2) certain cooperative organizations that are more than 50-percent owned by agricultural producers or by cooperatives owned by agricultural producers, or organizations that are more than 50-percent owned, or controlled by, one or more such cooperative organizations. A plan is also treated as an eligible cooperative plan for any plan year for which it is maintained by more than one employer and is maintained by a rural telephone cooperative association.

Effective Date

The provision is effective on the date of enactment.

engaged primarily in providing electric service to the public in its service area and which is exempt from tax or which is a State or local government, other than a municipality; (2) certain civic leagues and business leagues exempt from tax 80 percent of the members of which are described in (1); (3) certain cooperative telephone companies; and (4) any organization that is a national association of organizations described above.

D. Temporary Relief for Certain PBGC Settlement Plans

Present Law

Defined benefit pension plans are required to meet certain minimum funding rules. In some cases, additional contributions are required under the deficit reduction contribution rules if a single-employer defined benefit pension plan is underfunded. Additional contributions generally are not required in the case of a plan with a funded current liability percentage of at least 90 percent. A plan's funded current liability percentage is the value of plan assets as a percentage of current liability. In general, a plan's current liability means all liabilities to employees and their beneficiaries under the plan, determined using specified interest and mortality assumptions. In the case of a plan with a funded current liability percentage of less than 100 percent for the preceding plan year, estimated contributions for the current plan year must be made in quarterly installments during the current plan year.

The PBGC insures benefits under most single-employer defined benefit pension plans in the event the plan is terminated with insufficient assets to pay for plan benefits. The PBGC is funded in part by a flat-rate premium per plan participant, and variable-rate premiums based on the amount of unfunded vested benefits under the plan. A specified interest rate and a specified mortality table apply in determining unfunded vested benefits for this purpose.

Explanation of Provision

The provision agreement provides a delayed effective date for the new single-employer plan funding rules in the case of a plan that was in existence on July 26, 2005, and was a "PBGC settlement plan" as of that date. The new funding rules do not apply with respect to such a plan for plan years beginning before January 1, 2014. In addition, in applying the present-law funding rules to a such a plan for plan years beginning after December 31, 2007, and before January 1, 2014, the interest rate used is the interest rate applicable under the new funding rules with respect to payments expected to be made from the plan after the 20-year period beginning on the first day of the plan year (i.e., the third segment rate under the new funding rules).

Under the provision, the term "PBGC settlement plan" means a single-employer defined benefit plan: (1) that was sponsored by an employer in bankruptcy proceedings giving rise to a claim by the PBGC of not greater than $150 million, and the sponsorship of which was assumed by another employer (not a member of the same controlled group as the bankrupt sponsor) and the PBGC's claim was settled or withdrawn in connection with the assumption of the sponsorship; or (2) that, by agreement with the PBGC, was spun off from a plan subsequently terminated by the PBGC in an involuntary termination.

Effective Date

The provision is effective on the date of enactment.

E. Special Rules for Plans of Certain Government Contractors

Present Law

Defined benefit pension plans are required to meet certain minimum funding rules. In some cases, additional contributions are required under the deficit reduction contribution rules if a single-employer defined benefit pension plan is underfunded. Additional contributions generally are not required in the case of a plan with a funded current liability percentage of at least 90 percent. A plan's funded current liability percentage is the value of plan assets as a percentage of current liability. In general, a plan's current liability means all liabilities to employees and their beneficiaries under the plan, determined using specified interest and mortality assumptions. In the case of a plan with a funded current liability percentage of less than 100 percent for the preceding plan year, estimated contributions for the current plan year must be made in quarterly installments during the current plan year.

The PBGC insures benefits under most single-employer defined benefit pension plans in the event the plan is terminated with insufficient assets to pay for plan benefits. The PBGC is funded in part by a flat-rate premium per plan participant, and variable-rate premiums based on the amount of unfunded vested benefits under the plan. A specified interest rate and a specified mortality table apply in determining unfunded vested benefits for this purpose.

Explanation of Provision

The provision provides a delayed effective date for the new single-employer plan funding rules in the case of an eligible government contractor plan. The new funding rules do not apply with respect to such a plan for plan years beginning before the earliest of: (1) the first plan year for which the plan ceases to be an eligible government contractor plan, (2) the effective date of the Cost Accounting Standards Pension Harmonization Rule, and (3) the first plan year beginning after December 31, 2010. In addition, in applying the present-law funding rules to a such a plan for plan years beginning after December 31, 2007, and before the first plan year for which the new funding rules apply, the interest rate used is the interest rate applicable under the new funding rules with respect to payments expected to be made from the plan after the 20-year period beginning on the first day of the plan year (i.e., the third segment rate under the new funding rules).

Under the provision, a plan is treated as an eligible government contractor plan if it is maintained by a corporation (or member of the same affiliated group): (1) whose primary source of revenue is derived from business performed under contracts with the United States that are subject to the Federal Acquisition Regulations and also to the Defense Federal Acquisition Regulation Supplement; (2) whose revenue derived from such business in the previous fiscal year exceeded $5 billion; and (3) whose pension plan costs that are assignable under those contracts are subject to certain provisions of the Cost Accounting Standards.

The provision also requires the Cost Accounting Standards Board, not later than January 1, 2010, to review and revise the relevant provisions of the Cost Accounting Standards to harmonize minimum contributions required under ERISA of eligible government contractor plans and government reimbursable pension plan costs. Any final rule adopted by the Cost

Accounting Standards Board shall be deemed the Cost Accounting Standards Pension Harmonization Rule.

Effective Date

The provision is effective on the date of enactment.

F. Modification of Transition Rule to Pension Funding Requirements for Interstate Bus Company (769(c) of the Retirement Protection Act, as added by sec. 1508 of the Taxpayer Relief Act of 1997)

Present Law

Defined benefit pension plans are required to meet certain minimum funding rules. In some cases, additional contributions are required under the deficit reduction contribution rules if a single-employer defined benefit pension plan is underfunded. Additional contributions generally are not required in the case of a plan with a funded current liability percentage of at least 90 percent. A plan's funded current liability percentage is the value of plan assets as a percentage of current liability. In general, a plan's current liability means all liabilities to employees and their beneficiaries under the plan, determined using specified interest and mortality assumptions. In the case of a plan with a funded current liability percentage of less than 100 percent for the preceding plan year, estimated contributions for the current plan year must be made in quarterly installments during the current plan year.

The PBGC insures benefits under most single-employer defined benefit pension plans in the event the plan is terminated with insufficient assets to pay for plan benefits. The PBGC is funded in part by a flat-rate premium per plan participant, and variable rate premiums based on the amount of unfunded vested benefits under the plan. A specified interest rate and a specified mortality table apply in determining unfunded vested benefits for this purpose.

A special rule modifies the minimum funding requirements in the case of certain plans. The special rule applies in the case of plans that: (1) were not required to pay a variable rate PBGC premium for the plan year beginning in 1996; (2) do not, in plan years beginning after 1995 and before 2009, merge with another plan (other than a plan sponsored by an employer that was a member of the controlled group of the employer in 1996); and (3) are sponsored by a company that is engaged primarily in interurban or interstate passenger bus service.

The special rule generally treats a plan to which it applies as having a funded current liability percentage of at least 90 percent for plan years beginning after 1996 and before 2004 if for such plan year the funded current liability percentage is at least 85 percent. If the funded current liability of the plan is less than 85 percent for any plan year beginning after 1996 and before 2004, the relief from the minimum funding requirements generally applies only if certain specified contributions are made.

For plan years beginning in 2004 and 2005, the funded current liability percentage of the plan is treated as at least 90 percent for purposes of determining the amount of required contributions (100 percent for purposes of determining whether quarterly contributions are required). As a result, for these years, additional contributions under the deficit reduction contribution rules and quarterly contributions are not required with respect to the plan. In addition, for these years, the mortality table used under the plan is used in calculating PBGC variable rate premiums.

For plan years beginning after 2005 and before 2010, the funded current liability percentage generally will be deemed to be at least 90 percent if the actual funded current liability percentage is at least at certain specified levels. The relief from the minimum funding requirements generally applies for a plan year beginning in 2006, 2007, or 2008 only if contributions to the plan for the plan year equal at least the expected increase in current liability due to benefits accruing during the plan year.

Explanation of Provision

The provision revises the special rule for a plan that is sponsored by a company engaged primarily in interurban or interstate passenger bus service and that meets the other requirements for the special rule under present law. The provision extends the application of the special rule under present law for plan years beginning in 2004 and 2005 to plan years beginning in 2006 and 2007. The provision also provides several special rules relating to determining minimum required contributions and variable rate premiums for plan years beginning after 2007 when the new funding rules for single-employer plans apply.

Under the provision, for the plan year beginning in 2006 or 2007, a plan's funded current liability percentage of a plan is treated as at least 90 percent for purposes of determining the amount of required contributions (100 percent for purposes of determining whether quarterly contributions are required). As a result, for the 2006 and 2007 plan years, additional contributions under the deficit reduction contribution rules and quarterly contributions are not required with respect to the plan. In addition, the mortality table used under the plan is used in calculating PBGC variable rate premiums.

Under the provision, for plan years beginning after 2007, the mortality table used under the plan is used in: (1) determining any present value or making any computation under the minimum funding rules applicable to the plan; and (2) calculating PBGC variable rate premiums. Under a special phase-in (in lieu of the phase-in otherwise applicable under the provision relating to funding rules for single-employer plans), for purposes of determining whether a shortfall amortization base is required for plan years beginning after 2007 and before 2012, the applicable percentage of the plan's funding shortfall is the following: 90 percent for 2008, 92 percent for 2009, 94 percent for 2010, and 96 percent for 2011. In addition, for purposes of the quarterly contributions requirement, the plan is treated as not having a funding shortfall for any plan year. As a result, quarterly contributions are not required with respect to the plan.

Effective Date

The provision is effective for plan years beginning after December 31, 2005.

G. Restrictions on Funding of Nonqualified Deferred Compensation Plans by Employers Maintaining Underfunded or Terminated Single-Employer Plans (sec. 409A of the Code)

Present Law

Amounts deferred under a nonqualified deferred compensation plan for all taxable years are currently includible in gross income to the extent not subject to a substantial risk of forfeiture and not previously included in gross income, unless certain requirements are satisfied.[53] For example, distributions from a nonqualified deferred compensation plan may be allowed only upon certain times and events. Rules also apply for the timing of elections. If the requirements are not satisfied, in addition to current income inclusion, interest at the underpayment rate plus one percentage point is imposed on the underpayments that would have occurred had the compensation been includible in income when first deferred, or if later, when not subject to a substantial risk of forfeiture. The amount required to be included in income is also subject to a 20-percent additional tax.

In the case of assets set aside in a trust (or other arrangement) for purposes of paying nonqualified deferred compensation, such assets are treated as property transferred in connection with the performance of services under Code section 83 at the time set aside if such assets (or trust or other arrangement) are located outside of the United States or at the time transferred if such assets (or trust or other arrangement) are subsequently transferred outside of the United States. A transfer of property in connection with the performance of services under Code section 83 also occurs with respect to compensation deferred under a nonqualified deferred compensation plan if the plan provides that upon a change in the employer's financial health, assets will be restricted to the payment of nonqualified deferred compensation.

Explanation of Provision

Under the provision, if during any restricted period in which a defined benefit pension plan of an employer is in at-risk status,[54] assets are set aside (directly or indirectly) in a trust (or other arrangement as determined by the Secretary of the Treasury), or transferred to such a trust or other arrangement, for purposes of paying deferred compensation of an applicable covered employee, such transferred assets are treated as property transferred in connection with the performance of services (whether or not such assets are available to satisfy the claims of general creditors) under Code section 83. The rule does not apply in the case of assets that are set aside before the defined benefit pension plan is in at-risk status.

If a nonqualified deferred compensation plan of an employer provides that assets will be restricted to the provision of benefits under the plan in connection with a restricted period (or

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[53] Code sec. 409A.

[54] At-risk status is defined as under the provision relating to funding rules for single-employer defined benefit pension plans and applies if a plan's funding target attainment percentage for the preceding year was less than 60 percent.

other similar financial measure determined by the Secretary of Treasury) of any defined benefit pension plan of the employer, or assets are so restricted, such assets are treated as property transferred in connection with the performance of services (whether or not such assets are available to satisfy the claims of general creditors) under Code section 83.

A restricted period is (1) any period in which a single-employer defined benefit pension plan of an employer is in at risk-status, (2) any period in which the employer is in bankruptcy, and (3) the period that begins six months before and ends six months after the date any defined benefit pension plan of the employer is terminated in an involuntary or distress termination. The provision does not apply with respect to assets set aside before a restricted period.

In general, applicable covered employees include the chief executive officer (or individual acting in such capacity), the four highest compensated officers for the taxable year (other than the chief executive officer), and individuals subject to section 16(a) of the Securities Exchange Act of 1934. An applicable covered employee includes any (1) covered employee of a plan sponsor; (2) covered employee of a member of a controlled group which includes the plan sponsor; and (3) former employee who was a covered employee at the time of termination of employment with the plan sponsor or a member of a controlled group which includes the plan sponsor.

A nonqualified deferred compensation plan is any plan that provides for the deferral of compensation other than a qualified employer plan or any bona fide vacation leave, sick leave, compensatory time, disability pay, or death benefit plan. A qualified employer plan means a qualified retirement plan, tax-deferred annuity, simplified employee pension, and SIMPLE.[55] A qualified governmental excess benefit arrangement (sec. 415(m)) is a qualified employer plan. An eligible deferred compensation plan (sec. 457(b)) is also a qualified employer plan under the provision. The term plan includes any agreement or arrangement, including an agreement or arrangement that includes one person.

Any subsequent increases in the value of, or any earnings with respect to, transferred or restricted assets are treated as additional transfers of property. Interest at the underpayment rate plus one percentage point is imposed on the underpayments that would have occurred had the amounts been includible in income for the taxable year in which first deferred or, if later, the first taxable year not subject to a substantial risk of forfeiture. The amount required to be included in income is also subject to an additional 20-percent tax.

Under the provision, if an employer provides directly or indirectly for the payment of any Federal, State or local income taxes with respect to any compensation required to be included in income under the provision, interest is imposed on the amount of such payment in the same manner as if the payment were part of the deferred compensation to which it related. As under present law, such payment is included in income; in addition, under the provision, such payment is subject to a 20 percent additional tax. The payment is also nondeductible by the employer.

[55] A qualified employer plan also includes a section 501(c)(18) trust.

Effective Date

The provision is effective for transfers or other reservations of assets after date of enactment.

TITLE II: FUNDING RULES FOR MULTIEMPLOYER DEFINED BENEFIT PLANS

A. Funding Rules for Multiemployer Defined Benefit Plans (new sec. 304 of ERISA and new sec. 431 of the Code)

Present Law

Multiemployer plans

A multiemployer plan is a plan to which more than one unrelated employer contributes, which is established pursuant to one or more collective bargaining agreements, and which meets such other requirements as specified by the Secretary of Labor. Multiemployer plans are governed by a board of trustees consisting of an equal number of employer and employee representatives. In general, the level of contributions to a multiemployer plan is specified in the applicable collective bargaining agreements, and the level of plan benefits is established by the plan trustees.

Defined benefit multiemployer plans are subject to the same general minimum funding rules as single-employer plans, except that different rules apply in some cases. For example, different amortization periods apply for some costs in the case of multiemployer plans. In addition, the deficit reduction contribution rules do not apply to multiemployer plans.

Funding standard account

As an administrative aid in the application of the funding requirements, a defined benefit pension plan is required to maintain a special account called a "funding standard account" to which specified charges and credits are made for each plan year, including a charge for normal cost and credits for contributions to the plan. Other credits or charges or credits may apply as a result of decreases or increases in past service liability as a result of plan amendments or experience gains or losses, gains or losses resulting from a change in actuarial assumptions, or a waiver of minimum required contributions.

If, as of the close of the plan year, charges to the funding standard account exceed credits to the account, then the excess is referred to as an "accumulated funding deficiency." For example, if the balance of charges to the funding standard account of a plan for a year would be $200,000 without any contributions, then a minimum contribution equal to that amount would be required to meet the minimum funding standard for the year to prevent an accumulated funding deficiency. If credits to the funding standard account exceed charges, a "credit balance" results. The amount of the credit balance, increased with interest, can be used to reduce future required contributions.

Funding methods and general concepts

In general

A defined benefit pension plan is required to use an acceptable actuarial cost method to determine the elements included in its funding standard account for a year. Generally, an actuarial cost method breaks up the cost of benefits under the plan into annual charges consisting

of two elements for each plan year. These elements are referred to as: (1) normal cost; and (2) supplemental cost.

Normal cost

The plan's normal cost for a plan year generally represents the cost of future benefits allocated to the year by the funding method used by the plan for current employees and, under some funding methods, for separated employees. Specifically, it is the amount actuarially determined that would be required as a contribution by the employer for the plan year in order to maintain the plan if the plan had been in effect from the beginning of service of the included employees and if the costs for prior years had been paid, and all assumptions as to interest, mortality, time of payment, etc., had been fulfilled.

Supplemental cost

The supplemental cost for a plan year is the cost of future benefits that would not be met by future normal costs, future employee contributions, or plan assets. The most common supplemental cost is that attributable to past service liability, which represents the cost of future benefits under the plan: (1) on the date the plan is first effective; or (2) on the date a plan amendment increasing plan benefits is first effective. Other supplemental costs may be attributable to net experience losses, changes in actuarial assumptions, and amounts necessary to make up funding deficiencies for which a waiver was obtained. Supplemental costs must be amortized (i.e., recognized for funding purposes) over a specified number of years, depending on the source.

Valuation of assets

For funding purposes, the actuarial value of plan assets may be used, rather than fair market value. The actuarial value of plan assets is the value determined under a reasonable actuarial valuation method that takes into account fair market value and is permitted under Treasury regulations. Any actuarial valuation method used must result in a value of plan assets that is not less than 80 percent of the fair market value of the assets and not more than 120 percent of the fair market value. In addition, if the valuation method uses average value of the plan assets, values may be used for a stated period not to exceed the five most recent plan years, including the current year.

Reasonableness of assumptions

In applying the funding rules, all costs, liabilities, interest rates, and other factors are required to be determined on the basis of actuarial assumptions and methods, each of which is reasonable (taking into account the experience of the plan and reasonable expectations), or which, in the aggregate, result in a total plan contribution equivalent to a contribution that would be obtained if each assumption and method were reasonable. In addition, the assumptions are required to offer the actuary's best estimate of anticipated experience under the plan.

Charges and credits to the funding standard account

In general

Under the minimum funding standard, the portion of the cost of a plan that is required to be paid for a particular year depends upon the nature of the cost. For example, the normal cost for a year is generally required to be funded currently. Other costs are spread (or amortized) over a period of years. In the case of a multiemployer plan, past service liability is amortized over 40 or 30 years depending on how the liability arose, experience gains and losses are amortized over 15 years, gains and losses from changes in actuarial assumptions are amortized over 30 years, and waived funding deficiencies are amortized over 15 years.

Normal cost

Each plan year, a plan's funding standard account is charged with the normal cost assigned to that year under the particular acceptable actuarial cost method adopted by the plan. The charge for normal cost will require an offsetting credit in the funding standard account. Usually, an employer contribution is required to create the credit. For example, if the normal cost for a plan year is $150,000, the funding standard account would be charged with that amount for the year. Assuming that there are no other credits in the account to offset the charge for normal cost, an employer contribution of $150,000 will be required for the year to avoid an accumulated funding deficiency.

Past service liability

There are three separate charges to the funding standard account one or more of which may apply to a multiemployer plan as the result of past service liabilities. In the case of a plan in existence on January 1, 1974, past service liability under the plan on the first day on which the plan was first subject to ERISA is amortized over 40 years. In the case of a plan which was not in existence on January 1, 1974, past service liability under the plan on the first day on which the plan was first subject to ERISA is amortized over 30 years. Past service liability due to plan amendments is amortized over 30 years.

Experience gains and losses

In determining plan funding under an actuarial cost method, a plan's actuary generally makes certain assumptions regarding the future experience of a plan. These assumptions typically involve rates of interest, mortality, disability, salary increases, and other factors affecting the value of assets and liabilities. The actuarial assumptions are required to be reasonable, as discussed above. If the plan's actual unfunded liabilities are less than those anticipated by the actuary on the basis of these assumptions, then the excess is an experience gain. If the actual unfunded liabilities are greater than those anticipated, then the difference is an experience loss. In the case of a multiemployer plan, experience gains and losses for a year are generally amortized over a 15-year period, resulting in credits or charges to the funding standard account.

Gains and losses from changes in assumptions

If the actuarial assumptions used for funding a plan are revised and, under the new assumptions, the accrued liability of a plan is less than the accrued liability computed under the previous assumptions, the decrease is a gain from changes in actuarial assumptions. If the new assumptions result in an increase in the accrued liability, the plan has a loss from changes in actuarial assumptions. The accrued liability of a plan is the actuarial present value of projected pension benefits under the plan that will not be funded by future contributions to meet normal cost or future employee contributions. In the case of a multiemployer plan, the gain or loss for a year from changes in actuarial assumptions is amortized over a period of 30 years, resulting in credits or charges to the funding standard account.

Shortfall funding method

Certain plans may elect to determine the required charges to the funding standard account under the shortfall method. Under such method, the charges are computed on the basis of an estimated number of units of service or production for which a certain amount per unit is to be charged. The difference between the net amount charged under this method and the net amount that otherwise would have been charged for the same period is a shortfall loss or gain that is amortized over subsequent plan years. The use of the shortfall method and changes to use of the shortfall method are generally subject to IRS approval.

Funding waivers and amortization of waived funding deficiencies

Within limits, the Secretary of the Treasury is permitted to waive all or a portion of the contributions required under the minimum funding standard for the year (a "waived funding deficiency"). In the case of a multiemployer plan, a waiver may be granted if 10 percent or more of the number of employers contributing to the plan could not make the required contribution without temporary substantial business hardship and if requiring the contribution would be adverse to the interests of plan participants in the aggregate. The minimum funding requirements may not be waived with respect to a multiemployer plan for more five out of any 15 consecutive years.

If a funding deficiency is waived, the waived amount is credited to the funding standard account. In the case of a multiemployer plan, the waived amount is then amortized over a period of 15 years, beginning with the year following the year in which the waiver is granted. Each year, the funding standard account is charged with the amortization amount for that year unless the plan becomes fully funded. In the case of a multiemployer plan, the interest rate used for purposes of determining the amortization on the waived amount is the rate determined under section 6621(b) of the Internal Revenue Code (relating to the Federal short-term rate).

Extension of amortization periods

Amortization periods may be extended for up to 10 years by the Secretary of the Treasury if the Secretary finds that the extension would carry out the purposes of ERISA and would provide adequate protection for participants under the plan and if such Secretary determines that the failure to permit such an extension would (1) result in a substantial risk to the voluntary continuation of the plan or a substantial curtailment of pension benefit levels or employee

compensation, and (2) be adverse to the interests of plan participants in the aggregate. The interest rate with respect to extensions of amortization periods is the same as that used with respect to waived funding deficiencies.

Alternative funding standard account

As an alternative to applying the rules described above, a plan which uses the entry age normal cost method may satisfy an alternative minimum funding standard. Under the alternative, the minimum required contribution for the year is generally based on the amount necessary to bring the plan's assets up to the present value of accrued benefits, determine using the actuarial assumptions that apply when a plan terminates. The alternative standard has been rarely used.

Controlled group liability for required contributions

Unlike the rule for single-employer plans which imposes liability for minimum required contributions to all members of the employer's controlled group, controlled-group liability does not apply to contributions an employer is required to make to a multiemployer plan.

Explanation of Provision

Amortization periods

The provision modifies the amortization periods applicable to multiemployer plans so that the amortization period for most charges is 15 years. Under the provision, past service liability under the plan is amortized over 15 years (rather than 30); past service liability due to plan amendments is amortized over 15 years (rather than 30); and experience gains and losses resulting from a change in actuarial assumptions are amortized over 15 years (rather than 30). As under present law, experience gains and losses and waived funding deficiencies are amortized over 15 years. The new amortization periods do not apply to amounts being amortized under present-law amortization periods, that is, no recalculation of amortization schedules already in effect is required under the provision. The provision eliminates the alternative funding standard account.

Actuarial assumptions

The provision provides that in applying the funding rules, all costs, liabilities, interest rates, and other factors are required to be determined on the basis of actuarial assumptions and methods, each of which is reasonable (taking into account the experience of the plan and reasonable expectations). In addition, as under present law, the assumptions are required to offer the actuary's best estimate of anticipated experience under the plan.

Extension of amortization periods

The provision provides that, upon application to the Secretary of the Treasury, the Secretary is required to grant an extension of the amortization period for up to five years with respect to any unfunded past service liability, investment loss, or experience loss. Included with the application must be a certification by the plan's actuary that (1) absent the extension, the plan

would have an accumulated funding deficiency in the current plan year and any of the nine succeeding plan years, (2) the plan sponsor has adopted a plan to improve the plan's funding status, (3) taking into account the extension, the plan is projected to have sufficient assets to timely pay its expected benefit liabilities and other anticipated expenditures, and (4) that required notice is provided. The automatic extension provision does not apply with respect to any application submitted after December 31, 2014.

The Secretary of the Treasury may also grant an additional extension of such amortization periods for an additional five years. The standards for determining whether such an extension may be granted are the same as under present law. In addition, the provision requires the Secretary of the Treasury to act upon an application for an additional extension within 180 days after submission. If the Secretary rejects the application, the Secretary must provide notice to the plan detailing the specific reasons for the rejection.

As under present law, these extensions do not apply unless the applicant demonstrates to the satisfaction of the Treasury Secretary that notice of the application has been provided to each affected party (as defined in ERISA section 4001(a)(21)).

Interest rate applicable to funding waivers and extension of amortization periods

The provision eliminates the special interest rate rule for funding waivers and extensions of amortization periods so that the plan rate applies.

Additional provisions

Controlled group liability for required contributions

The provision imposes joint and several liability to all members of the employer's controlled group for minimum required contributions to single-employer or multiemployer plans.

Shortfall funding method

The provision provides that, for plan years beginning before January 1, 2015, certain multiemployer plans may adopt, use or cease using the shortfall funding method and such adoption, use, or cessation of use is deemed approved by the Secretary of the Treasury. Plans are eligible if (1) the plan has not used the shortfall funding method during the five-year period ending on the day before the date the plan is to use the shortfall funding method; and (2) the plan is not operating under an amortization period extension and did not operate under such an extension during such five-year period. Benefit restrictions apply during a period that a multiemployer plan is using the shortfall funding method. In general, plan amendments increasing benefits cannot be adopted while the shortfall funding method is in use. The provision is not intended to affect a plan's ability to adopt the shortfall funding method with IRS approval or to affect a plan's right to change funding methods as otherwise permitted.

Effective Date

The provision is effective for plan years beginning after 2007.

B. Additional Funding Rules for Multiemployer Plans in Endangered or Critical Status (new sec. 305 of ERISA and new sec. 432 of the Code)

Present Law

In general

Multiemployer defined benefit plans are subject to minimum funding rules similar to those applicable to single-employer plans.[56] If a multiemployer plan has an accumulated funding deficiency for a year, an excise tax of five percent generally applies, increasing to 100 percent if contributions sufficient to eliminate the funding deficiency are not made within a certain period.

Additional required contributions and benefit reductions may apply if a multiemployer plan is in reorganization status or is insolvent.

Reorganization status

Certain modifications to the single-employer plan funding rules apply to multiemployer plans that experience financial difficulties, referred to as "reorganization status." A plan is in reorganization status for a year if the contribution needed to balance the charges and credits to its funding standard account exceeds its "vested benefits charge."[57] The plan's vested benefits charge is generally the amount needed to amortize, in equal annual installments, unfunded vested benefits under the plan over: (1) 10 years in the case of obligations attributable to participants in pay status; and (2) 25 years in the case of obligations attributable to other participants. A plan in reorganization status is eligible for a special funding credit. In addition, a cap on year-to-year contribution increases and other relief is available to employers that continue to contribute to the plan.

Subject to certain requirements, a multiemployer plan in reorganization status may also be amended to reduce or eliminate accrued benefits in excess of the amount of benefits guaranteed by the PBGC.[58] In order for accrued benefits to be reduced, at least six months before the beginning of the plan year in which the amendment is adopted, notice must be given that the plan is in reorganization status and that, if contributions to the plan are not increased, accrued benefits will be reduced or an excise tax will be imposed on employers obligated to contribute to the plan. The notice must be provided to plan participants and beneficiaries, any

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[56] See the explanation of the preceding provision for a discussion of the minimum funding rules for multiemployer defined benefit plans. Under Treasury regulations, certain noncollectively bargained employees covered by a multiemployer plan may be treated as collectively bargained employees for purposes of applying the minimum coverage rules of the Code. Treas. Reg. sec. 1.410(b)-6(d)(2)(ii)(D).

[57] ERISA sec. 4241.

[58] ERISA sec. 4244A.

employer who has an obligation to contribute to the plan, and any employee organization representing employees in the plan.

Insolvency

In the case of multiemployer plans, the PBGC insures plan insolvency, rather than plan termination. A plan is insolvent when its available resources are not sufficient to pay the plan benefits for the plan year in question, or when the sponsor of a plan in reorganization reasonably determines, taking into account the plan's recent and anticipated financial experience, that the plan's available resources will not be sufficient to pay benefits that come due in the next plan year.[59] An insolvent plan is required to reduce benefits to the level that can be covered by the plan's assets. However, benefits cannot be reduced below the level guaranteed by the PBGC.[60] If a multiemployer plan is insolvent, the PBGC guarantee is provided in the form of loans to the plan trustees. If the plan recovers from insolvency status, loans from the PBGC can be repaid. Plans in reorganization status are required to compare assets and liabilities to determine if the plan will become insolvent in the future.

Explanation of Provision

In general

The provision provides additional funding rules for multiemployer defined benefit plans in effect on July 16, 2006, that are in endangered or critical status. The provision requires the adoption of and compliance with (1) a funding improvement plan in the case of a multiemployer plan in endangered status, and (2) a rehabilitation plan in the case of a multiemployer plan in critical status.

Under the provision, in the case of a plan in critical status, additional required contributions and benefit reductions apply and employers are relieved of liability for minimum required contributions under the otherwise applicable funding rules, provided that a rehabilitation plan is adopted and followed.

Annual certification of status; notice; annual reports

Not later than the 90th day of each plan year, the plan actuary must certify to the Secretary of the Treasury and to the plan sponsor whether or not the plan is in endangered or critical status for the plan year. In the case of a plan that is in a funding improvement or rehabilitation period, the actuary must certify whether or not the plan is making scheduled progress in meeting the requirements of its funding improvement or rehabilitation plan.

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[59] ERISA sec. 4245.

[60] The limit of benefits that the PBGC guarantees under a multiemployer plan is the sum of 100 percent of the first $11 of monthly benefits and 75 percent of the next $33 of monthly benefits for each year of service. ERISA sec. 4022A(c).

In making the determinations and projections applicable under the endangered and critical status rules, the plan actuary must make projections for the current and succeeding plan years of the current value of the assets of the plan and the present value of all liabilities to participants and beneficiaries under the plan for the current plan year as of the beginning of such year. The actuary's projections must be based on reasonable actuarial estimates, assumptions, and methods that offer the actuary's best estimate of anticipated experience under the plan. An exception to this rule applies in the case of projected industry activity. Any projection of activity in the industry or industries covered by the plan, including future covered employment and contribution levels, must be based on information provided by the plan sponsor, which shall act reasonably and in good faith. The projected present value of liabilities as of the beginning of the year must be based on the most recent actuarial statement required with respect to the most recently filed annual report or the actuarial valuation for the preceding plan year.

Any actuarial projection of plan assets must assume (1) reasonably anticipated employer contributions for the current and succeeding plan years, assuming that the terms of one or more collective bargaining agreements pursuant to which the plan is maintained for the current plan year continue in effect for the succeeding plan years, or (2) that employer contributions for the most recent plan year will continue indefinitely, but only if the plan actuary determines that there have been no significant demographic changes that would make continued application of such terms unreasonable.

Failure of the plan's actuary to certify the status of the plan is treated as a failure to file the annual report (thus, an ERISA penalty of up to $1,100 per day applies).

If a plan is certified to be in endangered or critical status, notification of the endangered or critical status must be provided within 30 days after the date of certification to the participants and beneficiaries, the bargaining parties, the PBGC and the Secretary of Labor.[61] If it is certified that a plan is or will be in critical status, the plan sponsor must included in the notice an explanation of the possibility that (1) adjustable benefits may be reduced and (2) such reductions may apply to participants and beneficiaries whose benefit commencement date is on or after the date such notice is provided for the first plan year in which the plan is in critical status. The Secretary of Labor is required to prescribe a model notice to satisfy these requirements.

The plan sponsor must annually update the funding improvement or rehabilitation plan. Updates are required to be filed with the plan's annual report.

Endangered status

Definition of endangered status

A multiemployer plan is in endangered status if the plan is not in critical status and, as of the beginning of the plan year, (1) the plan's funded percentage for the plan year is less than 80

[61] If a plan actuary certifies that it is reasonably expected that a plan will be in critical status with respect to the first plan year after 2007, notice may be provided at any time after date of enactment, as long as it is provided on or before the date otherwise required.

percent, or (2) the plan has an accumulated funding deficiency for the plan year or is projected to have an accumulated funding deficiency in any of the six succeeding plan years (taking into account amortization extensions). A plan's funded percentage is the percentage of plan assets over accrued liability of the plan. A plan that meets the requirements of both (1) and (2) is treated as in seriously endangered status.

Information to be provided to bargaining parties

Within 30 days of the adoption of a funding improvement plan, the plan sponsor must provide to the bargaining parties schedules showing revised benefit structures, revised contribution structures, or both, which, if adopted, may reasonably be expected to enable the multiemployer plan to meet the applicable benchmarks in accordance with the funding improvement plan, including (1) one proposal for reductions in the amount of future benefit accruals necessary to achieve the applicable benchmarks, assuming no amendments increasing contributions under the plan (other than amendments increasing contributions necessary to achieve the applicable benchmarks after amendments have reduced future benefit accruals to the maximum extent permitted by law) (the "default schedule"), and (2) one proposal for increases in contributions under the plan necessary to achieve the applicable benchmarks, assuming no amendments reducing future benefit accruals under the plan. The applicable benchmarks are the requirements of the funding improvement plan (discussed below). The plan sponsor may provide the bargaining parties with additional information if deemed appropriate.

The plan sponsor must annually update any schedule of contribution rates to reflect the experience of the plan.

Funding improvement plan and funding improvement period

In the case of a multiemployer plan in endangered status, a funding improvement plan must be adopted within 240 days following the deadline for certifying a plan's status.[62] A funding improvement plan is a plan which consists of the actions, including options or a range of options, to be proposed to the bargaining parties, formulated to provide, based on reasonably anticipated experience and reasonable actuarial assumptions, for the attainment by the plan of certain requirements.

The funding improvement plan must provide that during the funding improvement period, the plan will have a certain required increase in the funded percentage and no accumulated funding deficiency for any plan year during the funding improvement period, taking into account amortization extensions (the "applicable benchmarks"). In the case of a plan that is not in seriously endangered status, under the applicable benchmarks, the plan's funded percentage must increase such that the funded percentage as of the close of the funding improvement period equals or exceeds a percentage equal to the sum of (1) the funded percentage at the beginning of the period, plus (2) 33 percent of the difference between 100 percent and the percentage in (1). Thus, the difference between 100 percent and the plan's

[62] This requirement applies for the initial determination year (i.e., the first plan year that the plan is in endangered status).

funded percentage at the beginning of the period must be reduced by at least one-third during the funding improvement period.

The funding improvement period is the 10-year period beginning on the first day of the first plan year beginning after the earlier of (1) the second anniversary of the date of adoption of the funding improvement plan, or (2) the expiration of collective bargaining agreements that were in effect on the due date for the actuarial certification of endangered status for the initial determination year and covering, as of such date, at least 75 percent of the plan's active participants. The period ends if the plan is no longer in endangered status or if the plan enters critical status.

In the case of a plan in seriously endangered status that is funded 70 percent or less, under the applicable benchmarks, the difference between 100 percent and the plan's funded percentage at the beginning of the period must be reduced by at least one-fifth during the funding improvement period. In the case of such plans, a 15-year funding improvement period is used.

In the case of a seriously endangered plan that is more than 70 percent funded as of the beginning of the initial determination year, the same benchmarks apply for plan years beginning on or before the date on which the last collective bargaining agreements in effect on the date for actuarial certification for the initial determination year and covering at least 75 percent of active employees in the multiemployer plan have expired if the plan actuary certifies within 30 days after certification of endangered status that the plan is not projected to attain the funding percentage increase otherwise required by the provision. Thus, for such plans, the difference between 100 percent and the plan's funded percentage at the beginning of the period must be reduced by at least one-fifth during the 15-year funding improvement period. For subsequent years for such plans, if the plan actuary certifies that the plan is not able to attain the increase generally required under the provision, the same benchmarks continue to apply.

As previously discussed, the plan sponsor must annually update the funding improvement plan and must file the update with the plan's annual report.

If, for the first plan year following the close of the funding improvement period, the plan's actuary certifies that the plan is in endangered status, such year is treated as an initial determination year. Thus, a new funding improvement plan must be adopted within 240 days of the required certification date. In such case, the plan may not be amended in a manner inconsistent with the funding improvement plan in effect for the preceding plan year until a new funding improvement plan is adopted.

Requirements pending approval of plan and during funding improvement period

Certain restrictions apply during the period beginning on the date of certification for the initial determination year and ending on the day before the first day of the funding improvement period (the "funding plan adoption period").

During the funding plan adoption period, the plan sponsor may not accept a collective bargaining agreement or participation agreement that provides for (1) a reduction in the level of contributions for any participants; (2) a suspension of contributions with respect to any period of

service; or (3) any new or indirect exclusion of younger or newly hired employees from plan participation.

In addition, during the funding plan adoption period, except in the case of amendments required as a condition of qualification under the Internal Revenue Code or to apply with other applicable law, no amendment may be adopted which increases liabilities of the plan by reason of any increase in benefits, any change in accrual of benefits, or any change in the rate at which benefits become nonforfeitable under the plan.

In the case of a plan in seriously endangered status, during the funding plan adoption period, the plan sponsor must take all reasonable actions (consistent with the terms of the plan and present law) which are expected, based on reasonable assumptions, to achieve an increase in the plan's funded percentage and a postponement of an accumulated funding deficiency for at least one additional plan year. These actions include applications for extensions of amortization periods, use of the shortfall funding method in making funding standard account computations, amendments to the plan's benefit structure, reductions in future benefit accruals, and other reasonable actions.

Upon adoption of a funding improvement plan, the plan may not be amended to be inconsistent with the funding improvement plan. During the funding improvement period, a plan sponsor may not accept a collective bargaining agreement or participation agreement with respect to the multiemployer plan that provides for (1) a reduction in the level of contributions for any participants; (2) a suspension of contributions with respect to any period of service, or (3) any new direct or indirect exclusion of younger or newly hired employees from plan participation.

After the adoption of a funding improvement plan, a plan may not be amended to increase benefits, including future benefit accruals, unless the plan actuary certifies that the benefit increase is consistent with the funding improvement plan and is paid for out of contributions not required by the funding improvement plan to meet the applicable benchmark in accordance with the schedule contemplated in the funding improvement plan.

Effect of and penalty for failure to adopt a funding improvement plan

If a collective bargaining agreement providing for contributions under a multiemployer plan that was in effect at the time the plan entered endangered status expires, and after receiving one or more schedules from the plan sponsor, the bargaining parties fail to agree on changes to contribution or benefit schedules necessary to meet the applicable benchmarks, the plan sponsor must implement the default schedule. The schedule must be implemented on the earlier of the date (1) on which the Secretary of Labor certifies that the parties are at an impasse, or (2) which is 180 days after the date on which the collective bargaining agreement expires.

In the case of the failure of a plan sponsor to adopt a funding improvement plan by the end of the 240-day period after the required certification date, an ERISA penalty of up to $1,100 a day applies.

Excise tax on employers failing to meet required contributions

If the funding improvement plan requires an employer to make contributions to the plan, an excise tax applies upon the failure of the employer to make such required contributions within the time required under the plan. The amount of tax is equal to the amount of the required contribution the employer failed to make in a timely manner.

Application of excise tax to plans in endangered status/penalty for failure to achieve benchmarks

In the case of a plan in endangered status, which is not in seriously endangered status, a civil penalty of $1,100 a day applies for the failure of the plan to meet the applicable benchmarks by the end of the funding improvement period.

In the case of a plan in seriously endangered status, an excise tax applies for the failure to meet the benchmarks by the end of the funding improvement period. In such case, an excise tax applies based on the greater of (1) the amount of the contributions necessary to meet such benchmarks or (2) the plan's accumulated funding deficiency. The excise tax applies for each succeeding plan year until the benchmarks are met.

Waiver of excise tax

In the case of a failure which is due to reasonable cause and not to willful neglect, the Secretary of the Treasury may waive all or part of the excise tax on employers failing to make required contributions and the excise tax for failure to achieve the applicable benchmarks. The party against whom the tax is imposed has the burden of establishing that the failure was due to reasonable cause and not willful neglect. Reasonable cause includes unanticipated and material market fluctuations, the loss of a significant contributing employer, or other factors to the extent that the payment of tax would be excessive or otherwise inequitable relative to the failure involved. The determination of reasonable cause is based on the facts and circumstances of each case and requires the parties to act with ordinary business care and prudence. The standard requires the funding improvement plan to be based on reasonably foreseeable events. It is expected that reasonable cause would include instances in which the plan experiences a net equity loss of at least ten percent during the funding improvement period, a change in plan demographics such as the bankruptcy of a significant contributing employer, a legal change (including the outcome of litigation) that unexpectedly increases the plan's benefit obligations, or a strike or lockout for a significant period.

Critical status

Definition of critical status

A multiemployer plan is in critical status for a plan year if as of the beginning of the plan year:

1. The funded percentage of the plan is less than 65 percent and the sum of (A) the market value of plan assets, plus (B) the present value of reasonably anticipated employer and employee contributions for the current plan year and each of the six

succeeding plan years (assuming that the terms of the collective bargaining agreements continue in effect) is less than the present value of all benefits projected to be payable under the plan during the current plan year and each of the six succeeding plan years (plus administrative expenses),

2. (A) The plan has an accumulated funding deficiency for the current plan year, not taking into account any amortization extension, or (B) the plan is projected to have an accumulated funding deficiency for any of the three succeeding plan years (four succeeding plan years if the funded percentage of the plan is 65 percent or less), not taking into account any amortization extension,

3. (A) The plan's normal cost for the current plan year, plus interest for the current plan year on the amount of unfunded benefit liabilities under the plan as of the last day of the preceding year, exceeds the present value of the reasonably anticipated employer contributions for the current plan year, (B) the present value of nonforfeitable benefits of inactive participants is greater than the present value of nonforfeitable benefits of active participants, and (C) the plan has an accumulated funding deficiency for the current plan year, or is projected to have an accumulated funding deficiency for any of the four succeeding plan years (not taking into account amortization period extensions), or

4. The sum of (A) the market value of plan assets, plus (B) the present value of the reasonably anticipated employer contributions for the current plan year and each of the four succeeding plan years (assuming that the terms of the collective bargaining agreements continue in effect) is less than the present value of all benefits projected to be payable under the plan during the current plan year and each of the four succeeding plan years (plus administrative expenses).

Additional contributions during critical status

In the case of a plan in critical status, the provision imposes an additional required contribution ("surcharge") on employers otherwise obligated to make a contribution in the initial critical year, i.e., the first plan year for which the plan is in critical status. The amount of the surcharge is five percent of the contribution otherwise required to be made under the applicable collective bargaining agreement. The surcharge is 10 percent of contributions otherwise required in the case of succeeding plan years in which the plan is in critical status. The surcharge applies 30 days after the employer is notified by the plan sponsor that the plan is in critical status and the surcharge is in effect. The surcharges are due and payable on the same schedule as the contributions on which the surcharges are based. Failure to make the surcharge payment is treated as a delinquent contribution. The surcharge is not required with respect to employees covered by a collective bargaining agreement (or other agreement pursuant to which the employer contributes), beginning on the effective date of a collective bargaining agreement (or other agreement) that includes terms consistent with a schedule presented by the plan sponsor. The amount of the surcharge may not be the basis for any benefit accrual under the plan.

Surcharges are disregarded in determining an employer's withdrawal liability except for purposes of determining the unfunded vested benefits attributable to an employer under ERISA section 4211(c)(4) or a comparable method approved under ERISA section 4211(c)(5).[63]

Reductions to previously earned benefits

Notwithstanding the anti-cutback rules, the plan sponsor may make any reductions to adjustable benefits which the plan sponsor deems appropriate, based upon the outcome of collective bargaining over the schedules required to be provided by the plan sponsor as discussed below. Adjustable benefits means (1) benefits, rights, and features under the plan, including post-retirement death benefits, 60-month guarantees, disability benefits not yet in pay status, and similar benefits; (2) any early retirement benefit or retirement-type subsidy and any benefit payment option (other than the qualified joint-and-survivor annuity); and (3) benefit increase that would not be eligible for PBGC guarantee on the first day of the initial critical year because the increases were adopted (or, if later, took effect) less than 60 months before such first day. Except as provided in (3), nothing should be construed to permit a plan to reduce the level of a participant's accrued benefit payable at normal retirement age.

The plan sponsor may not reduce adjustable benefits of any participant or beneficiary whose benefit commencement date is before the date on which the plan provides notice to the participant or beneficiary that the plan is in critical status and that benefits may be reduced. An exception applies in the case of benefit increases that would not be eligible for PBGC guarantee because the increases were adopted less than 60 months before the first day of the initial critical year.

The plan sponsor must include in the schedules provided to the bargaining parties an allowance for funding the benefits of participants with respect to whom contributions are not currently required to be made, and shall reduce their benefits to the extent permitted under the Code and ERISA and considered appropriate by the plan sponsor based on the plan's then current overall funding status.

Notice of any reduction of adjustable benefits must be provided at least 30 days before the general effective date of the reduction for all participants and beneficiaries. Benefits may not be reduced until the notice requirement is satisfied. Notice must be provided to (1) plan participants and beneficiaries; (2) each employer who has an obligation to contribute under the plans; and (3) each employee organization which, for purposes of collective bargaining, represents plan participants employed by such employer. The notice must contain (1) sufficient information to enable participants and beneficiaries to understand the effect of any reduction of their benefits, including an estimate (on an annual or monthly basis) of any affected adjustable benefit that a participant or beneficiary would otherwise have been eligible for as of the general effective date for benefit reductions; and (2) information as to the rights and remedies of plan participants and beneficiaries as well as how to contact the Department of Labor for further

[63] The PBGC is directed to prescribe simplified methods for determining withdrawal liability in this case.

information and assistance where appropriate. The notice must be provided in a form and manner prescribed in regulations of the Secretary of Labor. In such regulations, the Secretary of Labor must establish a model notice.

Benefit reduction are disregarded in determining a plan's unfunded vested benefits for purposes of determining an employer's withdrawal liability.[64]

Information to be provided to bargaining parties

Within 30 days after adoption of the rehabilitation plan, the plan sponsor must provide to the bargaining parties schedules showing revised benefit structures, revised contribution structures, or both which, if adopted, may reasonably be expected to enable the multiemployer plan to emerge from critical status in accordance with the rehabilitation plan.[65] The schedules must reflect reductions in future benefit accruals and adjustable benefits and increases in contributions that the plan sponsor determined are reasonably necessary to emerge from critical status. One schedule must be designated as the default schedule and must assume no increases in contributions other than increases necessary to emerge from critical status after future benefit accruals and other benefits (other than benefits the reduction or elimination of which are not permitted under the anti-cutback rules) have been reduced. The plan sponsor may also provide additional information as appropriate.

The plan sponsor must periodically update any schedule of contributions rates to reflect the experience of the plan.

Rehabilitation plan

If a plan is in critical status for a plan year, the plan sponsor must adopt a rehabilitation plan within 240 days following the required date for the actuarial certification of critical status.[66]

A rehabilitation plan is a plan which consists of actions, including options or a range of options to be proposed to the bargaining parties, formulated, based on reasonable anticipated experience and reasonable actuarial assumptions, to enable the plan to cease to be in critical status by the end of the rehabilitation period and may include reductions in plan expenditures (including plan mergers and consolidations), reductions in future benefits accruals or increases in contributions, if agreed to by the bargaining parties, or any combination of such actions.

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[64] The PBGC is directed to prescribe simplified methods for determining withdrawal liability in this case.

[65] A schedule of contribution rates provided by the plan sponsor and relied upon by bargaining parties in negotiating a collective bargaining agreement must remain in effect for the duration of the collective bargaining agreement.

[66] The requirement applies with respect to the initial critical year.

A rehabilitation plan must provide annual standards for meeting the requirements of the rehabilitation. The plan must also include the schedules required to be provided to the bargaining parties.

If the plan sponsor determines that, based on reasonable actuarial assumptions and upon exhaustion of all reasonable measures, the plan cannot reasonably be expected to emerge from critical status by the end of the rehabilitation period, the plan must include reasonable measures to emerge from critical status at a later time or to forestall possible insolvency. In such case, the plan must set forth alternatives considered, explain why the plan is not reasonable expected to emerge from critical status by the end of the rehabilitation period, and specify when, if ever, the plan is expected to emerge from critical status in accordance with the rehabilitation plan.

As previously discussed, the plan sponsor must annually update the rehabilitation plan and must file the update with the plan's annual report.

Rehabilitation period

The rehabilitation period is the 10-year period beginning on the first day of the first plan year following the earlier of (1) the second anniversary of the date of adoption of the rehabilitation plan or (2) the expiration of collective bargaining agreements that were in effect on the due date for the actuarial certification of critical status for the initial critical year and covering at least 75 percent of the active participants in the plan.

The rehabilitation period ends if the plan emerges from critical status. A plan in critical status remains in critical status until a plan year for which the plan actuary certifies that the plan is not projected to have an accumulated funding deficiency for the plan year or any of the nine succeeding plan years, without regard to the use of the shortfall method and taking into account amortization period extensions.

Rules for reductions in future benefit accrual rates

Any schedule including reductions in future benefit accruals forming part of a rehabilitation plan must not reduce the rate of benefit accruals below (1) a monthly benefit (payable as a single life annuity commencing at the participant's normal retirement age) equal to one percent of the contributions required to be made with respect to a participant or the equivalent standard accrual rate for a participant or group of participants under the collective bargaining agreements in effect as of the first day of the initial critical year, or (2) if lower, the accrual rate under the plan on such first day.

The equivalent standard accrual rate is determined by the plan sponsor based on the standard or average contribution base units which the plan sponsor determines to be representative for active participants and such other factors that the plan sponsor determines to be relevant.

Benefit reductions are disregarded in determining an employer's withdrawal liability.

Requirements pending approval and during rehabilitation period

Rehabilitation plan adoption period.−Certain restrictions apply during the period beginning on the date of certification and ending on the day before the first day of the rehabilitation period (defined as the "rehabilitation plan adoption period").

During the rehabilitation plan adoption period, the plan sponsor may not accept a collective bargaining agreement or participation agreement that provides for (1) a reduction in the level of contributions for any participants; (2) a suspension of contributions with respect to any period of service; or (3) any new direct or indirect exclusion of younger or newly hired employees from plan participation. Except in the case of amendments required as a condition of qualification under the Internal Revenue Code or to comply with other applicable law, during the rehabilitation plan adoption period, no amendments that increase the liabilities of the plan by reason of any increase in benefits, any change in the accrual of benefits, or any change in the rate at which benefits become nonforfeitable may be adopted.

During rehabilitation period.−A plan may not be amended after the date of adoption of a rehabilitation plan to be inconsistent with the rehabilitation plan.

A plan may not be amended after the date of adoption of a rehabilitation plan to increase benefits (including future benefit accruals) unless the plan actuary certifies that such increase is paid for out of additional contributions not contemplated by the rehabilitation plan and, after taking into account the benefit increases, the plan is still reasonably expected to emerge from critical status by the end of the rehabilitation period on the schedule contemplated by the rehabilitation plan.

Beginning on the date that notice of certification of the plan's critical status is sent, lump sum and other similar benefits may not be paid. The restriction does not apply if the present value of the participant's accrued benefit does not exceed $5,000. The restriction also does not apply to any makeup payment in the case of a retroactive annuity starting date or any similar payment of benefits owed with respect to a prior period.

The plan sponsor must annually update the plan and must file updates with the plan's annual report. Schedules must be annually updated to reflect experience of the plan.

Effect and penalty for failure to adopt a rehabilitation plan

If a collective bargaining agreement providing for contributions under a multiemployer plan that was in effect at the time the plan entered endangered status expires, and after receiving one of more schedules from the plan sponsor, the bargaining parties fail to adopt a contribution or benefit schedule with terms consistent with the rehabilitation plan and the scheduled from the plan sponsor, the plan sponsor must implement the default schedule. The schedule must be implemented on the earlier of the date (1) on which the Secretary of Labor certifies that the parties are at an impasse, or (2) which is 180 days after the date on which the collective bargaining agreement expires.

Upon the failure of a plan sponsor to adopt a rehabilitation plan within 240 days after the date required for certification, an ERISA penalty of $1,100 a day applies. In addition, upon the

failure to timely adopt a rehabilitation plan, an excise tax is imposed on the plan sponsor equal to the greater of (1) the present law excise tax or (2) $1,100 per day. The tax must be paid by the plan sponsor.

Excise tax on employers failing to meet required contributions

If the rehabilitation plan requires an employer to make contributions to the plan, an excise tax applies upon the failure of the employer to make such required contributions within the time required under the plan. The amount of tax is equal to the amount of the required contribution the employer failed to make in a timely manner.

Application of excise tax to plans in critical status/penalty for failure to meet benchmarks or make scheduled progress

In the case of a plan in critical status, if a rehabilitation plan is adopted and complied with, employers are not liable for contributions otherwise required under the general funding rules. In addition, the present-law excise tax does not apply.

If a plan fails to leave critical status at the end of the rehabilitation period or fails to make scheduled progress in meeting its requirements under the rehabilitation plan for three consecutive years, the present law excise tax applies based on the greater of (1) the amount of the contributions necessary to leave critical status or make scheduled progress or (2) the plan's accumulated funding deficiency. The excise tax applies for each succeeding plan year until the requirements are met.

Waiver of excise tax

In the case of a failure which is due to reasonable cause and not to willful neglect, the Secretary of the Treasury may waive all or part of the excise tax on employers failing to make required contributions and the excise tax for failure to meet the rehabilitation plan requirements or make scheduled progress. The standards applicable to waivers of the excise tax for plans in endangered status apply to waivers of plans in critical status.

Additional rules

In general

The actuary's determination with respect to a plan's normal cost, actuarial accrued liability, and improvements in a plan's funded percentage must be based on the unit credit funding method (whether or not that method is used for the plan's actuarial valuation).

In the case of a plan sponsor described under section 404(c) of the Code, the term "plan sponsor" means the bargaining parties.

Expedited resolution of plan sponsor decisions

If, within 60 days of the due date for the adoption of a funding improvement plan or a rehabilitation plan, the plan sponsor has not agreed on a funding improvement plan or a

rehabilitation plan, any member of the board or group that constitutes the plan sponsor may require that the plan sponsor enter into an expedited dispute resolution procedure for the development and adoption of a funding improvement plan or rehabilitation plan.

Nonbargained participation

In the case of an employer who contributes to a multiemployer plan with respect to both employees who are covered by one or more collective bargaining agreements and to employees who are not so covered, if the plan is in endangered or critical status, benefits of and contributions for the nonbargained employees, including surcharges on those contributions, must be determined as if the nonbargained employees were covered under the first to expire of the employer's collective bargaining agreements in effect when the plan entered endangered or critical status.[67] In the case of an employer who contributes to a multiemployer plan only with respect to employees who are not covered by a collective bargaining agreement, the additional funding rules apply as if the employer were the bargaining party, and its participation agreement with the plan was a collective bargaining agreement with a term ending on the first day of the plan year beginning after the employer is provided the schedule requires to be provided by the plan sponsor.

Special rule for certain restored benefits

In the case of benefits which were reduced pursuant to a plan amendment adopted on or after January 1, 2002, and before June 30, 2005, if, pursuant to the plan document, the trust agreement, or a formal written communication from the plan sponsor to participants provided before June 30, 2005, such benefits were restored, the rules under the provision do not apply to such benefit restorations to the extent that any restriction on the providing or accrual of such benefits would otherwise apply by reason of the provision.

Cause of action to compel adoption of funding improvement or rehabilitation plan

The provision creates a cause of action under ERISA in the case that the plan sponsor of a plan certified to be endangered or critical (1) has not adopted a funding improvement or rehabilitation plan within 240 days of certification of endangered or critical or (2) fails to update or comply with the terms of the funding improvement or rehabilitation plan. In such case, a civil action may be brought by an employer that has an obligation to contribute with respect to the plan, or an employee organization that represents active participants, for an order compelling the plan sponsor to adopt a funding improvement or rehabilitation plan or to update or comply with the terms of the funding improvement or rehabilitation plan.

[67] Treasury regulations allowing certain noncollectively bargained employees covered by a multiemployer plan to be treated as collectively bargained employees for purposes of the minimum coverage rules of the Code do not apply in making determinations under the provision.

Effective Date

The provision is effective for plan years beginning after 2007. The additional funding rules for plans in endangered or critical status do not apply to plan years beginning after December 31, 2014.

If a plan is operating under a funding improvement or rehabilitation plan for its last year beginning before January 1, 2015, the plan shall continue to operate under such funding improvement or rehabilitation plan during any period after December 31, 2014, that such funding improvement or rehabilitation plan is in effect.

C. Measures to Forestall Insolvency of Multiemployer Plans (sec. 4245 of ERISA and sec. 418E of the Code)

Present Law

In the case of multiemployer plans, the PBGC insures plan insolvency, rather than plan termination. A plan is insolvent when its available resources are not sufficient to pay the plan benefits for the plan year in question, or when the sponsor of a plan in reorganization reasonably determines, taking into account the plan's recent and anticipated financial experience, that the plan's available resources will not be sufficient to pay benefits that come due in the next plan year.

In order to anticipate future insolvencies, at the end of the first plan year in which a plan is in reorganization and at least every three plans year thereafter, the plan sponsor must compare the value of plan assets for the plan year with the total amount of benefit payments made under the plan for the plan year.[68] Unless the plan sponsor determines that the value of plan assets exceeds three times the total amount of benefit payments, the plan sponsor must determine whether the plan will be insolvent for any of the next three plan years.

Explanation of Provision

The provision modifies the requirements for anticipating future insolvencies of plans in reorganization status. Under the provision, unless the plan sponsor determines that the value of plan assets exceeds three times the total amount of benefit payments, the plan sponsor must determine whether the plan will be insolvent for any of the next five plan years, rather than three plan years as under present law. If the plan sponsor makes a determination that the plan will be insolvent for any of the next five plan years, the plan sponsor must make the comparison of plan assets and benefit payments under the plan at least annually until the plan sponsor makes a determination that the plan will not be insolvent in any of the next five plan years.

Effective Date

The provision is effective with respect to determinations made in plan years beginning after 2007.

[68] Code sec. 418E(d)(1); ERISA sec. 4245(d)(1).

D. Withdrawal Liability Reforms (secs. 4203, 4205, 4210, 4219, 4221 and 4225 of ERISA)

1. Repeal of limitation on withdrawal liability in certain cases

Present Law

Under ERISA, an employer which withdraws from a multiemployer plan in a complete or partial withdrawal is liable to the plan in the amount determined to be the employer's withdrawal liability.[69] In general, a "complete withdrawal" means the employer has permanently ceased operations under the plan or has permanently ceased to have an obligation to contribute.[70] A "partial withdrawal" generally occurs if, on the last day of a plan year, there is a 70-percent contribution decline for such plan year or there is a partial cessation of the employer's contribution obligation.[71]

When an employer withdraws from a multiemployer plan, the plan sponsor is required to determine the amount of the employer's withdrawal liability, notify the employer of the amount of the withdrawal liability, and collect the amount of the withdrawal liability from the employer.[72] The employer's withdrawal liability generally is based on the extent of the plan's unfunded vested benefits for the plan years preceding the withdrawal.[73]

ERISA section 4225 provides rules limiting or subordinating withdrawal liability in certain cases. The amount of unfunded vested benefits allocable to an employer is limited in the case of certain sales of all or substantially all of the employer's assets and in the case of an insolvent employer undergoing liquidation or dissolution.

In the case of a bona fide sale of all or substantially all of the employer's assets in an arm's length transaction to an unrelated party, the unfunded vested benefits allocable to an employer is limited to the greater of (1) a portion of the liquidation or dissolution value of the employer (determined after the sale or exchange of such assets), or (2) the unfunded vested benefits attributable to the employees of the employer. The portion to be used in (1) is determined in accordance with a table described in ERISA section 4225(a)(2). Other limitations on withdrawal liability also apply.

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[69] ERISA sec. 4201.

[70] ERISA sec. 4203.

[71] ERISA sec. 4205.

[72] ERISA sec. 4202.

[73] ERISA secs. 4209 and 4211.

Explanation of Provision

The provision prescribes a new table under ERISA section 4225(a)(2) to be used in determining the portion of the liquidation or dissolution value of the employer for the calculation of the limitation of unfunded vested benefits allocable to an employer in the case of a bona fide sale of all or substantially all of the employer's assets in an arm's length transaction to an unrelated party. The provision also modifies the calculation of the limit so that the unfunded vested benefits allocable to an employer do not exceed the greater of (1) a portion of the liquidation or dissolution value of the employer (determined after the sale or exchange of such assets), or (2) in the case of a plan using the attributable method of allocating withdrawal liability, the unfunded vested benefits attributable to the employees of the employer. Present law ERISA section 4225(b) is not amended by the provision.

Effective Date

The provisions are effective for sales occurring on or after January 1, 2007.

2. Withdrawal liability continues if work contracted out

Present Law

Under ERISA, an employer which withdraws from a multiemployer plan in a complete or partial withdrawal is liable to the plan in the amount determined to be the employer's withdrawal liability.[74] In general, a "complete withdrawal" means the employer has permanently ceased operations under the plan or has permanently ceased to have an obligation to contribute.[75]

A "partial withdrawal" generally occurs if, on the last day of a plan year, there is a 70-percent contribution decline for such plan year or there is a partial cessation of the employer's contribution obligation.[76] A partial cessation of the employer's obligation occurs if (1) the employer permanently ceases to have an obligation to contribute under one or more, but fewer than all collective bargaining agreements under which obligated to contribute, but the employer continues to perform work in the jurisdiction of the collective bargaining agreement or transfers such work to another location or (2) an employer permanently ceases to have an obligation to contribute under the plan with respect to work performed at one or more, but fewer than all of its facilities, but continues to perform work at the facility of the type for which the obligation to contribute ceased.[77]

[74] ERISA sec. 4201.

[75] ERISA sec. 4203.

[76] ERISA sec. 4205.

[77] ERISA sec. 4205(b)(2).

Explanation of Provision

Under the provision, a partial withdrawal also occurs if the employer permanently ceases to have an obligation to contribute under one or more, but fewer than all collective bargaining agreements under which obligated to contribute, but the employer transfers such work to an entity or entities owned or controlled by the employer.

Effective Date

The provision is effective with respect to work transferred on or after the date of enactment.

3. Application of forgiveness rule to plans primarily covering employees in building and construction

Present Law

Under ERISA, an employer which withdraws from a multiemployer plan in a complete or partial withdrawal is liable to the plan in the amount determined to be the employer's withdrawal liability.[78] A multiemployer plan, other than a plan which primarily covers employees in the building and construction industry, may adopt a rule that an employer who withdraws from the plan is not subject to withdrawal liability if certain requirements are satisfied.[79] In general, the employer is not liable if the employer (1) first had an obligation to contribute to the plan after the date of enactment of the Multiemployer Pension Plan Amendments Act of 1980; (2) contributed to the plan for no more than the lesser of six plan years or the number of years required for vesting under the plan; (3) was required to make contributions to the plan for each year in an amount equal to less than two percent of all employer contributions for the year; and (4) never avoided withdrawal liability because of the special rule.

A multiemployer plan, other than a plan that primarily covers employees in the building and construction industry, may be amended to provide that the amount of unfunded benefits allocable to an employer that withdraws from the plan is determined under an alternative method.[80]

Explanation of Provision

The provision extends the rule allowing plans to exempt certain employers from withdrawal liability to plans primarily covering employees in the building and construction industries. In addition, the provision also provides that a plan (including a plan which primarily covers employees in the building and construction industry) may be amended to provide that the

[78] ERISA sec. 4201.

[79] ERISA sec. 4210.

[80] ERISA sec. 4211(c)(1).

withdrawal liability method otherwise applicable shall be applied by substituting the plan year which is specified in the amendment and for which the plan has no unfunded vested benefits for the plan year ending before September 26, 1980.

Effective Date

The provision is effective with respect to plan withdrawals occurring on or after January 1, 2007.

4. Procedures applicable to disputes involving withdrawal liability

Present Law

Under ERISA, when an employer withdraws from a multiemployer plan, the employer is generally liable for its share of unfunded vested benefits, determined as of the date of withdrawal (generally referred to as the "withdrawal liability"). Whether and when a withdrawal has occurred and the amount of the withdrawal liability is determined by the plan sponsor. The plan sponsor's assessment of withdrawal liability is presumed correct unless the employer shows by a preponderance of the evidence that the plan sponsor's determination of withdrawal liability was unreasonable or clearly erroneous. A similar standard applies in the event the amount of the plan's unfunded vested benefits is challenged.

The first payment of withdrawal liability determined by the plan sponsor is generally due no later than 60 days after demand, even if the employer contests the determination of liability. Disputes between an employer and plan sponsor concerning withdrawal liability are resolved through arbitration, which can be initiated by either party. Even if the employer contests the determination, payments of withdrawal liability must be made by the employer until the arbitrator issues a final decision with respect to the determination submitted for arbitration.

For purposes of withdrawal liability, all trades or businesses under common control are treated as a single employer. In addition, the plan sponsor may disregard a transaction in order to assess withdrawal liability if the sponsor determines that the principal purpose of the transaction was to avoid or evade withdrawal liability. For example, if a subsidiary of a parent company is sold and the subsidiary then withdraws from a multiemployer plan, the plan sponsor may assess withdrawal liability as if the subsidiary were still part of the parent company's controlled group if the sponsor determines that a principal purpose of the sale of the subsidiary was to evade or avoid withdrawal liability.

In the case of an employer that receives a notification of withdrawal liability and demand for payment after October 31, 2003, a special rule may apply if a transaction is disregarded by a plan sponsor in determining that a withdrawal has occurred or that an employer is liable for withdrawal liability. If the transaction that is disregarded by the plan sponsor occurred before January 1, 1999, and at least five years before the date of the withdrawal, then (1) the determination by the plan sponsor that a principal purpose of the transaction was to evade or avoid withdrawal liability is not be presumed to be correct, (2) the plan sponsor, rather than the employer, has the burden to establish, by a preponderance of the evidence, the elements of the claim that a principal purpose of the transaction was to evade or avoid withdrawal liability, and (3) if an employer contests the plan sponsor's determination through an arbitration proceeding,

or through a claim brought in a court of competent jurisdiction, the employer is not obligated to make any withdrawal liability payments until a final decision in the arbitration proceeding, or in court, upholds the plan sponsor's determination.

Explanation of Provision

Under the provision, if (1) a plan sponsor determines that a complete or partial withdrawal of an employer has occurred or an employer is liable for withdrawal liability payments with respect to the complete or partial withdrawal from the plan and (2) such determination is based in whole or in part on a finding by the plan sponsor that a principal purpose of any transaction that occurred after December 31, 1998, and at least five years (two years in the case of a small employer) before the date of complete or partial withdrawal was to evade or avoid withdrawal liability, the person against which the withdrawal liability is assessed may elect to use a special rule relating to required payments. Under the special rule, if the electing person contests the plan sponsor's determination with respect to withdrawal liability payments through an arbitration proceeding, through a claim brought in a court of competent jurisdiction, or as otherwise permitted by law, the electing person is not obligated to make the withdrawal liability payments until a final decision in the arbitration proceeding, or in court, upholds the plan sponsor's determination. The special rule applies only if the electing person (1) provides notice to the plan sponsor of its election to apply the special rule within 90 days after the plan sponsor notifies the electing person of its liability, and (2) if a final decision on the arbitration proceeding, or in court, of the withdrawal liability dispute has not been rendered within 12 months from the date of such notice, the electing person provides to the plan, effective as of the first day following the 12-month period, a bond issued by a corporate surety, or an amount held on escrow by a bank or similar financial institution satisfactory to the plan, in an amount equal to the sum of the withdrawal liability payments that would otherwise be due for the 12-month period beginning with the first anniversary of such notice. The bond or escrow must remain in effect until there is a final decision in the arbitration proceeding, or on court, of the withdrawal liability dispute. At such time, the bond or escrow must be paid to the plan if the final decision upholds the plan sponsor's determination. If the withdrawal liability dispute is not concluded by 12 months after the electing person posts the bond or escrow, the electing person must, at the start of each succeeding 12-month period, provide an additional bond or amount held in escrow equal to the sum of the withdrawal liability payments that would otherwise be payable to the plan during that period.

A small employer is an employer which, for the calendar year in which the transaction occurred, and for each of the three preceding years, on average (1) employs no more than 500 employees, and (2) is required to make contributions to the plan on behalf of not more than 250 employees.

Effective Date

The provision is effective for any person that receives a notification of withdrawal liability and demand for payment on or after the date of enactment with respect to a transaction that occurred after December 31, 1998.

E. Prohibition on Retaliation against Employers Exercising their Rights to Petition the Federal Government (sec. 510 of ERISA)

Present Law

Under ERISA section 510, it is unlawful for any person to discharge, fine, suspend, expel, discipline, or discriminate against a participant or beneficiary for exercising any right to which he is entitled under the provisions of an employee benefit plan, Title I or section 3001 of ERISA, or the Welfare and Pension Plans Disclosure Act, or for the purpose of interfering with the attainment of any right to which a participant may become entitled. It is also unlawful for any person to discharge, fine, suspend, expel or discriminate against any person because he has given information or has testified or is about to testify in any inquiry or proceeding relating to ERISA or the Welfare and Pension Plans Disclosure Act. The civil enforcement provisions under ERISA section 503 are applicable in the enforcement of such provisions.

Explanation of Provision

The provision provides that in the case of a multiemployer plan, it is unlawful for the plan sponsor or any other person to discriminate against any contributing employer for exercising rights under ERISA or for giving information or testifying in an inquiry or proceedings relating to ERISA before Congress. The provision amends the anti-retaliation section of ERISA to provide protection for employers who contribute to multiemployer plans and others. The provision is intended to close a loophole in the existing whistleblower protections. In June 2005, a witness who appeared on behalf of several other companies testified before the Retirement Security & Aging Subcommittee of the Senate Health, Education, Labor & Pensions Committee. Subsequent to that testimony there was an allegation that some of these companies may have been targeted for possible audits.

It is intended that retaliation against any employer who has an obligation to contribute to a plan due to testifying before Congress or exercising his or her rights to petition for redress of grievances would amount to unlawful retaliation under ERISA as amended by the provision. Exercising rights under ERISA, testifying before Congress, and giving information in any inquiry or proceeding relating to this Act are intended to be protected under the provision.

Effective Date

The provision is effective on the date of enactment.

F. Special Rule for Certain Benefits Funded under an Agreement Approved by the PBGC

Present Law

No provision.

Explanation of Provision

The provision provides that in the case of a multiemployer plan that is a party to an agreement that was approved by the PBGC before June 30, 2005, that increases benefits and provides for special withdrawal liability rules, certain benefit increases funded pursuant to the agreement are not subject to the multiemployer plan funding rules under the provision (including the additional funding rules for plans in endangered or critical status) if the multiemployer plan is funded in compliance with the agreement (or any amendment thereto).

Effective Date

The provision is effective on the date of enactment.

G. Exception from Excise Tax for Certain Multiemployer Pension Plans (sec. 4971 of the Code)

Present Law

If a multiemployer plan has an accumulated funding deficiency for a year, an excise tax of five percent generally applies, increasing to 100 percent if contributions sufficient to eliminate the funding deficiency are not made within a certain period.[81]

Explanation of Provision

Under the provision, the present-law excise tax does not apply with respect to any accumulated funding deficiency of a multiemployer plan (1) with less than 100 participants; (2) with respect to which the contributing employers participated in a Federal fishery capacity reduction program; (3) with respect to which employers under the plan participated in the Northeast Fisheries Assistance Program; and (4) with respect to which the annual normal cost is less than $100,000 and the plan is experiencing a funding deficiency on the date of enactment. The tax does not apply to any taxable year beginning before the earlier of (1) the taxable year in which the plan sponsor adopts a rehabilitation plan, or (2) the taxable year that contains January 1, 2009.

Effective Date

The provision is effective for any taxable year beginning before the earlier of (1) the taxable year in which the plan sponsor adopts a rehabilitation plan, or (2) the taxable year that contains January 1, 2009.

[81] Code sec. 4971.

H. Sunset of Multiemployer Plan Funding Provisions

Present Law

No provision.

Explanation of Provision

The provision directs the Secretary of Labor, the Secretary of Treasury, and the Executive Director of the PBGC, not later than December 31, 2011, to conduct a study of the effect of the changes made by the provision on the operation and funding status of multiemployer plans and report the results of the study, including recommendations for legislation, to Congress. The study must include (1) the effect of funding difficulties, funding rules in effect before the date of enactment, and the changes made by the provision on small businesses participating in multiemployer plans; (2) the effect on the financial status of small employers of funding targets set in funding improvement and rehabilitation plans and associated contribution increases, funding deficiencies, excise taxes, withdrawal liability, the possibility of alternative schedules and procedures for financially-troubled employers, and other aspects of the multiemployer system; and (3) the role of the multiemployer pension plan system in helping small employers to offer pension benefits.

The provision provides that the rules applicable to plans in endangered and critical status and the rules relating to the automatic amortization extension and shortfall funding method under the general funding rules for multiemployer plans do not apply to plan years beginning after December 31, 2014. The present-law rules are reinstated for such years except that funding improvement and rehabilitation plans and amortization schedules in effect at the time of the sunset continue.

Effective Date

The provision is effective on the date of enactment.

TITLE III: INTEREST RATE ASSUMPTIONS

A. Extension of Replacement of 30-Year Treasury Rates (secs. 302 and 4006 of ERISA, and sec. 412 of the Code)

The provisions relating to extension of the replacement of the 30-year Treasury rate for purposes of single-employer funding rules are described above, under Title I. The provision relating to extension of the replacement of the 30-year Treasury rate for PBGC premium purposes is described below, under Title IV.

B. Interest Rate Assumption for Determination of Lump-Sum Distributions (sec. 205(g) of ERISA and sec. 417(e) of the Code)

Present law

Accrued benefits under a defined benefit pension plan generally must be paid in the form of an annuity for the life of the participant unless the participant consents to a distribution in another form. Defined benefit pension plans generally provide that a participant may choose among other forms of benefit offered under the plan, such as a lump-sum distribution. These optional forms of benefit generally must be actuarially equivalent to the life annuity benefit payable to the participant.

A defined benefit pension plan must specify the actuarial assumptions that will be used in determining optional forms of benefit under the plan in a manner that precludes employer discretion in the assumptions to be used. For example, a plan may specify that a variable interest rate will be used in determining actuarial equivalent forms of benefit, but may not give the employer discretion to choose the interest rate.

Statutory interest and mortality assumptions must be used in determining the minimum value of certain optional forms of benefit, such as a lump sum. That is, the lump sum payable under the plan may not be less than the amount of the lump sum that is actuarially equivalent to the life annuity payable to the participant, determined using the statutory assumptions. The statutory assumptions consist of an applicable interest rate and an applicable mortality table (as published by the IRS).

The applicable interest rate is the annual interest rate on 30-year Treasury securities for the month before the date of distribution or such other time as prescribed by Treasury regulations. The regulations provide various options for determining the interest rate to be used under the plan, such as the period for which the interest rate will remain constant ("stability period") and the use of averaging.

The applicable mortality table is a mortality table based on the 1994 Group Annuity Reserving Table ("94 GAR"), projected through 2002.

An amendment of a qualified retirement plan may not decrease the accrued benefit of a plan participant.[82] This restriction is sometimes referred to as the "anticutback" rule and applies to benefits that have already accrued. For purposes of the anticutback rule, an amendment is also treated as reducing an accrued benefit if, with respect to benefits accrued before the amendment is adopted, the amendment has the effect of either (1) eliminating or reducing an early retirement benefit or a retirement-type subsidy, or (2) except as provided by Treasury regulations, eliminating an optional form of benefit.

[82] Code sec. 411(d)(6); ERISA sec. 204(g).

Explanation of Provision

The provision changes the interest rate and mortality table used in calculating the minimum value of certain optional forms of benefit, such as lump sums.[83]

Minimum value is calculated using the first, second, and third segment rates as applied under the funding rules, with certain adjustments, for the month before the date of distribution or such other time as prescribed by Treasury regulations. The adjusted first, second, and third segment rates are derived from a corporate bond yield curve prescribed by the Secretary of the Treasury for such month which reflects the yields on investment grade corporate bonds with varying maturities (rather than a 24-month average, as under the minimum funding rules). Thus, the interest rate that applies depends upon how many years in the future a participant's annuity payment will be made. Typically, a higher interest applies for payments made further out in the future.

A transition rule applies for distributions in 2008 through 2011. For distributions in 2008 through 2011, minimum lump-sum values are determined as the weighted average of two values: (1) the value of the lump sum determined under the methodology under present law (the "old" methodology); and (2) the value of the lump sum determined using the methodology applicable for 2008 and thereafter (the "new" methodology). For distributions in 2008, the weighting factor is 80 percent for the lump-sum value determined under the old methodology and 20 percent for the lump-sum determined under the new methodology. For distributions in 2009, the weighting factor is 60 percent for the lump-sum value determined under the old methodology and 40 percent for the lump-sum determined under the new methodology. For distributions in 2010, the weighting factor is 40 percent for the lump-sum value determined under the old methodology and 60 percent for the lump-sum determined under the new methodology. For distributions in 2011, the weighting factor is 20 percent for the lump-sum value determined under the old methodology and 80 percent for the lump-sum determined under the new methodology.

The mortality table that must be used for calculating lump sums under the bill is based on the mortality table required for minimum funding purposes under the bill, modified as appropriate by the Secretary of the Treasury. The Secretary is to prescribe gender-neutral tables for use in determining minimum lump sums.

Effective Date

The provision is effective for plan years beginning after December 31, 2007.

[83] Under the provision of the bill relating to plan amendments, if certain requirements are met, a plan amendment to implement the changes made to the minimum value requirements may be made retroactively and without violating the anticutback rule.

C. Interest Rate Assumption for Applying Benefit Limitations to Lump-Sum Distributions (sec. 415(b) of the Code)

Present Law

Annual benefits payable under a defined benefit pension plan generally may not exceed the lesser of (1) 100 percent of average compensation, or (2) $175,000 (for 2006). The dollar limit generally applies to a benefit payable in the form of a straight life annuity. If the benefit is not in the form of a straight life annuity (e.g., a lump sum), the benefit generally is adjusted to an equivalent straight life annuity. For purposes of adjusting a benefit in a form that is subject to the minimum value rules, such as a lump-sum benefit, the interest rate used generally must be not less than the greater of: (1) the rate applicable in determining minimum lump sums, i.e., the interest rate on 30-year Treasury securities; or (2) the interest rate specified in the plan. In the case of plan years beginning in 2004 or 2005, the interest rate used generally must be not less than the greater of: (1) 5.5 percent; or (2) the interest rate specified in the plan.[84]

An amendment of a qualified retirement plan may not decrease the accrued benefit of a plan participant.[85] This restriction is sometimes referred to as the "anticutback" rule and applies to benefits that have already accrued. For purposes of the anticutback rule, an amendment is also treated as reducing an accrued benefit if, with respect to benefits accrued before the amendment is adopted, the amendment has the effect of either (1) eliminating or reducing an early retirement benefit or a retirement-type subsidy, or (2) except as provided by Treasury regulations, eliminating an optional form of benefit.

Explanation of Provision

Under the bill, for purposes of adjusting a benefit in a form that is subject to the minimum value rules, such as a lump-sum benefit, the interest rate used generally must be not less than the greater of: (1) 5.5 percent; (2) the rate that provides a benefit of not more than 105 percent of the benefit that would be provided if the rate (or rates) applicable in determining minimum lump sums were used; or (3) the interest rate specified in the plan.[86]

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[84] In the case of a plan under which lump-sum benefits are determined solely as required under the minimum value rules (rather than using an interest rate that results in larger lump-sum benefits), the interest rate specified in the plan is the interest rate applicable under the minimum value rules. Thus, for purposes of applying the benefit limits to lump-sum benefits under the plan, the interest rate used must be not less than the greater of: (1) 5.5 percent; or (2) the interest rate applicable under the minimum value rules.

[85] Code sec. 411(d)(6); ERISA sec. 204(g).

[86] Under the provision of the bill relating to plan amendments, if certain requirements are met, a plan amendment to implement the change made to the interest rate used in adjusting a benefit in a form that is subject to the minimum value rules may be made retroactively and without violating the anticutback rule.

Effective Date

The provision is effective for years beginning after December 31, 2005.

TITLE IV: PBGC GUARANTEE AND RELATED PROVISIONS

A. PBGC Premiums (sec. 4006 of ERISA)

Present Law

The PBGC

The minimum funding requirements permit an employer to fund defined benefit plan benefits over a period of time. Thus, it is possible that a plan may be terminated at a time when plan assets are not sufficient to provide all benefits accrued by employees under the plan. In order to protect plan participants from losing retirement benefits in such circumstances, the Pension Benefit Guaranty Corporation ("PBGC"), a corporation within the Department of Labor, was created in 1974 under ERISA to provide an insurance program for benefits under most defined benefit plans maintained by private employers.

Termination of single-employer defined benefit plans

An employer may voluntarily terminate a single-employer plan only in a standard termination or a distress termination. The PBGC may also involuntarily terminate a plan (that is, the termination is not voluntary on the part of the employer).

A standard termination is permitted only if plan assets are sufficient to cover benefit liabilities. If assets in a defined benefit plan are not sufficient to cover benefit liabilities, the employer may not terminate the plan unless the employer (and members of the employer's controlled group) meets one of four criteria of financial distress.[87]

The PBGC may institute proceedings to terminate a plan if it determines that the plan in question has not met the minimum funding standards, will be unable to pay benefits when due, has a substantial owner who has received a distribution greater than $10,000 (other than by reason of death) while the plan has unfunded nonforfeitable benefits, or may reasonably be expected to increase PBGC's long-run loss unreasonably. The PBGC must institute proceedings to terminate a plan if the plan is unable to pay benefits that are currently due.

[87] The four criteria for a distress termination are: (1) the contributing sponsor, and every member of the controlled group of which the sponsor is a member, is being liquidated in bankruptcy or any similar Federal law or other similar State insolvency proceedings; (2) the contributing sponsor and every member of the sponsor's controlled group is being reorganized in bankruptcy or similar State proceeding; (3) the PBGC determines that termination is necessary to allow the employer to pay its debts when due; or (4) the PBGC determines that termination is necessary to avoid unreasonably burdensome pension costs caused solely by a decline in the employer's work force.

Guaranteed benefits

When an underfunded plan terminates, the amount of benefits that the PBGC will pay depends on legal limits, asset allocation, and recovery on the PBGC's employer liability claim. The PBGC guarantee applies to "basic benefits." Basic benefits generally are benefits accrued before a plan terminates, including (1) benefits at normal retirement age; (2) most early retirement benefits; (3) disability benefits for disabilities that occurred before the plan was terminated; and (4) certain benefits for survivors of plan participants. Generally only that part of the retirement benefit that is payable in monthly installments (rather than, for example, lump-sum benefits payable to encourage early retirement) is guaranteed.[88]

Retirement benefits that begin before normal retirement age are guaranteed, provided they meet the other conditions of guarantee (such as that before the date the plan terminates, the participant had satisfied the conditions of the plan necessary to establish the right to receive the benefit other than application for the benefit). Contingent benefits (for example, subsidized early retirement benefits) are guaranteed only if the triggering event occurs before plan termination.

For plans terminating in 2006, the maximum guaranteed benefit for an individual retiring at age 65 and receiving a single life annuity is $3,971.59 per month or $47,659.08 per year.[89] The dollar limit is indexed annually for inflation. The guaranteed amount is reduced for benefits starting before age 65.

The dollar limit is indexed annually for wage inflation. The guaranteed amount is reduced for benefits starting before age 65.

In the case of a plan or a plan amendment that has been in effect for less than five years before a plan termination, the amount guaranteed is phased in by 20 percent a year.[90]

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[88] ERISA sec. 4022(b) and (c).

[89] The PBGC generally pays the greater of the guaranteed benefit amount and the amount that was covered by plan assets when it terminated. Thus, depending on the amount of assets in the terminating plan, participants may receive more than the amount guaranteed by PBGC.

Special rules limit the guaranteed benefits of individuals who are substantial owners covered by a plans whose benefits have not been increased by reason of any plan amendment. A substantial owner generally is an individual who: (1) owns the entire interest in an unincorporated trade or business; (2) in the case of a partnership, is a partner who owns, directly or indirectly, more than 10 percent of either the capital interest or the profits interest in the partnership; (3) in the case of a corporation, owns, directly or indirectly, more than 10 percent in value of either the voting stock of the corporation or all the stock of the corporation; or (4) at any time within the preceding 60 months was a substantial owner under the plan. ERISA sec. 4022(b)(5).

[90] The phase in does not apply if the benefit is less than $20 per month.

PBGC premiums

In general

The PBGC is funded by assets in terminated plans, amounts recovered from employers who terminate underfunded plans, premiums paid with respect to covered plans, and investment earnings. All covered single-employer plans are required to pay a flat per-participant premium and underfunded plans are subject to an additional variable rate premium based on the level of underfunding. The amount of both the flat rate premium and the variable rate premium are set by statute; the premiums are not indexed for inflation.

Flat rate premium

Under the Deficit Reduction Act of 2005,[91] the flat-rate premium is $30 for plan years beginning after December, 31, 2005, with indexing after 2006 based on increases in average wages.

Variable rate premium

The variable rate premium is equal to $9 per $1,000 of unfunded vested benefits. "Unfunded vested benefits" is the amount which would be the unfunded current liability (as defined under the minimum funding rules) if only vested benefits were taken into account and if benefits were valued at the variable premium interest rate. No variable rate premium is imposed for a year if contributions to the plan for the prior year were at least equal to the full funding limit for that year.

In determining the amount of unfunded vested benefits, the interest rate used is generally 85 percent of the interest rate on 30 year Treasury securities for the month preceding the month in which the plan year begins (100 percent of the interest rate on 30 year Treasury securities for plan years beginning in 2002 and 2003). Under the Pension Funding Equity Act of 2004, in determining the amount of unfunded vested benefits for plan years beginning after December 31, 2003, and before January 1, 2006, the interest rate used is 85 percent of the annual rate of interest determined by the Secretary of the Treasury on amounts invested conservatively in long term investment-grade corporate bonds for the month preceding the month in which the plan year begins.

Termination premium

Under the Deficit Reduction Act of 2005, a new premium generally applies in the case of certain plan terminations occurring after 2005 and before 2011. A premium of $1,250 per participant is imposed generally for the year of the termination and each of the following two years. The premium applies in the case of a plan termination by the PBGC or a distress termination due to reorganization in bankruptcy, the inability of the employer to pay its debts when due, or a determination that a termination is necessary to avoid unreasonably burdensome

[91] Pub. L. No. 109-171, enacted February 8, 2006.

pension costs caused solely by a decline in the workforce. In the case of a termination due to reorganization, the liability for the premium does not arise until the employer is discharged from the reorganization proceeding. The premium does not apply with respect to a plan terminated during bankruptcy reorganization proceedings pursuant to a bankruptcy filing before October 18, 2005.

Explanation of Provision

Variable rate premium

For 2006 and 2007, the bill extends the present-law rule under which, in determining the amount of unfunded vested benefits for variable rate premium purposes, the interest rate used is 85 percent of the annual rate of interest determined by the Secretary of the Treasury on amounts invested conservatively in long term investment-grade corporate bonds for the month preceding the month in which the plan year begins.

Beginning in 2008, the determination of unfunded vested benefits for purposes of the variable rate premium is modified to reflect the changes to the funding rules of the provision. Thus, under the provision, unfunded vested benefits are equal to the excess (if any) of (1) the plan's funding target[92] for the year determined as under the minimum funding rules, but taking into account only vested benefits over (2) the fair market value of plan assets. In valuing unfunded vested benefits the interest rate is the first, second, and third segment rates which would be determined under the funding rules of the provision, if the segment rates were based on the yields of corporate bond rates, rather than a 24-month average of such rates. Under the bill, deductible contributions are no longer limited by the full funding limit; thus, the rule providing that no variable rate premium is required if contributions for the prior plan year were at least equal to the full funding limit no longer applies under the provision.

Termination premium

The bill makes permanent the termination premium enacted in the Deficit Reduction Act of 2005.

Effective Date

The extension of the present-law interest rate for purposes of calculating the variable rate premium is effective for plan years beginning in 2006 and 2007. The modifications to the variable rate premium are effective for plan years beginning after December 31, 2007. The provision extending the termination premium is effective on the date of enactment.

[92] The assumptions used in determining funded target are the same as under the minimum funding rules. Thus, for a plan in at-risk status, the at-risk assumptions are used.

B. Special Funding Rules for Plans Maintained by Commercial Airlines

Present Law

Minimum funding rules in general

Single-employer defined benefit pension plans are subject to minimum funding requirements under the Employee Retirement Income Security Act of 1974 ("ERISA") and the Internal Revenue Code (the "Code").[93] The amount of contributions required for a plan year under the minimum funding rules is generally the amount needed to fund benefits earned during that year plus that year's portion of other liabilities that are amortized over a period of years, such as benefits resulting from a grant of past service credit. The amount of required annual contributions is determined under one of a number of acceptable actuarial cost methods. Additional contributions are required under the deficit reduction contribution rules in the case of certain underfunded plans. No contribution is required under the minimum funding rules in excess of the full funding limit. A detailed description of the present-law funding rules is provided in Title I, above.

Notice of certain plan amendments

A notice requirement must be met if an amendment to a defined benefit pension plan provides for a significant reduction in the rate of future benefit accrual. In that case, the plan administrator must furnish a written notice concerning the amendment. Notice may also be required if a plan amendment eliminates or reduces an early retirement benefit or retirement-type subsidy. The plan administrator is required to provide the notice to any participant or alternate payee whose rate of future benefit accrual may reasonably be expected to be significantly reduced by the plan amendment (and to any employee organization representing affected participants). The notice must be written in a manner calculated to be understood by the average plan participant and must provide sufficient information to allow recipients to understand the effect of the amendment. In the case of a single-employer plan, the plan administrator is generally required to provide the notice at least 45 days before the effective date of the plan amendment. In the case of a multiemployer plan, the notice is generally required to be provided 15 days before the effective date of the plan amendment.

PBGC termination insurance program

The minimum funding requirements permit an employer to fund defined benefit plan benefits over a period of time. Thus, it is possible that a plan may be terminated at a time when plan assets are not sufficient to provide all benefits accrued by employees under the plan. In order to protect plan participants from losing retirement benefits in such circumstances, the PBGC guarantees basic benefits under most defined benefit plans. When an underfunded plan terminates, the amount of benefits that the PBGC will pay depends on legal limits, asset

[93] Code sec. 412. The minimum funding rules also apply to multiemployer plans, but the rules for multiemployer plans differ in various respects from the rules applicable to single-employer plans.

allocation, and recovery on the PBGC's employer liability claim. There is a dollar limit on the amount of otherwise guaranteed benefits based on the year in which the plan terminates. For plans terminating in 2006, the maximum guaranteed benefit for an individual retiring at age 65 and receiving a single life annuity is $3,971.59 per month or $47,659.08 per year.[94] The dollar limit is indexed annually for inflation. The guaranteed amount is reduced for benefits starting before age 65. In the case of a plan or a plan amendment that has been in effect for less than five years before a plan termination, the amount guaranteed is phased in by 20 percent a year.[95]

Termination premiums

Under the Deficit Reduction Act of 2005, a new premium generally applies in the case of certain plan terminations occurring after 2005 and before 2011. A premium of $1,250 per participant is imposed generally for the year of the termination and each of the following two years. The premium applies in the case of a plan termination by the PBGC or a distress termination due to reorganization in bankruptcy, the inability of the employer to pay its debts when due, or a determination that a termination is necessary to avoid unreasonably burdensome pension costs caused solely by a decline in the workforce. In the case of a termination due to reorganization, the liability for the premium does not arise until the employer is discharged from the reorganization proceeding. The premium does not apply with respect to a plan terminated during bankruptcy reorganization proceedings pursuant to a bankruptcy filing before October 18, 2005.

Minimum coverage requirements

The Code imposes minimum coverage requirements on qualified retirement plans in order to ensure that plans cover a broad cross section of employees.[96] In general, the minimum coverage requirements are satisfied if one of the following criteria are met: (1) the plan benefits at least 70 percent of employees who are not highly compensated employees; (2) the plan benefits a percentage of employees who are not highly compensated employees which is at least

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[94] The PBGC generally pays the greater of the guaranteed benefit amount and the amount that was covered by plan assets when it terminated. Thus, depending on the amount of assets in the terminating plan, participants may receive more than the amount guaranteed by PBGC.

Special rules limit the guaranteed benefits of individuals who are substantial owners covered by a plans whose benefits have not been increased by reason of any plan amendment. A substantial owner generally is an individual who: (1) owns the entire interest in an unincorporated trade or business; (2) in the case of a partnership, is a partner who owns, directly or indirectly, more than 10 percent of either the capital interest or the profits interest in the partnership; (3) in the case of a corporation, owns, directly or indirectly, more than 10 percent in value of either the voting stock of the corporation or all the stock of the corporation; or (4) at any time within the preceding 60 months was a substantial owner under the plan. ERISA sec. 4022(b)(5).

[95] The phase in does not apply if the benefit is less than $20 per month.

[96] Code sec. 410(b).

70 percent of the percentage of highly compensated employees participating under the plan; or (3) the plan meets the average benefits test.

Certain employees may be disregarded in applying the minimum coverage requirements. Under one exclusion, in the case of a plan established or maintained pursuant to an agreement which the Secretary of Labor finds to be a collective bargaining agreement between air pilots represented in accordance with title II of the Railway Labor Act and one or more employers, all employees not covered by such agreement may be disregarded. This exclusion does not apply in the case of a plan which provides contributions or benefits for employees whose principal duties are not customarily performed aboard aircraft in flight.

Alternative deficit reduction contribution for certain plans

Under present law, certain employers ("applicable employers") may elect a reduced amount of additional required contribution under the deficit reduction contribution rules (an "alternative deficit reduction contribution") with respect to certain plans for applicable plan years. An applicable plan year is a plan year beginning after December 27, 2003, and before December 28, 2005, for which the employer elects a reduced contribution. If an employer so elects, the amount of the additional deficit reduction contribution for an applicable plan year is the greater of: (1) 20 percent of the amount of the additional contribution that would otherwise be required; or (2) the additional contribution that would be required if the deficit reduction contribution for the plan year were determined as the expected increase in current liability due to benefits accruing during the plan year.

An applicable employer is an employer that is: (1) a commercial passenger airline; (2) primarily engaged in the production or manufacture of a steel mill product, or the processing of iron ore pellets; or (3) an organization described in section 501(c)(5) that established the plan for which an alternative deficit reduction contribution is elected on June 30, 1955.

Explanation of Provision

In general

The provision provides special funding rules for certain eligible plans. For purposes of the provision, an eligible plan is a single-employer defined benefit pension plan sponsored by an employer that is a commercial passenger airline or the principal business of which is providing catering services to a commercial passenger airline.

The plan sponsor of an eligible plan may make one of two alternative elections. In the case of a plan that meets certain benefit accrual and benefit increase restrictions, an election allowing a 17-year amortization of the plan's unfunded liability is available. A plan that does not meet such requirements may elect to use a 10-year amortization period in amortizing the plan's shortfall amortization base for the first taxable year beginning in 2008.

Election for plans that meet benefit accrual and benefit increase restriction requirements

In general

Under the provision, if an election of a 17-year amortization period is made with respect to an eligible plan for a plan year (an "applicable" plan year), the minimum required contribution is determined under a special method.[97] If minimum required contributions as determined under the provision are made: (1) for an applicable plan year beginning before January 1, 2008 (for which the present-law funding rules apply), the plan does not have an accumulated funding deficiency; and (2) for an applicable plan year beginning on or after January 1, 2008 (for which the funding rules under the provision apply), the minimum required contribution is the contribution determined under the provision.

The employer may select either a plan year beginning in 2006 or 2007 as the first plan year to which the election applies. The election applies to such plan year and all subsequent plan years, unless the election is revoked with the approval of the Secretary of the Treasury. The election must be made (1) no later than December 31, 2006, in the case of an election for a plan year beginning in 2006, or (2) not later than December 31, 2007, in the case of a plan year beginning in 2007. An election under the provision must be made in such manner as prescribed by the Secretary of the Treasury. The employer may change the plan year with respect to the plan by specifying a new plan year in the election. Such a change in plan year does not require approval of the Secretary of the Treasury.

Determination of required contribution

Under the provision, the minimum required contribution for any applicable plan year during the amortization period is the amount required to amortize the plan's unfunded liability, determined as of the first day of the plan year, in equal annual installments over the remaining amortization period. For this purpose, the amortization period is the 17-plan-year period beginning with the first applicable plan year. Thus, the annual amortization amount is redetermined each year, based on the plan's unfunded liability at that time and the remainder of the amortization period. For any plan years beginning after the end of the amortization period, the plan is subject to the generally applicable minimum funding rules (as provided under the bill, including the benefit limitations applicable to underfunded plans). The plan's prefunding balance and funding standard carryover balance as of the first day of the first year beginning after the end of the amortization period is zero.[98]

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[97] Any charge or credit in the funding standard account determined under the present-law rules or any prefunding balance or funding standard carryover balance (determined under the funding provisions of the bill) as of the end of the last year preceding the first applicable year is reduced to zero.

[98] If an election to use the special method is revoked before the end of the amortization period, the plan is subject to the generally applicable minimum funding rules beginning with the first plan year for which the election is revoked, and the plan's prefunding balance as of the beginning of that year is zero.

Any waived funding deficiency as of the day before the first day of the first applicable plan year is deemed satisfied and the amount of such waived funding deficiency must be taken into account in determining the plan's unfunded liability under the provision. Any plan amendment adopted to satisfy the benefit accrual restrictions of the provision (discussed below) or any increase in benefits provided to such plan's participants under a defined contribution or multiemployer plan will not be deemed to violate the prohibition against benefit increases during a waiver period.[99]

For purposes of the provision, a plan's unfunded liability is the unfunded accrued liability under the plan, determined under the unit credit funding method. As under present law, minimum required contributions (including the annual amortization amount) under the provision must be determined using actuarial assumptions and methods, each of which is reasonable (taking into account the experience of the plan and reasonable expectations), or which, in the aggregate, result in a total plan contribution equivalent to a contribution that would be obtained if each assumption and method were reasonable. The assumptions are required also to offer the actuary's best estimate of anticipated experience under the plan. Under the election, a rate of interest of 8.85 percent is used in determining the plan's accrued liability. The value of plan assets used must be the fair market value.

If any applicable plan year with respect to an eligible plan using the special method includes the date of enactment of the provision and a plan was spun off from such eligible plan during the plan year, but before the date of enactment, the minimum required contribution under the special method for the applicable plan year is an aggregate amount determined as if the plans were a single plan for that plan year (based on the full 12-month plan year in effect prior to the spin off). The employer is to designate the allocation of the aggregate amount between the plans for the applicable plan year.

Benefit accrual and benefit increase restrictions

Benefit accrual restrictions. - Under the provision, effective as of the first day of the first applicable plan year and at all times thereafter while an election under the provision is in effect, an eligible plan must include two accrual restrictions. First, the plan must provide that, with respect to each participant: (1) the accrued benefit, any death or disability benefit, and any social security supplement are frozen at the amount of the benefit or supplement immediately before such first day; and (2) all other benefits under the plan are eliminated. However, such freezing or elimination of benefits or supplements is required only to the extent that it would be permitted under the anticutback rule if implemented by a plan amendment adopted immediately before such first day.

Second, if an accrued benefit of a participant has been subject to the limitations on benefits under section 415 of the Code and would otherwise be increased if such limitation is increased, the plan must provide that, effective as of the first day of the first applicable plan year

[99] ERISA sec. 304(b); Code sec. 412(f).

(or, if later, the date of enactment) any such increase will not take effect. The plan does not fail to meet the anticutback rule solely because the plan is amended to meet this requirement.

Benefit increase restriction. – No applicable benefit increase under an eligible plan may take effect at any time during the period beginning on July 26, 2005, and ending on the day before the first day of the first applicable plan year. For this purpose, an applicable benefit increase is any increase in liabilities of the plan by plan amendment (or otherwise as specified by the Secretary) which would occur by reason of: (1) any increase in benefits; (2) any change in the accrual of benefits; or (3) any change in the rate at which benefits become nonforfeitable under the plan.

Exception for imputed disability service.– The benefit accrual and benefit increase restrictions do not apply to any accrual or increase with respect to imputed serviced provided to a participant during any period of the participant's disability occurring on or after the effective date of the plan amendment providing for the benefit accrual restrictions (on or after July 26, 2005, in the case of benefit increase restrictions) if the participant was: (1) was receiving disability benefits as of such date or (2) was receiving sick pay and subsequently determined to be eligible for disability benefits as of such date.

Rules relating to PBGC guarantee and plan terminations

Under the provision, if a plan to which an election applies is terminated before the end of the 10-year period beginning on the first day of the first applicable plan year, certain aspects of the PBGC guarantee provisions are applied as if the plan terminated on the first day of the first applicable plan year. Specifically, the amount of guaranteed benefits payable by the PBGC is determined based on plan assets and liabilities as of the assumed termination date. The difference between the amount of guaranteed benefits determined as of the assumed termination date and the amount of guaranteed benefits determined as of the actual termination date is to be paid from plan assets before other benefits.

The provision of the bill under which defined benefit plans that are covered by the PBGC insurance program are not taken into account in applying the overall limit on deductions for contributions to combinations of defined benefit and defined contribution plans, does not apply to an eligible plan to which the special method applies. Thus, the overall deduction limit applies.

In the case of notice required with respect to an amendment that is made to an eligible plan maintained pursuant to one or more collective bargaining agreements in order to comply with the benefit accrual and benefit increase restrictions under the provision, the provision allows the notice to be provided 15 days before the effective date of the plan amendment.

Termination premiums

If a plan terminates during the five-year period beginning on the first day of the first applicable plan year, termination premiums are imposed at a rate of $2,500 per participant (in lieu of the present-law $1,250 amount). The increased termination premium applies notwithstanding that a plan was terminated during bankruptcy reorganization proceedings pursuant to a bankruptcy filing before October 18, 2005 (i.e., the present-law grandfather rule does not apply).

The Secretary of Labor may waive the additional termination premium if the Secretary determines that the termination occurred as the result of extraordinary circumstances such as a terrorist attack or other similar event. It is intended that extraordinary circumstances means a substantial, system-wide adverse effect on the airline industry such as the terrorist attack which occurred on September 11, 2001. It is intended that the waiver of the additional premiums occur only in rare and unpredictable events. Extraordinary circumstances would not include a mere economic event such as the high price of oil or fuel, or a downturn in the market.

Alternative election in the case of plans not meeting benefit accrual and benefit increase restrictions

In lieu of the election above, a plan sponsor may elect, for the first taxable year beginning in 2008, to amortize the shortfall amortization base for such taxable year over a period of 10 plan years (rather than seven plan years) beginning with such plan year. Under such election, the benefit accrual, benefit increase and other restrictions discussed above do not apply. This 10-year amortization election must be made by December 31, 2007.

Authority of Treasury to disqualify successor plans

If either election is made under the provision and the eligible plan is maintained by an employer that establishes or maintains one or more other single-employer defined benefit plans, and such other plans in combination provide benefit accruals to any substantial number of successor employees, the Secretary of Treasury may disqualify such successor plans unless all benefit obligations of the eligible plan have been satisfied. Successor employees include any employee who is or was covered by the eligible plan and any employee who performs substantially the same type of work with respect to the same business operations as an employee covered by the eligible plan.

Alternative deficit reduction contribution for certain plans

In the case of an employer which is a commercial passenger airline, the provision extends the alternative deficit reduction contributions rules to plan years beginning before December 28, 2007.

Application of minimum coverage rules

In applying the minimum coverage rules to a plan, management pilots who are not represented in accordance with title II of the Railway Labor Act are treated as covered by a collective bargaining agreement if the management pilots manage the flight operations of air pilots who are so represented and the management pilots are, pursuant to the terms of the agreement, included in the group of employees benefiting under the plan.

The exclusion under the minimum coverage rules for air pilots represented in accordance with title II of the Railway Labor Act does not apply in the case of a plan which provides contributions or benefits for employees whose principal duties are not customarily performed aboard an aircraft in flight (other than management pilots described above).

Effective Date

The provision is effective for plan years ending after the date of enactment except that the modifications to the minimum coverage rules apply to years beginning before, on, or after the date of enactment.

C. Limitations on PBGC Guarantee of Shutdown and Other Benefits (sec. 4022 of ERISA)

Present Law

A plan may provide for unpredictable contingent event benefits, which are benefits that depend on contingencies that are not reliably and reasonably predictable, such as facility shutdowns or reductions in workforce. Under present law, unpredictable contingent event benefits generally are not taken into account for funding purposes until the event has occurred.

Under present law, defined benefit pension plans are not permitted to provide "layoff" benefits (i.e., severance benefits).[100] However, defined benefit pension plans may provide subsidized early retirement benefits, including early retirement window benefits.[101]

Within certain limits, the PBGC guarantees any retirement benefit that was vested on the date of plan termination (other than benefits that vest solely on account of the termination), and any survivor or disability benefit that was owed or was in payment status at the date of plan termination.[102] Generally only that part of the retirement benefit that is payable in monthly installments is guaranteed.[103]

Retirement benefits that begin before normal retirement age are guaranteed, provided they meet the other conditions of guarantee (such as that, before the date the plan terminates, the participant had satisfied the conditions of the plan necessary to establish the right to receive the benefit other than application for the benefit). Contingent benefits (for example, early retirement benefits provided only if a plant shuts down) are guaranteed only if the triggering event occurs before plan termination.

In the case of a plan or a plan amendment that has been in effect for less than five years before a plan termination, the amount guaranteed is phased in by 20 percent a year.

Explanation of Provision

Under the bill, the PBGC guarantee applies to unpredictable contingent event benefits as if a plan amendment had been adopted on the date the event giving rise to the benefits occurred. An unpredictable contingent event benefit is defined as under the benefit limitations applicable to single-employer plans (described above) and means a benefit payable solely by reason of (1) a plant shutdown (or similar event as determined by the Secretary of the Treasury), or (2) an event other than the attainment of any age, performance of any service, receipt or derivation of any compensation, or occurrence of death or disability.

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[100] Treas. Reg. sec. 1.401-1(b)(1)(i).

[101] Treas. Reg. secs. 1.401(a)(4)-3(f)(4) and 1.411(a)-7(c).

[102] ERISA sec. 4022(a).

[103] ERISA sec. 4022(b) and (c).

Effective Date

The provision applies to benefits that become payable as a result of an event which occurs after July 26, 2005.

D. Rules Relating to Bankruptcy of the Employer (secs. 4022 and 4044 of ERISA)

Present Law

Guaranteed benefits

When an underfunded plan terminates, the amount of benefits that the PBGC will pay depends on legal limits, asset allocation, and recovery on the PBGC's employer liability claim. The PBGC guarantee applies to "basic benefits." Basic benefits generally are benefits accrued before a plan terminates, including (1) benefits at normal retirement age; (2) most early retirement benefits; (3) disability benefits for disabilities that occurred before the plan was terminated; and (4) certain benefits for survivors of plan participants. Generally only that part of the retirement benefit that is payable in monthly installments is guaranteed.[104]

Retirement benefits that begin before normal retirement age are guaranteed, provided they meet the other conditions of guarantee (such as that before the date the plan terminates, the participant had satisfied the conditions of the plan necessary to establish the right to receive the benefit other than application for the benefit). Contingent benefits (for example, subsidized early retirement benefits) are guaranteed only if the triggering event occurs before plan termination.

For plans terminating in 2006, the maximum guaranteed benefit for an individual retiring at age 65 and receiving a single life annuity is $3,971.59 per month or $47,659.08 per year.[105] The dollar limit is indexed annually for inflation. The guaranteed amount is reduced for benefits starting before age 65.

In the case of a plan or a plan amendment that has been in effect for less than five years before a plan termination, the amount guaranteed is phased in by 20 percent a year.[106]

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[104] ERISA sec. 4022(b) and (c).

[105] The PBGC generally pays the greater of the guaranteed benefit amount and the amount that was covered by plan assets when it terminated. Thus, depending on the amount of assets in the terminating plan, participants may receive more than the amount guaranteed by PBGC.

Special rules limit the guaranteed benefits of individuals who are substantial owners covered by a plans whose benefits have not been increased by reason of any plan amendment. A substantial owner generally is an individual who: (1) owns the entire interest in an unincorporated trade or business; (2) in the case of a partnership, is a partner who owns, directly or indirectly, more than 10 percent of either the capital interest or the profits interest in the partnership; (3) in the case of a corporation, owns, directly or indirectly, more than 10 percent in value of either the voting stock of the corporation or all the stock of the corporation; or (4) at any time within the preceding 60 months was a substantial owner under the plan. ERISA sec. 4022(b)(5).

[106] The phase in does not apply if the benefit is less than $20 per month.

Asset allocation

ERISA contains rules for allocating the assets of a single-employer plan when the plan terminates. Plan assets available to pay for benefits under a terminating plan include all plan assets remaining after subtracting all liabilities (other than liabilities for future benefit payments), paid or payable from plan assets under the provisions of the plan. On termination, the plan administrator must allocate plan assets available to pay for benefits under the plan in the manner prescribed by ERISA. In general, plan assets available to pay for benefits under the plan are allocated to six priority categories. If the plan has sufficient assets to pay for all benefits in a particular priority category, the remaining assets are allocated to the next lower priority category. This process is repeated until all benefits in the priority categories are provided or until all available plan assets have been allocated.

Explanation of Provision

Under the bill, the amount of guaranteed benefits payable by the PBGC is frozen when a contributing sponsor enters bankruptcy or a similar proceeding.[107] If the plan terminates during the contributing sponsor's bankruptcy, the amount of guaranteed benefits payable by the PBGC is determined based on plan provisions, salary, service, and the guarantee in effect on the date the employer entered bankruptcy. The priority among participants for purposes of allocating plan assets and employer recoveries to non-guaranteed benefits in the event of plan termination is determined as of the date the sponsor enters bankruptcy or a similar proceeding.

A contributing sponsor of a single-employer plan is required to notify the plan administrator when the sponsor enters bankruptcy or a similar proceeding. Within a reasonable time after a plan administrator knows or has reason to know that a contributing sponsor has entered bankruptcy (or similar proceeding), the administrator is required to notify plan participants and beneficiaries of the bankruptcy and the limitations on benefit guarantees if the plan is terminated while underfunded, taking into account the bankruptcy.

The Secretary of Labor is to prescribe the form and manner of notices required under this provision. The notice is to be written in a manner calculated to be understood by the average plan participant and may be delivered in written, electronic, or other appropriate form to the extent that such form is reasonably accessible to the applicable individual.

The Secretary of Labor may assess a civil penalty of up to $100 a day for each failure to provide the notice required by the provision. Each violation with respect to any single participant or beneficiary is treated as a separate violation.

[107] For purposes of the provision, a contributing sponsor is considered to have entered bankruptcy if the sponsor files or has had filed against it a petition seeking liquidation or reorganization in a case under title 11 of the United States Code or under any similar Federal law or law of a State or political subdivision.

Effective Date

The provision is effective with respect to Federal bankruptcy or similar proceedings or arrangements for the benefit of creditors which are initiated on or after the date that is 30 days after enactment.

E. PBGC Premiums for Small Plans (sec. 4006 of ERISA)

Present Law

Under present law, the Pension Benefit Guaranty Corporation ("PBGC") provides insurance protection for participants and beneficiaries under certain defined benefit pension plans by guaranteeing certain basic benefits under the plan in the event the plan is terminated with insufficient assets to pay benefits promised under the plan. The guaranteed benefits are funded in part by premium payments from employers who sponsor defined benefit pension plans. The amount of the required annual PBGC premium for a single-employer plan is generally a flat rate premium of $19 per participant and an additional variable-rate premium based on a charge of $9 per $1,000 of unfunded vested benefits. Unfunded vested benefits under a plan generally means (1) the unfunded current liability for vested benefits under the plan, over (2) the value of the plan's assets, reduced by any credit balance in the funding standard account. No variable-rate premium is imposed for a year if contributions to the plan were at least equal to the full funding limit.

The PBGC guarantee is phased in ratably in the case of plans that have been in effect for less than five years, and with respect to benefit increases from a plan amendment that was in effect for less than five years before termination of the plan.

Explanation of Provision

In the case of a plan of a small employer, the per participant variable-rate premium is no more than $5 multiplied by the number of plan participants in the plan at the end of the preceding plan year. For purposes of the provision, a small employer is a contributing sponsor that, on the first day of the plan year, has 25 or fewer employees. For this purpose, all employees of the members of the controlled group of the contributing sponsor are to be taken into account. In the case of a plan to which more than one unrelated contributing sponsor contributed, employees of all contributing sponsors (and their controlled group members) are to be taken into account in determining whether the plan was a plan of a small employer. For example, under the provision, in the case of a plan with 20 participants, the total variable rate premium is not more than $2,000, that is, (20 x $5) x 20.

Effective Date

The provision applies to plan years beginning after December 31, 2006.

F. Authorization for PBGC to Pay Interest on Premium Overpayment Refunds (sec. 4007(b) of ERISA)

Present Law

The PBGC charges interest on underpayments of premiums, but is not authorized to pay interest on overpayments.

Explanation of Provision

The provision allows the PBGC to pay interest on overpayments made by premium payors. Interest paid on overpayments is to be calculated at the same rate and in the same manner as interest charged on premium underpayments.

Effective Date

The provision is effective with respect to interest accruing for periods beginning not earlier than the date of enactment.

G. Rules for Substantial Owner Benefits in Terminated Plans (secs. 4021, 4022, 4043, and 4044 of ERISA)

Present Law

Under present law, the Pension Benefit Guaranty Corporation ("PBGC") provides participants and beneficiaries in a defined benefit pension plan with certain minimal guarantees as to the receipt of benefits under the plan in case of plan termination. The employer sponsoring the defined benefit pension plan is required to pay premiums to the PBGC to provide insurance for the guaranteed benefits. In general, the PBGC will guarantee all basic benefits which are payable in periodic installments for the life (or lives) of the participant and his or her beneficiaries and are non-forfeitable at the time of plan termination. The amount of the guaranteed benefit is subject to certain limitations. One limitation is that the plan (or an amendment to the plan which increases benefits) must be in effect for 60 months before termination for the PBGC to guarantee the full amount of basic benefits for a plan participant, other than a substantial owner. In the case of a substantial owner, the guaranteed basic benefit is phased in over 30 years beginning with participation in the plan. A substantial owner is one who owns, directly or indirectly, more than 10 percent of the voting stock of a corporation or all the stock of a corporation. Special rules restricting the amount of benefit guaranteed and the allocation of assets also apply to substantial owners.

Explanation of Provision

The provision provides that the 60-month phase-in of guaranteed benefits applies to a substantial owner with less than 50 percent ownership interest. For a substantial owner with a 50 percent or more ownership interest ("majority owner"), the phase-in occurs over a 10-year period and depends on the number of years the plan has been in effect. The majority owner's guaranteed benefit is limited so that it cannot be more than the amount phased in over 60 months for other participants. The rules regarding allocation of assets apply to substantial owners, other than majority owners, in the same manner as other participants.

Effective Date

The provision is effective for plan terminations with respect to which notices of intent to terminate are provided, or for which proceedings for termination are instituted by the PBGC, after December 31, 2005.

H. Acceleration of PBGC Computation of Benefits Attributable to Recoveries from Employers (secs. 4022(c) and 4062(c) of ERISA)

Present Law

In general

The Pension Benefit Guaranty Corporation ("PBGC") provides insurance protection for participants and beneficiaries under certain defined benefit pension plans by guaranteeing certain basic benefits under the plan in the event the plan is terminated with insufficient assets to pay promised benefits.[108] The guaranteed benefits are funded in part by premium payments from employers who sponsor defined benefit plans. In general, the PBGC guarantees all basic benefits which are payable in periodic installments for the life (or lives) of the participant and his or her beneficiaries and are non-forfeitable at the time of plan termination. For plans terminating in 2006, the maximum guaranteed benefit for an individual retiring at age 65 and receiving a straight life annuity is $3971.59 per month, or $47,659.08 per year.

The PBGC pays plan benefits, subject to the guarantee limits, when it becomes trustee of a terminated plan. The PBGC also pays amounts in addition to the guarantee limits ("additional benefits") if there are sufficient plan assets, including amounts recovered from the employer for unfunded benefit liabilities and contributions owed to the plan. The employer (including members of its controlled group) is statutorily liable for these amounts.

Plan underfunding recoveries

The PBGC's recoveries on its claims for unfunded benefit liabilities are shared between the PBGC and plan participants. The amounts recovered are allocated partly to the PBGC to help cover its losses for paying unfunded guaranteed benefits and partly to participants to help cover the loss of benefits that are above the PBGC's guarantees and are not funded. In determining the portion of the recovered amounts that will be allocated to participants, present law specifies the use of a recovery ratio based on plan terminations during a specified period, rather than the actual amount recovered for each specific plan. The recovery ratio that applies to a plan includes the PBGC's actual recovery experience for plan terminations in the five-Federal fiscal year period immediately preceding the Federal fiscal year in which falls the notice of intent to terminate for the particular plan.

The recovery ratio is used for all but very large plans taken over by the PBGC. For a very large plan (i.e., a plan for which participants' benefit losses exceed $20 million) actual recovery amounts with respect to the specific plan are used to determine the portion of the amounts recovered that will be allocated to participants.

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[108] The PBGC termination insurance program does not cover plans of professional service employers that have fewer than 25 participants.

Recoveries for due and unpaid employer contributions

Amounts recovered from an employer for contributions owed to the plan are treated as plan assets and are allocated to plan benefits in the same manner as other assets in the plan's trust on the plan termination date. The amounts recovered are determined on a plan-specific basis rather than based on an historical average recovery ratio.

Explanation of Provision

The bill changes the five-year period used to determine the recovery ratio for unfunded benefit liabilities so that the period begins two years earlier. Thus, under the bill, the recovery ratio that applies to a plan includes the PBGC's actual recovery experience for plan terminations in the five-Federal fiscal year period ending with the third fiscal year preceding the fiscal year in which falls the notice of intent to terminate for the particular plan.

In addition, the provision creates a recovery ratio for determining amounts recovered for contributions owed to the plan, based on the PBGC's recovery experience over the same five-year period.

The provision does not apply to very large plans (i.e., plans for which participants' benefit losses exceed $20 million). As under present law, in the case of a very large plan, actual amounts recovered for unfunded benefit liabilities and for contributions owed to the plan are used to determine the amount available to provide additional benefits to participants.

Effective Date

The provision is effective for any plan termination for which notices of intent to terminate are provided (or, in the case of a termination by the PBGC, a notice of determination that the plan must be terminated is issued) on or after the date that is 30 days after the date of enactment.

I. Treatment of Certain Plans Where There is a Cessation or Change in Membership of a Controlled Group (sec. 4041(b) of ERISA)

Present Law

An employer may voluntarily terminate a single-employer plan only in a standard termination or a distress termination. A standard termination is permitted only if plan assets are sufficient to cover benefit liabilities. Benefit liabilities are defined generally as the present value of all benefits due under the plan (this amount is referred to as "termination liability"). This present value is determined using interest and mortality assumptions prescribed by the PBGC.

Explanation of Provision

Under the bill, if: (1) there is a transaction or series of transactions which result in a person ceasing to be a member of a controlled group; (2) such person, immediately before the transaction or series of transactions maintained a single-employer defined benefit plan which is fully funded then the interest rate used in determining whether the plan is sufficient for benefit liabilities or to otherwise assess plan liabilities for purposes of section 4041(b) or section 4042(a)(4) shall not be less than the interest rate used in determining whether the plan is fully funded.

The provision does not apply to any transaction or series of transactions unless (1) any employer maintaining the plan immediately before or after such transactions or series of transactions (a) has a outstanding senior unsecured debt instrument which is rated investment grade by each of the nationally recognized statistical rating organizations for corporate bonds that has issued a credit rating for such instrument, or (b) if no such debt instrument of such employer has been rated by such an organization but one or more of such organizations has made an issuer credit rating for such employer, all such organizations which have so rated the employer have rated such employer investment grade and (2) the employer maintaining the plan after the transaction or series of transaction employs at least 20 percent of the employees located within United States who were employed by such employer immediately before the transaction or series of transactions.

The provision does not apply in the case of determinations of liabilities by the PBGC or a court if the plan is terminated within two years of the transaction (or first transaction in a series of transactions).

For purposes of the provision, a plan is considered fully funded with respect to a transaction or series of transactions if (1) in the case of a transaction or series of transactions which occur in a plan year beginning before January 1, 2008, the funded current liability percentage for the plan year (determined under the minimum funding rules) is at least 100 percent, or (2) in the case of a transaction or series of transactions which occur on or after January 1, 2008, the funding target attainment percentage (as determined under the minimum funding rules) as of the valuation date for the plan year is at least 100 percent.

Effective Date

The provision applies to transactions or series of transactions occurring on or after the date of enactment.

J. Missing Participants (sec. 4050 of ERISA)

Present Law

In the case of a defined benefit pension plan that is subject to the plan termination insurance program under Title IV of the Employee Retirement Income Security Act of 1974 ("ERISA"), is maintained by a single employer, and terminates under a standard termination, the plan administrator generally must purchase annuity contracts from a private insurer to provide the benefits to which participants are entitled and distribute the annuity contracts to the participants.

If the plan administrator of a terminating single employer plan cannot locate a participant after a diligent search (a "missing participant"), the plan administrator may satisfy the distribution requirement only by purchasing an annuity from an insurer or transferring the participant's designated benefit to the Pension Benefit Guaranty Corporation ("PBGC"), which holds the benefit of the missing participant as trustee until the PBGC locates the missing participant and distributes the benefit.[109]

The PBGC missing participant program is not available to multiemployer plans or defined contribution plans and other plans not covered by Title IV of ERISA.

Explanation of Provision

Under the bill, the PBGC is directed to prescribe rules for terminating multiemployer plans similar to the present-law missing participant rules applicable to terminating single-employer plans that are subject to Title IV of ERISA.

In addition, under the bill, plan administrators of certain types of plans not subject to the PBGC termination insurance program under present law are permitted, but not required, to elect to transfer missing participants' benefits to the PBGC upon plan termination. Specifically, the provision extends the missing participants program (in accordance with regulations) to defined contribution plans, defined benefit pension plans that have no more than 25 active participants and are maintained by professional service employers, and the portion of defined benefit pension plans that provide benefits based upon the separate accounts of participants and therefore are treated as defined contribution plans under ERISA.

Effective Date

The provision is effective for distributions made after final regulations implementing the provision are prescribed.

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[109] Secs. 4041(b)(3)(A) and 4050 of ERISA.

K. Director of the PBGC (secs. 4002 and 4003 of ERISA)

Present Law

The PBGC is a corporation within the Department of Labor. In carrying out its functions, the PBGC is administered by the chairman of the board of directors in accordance with the policies established by the board. The board of directors consists of the Secretaries of Labor, Treasury and Commerce.[110] The Secretary of Labor is the chairman of the board. The executive director of the PBGC is selected by the chairman of the board.

The PBGC is authorized to make such investigations as it deems necessary to enforce any provisions of title IV of ERISA or any rule or regulation thereunder. For the purpose of any such investigation (or any other proceeding under title IV or ERISA), any member of the board of directors or any officer designated by the chairman of the board may administer oaths, subpoena witnesses and take other actions as provided by ERISA as the corporation deems relevant or material to the inquiry.[111]

Explanation of Provision

The bill provides that, in carrying out its functions, the PBGC will be administered by a Director, who is appointed by the President by and with the advice and consent of the Senate. The Director is to act in accordance with the policies established by the PBGC board. The Senate Committees on Finance and on Health, Education, Labor, and Pensions are given joint jurisdiction over the nomination of a person nominated by the President to be Director of the PBGC. If one of such Committees votes to order reported such a nomination, the other such Committee is to report on the nomination within 30 calendar days, or it is automatically discharged.[112]

The Director, and any officer designated by the chairman, is given the authority with respect to investigations that is provided under present law to members of the PBGC board and officers designated by the chairman of the board.

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[110] ERISA sec. 4002.

[111] ERISA sec. 4003.

[112] The provision relating to the Senate committees is treated as an exercise of rulemaking power of the Senate and is deemed a part of the rules of the Senate. It is applicable only with respect to the procedure to be followed in the case of a nomination of the Director of the PBGC and it supersedes other Senate rules only to the extent that it is inconsistent with such rules. The provision does not change the constitutional right of the Senate to change its rules (so far as relating to the procedure of the Senate) at any time, in the same manner and to the same extent as in the case of any other rule of the Senate.

The Director is to be compensated at the rate of compensation provided under Level III of the Executive Schedule.[113] Effective January 1, 2006, such annual rate of pay is $152,000.

Effective Date

The provision is effective on the date of enactment. The term of the individual serving as Executive Director of the PBGC on the date of enactment expires on the date of enactment. Such individual, or any other individual, may serve as interim Director of the PBGC until an individual is appointed as Director in accordance with the provision.

[113] 5 U.S.C. sec. 5314.

L. Inclusion of Information in the PBGC Annual Report (sec. 4008 of ERISA)

Present Law

As soon as practicable after the close of each fiscal year, the PBGC is required to transmit to the President and Congress a report relative to the conduct of its business for the year. The report must include (1) financial statements setting forth its finances and the result of its operations and (2) an actuarial evaluation of the expected operations and status of the four revolving funds used by the PBGC in carrying out its operations.

Explanation of Provision

Under the bill, additional information is required to be provided in the PBGC's annual report. The report must include (1) a summary of the Pension Insurance Modeling System microsimulation model, including the specific simulation parameters, specific initial values, temporal parameters, and policy parameters used to calculate the PBGC's financial statements; (2) a comparison of (a) the average return on investments earned with respect to assets invested by the PBGC for the year to which the report relates and (b) an amount equal to 60 percent of the average return on investment for the year in the Standard & Poor's 500 Index, plus 40 percent of the average return on investment for such year in the Lehman Aggregate Bond Index (or in a similar fixed income index), and (3) a statement regarding the deficit or surplus for the year that the PBGC would have had if it had earned the return described in (2) with respect to its invested assets.

Effective Date

The provision is effective on the date of enactment.

TITLE V: DISCLOSURE

A. Defined Benefit Plan Funding Notice (secs. 101(f) and 4011 of ERISA)

Present Law

Defined benefit pension plans are generally required to meet certain minimum funding requirements. These requirements are designed to help ensure that such plans are adequately funded. In addition, the Pension Benefit Guaranty Corporation ("PBGC") guarantees benefits under defined benefit pension plans, subject to limits.

Certain notices must be provided to participants in a single-employer defined benefit pension plan relating to the funding status of the plan. For example, ERISA requires an employer of a single-employer defined benefit plan to notify plan participants if the employer fails to make required contributions (unless a request for a funding waiver is pending).[114] In addition, in the case of an underfunded single-employer plan for which PBGC variable rate premiums are required, the plan administrator generally must notify plan participants of the plan's funding status and the limits on the PBGC benefit guarantee if the plan terminates while underfunded.[115]

Effective for plan years beginning after December 31, 2004, the plan administrator of a multiemployer defined benefit pension plan must provide an annual funding notice to: (1) each participant and beneficiary; (2) each labor organization representing such participants or beneficiaries; (3) each employer that has an obligation to contribute under the plan; and (4) the PBGC.

Such a notice must include: (1) identifying information, including the name of the plan, the address and phone number of the plan administrator and the plan's principal administrative officer, each plan sponsor's employer identification number, and the plan identification number; (2) a statement as to whether the plan's funded current liability percentage for the plan year to which the notice relates is at least 100 percent (and if not, a statement of the percentage); (3) a statement of the value of the plan's assets, the amount of benefit payments, and the ratio of the assets to the payments for the plan year to which the notice relates; (4) a summary of the rules governing insolvent multiemployer plans, including the limitations on benefit payments and any potential benefit reductions and suspensions (and the potential effects of such limitations, reductions, and suspensions on the plan); (5) a general description of the benefits under the plan that are eligible to be guaranteed by the PBGC and the limitations of the guarantee and circumstances in which such limitations apply; and (6) any additional information the plan administrator elects to include to the extent it is not inconsistent with regulations prescribed by the Secretary of Labor.

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[114] ERISA sec. 101(d).

[115] ERISA sec. 4011.

The annual funding notice must be provided no later than two months after the deadline (including extensions) for filing the plan's annual report for the plan year to which the notice relates (i.e., nine months after the end of the plan year unless the due date for the annual report is extended). The funding notice must be provided in a form and manner prescribed in regulations by the Secretary of Labor. Additionally, it must be written so as to be understood by the average plan participant and may be provided in written, electronic, or some other appropriate form to the extent that it is reasonably accessible to persons to whom the notice is required to be provided.

A plan administrator that fails to provide the required notice to a participant or beneficiary may be liable to the participant or beneficiary in the amount of up to $100 a day from the time of the failure and for such other relief as a court may deem proper.

Explanation of Provision

The provision expands the annual funding notice requirement that applies under present law to multiemployer plans, so that it applies also to single-employer plans and, in the case of a single-employer plan, includes a summary of the PBGC rules governing plan termination. The provision also changes the information that must be provided in the notice and accelerates the time when the notice must be provided.

In addition to the information required under present law, an annual funding notice with respect to either a single-employer or multiemployer plan must include the following additional information, as of the end of the plan year to which the notice relates: (1) a statement of the number of participants who are retired or separated from service and receiving benefits, retired or separated participants who are entitled to future benefits, and active participants); (2) a statement setting forth the funding policy of the plan and the asset allocation of investments under the plan (expressed as percentages of total assets); (3) an explanation containing specific information of any plan amendment, scheduled benefit increase or reduction, or other known event taking effect in the current plan year and having a material effect on plan liabilities or assets for the year (as defined in regulations by the Secretary); and (4) a statement that a person may obtain a copy of the plan's annual report upon request, through the Department of Labor Internet website, or through an Intranet website maintained by the applicable plan sponsor.

In the case of a single-employer plan, the notice must provide: (1) a statement as to whether the plan's funding target attainment percentage (as defined under the minimum funding rules for single-employer plans) for the plan year to which the notice relates and the two preceding plan years, is at least 100 percent (and, if not, the actual percentages); (2) a statement of (a) the total assets (separately stating any funding standard carryover or prefunding balance) and the plan's liabilities for the plan year and the two preceding years, determined in the same manner as under the funding rules, and (b) the value of the plan's assets and liabilities as of the last day of the plan year to which the notice relates, determined using fair market value and the interest rate used in determining variable rate premiums; and (3) if applicable, a statement that each contributing sponsor, and each member of the sponsor's controlled group, was required to provide the information under section 4010 for the plan year to which the notice relates.

In the case of a multiemployer plan, the notice must provide: (1) a statement as to whether the plan's funded percentage (as defined under the minimum funding rules for

multiemployer plans) for the plan year to which the notice relates and the two preceding plan years, is at least 100 percent (and, if not, the actual percentages); (2) a statement of the value of the plan's assets and liabilities for the plan year to which the notice relates and the two preceding plan years; (3) whether the plan was in endangered or critical status and, if so, a summary of the plan's funding improvement or rehabilitation plan and a statement describing how a person can obtain a copy of the plan's funding improvement or rehabilitation plan and the actuarial or financial data that demonstrate any action taken by the plan toward fiscal improvement; and (4) a statement that the plan administrator will provide, on written request, a copy of the plan's annual report to any labor organization representing participants and beneficiaries and any employer that has an obligation to contribute to the plan.

The annual funding notice must be provided within 120 days after the end of the plan year to which it relates. In the case of a plan covering not more than 100 employees for the preceding year, the annual funding notice must be provided upon filing of the annual report with respect to the plan (i.e., within seven months after the end of the plan year unless the due date for the annual report is extended).

The Secretary of Labor is required to publish a model notice not later than one year after the date of enactment. In addition, the Secretary of Labor is given the authority to promulgate any interim final rules as appropriate to carry out the requirement that a model notice be published.

Under the provision, the annual funding notice includes the information provided in the notice required under present law in the case of a single-employer plan that is subject to PBGC variable rate premiums. Accordingly, that present-law notice requirement is repealed under the provision.

Effective Date

The provision is effective for plan years beginning after December 31, 2007, except that the repeal of the notice required under present law in the case of a single-employer plan that is subject to PBGC variable rate premiums is effective for plan years beginning after December 31, 2006. Under a transition rule, any requirement to report a plan's funding target attainment percentage or funded percentage for a plan year beginning before January 1, 2008, is met if (1) in the case of a plan year beginning in 2006, the plan's funded current liability percentage is reported, and (2) in the case of a plan year beginning in 2007, the funding target attainment percentage or funded percentage as determined using such methods of estimation as the Secretary of the Treasury may provide is reported.

B. Access to Multiemployer Pension Plan Information (secs. 101, 204(h), and 502(c) of ERISA and sec. 4980F of the Code)

Present Law

Annual report

The plan administrator of a pension plan generally must file an annual return with the Secretary of the Treasury, an annual report with the Secretary of Labor, and certain information with the Pension Benefit Guaranty Corporation ("PBGC"). Form 5500, which consists of a primary form and various schedules, includes the information required to be filed with all three agencies. The plan administrator satisfies the reporting requirement with respect to each agency by filing the Form 5500 with the Department of Labor.

In the case of a defined benefit pension plan, the annual report must include an actuarial statement. The actuarial statement must include, for example, information as to the value of plan assets, the plan's accrued and current liabilities, the plan's actuarial cost method and actuarial assumptions, and plan contributions. The report must be signed by an actuary enrolled to practice before the IRS, Department of Labor and the PBGC.

The Form 5500 is due by the last day of the seventh month following the close of the plan year. The due date generally may be extended up to two and one-half months. Copies of filed Form 5500s are available for public examination at the U.S. Department of Labor.

Notice of significant reduction in benefit accruals

If an amendment to a defined benefit pension plan provides for a significant reduction in the rate of future benefit accrual, the plan administrator must furnish a written notice concerning the amendment. Notice may also be required if a plan amendment eliminates or reduces an early retirement benefit or retirement-type subsidy. The plan administrator is required to provide the notice to any participant or alternate payee whose rate of future benefit accrual may reasonably be expected to be significantly reduced by the plan amendment (and to any employee organization representing affected participants). The notice must be written in a manner calculated to be understood by the average plan participant and must provide sufficient information to allow recipients to understand the effect of the amendment. The plan administrator is generally required to provide the notice at least 45 days before the effective date of the plan amendment.

Explanation of Provision

Under the provision, a plan administrator of a multiemployer plan must, within 30 days of a written request, provide a plan participant or beneficiary, employee organization or employer that has an obligation to contribute to the plan with a copy of: (1) any periodic actuarial report (including any sensitivity testing) for any plan year that has been in the plan's possession for at least 30 days; (2) a copy of any quarterly, semi-annual, or annual financial report prepared for the plan by any plan investment manager or advisor or other person who is a plan fiduciary that has been in the plan's possession for at least 30 days; and (3) a copy of any application for an amortization extension filed with the Secretary of the Treasury. Any actuarial

report or financial report provided to a participant, beneficiary, or employer must not include any individually identifiable information regarding any participant, beneficiary, employee, fiduciary, or contributing employer, or reveal any proprietary information regarding the plan, any contributing employer, or any entity providing services to the plan. Regulations relating to the requirement to provide actuarial or financial reports on request must be issued within one year after the date of enactment.

In addition, the plan sponsor or administrator of a multiemployer plan must provide to any employer having an obligation to contribute to the plan, within 180 days of a written request, notice of: (1) the estimated amount that would be the employer's withdrawal liability with respect to the plan if the employer withdrew from the plan on the last day of the year preceding the date of the request; and (2) an explanation of how the estimated liability amount was determined, including the actuarial assumptions and methods used to determine the value of plan liabilities and assets, the data regarding employer contributions, unfunded vested benefits, annual changes in the plan's unfunded vested benefits, and the application of any relevant limitations on the estimated withdrawal liability. Regulations may permit a longer time than 180 days as may be necessary in the case of a plan that determines withdrawal liability using certain methods.

A person is not entitled to receive more than one copy of any actuary or financial report or more than one notice of withdrawal liability during any 12-month period. The plan administrator may make a reasonable charge to cover copying, mailing, and other costs of furnishing copies or notices, subject to a maximum amount that may be prescribed by regulations. Any information required to be provided under the provision may be provided in written, electronic, or other appropriate form to the extent such form is reasonably available to the persons to whom the information is required to be provided.

In the case of a failure to comply with these requirements, the Secretary of Labor may assess a civil penalty of up to $1,000 per day for each failure to provide a notice.

Under the provision, notice of an amendment that provides for a significant reduction in the rate of future benefit accrual must be provided also to each employer that has an obligation to contribute to the plan.

Effective Date

The provision is effective for plan years beginning after December 31, 2007.

C. Additional Annual Reporting Requirements and Electronic Display of Annual Report Information (secs. 103 and 104 of ERISA)

Present Law

Annual report

The plan administrator of a pension plan generally must file an annual return with the Secretary of the Treasury, an annual report with the Secretary of Labor, and certain information with the Pension Benefit Guaranty Corporation ("PBGC"). Form 5500, which consists of a primary form and various schedules, includes the information required to be filed with all three agencies. The plan administrator satisfies the reporting requirement with respect to each agency by filing the Form 5500 with the Department of Labor.

In the case of a defined benefit pension plan, the annual report must include an actuarial statement. The actuarial statement must include, for example, information as to the value of plan assets, the plan's accrued and current liabilities, the plan's actuarial cost method and actuarial assumptions, and plan contributions. The report must be signed by an actuary enrolled to practice before the IRS, Department of Labor and the PBGC.

The Form 5500 is due by the last day of the seventh month following the close of the plan year. The due date generally may be extended up to two and one-half months. Copies of filed Form 5500s are available for public examination at the U.S. Department of Labor.

Summary annual report

A participant must be provided with a copy of the full annual report on written request. In addition, the plan administrator must automatically provide participants with a summary of the annual report within two months after the due date of the annual report (i.e., by the end of the ninth month after the end of the plan year unless an extension applies). The summary annual report must include a statement whether contributions were made to keep the plan funded in accordance with minimum funding requirements, or whether contributions were not made and the amount of the deficit. The current value of plan assets is also required to be disclosed. If an extension applies for the Form 5500, the summary annual report must be provided within two months after the extended due date. A plan administrator who fails to provide a summary annual report to a participant within 30 days of the participant making a request for the report may be liable to the participant for a civil penalty of up to $100 a day from the date of the failure.

Explanation of Provision

Annual report

The provision requires additional information to be provided in the annual report filed with respect to a defined benefit pension plan. In a case in which the liabilities under the plan as of the end of a plan year consist (in whole or in part) of liabilities under two or more other pension plans as of immediately before the plan year, the annual report must include the plan's funded percentage as of the last day of the plan year and the funded percentage of each of such

other plans. Funded percentage is defined as: (1) in the case of a single-employer plan, the plan's funded target attainment percentage (as defined under the minimum funding rules for single-employer plans); and (2) in the case of a multiemployer plan, the plan's funded percentage (as defined under the minimum funding rules for multiemployer plans).

An annual report filed with respect to a multiemployer plan must include, as of the end of the plan year, the following additional information: (1) the number of employers obligated to contribute to the plan; (2) a list of the employers that contributed more than five percent of the total contributions to the plan during the plan year; (3) the number of participants on whose behalf no contributions were made by an employer as an employer of the participant for the plan year and two preceding years; (4) the ratio of the number of participants under the plan on whose behalf no employer had an obligation to make an employer contribution during the plan year, to the number of participants under the plan on whose behalf no employer had an obligation to make an employer contribution during each of the two preceding plan years; (5) whether the plan received an amortization extension for the plan year and, if so, the amount by which it changed the minimum required contribution for the year, what minimum contribution would have been required without the extension, and the period of the extension; (6) whether the plan used the shortfall funding method and, if so, the amount by which it changed the minimum required contribution for the year, what minimum contribution would have been required without the use of this method, and the period for which the method is used; (7) whether the plan was in critical or endangered status for the plan year, and if so, a summary of any funding improvement or rehabilitation plan (or modification thereto) adopted during the plan year, and the funding percentage of the plan; (8) the number of employers that withdrew from the plan during the preceding plan year and the aggregate amount of withdrawal liability assessed, or estimated to be assessed, against the withdrawn employers; (9) if the plan that has merged with another plan or if assets and liabilities have been transferred to the plan, the actuarial valuation of the assets and liabilities of each affected plan during the year preceding the effective date of the merger or transfer, based upon the most recent data available as of the day before the first day of the plan year, or other valuation method performed under standards and procedures as prescribed by regulation.

The Secretary of Labor is required, not later than one year after the date of enactment, to publish guidance to assist multiemployer plans to identify and enumerate plan participants for whom there is no employer with an obligation to make an employer contribution under the plan and report such information in the annual report. The Secretary may provide rules as needed to apply this requirement with respect to contributions made on a basis other than hours worked, such as on the basis of units of production.

The actuarial statement filed with the annual return must include a statement explaining the actuarial assumptions and methods used in projecting future retirements and asset distributions under the plan.

Electronic display of annual report

Identification and basic plan information and actuarial information included in the annual report must be filed with the Secretary of Labor in an electronic format that accommodates display on the Internet (in accordance with regulations). The Secretary of Labor is to provide for

the display of such information, within 90 days after the filing of the annual report, on a website maintained by the Secretary of Labor on the Internet and other appropriate media. Such information is also required to be displayed on any Intranet website maintained by the plan sponsor (or by the plan administrator on behalf of the plan sponsor) in accordance with regulations.

Summary annual report

Under the provision, the requirement to provide a summary annual report to participants applies does not apply to defined benefit pension plans.[116]

Multiemployer plan summary report

The provision requires the plan administrator of a multiemployer plan to provide a report containing certain summary plan information to each employee organization and each employer with an obligation to contribute to the plan within 30 days after the due date of the plan's annual report. The report must contain: (1) a description of the contribution schedules and benefit formulas under the plan, and any modification to such schedules and formulas, during such plan year; (2) the number of employers obligated to contribute to the plan; (3) a list of the employers that contributed more than 5 percent of the total contributions to the plan during such plan year; (4) the number of participants under the plan on whose behalf no employer contributions have been made to the plan for such plan year and for each of the two preceding plan years; (5) whether the plan was in critical or endangered status for the plan year and, if so, a list of the actions taken by the plan to improve its funding status and a statement describing how to obtain a copy of the plan's improvement or rehabilitation plan, as appropriate, and the actuarial and financial data that demonstrate any action taken by the plan toward fiscal improvement; (6) the number of employers that withdrew from the plan during the preceding plan year and the aggregate amount of withdrawal liability assessed, or estimated to be assessed, against such withdrawn employers, as reported on the annual report for the plan year; (7) if the plan that has merged with another plan or if assets and liabilities have been transferred to the plan, the actuarial valuation of the assets and liabilities of each affected plan during the year preceding the effective date of the merger or transfer, based upon the most recent data available as of the day before the first day of the plan year, or other valuation method performed under standards and procedures as prescribed by regulation; (8) a description as to whether the plan sought or received an amortization extension or used the shortfall funding method for the plan year; and (9) notification of the right to obtain upon written request a copy of the annual report filed with respect to the plan, the summary annual report, the summary plan description, and the summary of any material modification of the plan, subject to a limitation of one copy of any such document in any 12-month period and any reasonable charge to cover copying, mailing, and other costs of furnishing the document. Nothing in this report requirement waives any other ERISA provision requiring plan administrators to provide, upon request, information to employers that have an obligation to contribute under the plan.

[116] As discussed in Part A above, detailed information about a defined benefit pension plan must be provided to participants in an annual funding notice.

Effective Date

The provisions are effective for plan years beginning after December 31, 2007.

D. Section 4010 Filings with the PBGC (sec. 4010 of ERISA)

Present Law

Present law provides that, in certain circumstances, the contributing sponsor of a single-employer plan defined benefit pension plan covered by the PBGC (and members of the contributing sponsor's controlled group) must provide certain information to the PBGC (referred to as "section 4010 reporting"). This information includes financial information with respect to the contributing sponsor (and controlled group members) and actuarial information with respect to single-employer plans maintained by the sponsor (and controlled group members).[117] Section 4010 reporting is required if: (1) the aggregate unfunded vested benefits (determined using the interest rate used in determining variable-rate premiums) as of the end of the preceding plan year under all plans maintained by members of the controlled group exceed $50 million (disregarding plans with no unfunded vested benefits); (2) the conditions for imposition of a lien (i.e., required contributions totaling more than $1 million have not been made) have occurred with respect to an underfunded plan maintained by a member of the controlled group; or (3) minimum funding waivers in excess of $1 million have been granted with respect to a plan maintained by any member of the controlled group and any portion of the waived amount is still outstanding. Information provided to the PBGC in accordance with these requirements is not available to the public.

The PBGC may assess a penalty for a failure to provide the required information in the amount of up to $1,000 a day for each day the failure continues.[118]

Explanation of Provision

Under the provision, the requirement of section 4010 reporting applicable under present law if aggregate unfunded vested benefits exceed $50 million is replaced with a requirement of section 4010 reporting if: (1) the funding target attainment percentage at the end of the preceding plan year of a plan maintained by a contributing sponsor or any member of its controlled group is less than 80 percent. It is intended that the PBGC may waive the requirement in appropriate circumstances, such as in the case of small plans.

The provision also requires the information provided to the PBGC to include the following: (1) the amount of benefit liabilities under the plan determined using the assumptions used by the PBGC in determining liabilities; (2) the funding target of the plan determined as if the plan has been in at-risk status for at least 5 plan years; and (3) the funding target attainment percentage of the plan.

The value of plan assets, a plan's funding target, a plan's funding target attainment percentage, and at-risk status are determined under the provision relating to funding rules

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[117] ERISA sec. 4010.

[118] ERISA sec. 4071.

applicable to single-employer plans under the provision. Thus, a plan's funding target for a plan year is the present value of the benefits earned or accrued under the plan as of the beginning of the plan year. A plan's "funding target attainment percentage" means the ratio, expressed as a percentage, that the value of the plan's assets (reduced by any funding standard carryover balance and prefunding balance) bears to the plan's funding target for the year (determined without regard to the special assumptions that apply to at-risk plans). A plan is in at-risk status for a plan year if the plan's funding target attainment percentage for the preceding year was less than (1) 80 percent, determined without regard to the special at-risk assumptions, and (2) 70 percent, determined using the special at-risk assumptions.

The provision requires the PBGC to provide the Senate Committees on Health, Education, Labor, and Pensions and Finance and the House Committees on Education and the Workforce and Ways and Means with a summary report in the aggregate of the information submitted to the PBGC under section 4010.

Effective Date

The provision is effective for filings for years beginning after December 31, 2007.

E. Disclosure of Plan Termination Information to Plan Participants (secs. 4041 and 4042 of ERISA)

Present Law

In the case of a single-employer defined benefit pension plan covered under the PBGC insurance program, the plan sponsor may voluntarily terminate the plan in a standard termination or a distress termination.[119] A standard termination is permitted only if plan assets are sufficient to cover benefit liabilities.

If assets in a defined benefit plan are not sufficient to cover benefit liabilities, the plan sponsor may not terminate the plan unless the plan sponsor (and members of the plan sponsor's controlled group) meets one of four criteria of financial distress. The four criteria for a distress termination are: (1) the plan sponsor, and every member of the controlled group of which the sponsor is a member, is being liquidated in bankruptcy or any similar Federal law or other similar State insolvency proceedings; (2) the plan sponsor and every member of the sponsor's controlled group is being reorganized in bankruptcy or similar State proceeding; (3) the PBGC determines that termination is necessary to allow the plan sponsor to pay its debts when due; or (4) the PBGC determines that termination is necessary to avoid unreasonably burdensome pension costs caused solely by a decline in the plan sponsor's work force.

In order for a plan sponsor to terminate a plan, the plan administrator must provide each affected party with advance written notice of the intent to terminate at least 60 days before the proposed termination date. Additional information must be included as required by the PBGC. For this purpose, an affected party is: (1) a plan participant; (2) a beneficiary of a deceased participant or an alternate payee under a qualified domestic relations order; (3) any employee organization representing plan participants; and (4) the PBGC (except in the case of a standard termination). In the case of a proposed distress termination, as soon as practicable after providing notice, the plan administrator must provide the PBGC with certain information, including information necessary for the PBGC to determine whether any of the criteria for a distress termination is met.

The PBGC may institute proceedings to terminate a single-employer plan if it determines that the plan in question: (1) has not met the minimum funding standards; (2) will be unable to pay benefits when due; (3) has a substantial owner who has received a distribution greater than $10,000 (other than by reason of death) while the plan has unfunded vested benefits; or (4) may reasonably be expected to increase the PBGC's long-run loss with respect to the plan unreasonably if the plan is not terminated. The PBGC must institute proceedings to terminate a plan if the plan is unable to pay benefits that are currently due.

If the PBGC determines that the requirements for an involuntary plan termination are met, it must provide notice to the plan.

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[119] The PBGC may not proceed with a voluntary termination if the termination would violate an existing collective bargaining agreement.

Explanation of Provision

The provision revises the rules applicable in the case of a distress termination to require a plan administrator to provide an affected party with any information provided to the PBGC in connection with the proposed plan termination. The plan administrator must provide the information not later than 15 days after: (1) the receipt of a request for the information from the affected party; or (2) the provision of new information to the PBGC relating to a previous request.

The provision also requires the plan sponsor or plan administrator of a plan that has received notice from the PBGC of a determination that the plan should be involuntarily terminated to provide an affected party with any information provided to the PBGC in connection with the plan termination. In addition, the PBGC is required to provide a copy of the administrative record, including the trusteeship decision record in connection with a plan termination. The plan sponsor, plan administrator, or PBGC must provide the required information not later than 15 days after: (1) the receipt of a request for the information from the affected party; or (2) in the case of information provided to the PBGC, the provision of new information to the PBGC relating to a previous request.

The PBGC may prescribe the form and manner in which information is to be provided, which is to include delivery in written, electronic, or other appropriate form to the extent such form is reasonably accessible to individuals to whom the information is required to be provided. A plan administrator or plan sponsor may charge a reasonable fee for any information provided under this subparagraph in other than electronic form.

A plan administrator or plan sponsor may not provide the relevant information in a form that includes any information that may directly or indirectly be associated with, or otherwise identify, an individual participant or beneficiary. In addition, a court may limit disclosure of confidential information (as described under the Freedom of Information Act) to any authorized representative of the participants or beneficiaries that agrees to ensure the confidentiality of such information. For this purposes, an authorized representative means any employee organization representing participants in the pension plan.

Effective Date

The provision generally applies with respect to any plan termination, with respect to which the notice of intent to terminate, or notice that the PBGC has determined that the requirements for an involuntary plan termination are met, occurs after the date of enactment. Under a transition rule, if notice under the provision would otherwise be required before the 90th day after the date of enactment, such notice is not required to be provided until the 90th day.

F. Notice of Freedom to Divest Employer Securities (new sec. 101(m) of ERISA)

Present Law

Under ERISA, a plan administrator is required to furnish participants with certain notices and information about the plan. This information includes, for example, a summary plan description that includes certain information, including administrative information about the plan, the plan's requirements as to eligibility for participation and benefits, the plan's vesting provisions, and the procedures for claiming benefits under the plan. Under ERISA, if a plan administrator fails or refuses to furnish to a participant information required to be provided to the participant within 30 days of the participant's written request, the participant generally may bring a civil action to recover from the plan administrator $100 a day, within the court's discretion, or other relief that the court deems proper.

Explanation of Provision

The provision requires a new notice in connection with the right of an applicable individual to divest his or her account under an applicable defined contribution plan of employer securities, as required under the provision of the provision relating to diversification rights with respect to amounts invested in employer securities. Not later than 30 days before the first date on which an applicable individual is eligible to exercise such right with respect to any type of contribution, the administrator of the plan must provide the individual with a notice setting forth such right and describing the importance of diversifying the investment of retirement account assets. Under the diversification provision, an applicable individual's right to divest his or her account of employer securities attributable to elective deferrals and employee after-tax contributions and the right to divest his or her account of employer securities attributable to other contributions (i.e., nonelective employer contributions and employer matching contributions) may become exercisable at different times. Thus, to the extent the applicable individual is first eligible to exercise such rights at different times, separate notices are required.

The notice must be written in a manner calculated to be understood by the average plan participant and may be delivered in written, electronic, or other appropriate form to the extent such form is reasonably accessible to the applicable individual. The Secretary of Treasury has regulatory authority over the required notice and is directed to prescribe a model notice to be used for this purpose within 180 days of the date of enactment of the provision. It is expected that the Secretary of Treasury will consult with the Secretary of Labor on the description of the importance of diversifying the investment of retirement account assets. In addition, it is intended that the Secretary of Treasury will prescribe rules to enable the notice to be provided at reduced administrative expense, such as allowing the notice to be provided with the summary plan description, with a reminder of these rights within a reasonable period before they become exercisable.

In the case of a failure to provide a required notice of diversification rights, the Secretary of Labor may assess a civil penalty against the plan administrator of up to $100 a day from the date of the failure. For this purpose, each violation with respect to any single applicable individual is treated as a separate violation.

Effective Date

The provision generally applies to plan years beginning after December 31, 2006. Under a transition rule, if notice would otherwise be required to be provided before 90 days after the date of enactment, notice is not required until 90 days after the date of enactment.

G. Periodic Pension Benefit Statements (secs. 105(a) and 502(c)(1) of ERISA)

Present Law

ERISA provides that the administrator of a defined contribution or defined benefit pension plan must furnish a benefit statement to any participant or beneficiary who makes a written request for such a statement. The benefit statement must indicate, on the basis of the latest available information: (1) the participant's or beneficiary's total accrued benefit; and (2) the participant's or beneficiary's vested accrued benefit or the earliest date on which the accrued benefit will become vested. A participant or beneficiary is not entitled to receive more than one benefit statement during any 12-month period. If a plan administrator fails or refuses to furnish a benefit statement to a participant or beneficiary within 30 days of a written request, the participant or beneficiary may bring a civil action to recover from the plan administrator $100 a day, within the court's discretion, or other relief that the court deems proper.

Explanation of Provision

In general

The provision revises the benefit statement requirements under ERISA. The new requirements depend in part on the type of plan and the individual to whom the statement is provided. The benefit statement requirements do not apply to a one-participant retirement plan.[120]

A benefit statement is required to indicate, on the basis of the latest available information: (1) the total benefits accrued; (2) the vested accrued benefit or the earliest date on which the accrued benefit will become vested; and (3) an explanation of any permitted disparity or floor-offset arrangement that may be applied in determining accrued benefits under the plan.[121] With respect to information on vested benefits, the Secretary of Labor is required to provide that the requirements are met if, at least annually, the plan: (1) updates the information on vested benefits that is provided in the benefit statement; or (2) provides in a separate statement information as is necessary to enable participants and beneficiaries to determine their vested benefits.

If a plan administrator fails to provide a required benefit statement to a participant or beneficiary, the participant or beneficiary may bring a civil action to recover from the plan

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[120] A one-participant retirement plan is defined as under the provision of ERISA that requires advance notice of a blackout period to be provided to participants and beneficiaries affected by the blackout period, as discussed in Part H below.

[121] Under the permitted disparity rules, contributions or benefits may be provided at a higher rate with respect to compensation above a specified level and at a lower rate with respect to compensation up to the specified level. In addition, benefits under a defined benefit plan may be offset by a portion of a participant's expected social security benefits. Under a floor-offset arrangement, benefits under a defined benefit pension plan are reduced by benefits under a defined contribution plan.

administrator $100 a day, within the court's discretion, or other relief that the court deems proper.

Requirements for defined contribution plans

The administrator of a defined contribution plan is required to provide a benefit statement (1) to a participant or beneficiary who has the right to direct the investment of the assets in his or her account, at least quarterly, (2) to any other participant or other beneficiary who has his or her own account under the plan, at least annually, and (3) to other beneficiaries, upon written request, but limited to one request during any 12-month period.

A benefit statement provided with respect to a defined contribution plan must include the value of each investment to which assets in the individual's account are allocated (determined as of the plan's most recent valuation date), including the value of any assets held in the form of employer securities (without regard to whether the securities were contributed by the employer or acquired at the direction of the individual). A quarterly benefit statement provided to a participant or beneficiary who has the right to direct investments must also provide: (1) an explanation of any limitations or restrictions on any right of the individual to direct an investment; (2) an explanation, written in a manner calculated to be understood by the average plan participant, of the importance, for the long-term retirement security of participants and beneficiaries, of a well-balanced and diversified investment portfolio, including a statement of the risk that holding more than 20 percent of a portfolio in the security of one entity (such as employer securities) may not be adequately diversified; and (3) a notice directing the participant or beneficiary to the Internet website of the Department of Labor for sources of information on individual investing and diversification.

Requirements for defined benefit plans

The administrator of a defined benefit plan is required either: (1) to furnish a benefit statement at least once every three years to each participant who has a vested accrued benefit under the plan and who is employed by the employer at the time the benefit statements are furnished to participants; or (2) to furnish at least annually to each such participant notice of the availability of a benefit statement and the manner in which the participant can obtain it. The Secretary of Labor is authorized to provide that years in which no employee or former employee benefits under the plan need not be taken into account in determining the three-year period. It is intended that the annual notice of the availability of a benefit statement may be included with other communications to the participant if done in a manner reasonably designed to attract the attention of the participant.

The administrator of a defined benefit pension plan is also required to furnish a benefit statement to a participant or beneficiary upon written request, limited to one request during any 12–month period.

In the case of a statement provided to a participant with respect to a defined benefit plan (other than at the participant's request), information may be based on reasonable estimates determined under regulations prescribed by the Secretary of Labor in consultation with the Pension Benefit Guaranty Corporation.

Form of benefit statement

A benefit statement must be written in a manner calculated to be understood by the average plan participant. It may be delivered in written, electronic, or other appropriate form to the extent such form is reasonably accessible to the recipient. For example, regulations could permit current benefit statements to be provided on a continuous basis through a secure plan website for a participant or beneficiary who has access to the website.

The Secretary of Labor is directed, within one year after the date of enactment, to develop one or more model benefit statements that may be used by plan administrators in complying with the benefit statement requirements. The use of the model statement is optional. It is intended that the model statement include items such as the amount of vested accrued benefits as of the statement date that are payable at normal retirement age under the plan, the amount of accrued benefits that are forfeitable but that may become vested under the terms of the plan, information on how to contact the Social Security Administration to obtain a participant's personal earnings and benefit estimate statement, and other information that may be important to understanding benefits earned under the plan. The Secretary of Labor is also given the authority to promulgate any interim final rules as determined appropriate to carry out the benefit statement requirements.

Effective Date

The provision is generally effective for plan years beginning after December 31, 2006. In the case of a plan maintained pursuant to one or more collective bargaining agreements, the provision is effective for plan years beginning after the earlier of (1) the later of December 31, 2007, or the date on which the last of such collective bargaining agreements terminates (determined without regard to any extension thereof after the date of enactment), or (2) December 31, 2008.

H. Notice to Participants or Beneficiaries of Blackout Periods (sec. 101(i) of ERISA)

Present Law

In general

The Sarbanes-Oxley Act of 2002[122] amended ERISA to require that the plan administrator of an individual account plan[123] provide advance notice of a blackout period (a "blackout notice") to plan participants and beneficiaries to whom the blackout period applies.[124] Generally, notice must be provided at least 30 days before the beginning of the blackout period. In the case of a blackout period that applies with respect to employer securities, the plan administrator must also provide timely notice of the blackout period to the employer (or the affiliate of the employer that issued the securities, if applicable).

The blackout notice requirement does not apply to a one-participant retirement plan, which is defined as a plan that (1) on the first day of the plan year, covered only the employer (and the employer's spouse) and the employer owns the entire business (whether or not incorporated) or covers only one or more partners (and their spouses) in a business partnership (including partners in an S or C corporation as defined in section 1361(a) of the Code), (2) meets the minimum coverage requirements without being combined with any other plan that covers employees of the business, (3) does not provide benefits to anyone except the employer (and the employer's spouse) or the partners (and their spouses), (4) does not cover a business that is a member of an affiliated service group, a controlled group of corporations, or a group of corporations under common control, and (5) does not cover a business that leases employees.[125]

Definition of blackout period

A blackout period is any period during which any ability of participants or beneficiaries under the plan, which is otherwise available under the terms of the plan, to direct or diversify assets credited to their accounts, or to obtain loans or distributions from the plan, is temporarily suspended, limited, or restricted if the suspension, limitation, or restriction is for any period of more than three consecutive business days. However, a blackout period does not include a suspension, limitation, or restriction that (1) occurs by reason of the application of securities

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[122] Pub. L. No. 107-204 (2002).

[123] An "individual account plan" is the term generally used under ERISA for a defined contribution plan.

[124] ERISA sec. 101(i), as enacted by section 306(b) of the Sarbanes-Oxley Act of 2002. Under section 306(a), a director or executive officer of a publicly-traded corporation is prohibited from trading in employer stock during blackout periods in certain circumstances. Section 306 is effective 180 days after enactment.

[125] Governmental plans and church plans are exempt from ERISA. Accordingly, the blackout notice requirement does not apply to these plans.

laws, (2) is a change to the plan providing for a regularly scheduled suspension, limitation, or restriction that is disclosed through a summary of material modifications to the plan or materials describing specific investment options under the plan, or changes thereto, or (3) applies only to one or more individuals, each of whom is a participant, alternate payee, or other beneficiary under a qualified domestic relations order.

Timing of notice

Notice of a blackout period is generally required at least 30 days before the beginning of the period. The 30-day notice requirement does not apply if (1) deferral of the blackout period would violate the fiduciary duty requirements of ERISA and a plan fiduciary so determines in writing, or (2) the inability to provide the 30-day advance notice is due to events that were unforeseeable or circumstances beyond the reasonable control of the plan administrator and a plan fiduciary so determines in writing. In those cases, notice must be provided as soon as reasonably practicable under the circumstances unless notice in advance of the termination of the blackout period is impracticable.

Another exception to the 30-day period applies in the case of a blackout period that applies only to one or more participants or beneficiaries in connection with a merger, acquisition, divestiture, or similar transaction involving the plan or the employer and that occurs solely in connection with becoming or ceasing to be a participant or beneficiary under the plan by reason of the merger, acquisition, divestiture, or similar transaction. Under the exception, the blackout notice requirement is treated as met if notice is provided to the participants or beneficiaries to whom the blackout period applies as soon as reasonably practicable.

The Secretary of Labor may provide additional exceptions to the notice requirement that the Secretary determines are in the interests of participants and beneficiaries.

Form and content of notice

A blackout notice must be written in a manner calculated to be understood by the average plan participant and must include (1) the reasons for the blackout period, (2) an identification of the investments and other rights affected, (3) the expected beginning date and length of the blackout period, and (4) in the case of a blackout period affecting investments, a statement that the participant or beneficiary should evaluate the appropriateness of current investment decisions in light of the inability to direct or diversify assets during the blackout period, and (5) other matters as required by regulations. If the expected beginning date or length of the blackout period changes after notice has been provided, the plan administrator must provide notice of the change (and specify any material change in other matters related to the blackout) to affected participants and beneficiaries as soon as reasonably practicable.

Notices provided in connection with a blackout period (or changes thereto) must be provided in writing and may be delivered in electronic or other form to the extent that the form is reasonably accessible to the recipient. The Secretary of Labor is required to issue guidance regarding the notice requirement and a model blackout notice.

Penalty for failure to provide notice

In the case of a failure to provide notice of a blackout period, the Secretary of Labor may assess a civil penalty against a plan administrator of up to $100 per day for each failure to provide a blackout notice. For this purpose, each violation with respect to a single participant or beneficiary is treated as a separate violation.

Explanation of Provision

The provision modifies the definition of a one-participant retirement plan to be consistent with Department of Labor regulations under which certain business owners and their spouses are not treated as employees.[126] As modified, a one-participant retirement plan is a plan that: (1) on the first day of the plan year, either covered only one individual (or the individual and his or her spouse) and the individual owned 100 percent of the plan sponsor, whether or not incorporated, or covered only one or more partners (or partners and their spouses) in the plan sponsor; and (2) does not cover a business that leases employees.

Effective Date

The provision is effective as if included in section 306 of the Sarbanes-Oxley Act of 2002.

[126] 29 C.F.R. sec. 2510.3-3(c) (2006).

TITLE VI: INVESTMENT ADVICE, PROHIBITED TRANSACTIONS, AND FIDUCIARY RULES

A. Investment Advice (sec. 408 of ERISA and sec. 4975 of the Code)

Present Law

ERISA and the Code prohibit certain transactions between an employer-sponsored retirement plan and a disqualified person (referred to as a "party in interest" under ERISA).[127] Under ERISA, the prohibited transaction rules apply to employer-sponsored retirement plans and welfare benefit plans. Under the Code, the prohibited transaction rules apply to qualified retirement plans and qualified retirement annuities, as well as individual retirement accounts and annuities ("IRAs"), health savings accounts ("HSAs"), Archer MSAs, and Coverdell education savings accounts.[128]

Disqualified persons include a fiduciary of the plan, a person providing services to the plan, and an employer with employees covered by the plan. For this purpose, a fiduciary includes any person who (1) exercises any authority or control respecting management or disposition of the plan's assets, (2) renders investment advice for a fee or other compensation with respect to any plan moneys or property, or has the authority or responsibility to do so, or (3) has any discretionary authority or responsibility in the administration of the plan.

Prohibited transactions include (1) the sale, exchange or leasing of property, (2) the lending of money or other extension of credit, (3) the furnishing of goods, services or facilities, (4) the transfer to, or use by or for the benefit of, the income or assets of the plan, (5) in the case of a fiduciary, any act that deals with the plan's income or assets for the fiduciary's own interest or account, and (6) the receipt by a fiduciary of any consideration for the fiduciary's own personal account from any party dealing with the plan in connection with a transaction involving the income or assets of the plan. However, certain transactions are exempt from prohibited transaction treatment, for example, certain loans to plan participants.

Under ERISA, the Secretary of Labor may assess a civil penalty against a person who engages in a prohibited transaction, other than a transaction with a plan covered by the prohibited transaction rules of the Code. The penalty may not exceed five percent of the amount involved in the transaction for each year or part of a year that the prohibited transaction continues. If the prohibited transaction is not corrected within 90 days after notice from the Secretary of Labor, the penalty may be up to 100 percent of the amount involved in the transaction. Under the Code, if a prohibited transaction occurs, the disqualified person who participates in the transaction is subject to a two-tier excise tax. The first level tax is 15 percent of the amount involved in the

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[127] ERISA sec. 406; Code sec. 4975.

[128] The prohibited transaction rules under ERISA and the Code generally do not apply to governmental plans or church plans.

transaction. The second level tax is imposed if the prohibited transaction is not corrected within a certain period and is 100 percent of the amount involved.

Explanation of Provision

In general

The provision adds a new category of prohibited transaction exemption under ERISA and the Code in connection with the provision of investment advice through an "eligible investment advice arrangement" to participants and beneficiaries of a defined contribution plan who direct the investment of their accounts under the plan and to beneficiaries of IRAs.[129] If the requirements under the provision are met, the following are exempt from prohibited transaction treatment: (1) the provision of investment advice; (2) an investment transaction (i.e., a sale, acquisition, or holding of a security or other property) pursuant to the advice; and (3) the direct or indirect receipt of fees or other compensation in connection with the provision of the advice or an investment transaction pursuant to the advice. The prohibited transaction exemptions provided under the provision do not in any manner alter existing individual or class exemptions provided by statute or administrative action.

The provision also directs the Secretary of Labor, in consultation with the Secretary of the Treasury, to determine, based on certain information to be solicited by the Secretary of Labor, whether there is any computer model investment advice program that meets the requirements of the provision and may be used by IRAs. The determination is to be made by December 31, 2007. If the Secretary of Labor determines there is such a program, the exemptions described above apply in connection with the use of the program with respect to IRA beneficiaries. If the Secretary of Labor determines that there is not such a program, such Secretary is directed to grant a class exemption from prohibited transaction treatment (as discussed below) for the provision of investment advice, investment transactions pursuant to such advice, and related fees to beneficiaries of such arrangements.

Eligible investment advice arrangements

In general

The exemptions provided under the provision apply in connection with the provision of investment advice by a fiduciary adviser under an eligible investment advice arrangement. An eligible investment advice arrangement is an arrangement (1) meeting certain requirements (discussed below) and (2) which either (a) provides that any fees (including any commission or compensation) received by the fiduciary adviser for investment advice or with respect to an investment transaction with respect to plan assets do not vary depending on the basis of any investment option selected, or (b) uses a computer model under an investment advice program as described below in connection with the provision of investment advice to a participant or beneficiary. In the case of an eligible investment advice arrangement with respect to a defined

[129] The portions of the provision relating to IRAs apply to HSAs, Archer MSAs, and Coverdell education savings accounts. References here to IRAs include such other arrangements as well.

contribution plan, the arrangement must be expressly authorized by a plan fiduciary other than (1) the person offering the investment advice program, (2) any person providing investment options under the plan, or (3) any affiliate of (1) or (2).

Investment advice program using computer model

If an eligible investment advice arrangement provides investment advice pursuant to a computer model, the model must (1) apply generally accepted investment theories that take into account the historic returns of different asset classes over defined periods of time, (2) use relevant information about the participant or beneficiary, (3) use prescribed objective criteria to provide asset allocation portfolios comprised of investment options under the plan, (4) operate in a manner that is not biased in favor of any investment options offered by the fiduciary adviser or related person, and (5) take into account all the investment options under the plan in specifying how a participant's or beneficiary's account should be invested without inappropriate weighting of any investment option. An eligible investment expert must certify, before the model is used and in accordance with rules prescribed by the Secretary, that the model meets these requirements. The certification must be renewed if there are material changes to the model as determined under regulations. For this purpose, an eligible investment expert is a person who meets requirements prescribed by the Secretary and who does not bear any material affiliation or contractual relationship with any investment adviser or related person.

In addition, if a computer model is used, the only investment advice that may be provided under the arrangement is the advice generated by the computer model, and any investment transaction pursuant the advice must occur solely at the direction of the participant or beneficiary. This requirement does not preclude the participant or beneficiary from requesting other investment advice, but only if the request has not been solicited by any person connected with carrying out the investment advice arrangement.

Audit requirements

In the case of an eligible investment advice arrangement with respect to a defined contribution plan, an annual audit of the arrangement for compliance with applicable requirements must be conducted by an independent auditor (i.e., unrelated to the person offering the investment advice arrangement or any person providing investment options under the plan) who has appropriate technical training or experience and proficiency and who so represents in writing. The auditor must issue a report of the audit results to the fiduciary that authorized use of the arrangement. In the case of an eligible investment advice arrangement with respect to IRAs, an audit is required at such times and in such manner as prescribed by the Secretary of Labor.

Notice requirements

Before the initial provision of investment advice, the fiduciary adviser must provide written notice (which may be in electronic form) containing various information to the recipient of the advice, including information relating to: (1) the role of any related party in the development of the investment advice program or the selection of investment options under the plan; (2) past performance and rates of return for each investment option offered under the plan; (3) any fees or other compensation to be received by the fiduciary adviser or affiliate; (4) any

material affiliation or contractual relationship of the fiduciary adviser or affiliates in the security or other property involved in the investment transaction; (5) the manner and under what circumstances any participant or beneficiary information will be used or disclosed; (6) the types of services provided by the fiduciary adviser in connection with the provision of investment advice; (7) the adviser's status as a fiduciary of the plan in connection with the provision of the advice; and (8) the ability of the recipient of the advice separately to arrange for the provision of advice by another adviser that could have no material affiliation with and receive no fees or other compensation in connection with the security or other property. This information must be maintained in accurate form and must be provided to the recipient of the investment advice, without charge, on an annual basis, on request, or in the case of any material change.

Any notification must be written in a clear and conspicuous manner, calculated to be understood by the average plan participant, and sufficiently accurate and comprehensive so as to reasonably apprise participants and beneficiaries of the required information. The Secretary is directed to issue a model form for the disclosure of fees and other compensation as required by the provision. The fiduciary adviser must maintain for at least six years any records necessary for determining whether the requirements for the prohibited transaction exemption were met. A prohibited transaction will not be considered to have occurred solely because records were lost or destroyed before the end of six years due to circumstances beyond the adviser's control.

Other requirements

In order for the exemption to apply, the following additional requirements must be satisfied: (1) the fiduciary adviser must provide disclosures applicable under securities laws; (2) an investment transaction must occur solely at the direction of the recipient of the advice; (3) compensation received by the fiduciary adviser or affiliates in connection with an investment transaction must be reasonable; and (4) the terms of the investment transaction must be at least as favorable to the plan as an arm's length transaction would be.

Fiduciary adviser

For purposes of the provision, "fiduciary adviser" is defined as a person who is a fiduciary of the plan by reason of the provision of investment advice to a participant or beneficiary and who is also: (1) registered as an investment adviser under the Investment Advisers Act of 1940 or under State laws; (2) a bank, a similar financial institution supervised by the United States or a State, or a savings association (as defined under the Federal Deposit Insurance Act), but only if the advice is provided through a trust department that is subject to periodic examination and review by Federal or State banking authorities; (3) an insurance company qualified to do business under State law; (4) registered as a broker or dealer under the Securities Exchange Act of 1934; (5) an affiliate of any of the preceding; or (6) an employee, agent or registered representative of any of the preceding who satisfies the requirements of applicable insurance, banking and securities laws relating to the provision of advice. A person who develops the computer model or markets the investment advice program or computer model is treated as a person who is a plan fiduciary by reason of the provision of investment advice and is treated as a fiduciary adviser, except that the Secretary may prescribe rules under which only one fiduciary adviser may elect treatment as a plan fiduciary. "Affiliate" means an affiliated person as defined under section 2(a)(3) of the Investment Company Act of 1940. "Registered

representative" means a person described in section 3(a)(18) of the Securities Exchange Act of 1934 or a person described in section 202(a)(17) of the Investment Advisers Act of 1940.

Fiduciary rules

Subject to certain requirements, an employer or other person who is a plan fiduciary, other than a fiduciary adviser, is not treated as failing to meet the fiduciary requirements of ERISA, solely by reason of the provision of investment advice as permitted under the provision or of contracting for or otherwise arranging for the provision of the advice. This rule applies if: (1) the advice is provided under an arrangement between the employer or plan fiduciary and the fiduciary adviser for the provision of investment advice by the fiduciary adviser as permitted under the provision; (2) the terms of the arrangement require compliance by the fiduciary adviser with the requirements of the provision; and (3) the terms of the arrangement include a written acknowledgement by the fiduciary adviser that the fiduciary adviser is a plan fiduciary with respect to the provision of the advice.

The provision does not exempt the employer or a plan fiduciary from fiduciary responsibility under ERISA for the prudent selection and periodic review of a fiduciary adviser with whom the employer or plan fiduciary has arranged for the provision of investment advice. The employer or plan fiduciary does not have the duty to monitor the specific investment advice given by a fiduciary adviser. The provision also provides that nothing in the fiduciary responsibility provisions of ERISA is to be construed to preclude the use of plan assets to pay for reasonable expenses in providing investment advice.

Study and determination by the Secretary of Labor; class exemption

Under the provision, the Secretary of Labor must determine, in consultation with the Secretary of the Treasury, whether there is any computer model investment advice program that can be used by IRAs and that meets the requirements of the provision. The determination is to be made on the basis of information to be solicited by the Secretary of Labor as described below. Under the provision, a computer model investment advice program must (1) use relevant information about the beneficiary, (2) take into account the full range of investments, including equities and bonds, in determining the options for the investment portfolio of the beneficiary, and (3) allow the account beneficiary, in directing the investment of assets, sufficient flexibility in obtaining advice to evaluate and select options. The Secretary of Labor must report the results of this determination to the House Committees on Ways and Means and Education and the Workforce and the Senate Committees on Finance and Health, Education, Labor, and Pensions no later than December 31, 2007.

As soon as practicable after the date of enactment, the Secretary of Labor, in consultation with the Secretary of the Treasury, must solicit information as to the feasibility of the application of computer model investment advice programs for IRAs, including from (1) at least the top 50 trustees of IRAs, determined on the basis of assets held by such trustees, and (2) other persons offering such programs based on nonproprietary products. The information solicited by the Secretary of Labor from such trustees and other persons is to include information on their computer modeling capabilities with respect to the current year and the preceding year, including their capabilities for investment accounts they maintain. If a person from whom the Secretary of

Labor solicits information does not provide such information within 60 days after the solicitation, the person is not entitled to use any class exemption granted by the Secretary of Labor as required under the provision (as discussed below) unless such failure is due to reasonable cause and not willful neglect.

The exemptions provided under the provision with respect to an eligible investment advice arrangement involving a computer model do not apply to IRAs. If the Secretary of Labor determines that there is a computer model investment advice program that can be used by IRAs, the exemptions provided under the provision with respect to an eligible investment advice arrangement involving a computer model can apply to IRAs.

If, as a result of the study of this issue as directed by the provision, the Secretary of Labor determines that there is not such a program, the Secretary of Labor must grant a class exemption from prohibited transaction treatment for (1) the provision of investment advice by a fiduciary adviser to beneficiaries of IRAs; (2) investment transactions pursuant to the advice; and (3) the direct or indirect receipt of fees or other compensation in connection with the provision of the advice or an investment transaction pursuant to the advice. Application of the exemptions are to be subject to conditions as are set forth in the class exemption and as are (1) in the interests of the IRA and its beneficiary and protective of the rights of the beneficiary, and (2) necessary to ensure the requirements of the applicable exemptions and the investment advice provided utilizes prescribed objective criteria to provide asset allocation portfolios comprised of securities or other property available as investments under the IRA. Such conditions could require that the fiduciary adviser providing the advice (1) adopt written policies and procedures that ensure the advice provided is not biased in favor of investments offered by the fiduciary adviser or a related person, and (2) appoint an individual responsible for annually reviewing the advice provided to determine that the advice is provided in accordance with the policies and procedures in (1).

If the Secretary of Labor later determines that there is any computer model investment advice program that can be used by IRAs, the class exemption ceases to apply after the later of (1) the date two years after the Secretary's later determination, or (2) the date three years after the date the exemption first took effect.

Any person may request the Secretary of Labor to make a determination with respect to any computer model investment advice program as to whether it can be used by IRAs, and the Secretary must make such determination within 90 days of the request. If the Secretary determines that the program cannot be so used, within 10 days of the determination, the Secretary must notify the House Committees on Ways and Means and Education and the Workforce and the Senate Committees on Finance and Health, Education, Labor, and Pensions thereof and the reasons for the determination.

Effective Date

The provisions are effective with respect to investment advice provided after December 31, 2006. The provision relating to the study by the Secretary of Labor is effective on the date of enactment.

B. Prohibited Transaction Rules Relating to Financial Investments (secs. 408, 412(a), and 502(i) and new sec. 3(42) of ERISA, and sec. 4975 of the Code)

1. Exemption for block trading

Present Law

Present law provides statutory exemptions from the prohibited transaction rules for certain transactions.[130] Present law does not provide a statutory prohibited transaction exemption for block trades. For purposes of the prohibited transaction rules, a fiduciary means any person who (1) exercises any authority or control respecting management or disposition of the plan's assets, (2) renders investment advice for a fee or other compensation with respect to any plan moneys or property, or has the authority or responsibility to do so, or (3) has any discretionary authority or responsibility in the administration of the plan.

Explanation of Provision

The provision provides prohibited transaction exemptions under ERISA and the Code for a purchase or sale of securities or other property (as determined by the Secretary of Labor) between a plan and a disqualified person (other than a fiduciary) involving a block trade if: (1) the transaction involves a block trade; (2) at the time of the transaction, the interest of the plan (together with the interests of any other plans maintained by the same plan sponsor) does not exceed 10 percent of the aggregate size of the block trade; (3) the terms of the transaction, including the price, are at least as favorable to the plan as an arm's length transaction with an unrelated party; and (4) the compensation associated with the transaction must be no greater than the compensation associated with an arm's length transaction with an unrelated party. For purposes of the provision, block trade is defined as any trade of at least 10,000 shares or with a market value of at least $200,000 that will be allocated across two or more unrelated client accounts of a fiduciary. Examples of property other than securities that the Secretary of labor may apply the exemption to include (but are not limited to) future contracts and currency.

Effective Date

The provision is effective with respect to transactions occurring after the date of enactment.

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[130] In addition, under ERISA section 408(a), the Secretary of Labor may grant exemptions with respect to particular transactions or classes of transactions after consultation and coordination with the Secretary of Treasury. An exemption may not be granted unless the Secretary of Labor finds that the exemption is administratively feasible, in the interests of the plan and its participants and beneficiaries, and protective of the rights of plan participants and beneficiaries.

2. Bonding relief

Present Law

Subject to certain exceptions, ERISA requires a plan fiduciary and any person handling plan assets to be bonded, generally in an amount between $1,000 and $500,000. An exception to the bonding requirement generally applies for a fiduciary (or a director, officer, or employee of the fiduciary) that is a corporation authorized to exercise trust powers or conduct an insurance business if the corporation is subject to supervision or examination by Federal or State regulators and meets certain financial requirements.

Explanation of Provision

The provision provides an exception to the ERISA bonding requirement for an entity registered as a broker or a dealer under the Securities Exchange Act of 1934 if the broker or dealer is subject to the fidelity bond requirements of a self-regulatory organization (within the meaning of the Securities Exchange Act of 1934).

Effective Date

The provision is effective for plan years beginning after the date of enactment.

3. Exemption for electronic communication network

Present Law

Present law provides statutory exemptions from the prohibited transaction rules for certain transactions.[131] Present law does not provide a statutory prohibited transaction exemption for transactions made through an electronic communication network, but such transactions may be permitted if the parties are not known to each other (a "blind" transaction).

Explanation of Provision

The provision provides a prohibited transaction exemption under ERISA and the Code for a transaction involving the purchase or sale of securities (or other property as determined under regulations) between a plan and a party in interest if: (1) the transaction is executed through an electronic communication network, alternative trading system, or similar execution system or trading venue that is subject to regulation and oversight by (a) the applicable Federal regulating entity or (b) a foreign regulatory entity as the Secretary may determine under regulations; (2) either (a) neither the execution system nor the parties to the transaction take into account the identity of the parties in the execution of trades, or (b) the transaction is effected

[131] In addition, under ERISA section 408(a), the Secretary of Labor may grant exemptions with respect to particular transactions or classes of transactions after consultation and coordination with the Secretary of Treasury. An exemption may not be granted unless the Secretary of Labor finds that the exemption is administratively feasible, in the interests of the plan and its participants and beneficiaries, and protective of the rights of plan participants and beneficiaries.

under rules designed to match purchases and sales at the best price available through the execution system in accordance with applicable rules of the SEC or other relevant governmental authority; (3) the price and compensation associated with the purchase and sale are not greater than an arm's length transaction with an unrelated party; (4) if the disqualified person has an ownership interest in the system or venue, the system or venue has been authorized by the plan sponsor or other independent fiduciary for this type of transaction; and (5) not less than 30 days before the first transaction of this type executed through any such system or venue, a plan fiduciary is provided written notice of the execution of the transaction through the system or venue.

Examples of other property for purposes of the exemption include (but are not limited to) futures contracts and currency.

Effective Date

The provision is effective with respect to transactions occurring after the date of enactment.

4. Exemption for service providers

Present Law

Certain transactions are exempt from prohibited transaction treatment if made for adequate consideration. For this purpose, adequate consideration means: (1) in the case of a security for which there is a generally recognized market, either the price of the security prevailing on a national securities exchange registered under the Securities Exchange Act of 1934, or, if the security is not traded on such a national securities exchange, a price not less favorable to the plan than the offering price for the security as established by the current bid and asked prices quoted by persons independent of the issuer and of any disqualified person; and (2) in the case of an asset other than a security for which there is a generally recognized market, the fair market value of the asset as determined in good faith by a trustee or named fiduciary pursuant to the terms of the plan and in accordance with regulations.[132]

Explanation of Provision

The provision provides a prohibited transaction exemption under ERISA for certain transactions (such as sales of property, loans, and transfers or use of plan assets) between a plan and a person that is a party in interest solely by reason of providing services (or solely by reason of having certain relationships with a service provider), but only if, in connection with the transaction, the plan receives no less, nor pays no more, than adequate consideration. For this purpose, adequate consideration means: (1) in the case of a security for which there is a generally recognized market, the price of the security prevailing on a national securities exchange registered under the Securities Exchange Act of 1934, taking into account factors such as the size of the transaction and marketability of the security, or, if the security is not traded on

[132] ERISA sec. 3(18).

such a national securities exchange, a price not less favorable to the plan than the offering price for the security as established by the current bid and asked prices quoted by persons independent of the issuer and of any disqualified person, taking into account factors such as the size of the transaction and marketability of the security; and (2) in the case of an asset other than a security for which there is a generally recognized market, the fair market value of the asset as determined in good faith by a fiduciary or named fiduciaries in accordance with regulations. The exemption does not apply to a fiduciary (or an affiliate) who has or exercises any discretionary authority or control with respect to the investment of the assets involved in the transaction or provides investment advice with respect to the assets.

Effective Date

The provision is effective with respect to transactions occurring after the date of enactment.

5. Relief for foreign exchange transactions

Present Law

Present law provides statutory exemptions from the prohibited transaction rules for certain transactions.[133] Present law does not provide a statutory prohibited transaction exemption for foreign exchange transactions.

Explanation of Provision

The provision provides a prohibited transaction exemption under ERISA and the Code for foreign exchange transactions between a bank or broker-dealer (or an affiliate of either) and a plan in connection with the sale, purchase, or holding of securities or other investment assets (other than a foreign exchange transaction unrelated to any other investment in securities or other investment assets) if: (1) at the time the foreign exchange transaction is entered into, the terms of the transaction are not less favorable to the plan than the terms generally available in comparable arm's length foreign exchange transactions between unrelated parties or the terms afforded by the bank or the broker-dealer (or any affiliate thereof) in comparable arm's-length foreign exchange transactions involving unrelated parties; (2) the exchange rate used for a particular foreign exchange transaction may not deviate by more than three percent from the interbank bid and asked rates at the time of the transaction for transactions of comparable size and maturity as displayed on an independent service that reports rates of exchange in the foreign currency market for such currency; and (3) the bank, broker-dealer (and any affiliate of either) does not have investment discretion or provide investment advice with respect to the transaction.

[133] In addition, under ERISA section 408(a), the Secretary of Labor may grant exemptions with respect to particular transactions or classes of transactions after consultation and coordination with the Secretary of Treasury. An exemption may not be granted unless the Secretary of Labor finds that the exemption is administratively feasible, in the interests of the plan and its participants and beneficiaries, and protective of the rights of plan participants and beneficiaries.

Effective Date

The provision is effective with respect to transactions occurring after the date of enactment.

6. Definition of plan asset vehicle

Present Law

Under ERISA regulations, applicable also for purposes of the prohibited transaction rules of the Code, when a plan holds a non-publicly-traded equity interest in an entity, the assets of the entity may be considered plan assets in certain circumstances unless equity participation in the entity by benefit plan inventors is not significant.[134] In general, such equity participation is significant if, immediately after the most recent acquisition of any equity interest in the entity, 25 percent or more of the value of any class of equity interest in the entity (disregarding certain interests) is held by benefit plan investors, defined as (1) employer-sponsored plans (including those exempt from ERISA, such as governmental plans), (2) other arrangements, such as IRAs, that are subject only to the prohibited transaction rules of the Code, and (3) any entity whose assets are plan assets by reason of a plan's investment in the entity.[135] In that case, unless an exception applies, plan assets include the plan's equity interest in the entity and an undivided interest in each of the underlying assets of the entity.

Explanation of Provision

Under the provision, the term "plan assets" means plan assets as defined under regulations prescribed by the Secretary of Labor. Under the regulations, the assets of any entity are not to be treated as plan assets if, immediately after the most recent acquisition of any equity interest in the entity, less than 25 percent of the total value of each class of equity interest in the entity (disregarding certain interests) is held by benefit plan investors. For this purpose, an entity is considered to hold plan assets only to the extent of the percentage of the equity interest held by benefit plan investors, which means an employee benefit plan subject to the fiduciary rules of ERISA, any plan to which the prohibited transaction rules of the Code applies, and any entity whose underlying assets include plan assets by reason of a plan's investment in such entity.

Effective Date

The provision is effective with respect to transactions occurring after the date of enactment.

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[134] 29 C.F.R. sec. 2510.3-101(a) (2005). As a result, a person who exercises authority or control respecting management or disposition of the assets of the entity or renders investment advice with respect to the assets for a fee (direct or indirect) is a plan fiduciary.

[135] 29 C.F.R. sec. 2510.3-101(f) (2005).

7. Exemption for cross trading

Present Law

Present law provides statutory exemptions from the prohibited transaction rules for certain transactions.[136] Present law does not provide a statutory prohibited transaction exemption for cross trades.

Explanation of Provision

The provision provides prohibited transaction exemptions under ERISA and the Code for a transaction involving the purchase and sale of a security between a plan and any other account managed by the same investment manager if certain requirements are met. These requirements are–

- the transaction is a purchase or sale, for no consideration other than cash payment against prompt delivery of a security for which market quotations are readily available;
- the transaction is effected at the independent current market price of the security;
- no brokerage commission fee (except for customary transfer fees, the fact of which is disclosed) or other remuneration is paid in connection with the transaction;
- a fiduciary (other than the investment manager engaging in the cross trades or any affiliate) for each plan participating in the transaction authorizes in advance of any cross-trades (in a document that is separate from any other written agreement of the parties) the investment manager to engage in cross trades at the investment manager's discretion, after the fiduciary has received disclosure regarding the conditions under which cross trades may take place (but only if the disclosure is separate from any other agreement or disclosure involving the asset management relationship), including the written policies and procedures of the investment manager;
- each plan participating in the transaction has assets of at least $100,000,000, except that, if the assets of a plan are invested in a master trust containing the assets of plans maintained by employers in the same controlled group, the master trust has assets of at least $100,000,000;
- the investment manager provides to the plan fiduciary who has authorized cross trading a quarterly report detailing all cross trades executed by the investment manager in which the plan participated during such quarter, including the following information as applicable: the identity of each security bought or sold, the number of

[136] In addition, under ERISA section 408(a), the Secretary of Labor may grant exemptions with respect to particular transactions or classes of transactions after consultation and coordination with the Secretary of Treasury. An exemption may not be granted unless the Secretary of Labor finds that the exemption is administratively feasible, in the interests of the plan and its participants and beneficiaries, and protective of the rights of plan participants and beneficiaries.

shares or units traded, the parties involved in the cross trade, and the trade price and the method used to establish the trade price;

- the investment manager does not base its fee schedule on the plan's consent to cross trading and no other service (other than the investment opportunities and cost savings available through a cross trade) is conditioned on the plan's consent to cross trading;
- the investment manager has adopted, and cross trades are effected in accordance with, written cross-trading policies and procedures that are fair and equitable to all accounts participating in the cross-trading program and that include a description of the manager's pricing policies and procedures, and the manager's policies and procedures for allocating cross trades in an objective manner among accounts participating in the cross-trading program; and
- the investment manager has designated an individual responsible for periodically reviewing purchases and sales to ensure compliance with the written policies and procedures and, following such review, the individual must issue an annual written report no later than 90 days following the period to which it relates, signed under penalty of perjury, to the plan fiduciary who authorized the cross trading, describing the steps performed during the course of the review, the level of compliance, and any specific instances of noncompliance.

The written report must also notify the plan fiduciary of the plan's right to terminate participation in the investment manager's cross-trading program at any time.

No later than 180 days after the date of enactment, the Secretary of Labor, after consultation with the Securities and Exchange Commission, is directed to issue regulations regarding the content of policies and procedures required to be adopted by an investment manager under the requirements for the exemption.

Effective Date

The provision is effective with respect to transactions occurring after the date of enactment.

C. Correction Period for Certain Transactions Involving Securities and Commodities (sec. 408 of ERISA, and sec. 4975 of the Code)

Present Law

ERISA and the Code prohibit certain transactions between an employer-sponsored retirement plan and a disqualified person (referred to as a "party in interest" under ERISA).[137] Disqualified persons include a fiduciary of the plan, a person providing services to the plan, and an employer with employees covered by the plan. For this purpose, a fiduciary includes any person who (1) exercises any authority or control respecting management or disposition of the plan's assets, (2) renders investment advice for a fee or other compensation with respect to any plan moneys or property, or has the authority or responsibility to do so, or (3) has any discretionary authority or responsibility in the administration of the plan.

Prohibited transactions include (1) the sale, exchange or leasing of property, (2) the lending of money or other extension of credit, (3) the furnishing of goods, services or facilities, (4) the transfer to, or use by or for the benefit of, the income or assets of the plan, (5) in the case of a fiduciary, any act that deals with the plan's income or assets for the fiduciary's own interest or account, and (6) the receipt by a fiduciary of any consideration for the fiduciary's own personal account from any party dealing with the plan in connection with a transaction involving the income or assets of the plan. However, certain transactions are exempt from prohibited transaction treatment, for example, certain loans to plan participants.

Under the Code, if a prohibited transaction occurs, the disqualified person who participates in the transaction is subject to a two-tier excise tax. The first level tax is 15 percent of the amount involved in the transaction. The second level tax is imposed if the prohibited transaction is not corrected within a certain period and is 100 percent of the amount involved. Under ERISA, the Secretary of Labor may assess a civil penalty against a person who engages in a prohibited transaction, other than a transaction with a plan covered by the prohibited transaction rules of the Code (i.e., involving a qualified retirement plan or annuity). The penalty may not exceed five percent of the amount involved in the transaction. If the prohibited transaction is not corrected within 90 days after notice from the Secretary of Labor, the penalty may be up to 100 percent of the amount involved in the transaction.[138] For purposes of these

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[137] Under ERISA, the prohibited transaction rules apply to employer-sponsored retirement plans and welfare benefit plans. Under the Code, the prohibited transaction rules apply to qualified retirement plans and qualified retirement annuities, as well as individual retirement accounts and annuities, Archer MSAs, health savings accounts, and Coverdell education savings accounts. The prohibited transaction rules under ERISA and the Code generally do not apply to governmental plans or church plans.

[138] A prohibited transaction violates the fiduciary responsibility provisions of ERISA. Under section 502(l) of ERISA, in the case of a violation of fiduciary responsibility, a civil penalty is generally imposed of 20 percent of the amount recovered from a person with respect to the violation in a settlement agreement with the Department of Labor or a judicial proceeding, but the penalty is reduced by the amount of any excise tax or other civil penalty with respect to a prohibited transaction.

rules, the "amount involved" generally means the greater of (1) the amount of money and the fair market value of the other property given, or (2) the amount of money and the fair market value of other property received by the plan. The terms "correction" and "correct" mean, with respect to a prohibited transaction, undoing the transaction to the extent possible, but in any case placing the plan in a financial position not worse than the position in which it would be if the disqualified person were acting under the highest fiduciary standards.

For purposes of the prohibited transaction rules of the Code and ERISA, a transaction involving the sale of securities is considered to occur when the transaction is settled (that is, an actual change in ownership of the securities). Under current practice, securities transactions are commonly settled 3 days after the agreement to sell is made. Present law does not provide a statutory prohibited transaction exemption that is based solely on correction of the transaction.

Explanation of Provision

The bill provides a prohibited transaction exemption under ERISA and the Code for a transaction in connection with the acquisition, holding, or disposition of any security or commodity if the transaction is corrected within a certain period, generally within 14 days of the date the disqualified person (or other person knowingly participating in the transaction) discovers, or reasonably should have discovered, the transaction was a prohibited transaction. For this purpose, the term "correct" means, with respect to a transaction: (1) to undo the transaction to the extent possible and in any case to make good to the plan or affected account any losses resulting from the transaction; and (2) to restore to the plan or affected account any profits made through the use of assets of the plan. If the exemption applies, no excise tax is to be assessed with the transaction, any tax assessed is to be abated, and any tax collected is to be credited or refunded as a tax overpayment.

The exemption does not apply to any transaction between a plan and a plan sponsor or its affiliates that involves the acquisition or sale of an employer security or the acquisition, sale, or lease of employer real property. In addition, in the case of a disqualified person (or other person knowingly participating in the transaction), the exemption does not apply if, at the time of the transaction, the person knew (or reasonably should have known) that the transaction would constitute a prohibited transaction.

Effective Date

The provision is effective with respect to any transaction that a fiduciary or other person discovers, or reasonably should have discovered, after the date of enactment constitutes a prohibited transaction.

D. Inapplicability of Relief from Fiduciary Liability During Suspension of Ability of Participant or Beneficiary to Direct Investments (sec. 404(c) of ERISA)

Present Law

Fiduciary rules under ERISA

ERISA contains general fiduciary duty standards that apply to all fiduciary actions, including investment decisions. ERISA requires that a plan fiduciary generally must discharge its duties solely in the interests of participants and beneficiaries and with the care, skill, prudence, and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims. With respect to plan assets, ERISA requires a fiduciary to diversify the investments of the plan so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so.

A plan fiduciary that breaches any of the fiduciary responsibilities, obligations, or duties imposed by ERISA is personally liable to make good to the plan any losses to the plan resulting from such breach and to restore to the plan any profits the fiduciary has made through the use of plan assets. A plan fiduciary may be liable also for a breach of responsibility by another fiduciary (a "co-fiduciary") in certain circumstances.

Special rule for participant control of assets

ERISA provides a special rule in the case of a defined contribution plan that permits participants to exercise control over the assets in their individual accounts. Under the special rule, if a participant exercises control over the assets in his or her account (as determined under regulations), the participant is not deemed to be a fiduciary by reason of such exercise and no person who is otherwise a fiduciary is liable for any loss, or by reason of any breach, that results from the participant's exercise of control.

Regulations issued by the Department of Labor describe the requirements that must be met in order for a participant to be treated as exercising control over the assets in his or her account. With respect to investment options, the regulations provide in part:

- the plan must provide at least three different investment options, each of which is diversified and has materially different risk and return characteristics;
- the plan must allow participants to give investment instructions with respect to each investment option under the plan with a frequency that is appropriate in light of the reasonably expected market volatility of the investment option (the general volatility rule);
- at a minimum, participants must be allowed to give investment instructions at least every three months with respect to least three of the investment options, and those investment options must constitute a broad range of options (the three-month minimum rule);

- participants must be provided with detailed information about the investment options, information regarding fees, investment instructions and limitations, and copies of financial data and prospectuses; and
- specific requirements must be satisfied with respect to investments in employer stock to ensure that employees' buying, selling, and voting decisions are confidential and free from employer influence.

If these and the other requirements under the regulations are met, a plan fiduciary may be liable for the investment options made available under the plan, but not for the specific investment decisions made by participants.

Blackout notice

Under ERISA, the plan administrator of a defined contribution plan generally must provide at least 30 days advance notice of a blackout period (a "blackout notice") to plan participants and beneficiaries to whom the blackout period applies.[139] Failure to provide a blackout notice may result in a civil penalty up to $100 per day for each failure with respect to a single participant or beneficiary.

A blackout period is any period during which any ability of participants or beneficiaries under the plan, which is otherwise available under the terms of the plan, to direct or diversify assets credited to their accounts, or to obtain loans or distributions from the plan, is temporarily suspended, limited, or restricted if the suspension, limitation, or restriction is for any period of more than three consecutive business days. However, a blackout period does not include a suspension, limitation, or restriction that (1) occurs by reason of the application of securities laws, (2) is a change to the plan providing for a regularly scheduled suspension, limitation, or restriction that is disclosed through a summary of material modifications to the plan or materials describing specific investment options under the plan, or changes thereto, or (3) applies only to one or more individuals, each of whom is a participant, alternate payee, or other beneficiary under a qualified domestic relations order.

A blackout notice must be written in a manner calculated to be understood by the average plan participant and must include (1) the reasons for the blackout period, (2) an identification of the investments and other rights affected, (3) the expected beginning date and length of the blackout period, and (4) in the case of a blackout period affecting investments, a statement that the participant or beneficiary should evaluate the appropriateness of current investment decisions in light of the inability to direct or diversify assets during the blackout period, and (5) other matters as required by regulations. If the expected beginning date or length of the blackout period changes after notice has been provided, the plan administrator must provide notice of the change (and specify any material change in other matters related to the blackout) to affected participants and beneficiaries as soon as reasonably practicable.

[139] ERISA sec. 101(i).

Explanation of Provision

The bill amends the special rule applicable if a participant exercises control over the assets in his or her account with respect to a case in which a qualified change in investment options offered under the defined contribution plan occurs. In such a case, for purposes of the special rule, a participant or beneficiary who has exercised control over the assets in his or her account before a change in investment options is not treated as not exercising control over such assets in connection with the change if certain requirements are met.

For this purpose, a qualified change in investment options means a change in the investment options offered to a participant or beneficiary under the terms of the plan, under which: (1) the participant's account is reallocated among one or more new investment options offered instead of one or more investment options that were offered immediately before the effective date of the change; and (2) the characteristics of the new investment options, including characteristics relating to risk and rate of return, are, immediately after the change, reasonably similar to the characteristics of the investment options offered immediately before the change.

The following requirements must be met in order for the rule to apply: (1) at least 30 but not more than 60 days before the effective date of the change in investment options, the plan administrator furnishes written notice of the change to participants and beneficiaries, including information comparing the existing and new investment options and an explanation that, in the absence of affirmative investment instructions from the participant or beneficiary to the contrary, the account of the participant or beneficiary will be invested in new options with characteristics reasonably similar to the characteristics of the existing investment options; (2) the participant or beneficiary has not provided to the plan administrator, in advance of the effective date of the change, affirmative investment instructions contrary to the proposed reinvestment of the participant's or beneficiary's account; and (3) the investment of the participant's or beneficiary's account as in effect immediately before the effective date of the change was the product of the exercise by such participant or beneficiary of control over the assets of the account.

In addition, the provision amends the special rule applicable if a participant or beneficiary exercises control over the assets in his or her account so that the provision under which no person who is otherwise a fiduciary is liable for any loss, or by reason of any breach, that results from the participant's or beneficiary's exercise of control does not apply in connection with a blackout period[140] in which the participant's or beneficiary's ability to direct the assets in his or her account is suspended by a plan sponsor or fiduciary. However, if a plan sponsor or fiduciary meets the requirements of ERISA in connection with authorizing and implementing a blackout period, any person who is otherwise a fiduciary is not liable under ERISA for any loss occurring during the blackout period.

Not later than one year after the date of enactment, the Secretary of Labor is to issue interim final regulations providing guidance, including safe harbors, on how plan sponsors or other affected fiduciaries can satisfy their fiduciary responsibilities during any blackout period.

[140] For this purpose, blackout period is defined as under the present-law provision requiring advance notice of a blackout period.

Effective Date

The provision generally applies to plan years beginning after December 31, 2007. In the case of a plan maintained pursuant to one or more collective bargaining agreements, the provision is effective for plan years beginning after the earlier of (1) the later of December 31, 2008 or the date on which the last of such collective bargaining agreements terminates (determined without regard to any extension thereof after the date of enactment), or (2) December 31, 2009.

E. Increase in Maximum Bond Amount (sec. 412(a) of ERISA)

Present Law

ERISA generally requires every plan fiduciary and every person who handles funds or other property of a plan (a "plan official") to be bonded. The amount of the bond is fixed annually at no less than ten percent of the funds handled, but must be at least $1,000 and not more than $500,000 (unless the Secretary of Labor prescribes a larger amount after notice and an opportunity to be heard). The bond is intended to protect plans against loss from acts of fraud or dishonesty by plan officials. Qualifying bonds must have as surety a corporate surety company that is an acceptable surety on Federal bonds.

Explanation of Provision

The provision raises the maximum bond amount to $1 million in the case of a plan that holds employer securities. The provision raises the maximum bond amount to $1 million in the case of a plan that holds employer securities. A plan would not be considered to hold employer securities within the meaning of this section where the only securities held by the plan are part of a broadly diversified fund of assets, such as mutual or index funds.

Effective Date

The provision is effective for plan years beginning after December 31, 2007.

F. Increase in Penalties for Coercive Interference with Exercise of ERISA Rights (sec. 511 of ERISA)

Present Law

ERISA prohibits any person from using fraud, force or violence (or threatening force or violence) to restrain, coerce, or intimidate (or attempt to) any plan participant or beneficiary in order to interfere with or prevent the exercise of their rights under the plan, ERISA, or the Welfare and Pension Plans Disclosure Act ("WPPDA"). Willful violation of this prohibition is a criminal offense subject to a $10,000 fine or imprisonment of up to one year, or both.

Explanation of Provision

The provision increases the penalties for willful acts of coercive interference with participants' rights under a plan, ERISA, or the WPPDA. The amount of the fine is increased to $100,000, and the maximum term of imprisonment is increased to 10 years.

Effective Date

The provision is effective for violations occurring on and after the date of enactment.

G. Treatment of Investment of Assets By Plan Where Participant Fails to Exercise Investment Election (sec. 404(c) of ERISA)

Present Law

ERISA imposes standards on the conduct of plan fiduciaries, including persons who make investment decisions with respect to plan assets. Fiduciaries are personally liable for any losses to the plan due to a violation of fiduciary standards.

An individual account plan may permit participants to make investment decisions with respect to their accounts. ERISA fiduciary liability does not apply to investment decisions made by plan participants if participants exercise control over the investment of their individual accounts, as determined under ERISA regulations. In that case, a plan fiduciary may be responsible for the investment alternatives made available, but not for the specific investment decisions made by participants.

Explanation of Provision

Under the bill, a participant is treated as exercising control with respect to assets in an individual account plan if such amounts are invested in a default arrangement in accordance with Department of Labor regulations until the participant makes an affirmative election regarding investments. Such regulations must provide guidance on the appropriateness of certain investments for designation as default investments under the arrangement, including guidance regarding appropriate mixes of default investments and asset classes which the Secretary considers consistent with long-term capital appreciation or long-term capital preservation (or both), and the designation of other default investments. The Secretary of Labor is directed to issue regulations under the provision within six months of the date of enactment.

In order for this treatment to apply, notice of the participant's rights and obligations under the arrangement must be provided. Under the notice requirement, within a reasonable period before the plan year, the plan administrator must give each participant notice of the rights and obligations under the arrangement which is sufficiently accurate and comprehensive to apprise the participant of such rights and obligations and is written in a manner to be understood by the average participant. The notice must include an explanation of the participant's rights under the arrangement to specifically elect to exercise control over the assets in the participant's account. In addition, the participant must have a reasonable period of time after receipt of the notice and before the assets are first invested to make such an election. The notice must also explain how contributions made under the arrangement will be invested in the absence of any investment election by the employee.

Effective Date

The provision is effective for plan years beginning after December 31, 2006.

H. Clarification of Fiduciary Rules

Present Law

ERISA imposes standards on the conduct of plan fiduciaries. Fiduciaries are personally liable for any losses to the plan due to a violation of fiduciary standards.

An ERISA interpretive bulletin requires a fiduciary choosing an annuity provider for purposes of distributions from a plan (whether on separation or retirement of a participant or on termination of the plan) to take steps calculated to obtain the safest available annuity, based on the annuity provider's claims paying ability and creditworthiness, unless under the circumstances it would be in the interest of participants to do otherwise.[141]

Explanation of Provision

The bill directs the Secretary of Labor to issue final regulations within one year of the date of enactment, clarifying that the selection of an annuity contract as an optional form of distribution from a defined contribution plan is not subject to the safest available annuity requirement under the ERISA interpretive bulletin and is subject to all otherwise applicable fiduciary standards.

The regulations to be issued by the Secretary of Labor are intended to clarify that the plan sponsor or other applicable plan fiduciary is required to act in accordance with the prudence standards of ERISA section 404(a). It is not intended that there be a single safest available annuity contract since the plan fiduciary must select the most prudent option specific to its plan and its participants and beneficiaries. Furthermore, it is not intended that the regulations restate all of the factors contained in the interpretive bulletin.

Effective Date

The provision is effective on the date of enactment.

[141] 29 C.F.R. sec. 2509.95-1 (2005).

TITLE VII: BENEFIT ACCRUAL STANDARDS
(Secs. 203, 204, and 205 of ERISA, secs. 411 and 417 of the Code, and sec. 4(i)(2) of ADEA)

Present Law

Prohibition on age discrimination

In general

A prohibition on age discrimination applies to benefit accruals under a defined benefit pension plan.[142] Specifically, an employee's benefit accrual may not cease, and the rate of an employee's benefit accrual may not be reduced, because of the attainment of any age. However, this prohibition is not violated solely because the plan imposes (without regard to age) a limit on the amount of benefits that the plan provides or a limit on the number of years of service or years of participation that are taken into account for purposes of determining benefit accrual under the plan. Moreover, for purposes of this requirement, the subsidized portion of any early retirement benefit may be disregarded in determining benefit accruals.

In December 2002, the IRS issued proposed regulations that dealt with the application of the age discrimination rules.[143] The proposed regulations included rules for applying the age discrimination rules with respect to accrued benefits, optional forms of benefit, ancillary benefits, and other rights and features provided under a plan. Under the proposed regulations, for purposes of applying the prohibition on age discrimination to defined benefit pension plans, an employee's rate of benefit accrual for a year is generally the increase in the employee's accrued normal retirement benefit (i.e., the benefit payable at normal retirement age) for the plan year. In the preamble to the proposed regulations, the IRS requested comments on other approaches to determining the rate of benefit accrual, such as allowing accrual rates to be averaged over multiple years (for example, to accommodate plans that provide a higher rate of accrual in earlier years) or, in the case of a plan that applies an offset, determining accrual rates before application of the offset. As discussed below, in June 2004, the IRS announced the withdrawal of the proposed regulations.

Cash balance and other hybrid plans

Certain types of defined benefit pension plans, such as cash balance plans and pension equity plans, are referred to as "hybrid" plans because they combine features of a defined benefit pension plan and a defined contribution plan.

Under a cash balance plan, benefits are determined by reference to a hypothetical account balance. An employee's hypothetical account balance is determined by reference to hypothetical annual allocations to the account ("pay credits") (e.g., a certain percentage of the employee's compensation for the year) and hypothetical earnings on the account ("interest credits"). Cash

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[142] Code sec. 411(b)(1)(H); ERISA sec. 204(b)(1)(H).

[143] 67 Fed. Reg. 76123.

balance plans are generally designed so that, when a participant receives a pay credit for a year of service, the participant also receives the right to future interest on the pay credit, regardless of whether the participant continues employment (referred to as "front-loaded" interest credits). That is, the participant's hypothetical account continues to be credited with interest after the participant stops working for the employer. As a result, if an employee terminates employment and defers distribution to a later date, interest credits will continue to be credited to that employee's hypothetical account.

Another type of hybrid plan is a pension equity plan (sometimes referred to as a "PEP"). Under a pension equity plan, benefits are generally described as a percentage of final average pay, with the percentage determined on the basis of points received for each year of service, which are often weighted for older or longer service employees. Pension equity plans commonly provide interest credits for the period between a participant's termination of employment and commencement of benefits.

Because of the front-loaded nature of accruals under cash balance plans, there is a longer time for interest credits to accrue on a pay credit to the account of a younger employee. Thus, a pay credit received at a younger age may provide a larger annuity benefit at normal retirement age than the same pay credit received at an older age. A similar effect may occur with respect to other types of hybrid plan designs, including pension equity plans.

IRS consideration of cash balance plans began in the early 1990s.[144] At that time, the focus was on the question of whether such plans satisfied the nondiscrimination requirements under section 401(a)(4), which requires that benefits or contributions not discriminate in favor of highly compensated employees. Treasury regulations issued in 1991 under section 401(a)(4) provided a safe harbor for cash balance plans that provide frontloaded interest credits and meet certain other requirements. In connection with the issuance of these regulations, Treasury spoke to the cash balance age discrimination issue. The preamble to the final regulations stated "[t]he fact that interest adjustments through normal retirement age are accrued in the year of the related hypothetical allocation will not cause a cash balance plan to fail to satisfy the requirements of section 411(b)(1)(H), relating to age-based reductions in the rate at which benefits accrue under a plan."[145] Many interpreted this language as Treasury's position that cash balance plan designs do not violate the prohibitions on age discrimination. The IRS has not to date asserted that hybrid plan formulas result in per se violations of age discrimination requirements. In 1999, Treasury and the IRS issued an announcement and a Federal Register notice stating that the question of whether cash balance conversions were age discriminatory or otherwise inconsistent with plan qualification rules was under active consideration, that further IRS determination letters on conversions to cash balance plans would therefore be suspected be referral to the IRS National Office until the IRS and Treasury had resolved the issues, and inviting public comment on the issues. Hundreds of comments were submitted. The December 2002 proposed regulations, noted above, provided that an employee's rate of benefit accrual for a year is

[144] Statement of Stuart L. Brown, Chief Counsel Internal Revenue Service, before the Senate Committee on Health, Education, Labor, and Pensions (Sept. 21, 1999).

[145] 56 Fed. Reg. 47528 (Sept. 19, 1991).

generally the increase in the employee's accrued normal retirement benefit (i.e., the benefit payable at normal retirement age) for the plan year. However, the proposed regulations provided a special rule under which an employee's rate of benefit accrual under a cash balance plan meeting certain requirements (an "eligible" cash balance plan) was based on the rate of pay credit provided under the plan. Thus, under the proposed regulations, an eligible cash balance plan would not violate the prohibition on age discrimination solely because pay credits for younger employees earn interest credits for a longer period.

Section 205 of the Consolidated Appropriations Act, 2004 (the "2004 Appropriations Act"), enacted January 24, 2004, provides that none of the funds made available in the 2004 Appropriations Act may be used by the Secretary of the Treasury, or his designee, to issue any rule or regulation implementing the 2002 proposed Treasury age discrimination regulations or any regulation reaching similar results.[146] The 2004 Appropriations Act also required the Secretary of the Treasury within 180 days of enactment to present to Congress a legislative proposal for providing transition relief for older and longer-service participants affected by conversions of their employers' traditional pension plans to cash balance plans. The Treasury Department complied with this requirement by including in the President's budget for fiscal year 2005 a proposal relating to cash balance and other hybrid plans that specifically addresses conversions to such plans, the application of the age discrimination rules to such plans, and the determination of minimum lump sums under such plans.[147] In June 2004, the IRS announced the withdrawal of the proposed age discrimination regulations, including the special rules for eligible cash balance plans.[148] According to the Announcement, "[t]his will provide Congress an opportunity to . . . address cash balance and other hybrid plan issues through legislation."

The application of the age discrimination rules to hybrid plans has been the subject of litigation. The decisions are divided on how ERISA requires courts to calculate the rate of benefit accrual.[149]

Calculating minimum lump-sum distributions under hybrid plans

Defined benefit pension plans, including cash balance plans and other hybrid plans, are required to provide benefits in the form of a life annuity commencing at a participant's normal retirement age. If the plan permits benefits to be paid in certain other forms, such as a lump sum,

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[146] Pub. L. No. 108-199 (2004).

[147] A similar proposal was also contained in the President's budget proposal for fiscal year 2006.

[148] IRS Announcement 2004-57, 2004-27 I.R.B. 15.

[149] Compare *Register v. PNC Financial Services Group, Inc*. No. 04-CV-6097, 2005 WL 3120268 (E.D. Pa. Nov. 21, 2005), *Tootle v. ARINC, Inc.*, 222 F.R.D. 88 (D. Md. 2004); *Eaton v. Oanan Corp.*, 117 F. Supp. 2d 812 (S.D. Ind. 2000); with *Cooper v. IBM Personal Pension Plan*, 274 F. Supp.2d 1010 (S.D. Ill. 2003), *Richards v. Fleetboston Financial Corp.*, 427 F.Supp.2d 150 (D. Conn. 2006), *Donaldson v. Pharmacia Pension Plan*, 2006 WL 1669789, 38 E.B.C. 1006 (S.D. Ill. June 14, 2006). See also *Campbell v. BankBoston*, 327 F.3d 1 (1st Cir. 2003) and *Hirt v. Equitable Retirement Plan for Employees, Managers and Agents* No. 01 Civ. 7920 (AKH), 2006 WL 2023545 (S.D.N.Y. July 20, 2006).

minimum present value rules apply, under which the alternative form of benefit cannot be less than the present value of the life annuity payable at normal retirement age, determined using certain statutorily prescribed interest and mortality assumptions.[150]

Most cash balance plans are designed to permit a lump-sum distribution of a participant's hypothetical account balance upon termination of employment. This raises an issue as to the whether a distribution of a participant's hypothetical account balance satisfies the minimum present value rules. In 1996, the IRS issued proposed guidance (Notice 96-8) on the application of the minimum present value rules to lump-sum distributions under cash balance plans and requested public comments in anticipation of proposed regulations incorporating the proposed guidance.[151]

Under the proposed guidance, a lump-sum distribution from a cash balance plan cannot be less than the present value of the benefit payable at normal retirement age, determined using the statutory interest and mortality assumptions. For this purpose, a participant's normal retirement benefit under a cash balance plan is generally determined by projecting the participant's hypothetical account balance to normal retirement age by crediting to the account future interest credits at the plan rate, the right to which has already accrued, and converting the projected account balance to an actuarially equivalent life annuity payable at normal retirement age, using the interest and mortality assumptions specified in the plan. The proposed guidance also included rules under which cash balance plans can provide lump-sum distributions in the amount of participants' hypothetical account balances if the rate at which interest credits are provided under the plan is not greater (or is assumed not to be greater) than the statutory interest rate.

Under the approach in the proposed guidance, a difference in the rate of interest credits provided under the plan, which is used to project the account balance forward to normal retirement age, and the statutory rate used to determine the lump-sum value (i.e., present value) of the accrued benefit can cause a discrepancy between the value of the minimum lump-sum and the employee's hypothetical account balance. This effect is sometimes referred to as "whipsaw." In particular, if the plan's interest crediting rate is higher than the statutory interest rate, then the resulting lump-sum amount will generally be greater than the hypothetical account balance.

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[150] Code sec. 417(e); ERISA sec. 205(g)(3). For years before 1995, these provisions required the use of an interest rate based on interest rates determined by the PBGC. For years after 1994, these provisions require the use of an interest rate based on interest rates on 30-year Treasury securities and a mortality table specified by the IRS.

[151] Notice 96-8, 1996-1996-1 C.B. 359. The Notice provides that regulations will be effective prospectively and, for plan years before regulations are effective, allows lump-sum distributions from cash balance plans that provide front-loaded interest credits to be based on a reasonable, good-faith interpretation of the minimum present value rules, taking into account preexisting guidance. The Notice further provides that plans that comply with the guidance in the Notice are deemed to be applying a reasonable, good-faith interpretation.

Several courts, but not all, have applied an approach similar to the approach in the proposed guidance in cases involving the determination of lump sums under cash balance plans.[152] Regulations addressing the application of the minimum present value rules to cash balance plans have not been issued.[153]

Explanation of Provision

Age discrimination rules in general

Under the provision, a plan is not treated as violating the prohibition on age discrimination under ERISA, the Code, and ADEA if a participant's accrued benefit,[154] as determined as of any date under the terms of the plan would be equal to or greater than that of any similarly situated, younger individual who is or could be a participant. For this purpose, an individual is similarly situated to a participant if the individual and the participant are (and always have been) identical in every respect (including period of service, compensation, position, date of hire, work history, and any other respect) except for age. Under the provision, the comparison of benefits for older and younger participants applies to all possible participants under all possible dates under the plan, in the same manner as the present-law application of the backloading and accrual rules.

In addition, in determining a participant's accrued benefit for this purpose, the subsidized portion of any early retirement benefit or any retirement type subsidy is disregarded. In some cases the value of an early retirement subsidy may be difficult to determine; it is therefore intended that a reasonable approximation of such value may be used for this purpose. In calculating the accrued benefit, the benefit may, under the terms of the plan, be calculated as an annuity payable at normal retirement age, the balance of a hypothetical account, or the current value of the accumulated percentage of the employee's final average compensation. That is, the

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[152] *Berger v. Xerox Corp. Retirement Income Guarantee Plan*, 338 F.3d 755 (7th Cir. 2003); *Esden v. Bank of Boston*, 229 F.3d 154 (2d Cir. 2000), cert. dismissed, 531 U.S. 1061 (2001); *Lyons v. Georgia Pacific Salaried Employees Retirement Plan*, 221 F.3d 1235 (11th Cir. 2000) ("*Lyons II*"), cert. denied, 532 U.S. 967 (2001); and *West v. AK Steel Corp. Retirement Accumulation Plan*, 318 F. Supp.2d 579 (S.D. Ohio 2004). In *Lyons II*, the court reversed a lower court holding in *Lyons v. Georgia Pacific Salaried Employees Retirement Plan*, 66 F. Supp.2d 1328 (N.D. Ga. 1999) ("*Lyons I*"), relating to the application of the minimum present value rules in effect before 1995. The *Lyons II* court limited its analysis to the minimum present value rules in effect as of 1993 when Mr. Lyons received his lump-sum distribution; however, the court indicated that a different result could apply under the law in effect after 1994. On remand, in *Lyons v. Georgia Pacific Salaried Employees Retirement Plan*, 196 F. Supp.2d 1260 (N.D. Ga. 2002) ("*Lyons III*"), the lower court determined that payment of the hypothetical account balance did not violate the minimum present value rules in effect for years after 1994.

[153] As mentioned above, the President's budgets for fiscal years 2005 and 2006 include a proposal relating to cash balance plans that specifically addresses the determination of minimum lump sums under such plans. The President's proposal would eliminate the whipsaw effect and allow the plan to pay the hypothetical account balance, if certain requirements are satisfied.

[154] For purposes of this rule, the accrued benefit means such benefit accrued to date.

age discrimination rules may be applied on the basis of the balance of the a hypothetical account or the current value of the accumulated percentage of the employee's final average compensation, but only if the plan terms provide the accrued benefit in such form. The provision is intended to apply to hybrid plans, including pension equity plans.

The provision makes it clear that a plan is not treated as age discriminatory solely because the plan provides offsets of benefits under the plan to the extent such offsets are allowable in applying the requirements under section 401(a) of the Code. It is intended that such offsets also comply with ERISA and the ADEA.

A plan is not treated as failing to meet the age discrimination requirements solely because the plan provides a disparity in contributions and benefits with respect to which the requirements of section 401(l) of the Code are met.

A plan is not treated as failing to meet the age discrimination requirements solely because the plan provides for indexing of accrued benefits under the plan. Except in the case of any benefit provided in the form of a variable annuity, this rule does not apply with respect to any indexing which results in an accrued benefit less than the accrued benefit determined without regard to such indexing. Indexing for this purpose means, with respect to an accrued benefit, the periodic adjustment of the accrued benefit by means of the application of a recognized investment index or methodology. Under the provision, in no event may indexing be reduced or cease because of age.

Rules for applicable defined benefit plans

In general

Under the provision, an applicable defined benefit plan fails to satisfy the age discrimination rules unless the plan meets certain requirements with respect to interest credits and, in the case of a conversion, certain additional requirements. Applicable defined benefit plans must also satisfy certain vesting requirements.

Interest requirement

A plan satisfies the interest requirement if the terms of the plan provide that any interest credit (or equivalent amount) for any plan year is at a rate that is not less than zero and is not greater than a market rate of return. A plan does not fail to meet the interest requirement merely because the plan provides for a reasonable minimum guaranteed rate of return or for a rate or return that is equal to the greater of a fixed or variable rate of return. An interest credit (or an equivalent amount) of less than zero cannot result in the account balance or similar amount being less than the aggregate amount of contributions credited to the account. The Secretary of the Treasury may provide rules governing the calculation of a market rate of return and for permissible methods of crediting interest to the account (including fixed or variable interest rates) resulting in effective rates of return that meet the requirements of the provision.

If the interest credit rate (or equivalent amount) is a variable rate, the plan must provide that, upon termination of the plan, the rate of interest used to determine accrued benefits under

the plan is equal to the average of the rates of interest used under the plan during the five-year period ending on the termination date.

Conversion rules

Under the provision, special rules apply if an amendment to a defined benefit plan is adopted which would have the effect of converting the plan into an applicable defined benefit plan (an "applicable plan amendment").[155] If an applicable plan amendment is adopted after June 29, 2005, the plan fails to satisfy the age discrimination rules unless the plan provides that the accrued benefit of any individual who was a participant immediately before the adoption of the amendment is not less than the sum of (1) the participant's accrued benefit for years of service before the effective date of the amendment, determined under the terms of the plan as in effect before the amendment; plus (2) the participant's accrued benefit for years of service after the effective date of the amendment, determined under the terms of the plan as in effect after the terms of the amendment.

For purposes of determining the amount in (1) above, the plan must credit the accumulation account or similar amount with the amount of any early retirement benefit or retirement-type subsidy for the plan year in which the participant retires if, as of such time, the participant has met the age, years of service, and other requirements under the plan for entitlement to such benefit or subsidy.

Vesting rules

The provision amends the ERISA and Code rules relating to vesting to provide that an applicable defined benefit plan must provide that each employee who has completed at least three years of serves has a nonforfeitable right to 100 percent of the employee's accrued benefit derived from employer contributions.

Minimum present value rules

The provision provides that an applicable defined benefit plan is not treated as failing to meet the minimum present value rules[156] solely because of the present value of the accrued benefit (or any portion thereof) of any participant is, under the terms of the plan, equal to the

[155] If the benefits under two or more defined benefit plans established by an employer are coordinated in such a manner as to have the effect of the adoption of an applicable plan amendment, the sponsor of the defined benefit plan or plans providing for the coordination is treated as having adopted an applicable plan amendment as of the date the coordination begins. In addition, the Secretary of Treasury is directed to issue regulations to prevent the avoidance of the requirements with respect to an applicable plan amendment through the use of two or more plan amendments rather than a single amendment.

[156] ERISA sec. 205(g), Code sec. 417(e). A plan complying with the provision also does not violate certain rules relating to vesting (ERISA sec. 203(a)(2) and Code sec. 411(a)(2)) and the determination of the accrued benefit (in the case of a plan which does not provide for employee contributions) (ERISA sec. 204(c) and Code sec. 411(c)).

amount expressed as the balance in the hypothetical account or as an accumulated percentage of the participant's final average compensation.

Rules on plan termination

The provision provides rules for making determinations of benefits upon termination of an applicable defined benefit plan. Such a plan must provide that, upon plan termination, (1) if the interest credit rate (or equivalent amount) under the plan is a variable rate, the rate of interest used to determine accrued benefits under the plan shall be equal to the average of the rates of interest used under the plan during the five-year period ending on the termination date and (2) the interest rate and mortality table used to determine the amount of any benefit under the plan payable in the form of an annuity payable at normal retirement age is the rate and table specified under the plan for such purposes as of the termination date. For purposes of (2), if the rate of interest is a variable rate, then the rate is the average of such rates during the five-year period ending on the termination date.

Definition of applicable defined benefit plan

An applicable defined benefit plan is a defined benefit plan under which the accrued benefit (or any portion thereof) is calculated as the balance of a hypothetical account maintained for the participant or as an accumulated percentage of the participant's final average compensation. The Secretary of the Treasury is to provide rules which include in the definition of an applicable defined benefit plan any defined benefit plan (or portion of such a plan) which has an effect similar to an applicable defined benefit plan.

No inference

Nothing in the provision is to be construed to infer the treatment of applicable defined benefit plans or conversions to such plans under the rules in ERISA, ADEA and the Code prohibiting age discrimination[157] as in effect before the provision is effective. In addition, no inference is to be drawn with respect to the application of the minimum benefit rules to applicable defined benefit plans before the provision is effective.

Regulations relating to mergers and acquisitions

The Secretary of the Treasury is directed to prescribe regulations for the application of the provisions relating to applicable defined benefit plans in cases where the conversion of a plan to a cash balance or similar plan is made with respect to a group of employees who become employees by reason of a merger, acquisition, or similar treatment. The regulations are to be issued not later than 12 months after the date of enactment.

Effective Date

In general, the provision is effective for periods beginning on or after June 29, 2005.

[157] ERISA sec. 204(b)(1)(H), ADEA sec. 4(i)(1), and Code sec. 411(b)(1)(H).

The provision relating to the minimum value rules is effective for distributions after the date of enactment.

In the case of a plan in existence on June 29, 2005, the interest credit and vesting requirements for an applicable defined benefit plan generally apply to years beginning after December 31, 2007, except that the plan sponsor may elect to have such requirements apply for any period after June 29, 2005, and before the first plan year beginning after December 31, 2007. In the case of a plan maintained pursuant to one or more collective bargaining agreements, a delayed effective date applies with respect to the interest credit and vesting requirements for an applicable defined benefit plan.

The provision relating to conversions of plans applies to plan amendments adopted after and taking effect after June 29, 2005, except that a plan sponsor may elect to have such amendments apply to plan amendments adopted before and taking affect after such date.

The direction to the Secretary of the Treasury to issue regulations relating to mergers and acquisitions is effective on the date of enactment.

TITLE VIII: PENSION RELATED REVENUE PROVISIONS

A. Deduction Limitations

1. Increase in deduction limits applicable to single-employer and multiemployer defined benefit pension plans (sec. 404 of the Code)

Present Law

In general

Employer contributions to qualified retirement plans are deductible subject to certain limits.

In the case of contributions to a defined benefit pension plan (including both single-employer and multiemployer plans), the employer generally may deduct the greater of: (1) the amount necessary to satisfy the minimum funding requirement of the plan for the year; or (2) the amount of the plan's normal cost for the year plus the amount necessary to amortize certain unfunded liabilities over 10 years, but limited to the full funding limitation for the year.[158] The maximum amount otherwise deductible generally is not less than the plan's unfunded current liability.[159] In the case of a single-employer plan covered by the PBGC insurance program that terminates during the year, the maximum deductible amount is generally not less than the amount needed to make the plan assets sufficient to fund benefit liabilities as defined for purposes of plan termination under the PBGC insurance program ("unfunded termination liability"). In applying these limits, future increases in the limits on compensation taken into account under a qualified retirement plan and on benefits payable under a defined benefit pension plan may not be taken into account.

In the case of a defined contribution plan, the employer generally may deduct contributions in an amount up to 25 percent of compensation paid or accrued during the employer's taxable year.

Overall deduction limit

If an employer sponsors one or more defined benefit pension plans and one or more defined contribution plans that cover at least one of the same employees, an overall deduction limit applies to the total contributions to all plans for a plan year. The overall deduction limit is

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[158] The full funding limitation is the excess, if any, of (1) the accrued liability of the plan (including normal cost), over (2) the lesser of (a) the market value of plan assets or (b) the actuarial value of plan assets. However, the full funding limit is not less than the excess, if any, of 90 percent of the plan's current liability (including the current liability normal cost) over the actuarial value of plan assets.

[159] In the case of a plan with 100 or fewer participants, unfunded current liability for this purpose does not include the liability attributable to benefit increases for highly compensated employees resulting from a plan amendment that is made or becomes effective, whichever is later, within the last two years.

the greater of (1) 25 percent of compensation, or (2) the amount necessary to meet the minimum funding requirement with respect to the defined benefit plan for the year. For this purpose, the amount necessary to meet the minimum funding requirement with respect to the defined benefit plan is treated as not less than the amount of the plan's unfunded current liability.

Subject to certain exceptions, an employer that makes nondeductible contributions to a plan is subject to an excise tax equal to 10 percent of the amount of the nondeductible contributions for the year.

Explanation of Provision

Single-employer defined benefit pension plans

General deduction limit

Under the bill, for taxable years beginning in 2006 and 2007, in the case of contributions to a single-employer defined benefit plan, the maximum deductible amount is not less than the excess (if any) of (1) 150 percent of the plan's current liability, over (2) the value of plan assets.

For taxable years beginning after 2007, in the case of contributions to a single-employer defined benefit pension plan, the maximum deductible amount is equal to the greater of: (1) the excess (if any) of the sum of the plan's funding target, the plan's target normal cost, and a cushion amount for a plan year, over the value of plan assets (as determined under the minimum funding rules[160]); and (2) the minimum required contribution for the plan year.[161]

However, in the case of a plan that is not in at-risk status, the first amount above is not less than the excess (if any) of the sum of the plan's funding target and target normal cost, determined as if the plan was in at-risk status, over the value of plan assets.

The cushion amount for a plan year is the sum of (1) 50 percent of the plan's funding target for the plan year; and (2) the amount by which the plan's funding target would increase if determined by taking into account increases in participants' compensation for future years or, if the plan does not base benefits attributable to past service on compensation, increases in benefits that are expected to occur in succeeding plans year, determined on the basis of average annual benefit increases over the previous six years.[162] For this purpose, the dollar limits on benefits

[160] In determining the maximum deductible amount, the value of plan assets is not reduced by any pre-funding balance or funding standard account carryover balance.

[161] The bill retains the present-law rule, under which, in the case of a single-employer plan covered by the PBGC that terminates during the year, the maximum deductible amount is generally not less than the amount needed to make the plan assets sufficient to fund benefit liabilities as defined for purposes of the PBGC termination insurance program.

[162] In determining the cushion amount for a plan with 100 or fewer participants, a plan's funding target does not include the liability attributable to benefit increases for highly compensated employees resulting from a plan amendment that is made or becomes effective, whichever is later, within the last two years.

and on compensation apply, but, in the case of a plan that is covered by the PBGC insurance program, increases in the compensation limit (under sec. 401(a)(17)) that are expected to occur in succeeding plan years may be taken into account.[163] The rules relating to projecting compensation for future years are intended solely to enable employers to reduce volatility in pension contributions; the rules are not intended to create any inference that employees have any protected interest with respect to such projected increases.

Overall deduction limit

Under the bill, in applying the overall deduction limit to contributions to one or more defined benefit pension plans and one or more defined contribution plans for years beginning after December 31, 2007, single-employer defined benefit pension plans that are covered by the PBGC insurance program are not taken into account. Thus, the deduction for contributions to a defined benefit pension plan or a defined contribution plan is not affected by the overall deduction limit merely because employees are covered by both plans if the defined benefit plan is covered by the PBGC insurance program (i.e., the separate deduction limits for contributions to defined contribution plans and defined benefit pension plans apply). In addition, in applying the overall deduction limit, the amount necessary to meet the minimum funding requirement with respect to a single-employer defined benefit pension plan that is not covered by the PBGC insurance program is treated as not less than the plan's funding shortfall (as determined under the minimum funding rules).

Multiemployer defined benefit pension plans

General deduction limit

Under the bill, for taxable years beginning after 2005, in the case of contributions to a multiemployer defined benefit pension plan, the maximum deductible amount is not less than the excess (if any) of (1) 140 percent of the plan's current liability, over (2) the value of plan assets.

Overall deduction limit

Under the bill, for taxable years beginning after December 31, 2005, in applying the overall deduction limit to contributions to one or more defined benefit pension plans and one or more defined contribution plans, multiemployer plans are not taken into account. Thus, the deduction for contributions to a defined benefit pension plan or a defined contribution plan is not affected by the overall deduction limit merely because employees are covered by both plans if either plan is a multiemployer plan (i.e., the separate deduction limits for contributions to defined contribution plans and defined benefit pension plans apply).

[163] Expected increases in the limitations on benefits under section 415, however, may not be taken into account.

Effective Date

The effective dates of the provisions regarding deductions are described above under each provision.

2. Updating deduction rules for combination of plans (secs. 404(a)(7) and 4972 of the Code)

Present Law

Employer contributions to qualified retirement plans are deductible subject to certain limits.[164] In general, the deduction limit depends on the kind of plan.[165]

If an employer sponsors one or more defined benefit pension plans and one or more defined contribution plans that cover at least one of the same employees, an overall deduction limit applies to the total contributions to all plans for a plan year. The overall deduction limit is the greater of (1) 25 percent of compensation, or (2) the amount necessary to meet the minimum funding requirements of the defined benefit plan for the year, but not less than the amount of the plan's unfunded current liability.

Under EGTRRA, elective deferrals are not subject to the limits on deductions and are not taken into account in applying the limits to other employer contributions. The combined deduction limit of 25 percent of compensation for defined benefit and defined contribution plans does not apply if the only amounts contributed to the defined contribution plan are elective deferrals.[166]

Subject to certain exceptions, an employer that makes nondeductible contributions to a plan is subject to an excise tax equal to 10 percent of the amount of the nondeductible contributions for the year. Certain contributions to a defined contribution plan that are nondeductible solely because of the overall deduction limit are disregarded in determining the amount of nondeductible contributions for purposes of the excise tax. Contributions that are disregarded are the greater of (1) the amount of contributions not in excess of six percent of the compensation of the employees covered by the defined contribution plan, or (2) the amount of matching contributions.

Explanation of Provision

Under the bill, the overall limit on employer deductions for contributions to combinations of defined benefit and defined contribution plans applies to contributions to one or more defined contribution plans only to the extent that such contributions exceed six percent of compensation

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[164] Code sec. 404.

[165] See the discussion under A., above, for a description of the deduction rules for defined benefit and defined contribution plans.

[166] Under the general EGTRRA sunset, this rule expires for plan years beginning after 2010.

otherwise paid or accrued during the taxable year to the beneficiaries under the plans. As under present law, for purposes of determining the excise tax on nondeductible contributions, matching contributions to a defined contribution plan that are nondeductible solely because of the overall deduction limit are disregarded.

Effective Date

The provision is effective for contributions for taxable years beginning after December 31, 2005.

B. Certain Pension Provisions Made Permanent

1. Permanency of EGTRRA pension and IRA provisions (Title X of EGTRRA)

Present Law

In general

The Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA") made a number of changes to the Federal tax laws, including a variety of provisions relating to pensions and individual retirement arrangements ("IRAs"). However, in order to comply with reconciliation procedures under the Congressional Budget Act of 1974 (e.g., section 313 of the Budget Act, under which a point of order may be lodged in the Senate), EGTRRA included a "sunset" provision, pursuant to which the provisions of EGTRRA expire at the end of 2010. Specifically, EGTRRA's provisions do not apply for taxable, plan, or limitation years beginning after December 31, 2010, or to estates of decedents dying after, or gifts or generation-skipping transfers made after, December 31, 2010. EGTRRA provides that, as of the effective date of the sunset, both the Internal Revenue Code and the Employee Retirement Income Security Act of 1974 ("ERISA") will be applied as though EGTRRA had never been enacted.

Certain provisions contained in EGTRRA expire before the general sunset date of 2010.[167]

List of affected provisions

Following is a list of the provisions affected by the general EGTRRA sunset.

Individual retirement arrangements ("IRAs")

- Increases in the IRA contribution limits, including the ability to make catch-up contributions (secs. 219, 408, and 408A of the Code and sec. 601 of EGTRRA); and
- Rules relating to deemed IRAs under employer plans (sec. 408(q) of the Code and sec. 602 of EGTRRA).

Expanding coverage

- Increases in the limits on contributions, benefits, and compensation under qualified retirement plans, tax-sheltered annuities, and eligible deferred compensation plans (secs. 401(a)(17), 402(g), 408(p), 414(v), 415, and 457 of the Code and sec. 611 of EGTRRA);
- Application of prohibited transaction rules to plan loans of S corporation owners, partners, and sole proprietors (sec. 4975 of the Code and sec. 612 of EGTRRA);

[167] The saver's credit (sec. 25B) expires at the end of 2006. Another provision of the bill makes the saver's credit permanent.

- Modification of the top-heavy rules (sec. 416 of the Code and sec. 613 of EGTRRA);
- Elective deferrals not taken into account for purposes of deduction limits (sec. 404 of the Code and sec. 614 of EGTRRA);
- Repeal of coordination requirements for deferred compensation plans of state and local governments and tax-exempt organizations (sec. 457 of the Code and sec. 615 of EGTRRA);
- Modifications to deduction limits (sec. 404 of the Code and sec. 616 of EGTRRA);
- Option to treat elective deferrals as after-tax Roth contributions (sec. 402A of the Code and sec. 617 of EGTRRA);
- Credit for pension plan start-up costs (sec. 45E of the Code and sec. 619 of EGTRRA); and
- Certain nonresident aliens excluded in applying minimum coverage requirements (secs. 410(b)(3) and 861(a)(3) of the Code).

Enhancing fairness

- Catch-up contributions for individuals age 50 and older (sec. 414 of the Code and sec. 631 of EGTRRA);
- Equitable treatment for contributions of employees to defined contribution plans (secs. 403(b), 415, and 457 of the Code and sec. 632 of EGTRRA);
- Faster vesting of employer matching contributions (sec. 411 of the Code and sec. 633 of EGTRRA);
- Modifications to minimum distribution rules (sec. 401(a)(9) of the Code and sec. 634 of EGTRRA);
- Clarification of tax treatment of division of section 457 plan benefits upon divorce (secs. 414(p) and 457 of the Code and sec. 635 of EGTRRA);
- Provisions relating to hardship withdrawals (secs. 401(k) and 402 of the Code and sec. 636 of EGTRRA); and
- Waiver of tax on nondeductible contributions for domestic and similar workers (sec. 4972(c)(6) of the Code and sec. 637 of EGTRRA).

Increasing portability

- Rollovers of retirement plan and IRA distributions (secs. 401, 402, 403(b), 408, 457, and 3405 of the Code and secs. 641-644 of EGTRRA);
- Treatment of forms of distribution (sec. 411(d)(6) of the Code and sec. 645 of EGTRRA);
- Rationalization of restrictions on distributions (secs. 401(k), 403(b), and 457 of the Code and sec. 646 of EGTRRA):

- Purchase of service credit under governmental pension plans (secs. 403(b) and 457 of the Code and sec. 647 of EGTRRA):
- Employers may disregard rollovers for purposes of cash-out rules (sec. 411(a)(11) of the Code and sec. 648 of EGTRRA); and
- Minimum distribution and inclusion requirements for section 457 plans (sec. 457 of the Code and sec. 649 of EGTRRA).

Strengthening pension security and enforcement

- Phase in repeal of 160 percent of current liability funding limit; maximum deduction rules (secs. 404(a)(1), 412(c)(7), and 4972(c) of the Code and secs. 651-652 of EGTRRA);
- Excise tax relief for sound pension funding (sec. 4972 of the Code and sec. 653 of EGTRRA);
- Modifications to section 415 limits for multiemployer plans (sec. 415 of the Code and sec. 654 of EGTRRA);
- Investment of employee contributions in 401(k) plans (sec. 655 of EGTRRA);
- Prohibited allocations of stock in an S corporation ESOP (secs. 409 and 4979A of the Code and sec. 656 of EGTRRA);
- Automatic rollovers of certain mandatory distributions (secs. 401(a)(31) and 402(f)(1) of the Code and sec. 657 of EGTRRA);
- Clarification of treatment of contributions to a multiemployer plan (sec. 446 of the Code and sec. 658 of EGTRRA); and
- Treatment of plan amendments reducing future benefit accruals (sec. 4980F of the Code and sec. 659 of EGTRRA).

Reducing regulatory burdens

- Modification of timing of plan valuations (sec. 412 of the Code and sec. 661 of EGTRRA);
- ESOP dividends may be reinvested without loss of dividend deduction (sec. 404 of the Code and sec. 662 of EGTRRA);
- Repeal transition rule relating to certain highly compensated employees (sec. 663 of EGTRRA);
- Treatment of employees of tax-exempt entities for purposes of nondiscrimination rules (secs. 410, 401(k), and 401(m) of the Code and sec. 664 of EGTRRA);
- Treatment of employer-provided retirement advice (sec. 132 of the Code and sec. 665 of EGTRRA); and
- Repeal of the multiple use test (sec. 401(m) of the Code and sec. 666 of EGTRRA).

Explanation of Provision

The provision repeals the sunset provision of EGTRRA as applied to the provisions relating to pensions and IRAs.

Effective Date

The provision is effective on the date of enactment.

2. Saver's credit made permanent (sec. 25B of the Code)

Present Law

Present law provides a temporary nonrefundable tax credit for eligible taxpayers for qualified retirement savings contributions. The maximum annual contribution eligible for the credit is $2,000. The credit rate depends on the adjusted gross income ("AGI") of the taxpayer. Joint returns with AGI of $50,000 or less, head of household returns of $37,500 or less, and single returns of $25,000 or less are eligible for the credit. The AGI limits applicable to single taxpayers apply to married taxpayers filing separate returns. The credit is in addition to any deduction or exclusion that would otherwise apply with respect to the contribution. The credit offsets minimum tax liability as well as regular tax liability. The credit is available to individuals who are 18 or older, other than individuals who are full-time students or claimed as a dependent on another taxpayer's return.

The credit is available with respect to: (1) elective deferrals to a qualified cash or deferred arrangement (a "section 401(k) plan"), a tax-sheltered annuity (a "section 403(b)" annuity), an eligible deferred compensation arrangement of a State or local government (a "section 457 plan"), a SIMPLE, or a simplified employee pension ("SEP"); (2) contributions to a traditional or Roth IRA; and (3) voluntary after-tax employee contributions to a tax-sheltered annuity or qualified retirement plan.

The amount of any contribution eligible for the credit is reduced by distributions received by the taxpayer (or by the taxpayer's spouse if the taxpayer filed a joint return with the spouse) from any plan or IRA to which eligible contributions can be made during the taxable year for which the credit is claimed, the two taxable years prior to the year the credit is claimed, and during the period after the end of the taxable year for which the credit is claimed and prior to the due date for filing the taxpayer's return for the year. Distributions that are rolled over to another retirement plan do not affect the credit.

The credit rates based on AGI are provided in Table 1, below.

Table 1.–Credit Rates for Saver's Credit

Joint Filers	Heads of Households	All Other Filers	Credit Rate
$0 – $30,000	$0 – $22,500	$0 – $15,000	50 percent
$30,001 – $32,500	$22,501 – $24,375	$15,001 – $16,250	20 percent
$32,501 – $50,000	$24,376 – $37,500	$16,251 – $25,000	10 percent
Over $50,000	Over $37,500	Over $25,000	0 percent

The credit does not apply to taxable years beginning after December 31, 2006.

Explanation of Provision

The provision makes the saver's credit permanent.

The provision also provides that an individual may direct that the amount of any refund attributable to the saver's credit be directly deposited by the Federal government into an applicable retirement plan, meaning an IRA, qualified retirement plan, section 403(b) annuity, or governmental section 457 plan designated by the individual (if the plan or other arrangement agrees to accept such direct deposits). In the case of a joint return, each spouse is entitled to designate an applicable retirement plan with respect to payments attributable to such spouse. The provision does not change the rules relating to the tax treatment of contributions to such plans or other arrangements.

Effective Date

The extension of the saver's credit is effective on enactment. The provision relating to direct deposit of refunds relating to the saver's credit is effective for taxable years beginning after December 31, 2006. (In addition, another provision of bill, described below, provides for indexing of the income limits on the saver's credit.)

C. Improvements in Portability, Distribution, and Contribution Rules

1. Purchase of permissive service credit (secs. 403(b)(13), 415(n)(3), and 457(e)(17) of the Code)

Present Law

In general

Present law imposes limits on contributions and benefits under qualified plans.[168] The limits on contributions and benefits under qualified plans are based on the type of plan. Under a defined benefit plan, the maximum annual benefit payable at retirement is generally the lesser of (1) a certain dollar amount ($175,000 for 2006) or (2) 100 percent of the participant's average compensation for his or her high three years.

A qualified retirement plan maintained by a State or local government employer may provide that a participant may make after-tax employee contributions in order to purchase permissive service credit, subject to certain limits.[169]

In the case of any repayment of contributions and earnings to a governmental plan with respect to an amount previously refunded upon a forfeiture of service credit under the plan (or another plan maintained by a State or local government employer within the same State), any such repayment is not taken into account for purposes of the section 415 limits on contributions and benefits. Also, service credit obtained as a result of such a repayment is not considered permissive service credit for purposes of the section 415 limits.

Permissive service credit

Definition of permissive service credit

Permissive service credit means credit for a period of service recognized by the governmental plan which the participant has not received under the plan and which the employee receives only if the employee voluntarily contributes to the plan an amount (as determined by the plan) that does not exceed the amount necessary to fund the benefit attributable to the period of service and that is in addition to the regular employee contributions, if any, under the plan.

The IRS has ruled that credit is not permissive service credit where it is purchased to provide enhanced retirement benefits for a period of service already credited under the plan, as the enhanced benefit is treated as credit for service already received.[170]

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[168] Sec. 415.

[169] Sec. 415(n)(3).

[170] Priv. Ltr. Rul. 200229051 (April 26, 2002).

Nonqualified service

Service credit is not permissive service credit if more than five years of permissive service credit is purchased for nonqualified service or if nonqualified service is taken into account for an employee who has less than five years of participation under the plan. Nonqualified service is service other than service (1) as a Federal, State or local government employee, (2) as an employee of an association representing Federal, State or local government employees, (3) as an employee of an educational institution which provides elementary or secondary education, as determined under State law, or (4) for military service. Service under (1), (2) and (3) is nonqualified service if it enables a participant to receive a retirement benefit for the same service under more than one plan.

Trustee-to-trustee transfers to purchase permissive service credit

Under EGTRRA, a participant is not required to include in gross income a direct trustee-to-trustee transfer to a governmental defined benefit plan from a section 403(b) annuity or a section 457 plan if the transferred amount is used (1) to purchase permissive service credit under the plan, or (2) to repay contributions and earnings with respect to an amount previously refunded under a forfeiture of service credit under the plan (or another plan maintained by a State or local government employer within the same State).[171]

Explanation of Provision

Permissive service credit

The provision modifies the definition of permissive service credit by providing that permissive service credit means service credit which relates to benefits to which the participant is not otherwise entitled under such governmental plan, rather than service credit which such participant has not received under the plan. Credit qualifies as permissive service credit if it is purchased to provide an increased benefit for a period of service already credited under the plan (e.g., if a lower level of benefit is converted to a higher benefit level otherwise offered under the same plan) as long as it relates to benefits to which the participant is not otherwise entitled.

The provision allows participants to purchase credit for periods regardless of whether service is performed, subject to the limits on nonqualified service.

Under the provision, service as an employee of an educational organization providing elementary or secondary education can be determined under the law of the jurisdiction in which the service was performed. Thus, for example, permissive service credit can be granted for time spent teaching outside of the United States without being considered nonqualified service credit.

[171] Secs. 403(b)(13) and 457(e)(17).

Trustee-to-trustee transfers to purchase permissive service credit

The provision provides that the limits regarding nonqualified service are not applicable in determining whether a trustee-to-trustee transfer from a section 403(b) annuity or a section 457 plan to a governmental defined benefit plan is for the purchase of permissive service credit. Thus, failure of the transferee plan to satisfy the limits does not cause the transferred amounts to be included in the participant's income. As under present law, the transferee plan must satisfy the limits in providing permissive service credit as a result of the transfer.

The provision provides that trustee-to-trustee transfers under sections 457(e)(17) and 403(b)(13) may be made regardless of whether the transfer is made between plans maintained by the same employer. The provision also provides that amounts transferred from a section 403(b) annuity or a section 457 plan to a governmental defined benefit plan to purchase permissive service credit are subject to the distribution rules applicable under the Internal Revenue Code to the defined benefit plan.

Effective Date

The provision is generally effective as if included in the amendments made by section 1526 of the Taxpayer Relief Act of 1997, except that the provision regarding trustee-to-trustee transfers is effective as if included in the amendments made by section 647 of the Economic Growth and Tax Relief Reconciliation Act of 2001.

2. Rollover of after-tax amounts in annuity contracts (sec. 402(c)(2) of the Code)

Present Law

Employee after-tax contributions may be rolled over from a tax-qualified retirement plan into another tax-qualified retirement plan, if the plan to which the rollover is made is a defined contribution plan, the rollover is accomplished through a direct rollover, and the plan to which the rollover is made provides for separate accounting for such contributions (and earnings thereon). After-tax contributions can also be rolled over from a tax-sheltered annuity (a "section 403(b) annuity") to another tax-sheltered annuity if the rollover is a direct rollover, and the annuity to which the rollover is made provides for separate accounting for such contributions (and earnings thereon). After-tax contributions may also be rolled over to an IRA. If the rollover is to an IRA, the rollover need not be a direct rollover and the IRA owner has the responsibility to keep track of the amount of after-tax contributions.[172]

Explanation of Provision

The provision allows after-tax contributions to be rolled over from a qualified retirement plan to another qualified retirement plan (either a defined contribution or a defined benefit plan) or to a tax-sheltered annuity. As under present law, the rollover must be a direct rollover, and

[172] Sec. 402(c)(2); IRS Notice 2002-3, 2002-2 I.R.B. 289.

the plan to which the rollover is made must separately account for after-tax contributions (and earnings thereon).

Effective Date

The provision is effective for taxable years beginning after December 31, 2006.

3. Application of minimum distribution rules to governmental plans

Present Law

Minimum distribution rules apply to tax-favored retirement arrangements, including governmental plans. In general, under these rules, distribution of minimum benefits must begin no later than the required beginning date. Minimum distribution rules also apply to benefits payable with respect to a plan participant who has died. Failure to comply with the minimum distribution rules results in an excise tax imposed on the plan participant equal to 50 percent of the required minimum distribution not distributed for the year. The excise tax may be waived in certain cases.

In the case of distributions prior to the death of the plan participant, the minimum distribution rules are satisfied if either (1) the participant's entire interest in the plan is distributed by the required beginning date, or (2) the participant's interest in the plan is to be distributed (in accordance with regulations) beginning not later than the required beginning date, over a permissible period. The permissible periods are (1) the life of the participant, (2) the lives of the participant and a designated beneficiary, (3) the life expectancy of the participant, or (4) the joint life and last survivor expectancy of the participant and a designated beneficiary. In calculating minimum required distributions from account-type arrangements (e.g., a defined contribution plan or an individual retirement arrangement), life expectancies of the participant and the participant's spouse generally may be recomputed annually.

The required beginning date generally is April 1 of the calendar year following the later of (1) the calendar year in which the participant attains age 70½ or (2) the calendar year in which the participant retires.

The minimum distribution rules also apply to distributions to beneficiaries of deceased participants. In general, if the participant dies after minimum distributions have begun, the remaining interest must be distributed at least as rapidly as under the minimum distribution method being used as of the date of death. If the participant dies before minimum distributions have begun, then the entire remaining interest must generally be distributed within five years of the participant's death. The five-year rule does not apply if distributions begin within one year of the participant's death and are payable over the life of a designated beneficiary or over the life expectancy of a designated beneficiary. A surviving spouse beneficiary is not required to begin distributions until the date the deceased participant would have attained age 70½. In addition, if the surviving spouse makes a rollover from the plan into a plan or IRA of his or her own, the minimum distribution rules apply separately to the surviving spouse.

Explanation of Provision

The provision directs the Secretary of the Treasury to issue regulations under which a governmental plan is treated as complying with the minimum distribution requirements, for all years to which such requirements apply, if the plan complies with a reasonable, good faith interpretation of the statutory requirements. It is intended that the regulations apply for periods before the date of enactment.

Effective Date

The provision is effective on the date of enactment.

4. Allow direct rollovers from retirement plans to Roth IRAs (sec. 408A(e) of the Code)

Present Law

IRAs in general

There are two general types of individual retirement arrangements ("IRAs"): traditional IRAs, to which both deductible and nondeductible contributions may be made, and Roth IRAs.

Traditional IRAs

An individual may make deductible contributions to an IRA up to the lesser of a dollar limit (generally $4,000 for 2006)[173] or the individual's compensation if neither the individual nor the individual's spouse is an active participant in an employer-sponsored retirement plan.[174] If the individual (or the individual's spouse) is an active participant in an employer-sponsored retirement plan, the deduction limit is phased out for taxpayers with adjusted gross income ("AGI") over certain levels for the taxable year. A different, higher, income phaseout applies in the case of an individual who is not an active participant in an employer sponsored plan but whose spouse is.

To the extent an individual cannot or does not make deductible contributions to an IRA or contributions to a Roth IRA, the individual may make nondeductible contributions to a traditional IRA.

Amounts held in a traditional IRA are includible in income when withdrawn (except to the extent the withdrawal is a return of nondeductible contributions). Includible amounts withdrawn prior to attainment of age 59½ are subject to an additional 10-percent early

[173] The dollar limit is scheduled to increase until it is $5,000 in 2008-2010. Individuals age 50 and older may make additional, catch-up contributions.

[174] In the case of a married couple, deductible IRA contributions of up to the dollar limit can be made for each spouse (including, for example, a homemaker who does not work outside the home), if the combined compensation of both spouses is at least equal to the contributed amount.

withdrawal tax, unless the withdrawal is due to death or disability, is made in the form of certain periodic payments, or is used for certain specified purposes.

Roth IRAs

Individuals with AGI below certain levels may make nondeductible contributions to a Roth IRA. The maximum annual contributions that can be made to all of an individuals IRAs (both traditional and Roth) cannot exceed the maximum deductible IRA contribution limit. The maximum annual contribution that can be made to a Roth IRA is phased out for taxpayers with income above certain levels.

Amounts held in a Roth IRA that are withdrawn as a qualified distribution are not includible in income, or subject to the additional 10-percent tax on early withdrawals. A qualified distribution is a distribution that (1) is made after the five-taxable year period beginning with the first taxable year for which the individual made a contribution to a Roth IRA, and (2) which is made after attainment of age 59½, on account of death or disability, or is made for first-time homebuyer expenses of up to $10,000.

Distributions from a Roth IRA that are not qualified distributions are includible in income to the extent attributable to earnings, and subject to the 10-percent early withdrawal tax (unless an exception applies). The same exceptions to the early withdrawal tax that apply to IRAs apply to Roth IRAs.

Rollover contributions

If certain requirements are satisfied, a participant in a tax-qualified retirement plan, a tax-sheltered annuity (sec. 403(b)), or a governmental section 457 plan may roll over distributions from the plan or annuity into a traditional IRA. Distributions from such plans may not be rolled over into a Roth IRA.

Taxpayers with modified AGI of $100,000 or less generally may roll over amounts in a traditional IRA into a Roth IRA. The amount rolled over is includible in income as if a withdrawal had been made, except that the 10-percent early withdrawal tax does not apply. Married taxpayers who file separate returns cannot roll over amounts in a traditional IRA into a Roth IRA. Amounts that have been distributed from a tax-qualified retirement plan, a tax-sheltered annuity, or a governmental section 457 plan may be rolled over into a traditional IRA, and then rolled over from the traditional IRA into a Roth IRA.

Explanation of Provision

The provision allows distributions from tax-qualified retirement plans, tax-sheltered annuities, and governmental 457 plans to be rolled over directly from such plan into a Roth IRA, subject to the present law rules that apply to rollovers from a traditional IRA into a Roth IRA. For example, a rollover from a tax-qualified retirement plan into a Roth IRA is includible in gross income (except to the extent it represents a return of after-tax contributions), and the 10-percent early distribution tax does not apply. Similarly, an individual with AGI of $100,000 or more could not roll over amounts from a tax-qualified retirement plan directly into a Roth IRA.

Effective Date

The provision is effective for distributions made after December 31, 2007.

5. Eligibility for participation in eligible deferred compensation plans (sec. 457 of the Code)

Present Law

A section 457 plan is an eligible deferred compensation plan of a State or local government or tax-exempt employer that meets certain requirements. In some cases, different rules apply under section 457 to governmental plans and plans of tax-exempt employers.

Amounts deferred under an eligible deferred compensation plan of a non-governmental tax-exempt organization are includible in gross income for the year in which amounts are paid or made available. Under present law, if the amount payable to a participant does not exceed $5,000, a plan may allow a distribution up to $5,000 without such amount being treated as made available if the distribution can be made only if no amount has been deferred under the plan by the participant during the two-year period ending on the date of the distribution and there has been no prior distribution under the plan. Prior to the Small Business Job Protection Act of 1996, under former section 457(e)(9), benefits were not treated as made available because a participant could elect to receive a lump sum payable after separation from service and within 60 days of the election if (1) the total amount payable under the plan did not exceed $3,500 and (2) no additional amounts could be deferred under the plan.

Explanation of Provision

Under the provision, an individual is not precluded from participating in an eligible deferred compensation plan by reason of having received a distribution under section 457(e)(9) as in effect before the Small Business Job Protection Act of 1996.

Effective Date

The provision is effective on the date of enactment.

6. Modifications of rules governing hardships and unforeseen financial emergencies

Present Law

Distributions from a qualified cash or deferred arrangement (a "section 401(k) plan"), a tax-shelter annuity, section 457 plan, or nonqualified deferred compensation plan subject to section 409A may not be made prior to the occurrence of one or more specified events. In the case of a section 401(k) plan or tax-sheltered annuity, one event upon which distribution is permitted is the case of a hardship. Similarly, distributions from section 457 plans and nonqualified deferred compensation plans subject to section 409A may be made in the case of an unforeseeable emergency. Under regulations, a hardship or unforeseeable emergency includes a hardship or unforeseeable emergency of a participant's spouse or dependent.

Explanation of Provision

The provision directs the Secretary of the Treasury to revise the rules for determining whether a participant has had a hardship or unforeseeable emergency to provide that if an event would constitute a hardship or unforeseeable emergency under the plan if it occurred with respect to the participant's spouse or dependent, such event shall, to the extent permitted under the plan, constitute a hardship or unforeseeable emergency if it occurs with respect to a beneficiary under the plan. The provision requires that the revised rules be issued within 180 days after the date of enactment.

Effective Date

The provision is effective on the date of enactment.

7. Treatment of distributions to individuals called to active duty for at least 179 days (sec. 72(t) of the Code)

Present Law

Under present law, a taxpayer who receives a distribution from a qualified retirement plan prior to age 59½, death, or disability generally is subject to a 10-percent early withdrawal tax on the amount includible in income, unless an exception to the tax applies. Among other exceptions, the early distribution tax does not apply to distributions made to an employee who separates from service after age 55, or to distributions that are part of a series of substantially equal periodic payments made for the life (or life expectancy) of the employee or the joint lives (or life expectancies) of the employee and his or her beneficiary.

Certain amounts held in a qualified cash or deferred arrangement (a "401(k) plan") or in a tax-sheltered annuity (a "403(b) annuity") may not be distributed before severance from employment, age 59½, death, disability, or financial hardship of the employee.

Explanation of Provision

Under the provision, the 10-percent early withdrawal tax does not apply to a qualified reservist distribution. A qualified reservist distribution is a distribution (1) from an IRA or attributable to elective deferrals under a 401(k) plan, 403(b) annuity, or certain similar arrangements, (2) made to an individual who (by reason of being a member of a reserve component as defined in section 101 of title 37 of the U.S. Code) was ordered or called to active duty for a period in excess of 179 days or for an indefinite period, and (3) that is made during the period beginning on the date of such order or call to duty and ending at the close of the active duty period. A 401(k) plan or 403(b) annuity does not violate the distribution restrictions applicable to such plans by reason of making a qualified reservist distribution.

An individual who receives a qualified reservist distribution may, at any time during the two-year period beginning on the day after the end of the active duty period, make one or more contributions to an IRA of such individual in an aggregate amount not to exceed the amount of such distribution. The dollar limitations otherwise applicable to contributions to IRAs do not

apply to any contribution made pursuant to the provision. No deduction is allowed for any contribution made under the provision.

This provision applies to individuals ordered or called to active duty after September 11, 2001, and before December 31, 2007. The two-year period for making recontributions of qualified reservist distributions does not end before the date that is two years after the date of enactment.

Effective Date

The provision applies to distributions after September 11, 2001. If refund or credit of any overpayment of tax resulting from the provision would be prevented at any time before the close of the one-year period beginning on the date of the enactment by the operation of any law or rule of law (including res judicata), such refund or credit may nevertheless be made or allowed if claim therefor is filed before the close of such period.

8. Inapplicability of 10-percent additional tax on early distributions of pension plans of public safety employees (sec. 72(t) of the Code)

Present Law

Under present law, a taxpayer who receives a distribution from a qualified retirement plan prior to age 59½, death, or disability generally is subject to a 10-percent early withdrawal tax on the amount includible in income, unless an exception to the tax applies. Among other exceptions, the early distribution tax does not apply to distributions made to an employee who separates from service after age 55, or to distributions that are part of a series of substantially equal periodic payments made for the life (or life expectancy) of the employee or the joint lives (or life expectancies) of the employee and his or her beneficiary.

Explanation of Provision

Under the provision, the 10-percent early withdrawal tax does not apply to distributions from a governmental defined benefit pension plan to a qualified public safety employee who separates from service after age 50. A qualified public safety employee is an employee of a State or political subdivision of a State if the employee provides police protection, firefighting services, or emergency medical services for any area within the jurisdiction of such State or political subdivision.

Effective Date

The provision is effective for distributions made after the date of enactment.

9. Rollovers by nonspouse beneficiaries (sec. 402 of the Code)

Present Law

Tax-free rollovers

Under present law, a distribution from a qualified retirement plan, a tax-sheltered annuity ("section 403(b) annuity"), an eligible deferred compensation plan of a State or local government employer (a "governmental section 457 plan"), or an individual retirement arrangement (an "IRA") generally is included in income for the year distributed. However, eligible rollover distributions may be rolled over tax free within 60 days to another plan, annuity, or IRA.[175]

In general, an eligible rollover distribution includes any distribution to the plan participant or IRA owner other than certain periodic distributions, minimum required distributions, and distributions made on account of hardship.[176] Distributions to a participant from a qualified retirement plan, a tax-sheltered annuity, or a governmental section 457 plan generally can be rolled over to any of such plans or an IRA.[177] Similarly, distributions from an IRA to the IRA owner generally are permitted to be rolled over into a qualified retirement plan, a tax-sheltered annuity, a governmental section 457 plan, or another IRA.

Similar rollovers are permitted in the case of a distribution to the surviving spouse of the plan participant or IRA owner, but not to other persons.

If an individual inherits an IRA from the individual's deceased spouse, the IRA may be treated as the IRA of the surviving spouse. This treatment does not apply to IRAs inherited from someone other than the deceased spouse. In such cases, the IRA is not treated as the IRA of the beneficiary. Thus, for example, the beneficiary may not make contributions to the IRA and cannot roll over any amounts out of the inherited IRA. Like the original IRA owner, no amount is generally included in income until distributions are made from the IRA. Distributions from the inherited IRA must be made under the rules that apply to distributions to beneficiaries, as described below.

Minimum distribution rules

Minimum distribution rules apply to tax-favored retirement arrangements. In the case of distributions prior to the death of the participant, distributions generally must begin by the April

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[175] The IRS has the authority to waive the 60-day requirement if failure to waive the requirement would be against equity or good conscience, including cases of casualty, disaster, or other events beyond the reasonable control of the individual. Sec. 402(c)(3)(B).

[176] Sec. 402(c)(4). Certain other distributions also are not eligible rollover distributions, e.g., corrective distributions of elective deferrals in excess of the elective deferral limits and loans that are treated as deemed distributions.

[177] Some restrictions or special rules may apply to certain distributions. For example, after-tax amounts distributed from a plan can be rolled over only to a plan of the same type or to an IRA.

1 of the calendar year following the later of the calendar year in which the participant (1) attains age 70½ or (2) retires.[178] The minimum distribution rules also apply to distributions following the death of the participant. If minimum distributions have begun prior to the participant's death, the remaining interest generally must be distributed at least as rapidly as under the minimum distribution method being used prior to the date of death. If the participant dies before minimum distributions have begun, then either (1) the entire remaining interest must be distributed within five years of the death, or (2) distributions must begin within one year of the death over the life (or life expectancy) of the designated beneficiary. A beneficiary who is the surviving spouse of the participant is not required to begin distributions until the date the deceased participant would have attained age 70½. Alternatively, if the surviving spouse makes a rollover from the plan into a plan or IRA of his or her own, minimum distributions generally would not need to begin until the surviving spouse attains age 70½.

Explanation of Provision

The provision provides that benefits of a beneficiary other than a surviving spouse may be transferred directly to an IRA. The IRA is treated as an inherited IRA of the nonspouse beneficiary. Thus, for example, distributions from the inherited IRA are subject to the distribution rules applicable to beneficiaries. The provision applies to amounts payable to a beneficiary under a qualified retirement plan, governmental section 457 plan, or a tax-sheltered annuity. To the extent provided by the Secretary, the provision applies to benefits payable to a trust maintained for a designated beneficiary to the same extent it applies to the beneficiary.

Effective Date

The provision is effective for distributions after December 31, 2006.

10. Direct deposit of tax refunds in an IRA

Present Law

Under current IRS procedures, a taxpayer may direct that his or her tax refund be deposited into a checking or savings account with a bank or other financial institution (such as a mutual fund, brokerage firm, or credit union) rather than having the refund sent to the taxpayer in the form of a check.

Explanation of Provision

The Secretary is directed to develop forms under which all or a portion of a taxpayer's refund may be deposited in an IRA of the taxpayer (or the spouse of the taxpayer in the case of a joint return). The provision does not modify the rules relating to IRAs, including the rules relating to timing and deductibility of contributions.

[178] In the case of five-percent owners and distributions from an IRA, distributions must begin by the April 1 of the calendar year following the year in which the individual attains age 70½.

Effective Date

The form required by the provision is to be available for taxable years beginning after December 31, 2006.

11. Additional IRA contributions for certain employees (secs. 25B and 219 of the Code)

Present Law

Under present law, favored tax treatment applies to qualified retirement plans maintained by employers and to individual retirement arrangements ("IRAs").

Qualified defined contribution plans may permit both employees and employers to make contributions to the plan. Under a qualified cash or deferred arrangement (commonly referred to as a "section 401(k) plan"), employees may elect to make pretax contributions to a plan, referred to as elective deferrals. Employees may also be permitted to make after-tax contributions to a plan. In addition, a plan may provide for employer nonelective contributions or matching contributions. Nonelective contributions are employer contributions that are made without regard to whether the employee makes elective deferrals or after-tax contributions. Matching contributions are employer contributions that are made only if the employee makes elective deferrals or after-tax contributions. Matching contributions are sometimes made in the form of employer stock.

Under present law, an individual may generally make contributions to an IRA for a taxable year up to the lesser of a certain dollar amount or the individual's compensation. The maximum annual dollar limit on IRA contributions to IRAs is $4,000 for 2005-2007 and $5,000 for 2008, with indexing thereafter. Individuals who have attained age 50 may make additional "catch-up" contributions to an IRA for a taxable year of up to $500 for 2005 and $1,000 for 2006 and thereafter.[179]

Present law provides a temporary nonrefundable tax credit for eligible taxpayers for qualified retirement savings contributions ("saver's" credit). The maximum annual contribution eligible for the credit is $2,000. The credit rate depends on the adjusted gross income ("AGI") of the taxpayer. Taxpayers filing joint returns with AGI of $50,000 or less, head of household returns of $37,500 or less, and single returns of $25,000 or less are eligible for the credit. The AGI limits applicable to single taxpayers apply to married taxpayers filing separate returns. The credit is in addition to any deduction or exclusion that would otherwise apply with respect to the contribution. The credit offsets minimum tax liability as well as regular tax liability. The credit is available to individuals who are 18 or over, other than individuals who are full-time students or claimed as a dependent on another taxpayer's return. The credit is available with respect to contributions to various types of retirement savings arrangements, including contributions to a

[179] These IRA limits were enacted as part of the Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA"), Pub. L. No. 107-16. The provisions of EGTRRA generally do not apply for years beginning after December 31, 2010.

traditional or Roth IRA. The saver's credit does not apply to taxable years beginning after December 31, 2006.

Explanation of Provision

Under the provision, an applicable individual may elect to make additional IRA contributions of up to $3,000 per year for 2006-2009. An applicable individual must have been a participant in a section 401(k) plan under which the employer matched at least 50 percent of the employee's contributions to the plan with stock of the employer. In addition, in a taxable year preceding the taxable year of an additional contribution: (1) the employer (or any controlling corporation of the employer) must have been a debtor in a bankruptcy case, and (2) the employer or any other person must have been subject to an indictment or conviction resulting from business transactions related to the bankruptcy. The individual must also have been a participant in the section 401(k) plan on the date six months before the bankruptcy case was filed. An applicable individual who elects to make these additional IRA contributions is not permitted to make IRA catch-up contributions that apply to individuals age 50 and older.

Effective Date

The provision is effective for taxable years beginning after December 31, 2006, and before January 1, 2010.

12. Special rule for computing high-three average compensation for benefit limitation purposes (sec. 415(b)(3) of the Code)

Present Law

Annual benefits payable to a participant under a defined benefit pension plan generally may not exceed the lesser of (1) 100 percent of average compensation for the participant's high three years, or (2) $175,000 (for 2006). The dollar limit is reduced proportionately for individuals with less than 10 years of participation in the plan. The compensation limit is reduced proportionately for individuals with less than 10 years of service.

For purposes of determining average compensation for a participant's high three years, the high three years are the period of consecutive calendar years (not more than three) during which the participant was both an active participant in the plan and had the greatest aggregate compensation from the employer.

Explanation of Provision

Under the bill, for purposes of determining average compensation for a participant's high three years, the high three years are the period of consecutive calendar years (not more than three) during which the participant had the greatest aggregate compensation from the employer.

Effective Date

The provision is effective for years beginning after December 31, 2005.

13. Inflation indexing of gross income limitations on certain retirement savings incentives (secs. 25A and 219 of the Code)

Present Law

Saver's credit

Present law provides a temporary nonrefundable tax credit for eligible taxpayers for qualified retirement savings contributions. The maximum annual contribution eligible for the credit is $2,000. The credit rate depends on the adjusted gross income ("AGI") of the taxpayer. Joint returns with AGI of $50,000 or less, head of household returns of $37,500 or less, and single returns of $25,000 or less are eligible for the credit. The AGI limits applicable to single taxpayers apply to married taxpayers filing separate returns. The credit is in addition to any deduction or exclusion that would otherwise apply with respect to the contribution. The credit offsets minimum tax liability as well as regular tax liability. The credit is available to individuals who are 18 or older, other than individuals who are full-time students or claimed as a dependent on another taxpayer's return.

Under present law, the saver's credit expires after 2006.

Individual retirement arrangements

In general

There are two general types of individual retirement arrangements ("IRAs") under present law: traditional IRAs,[180] to which both deductible and nondeductible contributions may be made,[181] and Roth IRAs.[182]

The maximum annual deductible and nondeductible contributions that can be made to a traditional IRA and the maximum contribution that can be made to a Roth IRA by or on behalf of an individual varies depending on the particular circumstances, including the individual's income. However, the contribution limits for IRAs are coordinated so that the maximum annual contribution that can be made to all of an individual's IRAs is the lesser of a certain dollar amount ($4,000 for 2006) or the individual's compensation. In the case of a married couple, contributions can be made up to the dollar limit for each spouse if the combined compensation of the spouses is at least equal to the contributed amount. An individual who has attained age 50 before the end of the taxable year may also make catch-up contributions to an IRA. For this purpose, the dollar limit is increased by a certain dollar amount ($1,000 for 2006).[183]

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[180] Sec. 408.

[181] Sec. 219.

[182] Sec. 408A.

[183] Under the Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA"), the dollar limit on IRA contributions increases to $5,000 in 2008, with indexing for inflation thereafter. The

Traditional IRAs

An individual may make deductible contributions to a traditional IRA up to the IRA contribution limit if neither the individual nor the individual's spouse is an active participant in an employer-sponsored retirement plan. If an individual (or the individual's spouse) is an active participant in an employer-sponsored retirement plan, the deduction is phased out for taxpayers with adjusted gross income over certain levels for the taxable year. The adjusted gross income phase-out ranges are: (1) for single taxpayers, $50,000 to $60,000; (2) for married taxpayers filing joint returns, $75,000 to $85,000 for 2006 and $80,000 to $100,000 for years after 2006; and (3) for married taxpayers filing separate returns, $0 to $10,000. If an individual is not an active participant in an employer-sponsored retirement plan, but the individual's spouse is, the deduction is phased out for taxpayers with adjusted gross income between $150,000 and $160,000.

To the extent an individual cannot or does not make deductible contributions to an IRA or contributions to a Roth IRA, the individual may make nondeductible contributions to a traditional IRA, subject to the same limits as deductible contributions. An individual who has attained age 50 before the end of the taxable year may also make nondeductible catch-up contributions to an IRA.

Amounts held in a traditional IRA are includible in income when withdrawn, except to the extent the withdrawal is a return of nondeductible contributions. Withdrawals from an IRA before age 70½, death, or disability are subject to an additional 10-percent tax unless an exception applies.[184]

Roth IRAs

Individuals with adjusted gross income below certain levels may make nondeductible contributions to a Roth IRA, subject to the overall limit on IRA contributions described above. The maximum annual contribution that can be made to a Roth IRA is phased out for taxpayers with adjusted gross income over certain levels for the taxable year. The adjusted gross income phase-out ranges are: (1) for single taxpayers, $95,000 to $110,000; (2) for married taxpayers filing joint returns, $150,000 to $160,000; and (3) for married taxpayers filing separate returns, $0 to $10,000.

Taxpayers generally may convert a traditional IRA into a Roth IRA, except for married taxpayers filing separate returns. The amount converted is includible in income as if a withdrawal had been made, except that the 10-percent early withdrawal tax does not apply.

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provisions of EGTRRA generally do not apply for years beginning after December 31, 2010. As a result, the dollar limit on annual IRA contributions is $2,000 for years after 2010, and catch-ups contributions are not permitted.

[184] Sec. 72(t).

Amounts held in a Roth IRA that are withdrawn as a qualified distribution are not includible in income, or subject to the additional 10-percent tax on early withdrawals. A qualified distribution is a distribution that (1) is made after the five-taxable year period beginning with the first taxable year for which the individual made a contribution to a Roth IRA, and (2) is made after attainment of age 59½, on account of death or disability, or is made for first-time homebuyer expenses of up to $10,000.

Distributions from a Roth IRA that are not qualified distributions are includible in income to the extent attributable to earnings. The amount includible in income is also subject to the 10-percent early withdrawal tax described above.

Explanation of Provision

The bill indexes the income limits applicable to the saver's credit beginning in 2007. (Another provision of the bill, described above, permanently extends the saver's credit.) Indexed amounts are rounded to the nearest multiple of $500. Under the indexed income limits, as under present law, the income limits for single taxpayers is one-half that for married taxpayers filing a joint return and the limits for heads of household are three-fourths that for married taxpayers filing a joint return.

The bill also indexes the income limits for IRA contributions beginning in 2007. The indexing applies to the income limits for deductible contributions for active participants in an employer-sponsored plan,[185] the income limits for deductible contributions if the individual is not an active participant but the individual's spouse is, and the income limits for Roth IRA contributions. Indexed amounts are rounded to the nearest multiple of $1,000. The provision does not affect the phase-out ranges under present law. Thus, for example, in the case of an active participant in an employer-sponsored plan, the phase-out range is $20,000 in the case of a married taxpayer filing a joint return and $10,000 in the case of an individual taxpayer.

Effective Date

The provision is effective for taxable years beginning after December 31, 2006.

[185] Under the bill, for 2007, the lower end of the income phase out for active participants filing a joint return is $80,000 as adjusted to reflect inflation.

D. Health and Medical Benefits

1. Ability to use excess pension assets for future retiree health benefits and collectively bargained retiree health benefits (sec. 420 of the Code)

Present Law

Transfer of pension assets

Defined benefit plan assets generally may not revert to an employer prior to termination of the plan and satisfaction of all plan liabilities. In addition, a reversion may occur only if the plan so provides. A reversion prior to plan termination may constitute a prohibited transaction and may result in plan disqualification. Any assets that revert to the employer upon plan termination are includible in the gross income of the employer and subject to an excise tax. The excise tax rate is 20 percent if the employer maintains a replacement plan or makes certain benefit increases in connection with the termination; if not, the excise tax rate is 50 percent. Upon plan termination, the accrued benefits of all plan participants are required to be 100-percent vested.

A pension plan may provide medical benefits to retired employees through a separate account that is part of such plan ("retiree medical accounts"). A qualified transfer of excess assets of a defined benefit plan to such a separate account within the plan may be made in order to fund retiree health benefits.[186] A qualified transfer does not result in plan disqualification, is not a prohibited transaction, and is not treated as a reversion. Thus, transferred assets are not includible in the gross income of the employer and are not subject to the excise tax on reversions. No more than one qualified transfer may be made in any taxable year. A qualified transfer may not be made from a multiemployer plan. No qualified transfer may be made after December 31, 2013.

Excess assets generally means the excess, if any, of the value of the plan's assets[187] over the greater of (1) the accrued liability under the plan (including normal cost) or (2) 125 percent of the plan's current liability.[188] In addition, excess assets transferred in a qualified transfer may not exceed the amount reasonably estimated to be the amount that the employer will pay out of such account during the taxable year of the transfer for qualified current retiree health liabilities. No deduction is allowed to the employer for (1) a qualified transfer or (2) the payment of qualified current retiree health liabilities out of transferred funds (and any income thereon). In

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[186] Sec. 420.

[187] The value of plan assets for this purpose is the lesser of fair market value or actuarial value.

[188] In the case of plan years beginning before January 1, 2004, excess assets generally means the excess, if any, of the value of the plan's assets over the greater of (1) the lesser of (a) the accrued liability under the plan (including normal cost) or (b) 170 percent of the plan's current liability (for 2003), or (2) 125 percent of the plan's current liability. The current liability full funding limit was repealed for years beginning after 2003. Under the general sunset provision of EGTRRA, the limit is reinstated for years after 2010.

addition, no deduction is allowed for amounts paid other than from transferred funds for qualified current retiree health liabilities to the extent such amounts are not greater than the excess of (1) the amount transferred (and any income thereon), over (2) qualified current retiree health liabilities paid out of transferred assets (and any income thereon). An employer may not contribute any amount to a health benefits account or welfare benefit fund with respect to qualified current retiree health liabilities for which transferred assets are required to be used.

Transferred assets (and any income thereon) must be used to pay qualified current retiree health liabilities for the taxable year of the transfer. Transferred amounts generally must benefit pension plan participants, other than key employees, who are entitled upon retirement to receive retiree medical benefits through the separate account. Retiree health benefits of key employees may not be paid out of transferred assets.

Amounts not used to pay qualified current retiree health liabilities for the taxable year of the transfer are to be returned to the general assets of the plan. These amounts are not includible in the gross income of the employer, but are treated as an employer reversion and are subject to a 20-percent excise tax.

In order for the transfer to be qualified, accrued retirement benefits under the pension plan generally must be 100-percent vested as if the plan terminated immediately before the transfer (or in the case of a participant who separated in the one-year period ending on the date of the transfer, immediately before the separation).

In order to a transfer to be qualified, the employer generally must maintain retiree health benefits at the same level for the taxable year of the transfer and the following four years.

In addition, ERISA provides that, at least 60 days before the date of a qualified transfer, the employer must notify the Secretary of Labor, the Secretary of the Treasury, employee representatives, and the plan administrator of the transfer, and the plan administrator must notify each plan participant and beneficiary of the transfer.[189]

Deductions for contributions

Deductions for contributions to qualified retirement plans are subject to certain limits. Deductions for contributions to funded welfare benefit plans are generally also subject to limits, including limits on the amount that may be contributed to an account to fund the expected cost of retiree medical benefits for future years. The limit on the amount that may be contributed to an account to fund the expected cost of retiree medical benefits for future years does not apply to a separate fund established under a collective bargaining agreement.

[189] ERISA sec. 101(e). ERISA also provides that a qualified transfer is not a prohibited transaction under ERISA or a prohibited reversion.

Explanation of Provision

In general

If certain requirements are satisfied, the bill permits transfers of excess pension assets under a single-employer plan to retiree medical accounts to fund the expected cost of retiree medical benefits for the current and future years (a "qualified future transfer") and also allows such transfers in the case of benefits provided under a collective bargaining agreement (a "collectively bargained transfer"). Transfers must be made for at least a two-year period. An employer can elect to make a qualified future transfer or a collectively bargained transfer rather than a qualified transfer. A qualified future transfer or collectively bargained transfer must meet the requirements applicable to qualified transfers, except that the provision modifies the rules relating to (1) the determination of excess pension assets; (2) the limitation on the amount transferred; and (3) the minimum cost requirement. Additional requirements apply in the case of collectively bargained transfer.

The general sunset applicable to qualified transfer applies (i.e., transfers can be made only before January 1, 2014).

Rule applicable to qualified future transfers and collectively bargained transfers

Qualified future transfers and collectively bargained transfers can be made to the extent that plan assets exceed the greater of (1) accrued liability, or (2) 120 percent of current liability.[190] The provision requires that, during the transfer period, the plan's funded status must be maintained at the minimum level required to make transfers. If the minimum level is not maintained, the employer must make contributions to the plan to meet the minimum level or an amount required to meet the minimum level must be transferred from the health benefits account. The transfer period is the period not to exceed a total of ten consecutive taxable years beginning with the taxable year of the transfer. As previously discussed, the period must be not less than two consecutive years.

A limit applies on the amount that can be transferred. In the case of a qualified future transfer, the amount of excess pension assets that may be transferred is limited to the sum of (1) the amount that is reasonably estimated to be the amount the employer will pay out of the account during the taxable year of the transfer for current retiree health liabilities, and (2) the sum of the qualified current retiree health liabilities which the plan reasonably estimates, in accordance with guidance issued by the Secretary, will be incurred for each additional year in the transfer period. The amount that can be transferred under a collectively bargained transfer cannot exceed the amount which is reasonably estimated, in accordance with the provisions of the collective bargaining agreement and generally accepted accounting principles, to be the amount the employer maintaining the plan will pay out of such account during the collectively bargained cost maintenance period for collectively bargained retiree health liabilities.

[190] The single-employer plan funding concepts are updated after 2007 to reflect the changes to the single-employer plan funding rules under the bill.

The provision also modifies the minimum cost requirement which requires retiree medical benefits to be maintained at a certain level. In the case of a qualified future transfer, the minimum cost requirement will be satisfied if, during the transfer period and the four subsequent years, the annual average amount of employer costs is not less than applicable employer cost determined with respect to the transfer. An employer may elect to meet this minimum cost requirement by meeting the requirements as in effect before the amendments made by section 535 of the Tax Relief Extension Act of 1999 for each year during the transfer period and the four subsequent years. In the case of a collectively bargained transfer, the minimum cost requirements is satisfied if each collectively bargained group health plan under which collectively bargained health benefits are provided provides that the collectively bargained employer cost for each table year during the collectively bargained cost maintenance period is not less than the amount specified by the collective bargaining agreement. The collectively bargained employer cost is the average cost per covered individual of providing collectively bargained retiree health benefits as determined in accordance with the applicable collective bargaining agreement. Thus, retiree medical benefits must be provided at the level determined under the collective bargaining agreement for the shorter of (1) the remaining lifetime of each covered retiree (and any covered spouse and dependent), or (2) the period of coverage provided under the collectively bargained health plan for such covered retiree (and any covered spouse and dependent).

Additional requirements for collectively bargained transfers

As previously discussed, the bill imposes certain additional requirements in the case of a collectively bargained transfer. Collectively bargained transfers can be made only if (1) for the employer's taxable year ending in 2005, medical benefits are provided to retirees (and spouses and dependents) under all the employer's benefit plans, and (2) the aggregate cost of benefits for such year is at least five percent of the employer's gross receipts. The provision also applies to successors of such employers. Before a collectively bargained transfer, the employer must designate in writing to each employee organization that is a party to the collective bargaining agreement that the transfer is a collectively bargained transfer.

Collectively bargained retiree health liabilities means the present value, as of the beginning of a taxable year and determined in accordance with the applicable collective bargaining agreement, of all collectively bargained health benefits (including administrative expenses) for such taxable year and all subsequent taxable years during the collectively bargained cost maintenance period (with the exclusion of certain key employees) reduced by the value of assets in all health benefits accounts or welfare benefit funds set aside to pay for the collectively bargained retiree health liabilities. Collectively bargained health benefits are health benefits or coverage provided to retired employees who, immediately before the collectively bargained transfer, are entitled to receive such benefits upon retirement and who are entitled to pension benefits under the plan (and their spouses and dependents). If specified by the provisions of the collective bargaining agreement, collectively bargained health benefits also include active employees who, following their retirement, are entitled to receive such benefits and who are entitled to pension benefits under the plan (and their spouse and dependents).

Assets transferred in a collectively bargained transfer can be used to pay collectively bargained retiree health liabilities (other than liabilities of certain key employees not taken into

account) for the taxable year of the transfer and for any subsequent taxable year during the collectively bargained cost maintenance period. The collectively bargained cost maintenance period (with respect to a retiree) is the shorter of (1) the remaining lifetime of the covered retiree (and any covered spouse and dependents) or (2) the period of coverage provided by the collectively bargained health plan with respect to such covered retiree (and any covered spouse and dependents).

The limit on deductions in the case of certain amounts paid for qualified current retiree health liabilities other than from the health benefits account does not apply in the case of a collectively bargained transfer.

An employer may contribute additional amounts to a health benefits account or welfare benefit fund with respect to collectively bargained health liabilities for which transferred assets are required to be used. The deductibility of such contributions are subject to the limits that otherwise apply to a welfare benefit fund under a collective bargaining agreements without regard to whether such contributions are made to a health benefits account or a welfare benefit fund and without regard to the limits on deductions for contributions to qualified retirement plans (under Code section 404). The Secretary of the Treasury is directed to provide rules to prevent duplicate deductions for the same contributions or for duplicate contributions to fund the same benefits.

Effective Date

The provision is effective for transfers after the date of enactment.

2. Transfer of excess pension assets to multiemployer health plans (sec. 420 of the Code)

Present Law

Defined benefit plan assets generally may not revert to an employer prior to termination of the plan and satisfaction of all plan liabilities. In addition, a reversion may occur only if the plan so provides. A reversion prior to plan termination may constitute a prohibited transaction and may result in plan disqualification. Any assets that revert to the employer upon plan termination are includible in the gross income of the employer and subject to an excise tax. The excise tax rate is 20 percent if the employer maintains a replacement plan or makes certain benefit increases in connection with the termination; if not, the excise tax rate is 50 percent. Upon plan termination, the accrued benefits of all plan participants are required to be 100-percent vested.

A pension plan may provide medical benefits to retired employees through a separate account that is part of such plan. A qualified transfer of excess assets of a defined benefit plan to such a separate account within the plan may be made in order to fund retiree health benefits.[191] A qualified transfer does not result in plan disqualification, is not a prohibited transaction, and is not treated as a reversion. Thus, transferred assets are not includible in the gross income of the

[191] Sec. 420.

employer and are not subject to the excise tax on reversions. No more than one qualified transfer may be made in any taxable year. A qualified transfer may not be made from a multiemployer plan. No qualified transfer may be made after December 31, 2013.

Excess assets generally means the excess, if any, of the value of the plan's assets[192] over the greater of (1) the accrued liability under the plan (including normal cost) or (2) 125 percent of the plan's current liability.[193] In addition, excess assets transferred in a qualified transfer may not exceed the amount reasonably estimated to be the amount that the employer will pay out of such account during the taxable year of the transfer for qualified current retiree health liabilities. No deduction is allowed to the employer for (1) a qualified transfer or (2) the payment of qualified current retiree health liabilities out of transferred funds (and any income thereon).

Transferred assets (and any income thereon) must be used to pay qualified current retiree health liabilities for the taxable year of the transfer. Transferred amounts generally must benefit pension plan participants, other than key employees, who are entitled upon retirement to receive retiree medical benefits through the separate account. Retiree health benefits of key employees may not be paid out of transferred assets.

Amounts not used to pay qualified current retiree health liabilities for the taxable year of the transfer are to be returned to the general assets of the plan. These amounts are not includible in the gross income of the employer, but are treated as an employer reversion and are subject to a 20-percent excise tax.

In order for the transfer to be qualified, accrued retirement benefits under the pension plan generally must be 100-percent vested as if the plan terminated immediately before the transfer (or in the case of a participant who separated in the one-year period ending on the date of the transfer, immediately before the separation).

In order to a transfer to be qualified, the employer generally must maintain retiree health benefits at the same level for the taxable year of the transfer and the following four years.

In addition, ERISA provides that, at least 60 days before the date of a qualified transfer, the employer must notify the Secretary of Labor, the Secretary of the Treasury, employee representatives, and the plan administrator of the transfer, and the plan administrator must notify each plan participant and beneficiary of the transfer.[194]

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[192] The value of plan assets for this purpose is the lesser of fair market value or actuarial value.

[193] In the case of plan years beginning before January 1, 2004, excess assets generally means the excess, if any, of the value of the plan's assets over the greater of (1) the lesser of (a) the accrued liability under the plan (including normal cost) or (b) 170 percent of the plan's current liability (for 2003), or (2) 125 percent of the plan's current liability. The current liability full funding limit was repealed for years beginning after 2003. Under the general sunset provision of EGTRRA, the limit is reinstated for years after 2010.

[194] ERISA sec. 101(e). ERISA also provides that a qualified transfer is not a prohibited transaction under ERISA or a prohibited reversion.

Under present law, special deduction rules apply to a multiemployer defined benefit plan established before January 1, 1954, under an agreement between the Federal government and employee representatives in a certain industry.[195]

Explanation of Provision

The bill allows qualified transfers of excess defined benefit plan assets to be made by multiemployer defined benefit plans.

Effective Date

The provision is effective for transfer made in taxable years beginning after December 31, 2006.

3. Allowance of reserve for medical benefits of plans sponsored by bona fide associations (sec. 419A of the Code)

Present Law

Under present law, deductions for contributions to funded welfare benefit plans are generally subject to limits, including limits on the amount that may be contributed to an account to fund medical benefits (other than retiree medical benefits) for future years. Deductions for contributions to a welfare benefit fund are limited to the fund's qualified cost for the taxable year. The qualified cost is the sum of (1) the qualified direct cost for the taxable year, and (2) permissible additions to a qualified asset account.

The qualified direct costs are the amount which would have been allowable as a deduction to the employer with respect to the benefits provided during the taxable year if the benefits were provided directly by the employer and the employer used the cash receipts and disbursements method of accounting. Additions to the qualified asset account are limited to the account limit. The account limit is the amount reasonably and actuarially necessary to fund claims uncured but unpaid (as of the close of the taxable year) and administrative costs with respect to such claims.

These limits do not apply to a welfare benefit fund that is part of a plan (referred to a "10-or-more employer" plan), to which (1) more than one employer contributes, and (2) no employer normally contributes more than 10 percent of the total contributions, provided that the plan may not maintain experience rating arrangements with respect to individual employers.

Explanation of Provision

The bill allows deductions for contributions to fund a reserve for medical benefits (other than retiree medical benefits) for future years provided through a bona fide association as defined in section 2791(d)(3) of the Public Health Service Act. In such case, the account limit may

[195] Code sec. 404(c).

include a reserve not to exceed 35 percent of the sum of (1) qualified direct costs, and (2) the change in claims incurred, but unpaid for such taxable year with respect to medical benefits (other than post-retirement medical benefits).

Effective Date

The provision is effective for taxable years ending after December 31, 2006.

4. Tax treatment of combined annuity or life insurance contracts with a long-term care insurance feature (secs. 72. 1035, and 7702B and new sec. 6050U of the Code)

Present Law

Annuity contracts

In general, earnings and gains on amounts invested in a deferred annuity contract held by an individual are not subject to tax during the deferral period in the hands of the holder of the contract. When payout commences under a deferred annuity contract, the tax treatment of amounts distributed depends on whether the amount is received "as an annuity" (generally, as periodic payments under contract terms) or not.

For amounts received as an annuity by an individual, an "exclusion ratio" is provided for determining the taxable portion of each payment (sec. 72(b)). The portion of each payment that is attributable to recovery of the taxpayer's investment in the contract is not taxed. The taxable portion of each payment is ordinary income. The exclusion ratio is the ratio of the taxpayer's investment in the contract to the expected return under the contract, that is, the total of the payments expected to be received under the contract. The ratio is determined as of the taxpayer's annuity starting date. Once the taxpayer has recovered his or her investment in the contract, all further payments are included in income. If the taxpayer dies before the full investment in the contract is recovered, a deduction is allowed on the final return for the remaining investment in the contract (sec. 72(b)(3)).

Amounts not received as an annuity generally are included as ordinary income if received on or after the annuity starting date. Amounts not received as an annuity are included in income to the extent allocable to income on the contract if received before the annuity starting date, i.e., as income first (sec. 72(e)(2)). In general, loans under the annuity contract, partial withdrawals and partial surrenders are treated as amounts not received as an annuity and are subject to tax as income first (sec. 72(e)(4)). Exceptions are provided in some circumstances, such as for certain grandfathered contracts, certain life insurance and endowment contracts (other than modified endowment contracts), and contracts under qualified plans (sec. 72(e)(5)). Under these exceptions, the amount received is included in income, but only to the extent it exceeds the investment in the contract, i.e., as basis recovery first.

Long-term care insurance contracts

Tax treatment

Present law provides favorable tax treatment for qualified long-term care insurance contracts meeting the requirements of section 7702B.

A qualified long-term care insurance contract is treated as an accident and health insurance contract (sec. 7702B(a)(1)). Amounts received under the contract generally are excludable from income as amounts received for personal injuries or sickness (sec. 104(a)(3)). The excludable amount is subject to a dollar cap of $250 per day or $91,250 annually (for 2006), as indexed, on per diem contracts only (sec. 7702B(d)). If payments under such contracts exceed the dollar cap, then the excess is excludable only to the extent of costs in excess of the dollar cap that are incurred for long-term care services. Amounts in excess of the dollar cap, with respect to which no actual costs were incurred for long-term care services, are fully includable in income without regard to the rules relating to return of basis under section 72.

A plan of an employer providing coverage under a long-term care insurance contract generally is treated as an accident and health plan (benefits under which generally are excludable from the recipient's income under section 105).

Premiums paid for a qualified long-term care insurance contract are deductible as medical expenses, subject to a dollar cap on the deductible amount of the premium per year based on the insured person's age at the end of the taxable year (sec. 213(d)(10)). Medical expenses generally are allowed as a deduction only to the extent they exceed 7.5 percent of adjusted gross income (sec. 213(a)).

Unreimbursed expenses for qualified long-term care services provided to the taxpayer or the taxpayer's spouse or dependent are treated as medical expenses for purposes of the itemized deduction for medical expenses (subject to the floor of 7.5 percent of adjusted gross income). Amounts received under a qualified long-term care insurance contract (regardless of whether the contract reimburses expenses or pays benefits on a per diem or other periodic basis) are treated as reimbursement for expense actually incurred for medical care (sec. 7702B(a)(2)).

Definitions

A qualified long-term care insurance contract is defined as any insurance contract that provides only coverage of qualified long-term care services, and that meets additional requirements (sec. 7702B(b)). The contract is not permitted to provide for a cash surrender value or other money that can paid, assigned or pledged as collateral for a loan, or borrowed (and premium refunds are to be applied as a reduction in future premiums or to increase future benefits). Per diem-type and reimbursement-type contracts are permitted.

Qualified long-term care services are necessary diagnostic, preventive, therapeutic, curing treating, mitigating, and rehabilitative services, and maintenance or personal care services that are required by a chronically ill individual and that are provided pursuant to a plan of care prescribed by a licensed health care practitioner (sec. 7702B(c)(1)).

A chronically ill individual is generally one who has been certified within the previous 12 months by a licensed health care practitioner as being unable to perform (without substantial assistance) at least 2 activities of daily (ADLs) for at least 90 days due to a loss of functional capacity (or meeting other definitional requirements) (sec. 7702B(c)(2)).

Long-term care riders on life insurance contracts

In the case of long-term care insurance coverage provided by a rider on or as part of a life insurance contract, the requirements applicable to long-term care insurance contracts apply as if the portion of the contract providing such coverage were a separate contract (sec. 7702B(e)). The term "portion" means only the terms and benefits that are in addition to the terms and benefits under the life insurance contract without regard to long-term care coverage. As a result, if the applicable requirements are met by the long-term care portion of the contract, amounts received under the contract as provided by the rider are treated in the same manner as long-term care insurance benefits, whether or not the payment of such amounts causes a reduction in the contract's death benefit or cash surrender value.

The guideline premium limitation applicable under section 7702(c)(2) is increased by the sum of charges (but not premium payments) against the life insurance contract's cash surrender value, the imposition of which reduces premiums paid for the contract (within the meaning of sec. 7702(f)(1)). Thus, a policyholder can pre-fund to a greater degree a life insurance policy with a long-term care rider without causing the policy to lose its tax-favored treatment as life insurance.

No medical expense deduction generally is allowed under section 213 for charges against the life insurance contract's cash surrender value, unless such charges are includible in income because the life insurance contract is treated as a "modified endowment contract" under section 72(e)(10) and 7702A (sec. 7702B(e)((3)).

Tax-free exchanges of insurance contracts

Present law provides for the exchange of certain insurance contracts without recognition of gain or loss (sec. 1035). No gain or loss is recognized on the exchange of: (1) a life insurance contract for another life insurance contract or for an endowment or annuity contract; or (2) an endowment contract for another endowment contract (that provides for regular payments beginning no later than under the exchanged contract) or for an annuity contract; or (3) an annuity contract for an annuity contract. The basis of the contract received in the exchange generally is the same as the basis of the contract exchanged (sec. 1031(d)). Tax-free exchanges of long-term care insurance contracts are not permitted.

Capitalization of certain policy acquisition expenses of insurance companies

In the case of an insurance company, specified policy acquisition expenses for any taxable year are required to be capitalized, and are amortized generally over the 120-month period beginning with the first month in the second half of the taxable year (sec. 848). Specified policy acquisition expenses are determined as that portion of the insurance company's general deductions for the taxable year that does not exceed a specific percentage of the net premiums for the taxable year on each of three categories of insurance contracts. For annuity contracts, the

percentage is 1.75; for group life insurance contracts, the percentage is 2.05; and for all other specified insurance contracts, the percentage is 7.7. With certain exceptions, a specified insurance contract is any life insurance, annuity, or noncancellable accident and health insurance contract or combination thereof.

Explanation of Provision

The provision provides tax rules for long-term care insurance that is provided by a rider on or as part of an annuity contract, and modifies the tax rules for long-term care insurance coverage provided by a rider on or as part of a life insurance contract.

Under the provision, any charge against the cash value of an annuity contract or the cash surrender value of a life insurance contract made as payment for coverage under a qualified long-term care insurance contract that is part of or a rider on the annuity or life insurance contract is not includable in income. The investment in the contract is reduced (but not below zero) by the charge.

The provision expands the rules for tax-free exchanges of certain insurance contracts. The provision provides that no gain or loss is recognized on the exchange of a life insurance contract, an endowment contract, an annuity contract, or a qualified long-term care insurance contract for a qualified long-term care insurance contract. The provision provides that a contract does not fail to be treated as an annuity contract, or as a life insurance contract, solely because a qualified long-term care insurance contract is a part of or a rider on such contract, for purposes of the rules for tax-free exchanges of certain insurance contracts.

The provision provides that, except as otherwise provided in regulations, for Federal tax purposes, in the case of a long-term care insurance contract (whether or not qualified) provided by a rider on or as part of a life insurance contract or an annuity contract, the portion of the contract providing long-term care insurance coverage is treated as a separate contract. The term "portion" means only the terms and benefits under a life insurance contract or annuity contract that are in addition to the terms and benefits under the contract without regard to long-term care coverage. As a result, if the applicable requirements are met by the long-term care portion of the contract, amounts received under the contract as provided by the rider are treated in the same manner as long-term care insurance benefits, whether or not the payment of such amounts causes a reduction in the life insurance contract's death benefit or cash surrender value or in the annuity contract's cash value.

No deduction as a medical expense is allowed for any payment made for coverage under a qualified long-term care insurance contract if the payment is made as a charge against the cash value of an annuity contract or the cash surrender value of a life insurance contract.

The provision provides that, for taxable years beginning after December 31, 2009, the guideline premium limitation is not directly increased by charges against a life insurance contract's cash surrender value for coverage under the qualified long-term care insurance portion of the contract. Rather, because such charges are not included in the holder's income by reason

of new section 72(e)(11),[196] the charges reduce premiums paid under section 7702(f)(1), for purposes of the guideline premium limitation of section 7702. The amount by which premiums paid (under 7702(f)(1)) are reduced under this rule is intended to be the sum of any charges (but not premium payments) against the life insurance contract's cash surrender value (within the meaning of section 7702(f)(2)(a)) for long-term care coverage made to that date under the contract. For taxable years beginning before January 1, 2010, the present-law rule of section 7702B(e)(2) before amendment by the bill (the so-called "pay-as-you-go" rule) increases the guideline premium limitation by this same amount, reduced by charges the imposition of which reduces the premiums paid under the contract. Thus, the provision of the bill recreates the result of the "pay-as-you-go" rule (which is repealed by the provision) as a reduction in premiums paid rather than as an increase in the guideline premium limitation.

The provision provides that certain retirement-related arrangements are not treated as annuity contracts, for purposes of the provision.

The provision requires information reporting by any person who makes a charge against the cash value of an annuity contract, or the cash surrender value of a life insurance contract, that is excludible from gross income under the provision. The information required to be reported includes the amount of the aggregate of such charges against each such contract for the calendar year, the amount of the reduction in the investment in the contract by reason of the charges, and the name, address, and taxpayer identification number of the holder of the contract. A statement is required to be furnished to each individual identified in the information report. Penalties apply for failure to file the information report or furnish the statement required under the provision.

The provision modifies the application of the rules relating to capitalization of policy acquisition expenses of insurance companies. In the case of an annuity or life insurance contract that includes a qualified long-term care insurance contract as a part of or rider on the annuity or life insurance contract, the specified policy acquisition expenses that must be capitalized is determined using 7.7 percent of the net premiums for the taxable year on such contracts.

The provision clarifies that, effective as if included in the Health Insurance Portability and Accountability Act of 1996 (when section 7702B was enacted), except as otherwise provided in regulations, for Federal tax purposes (not just for purposes of section 7702B), in the case of a long-term care insurance contract (whether or not qualified) provided by a rider on or as part of a life insurance contract, the portion of the contract providing long-term care insurance coverage is treated as a separate contract.

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[196] Because such charges are not included in the holder's income under new section 72(e)(11), the effect would be to increase the guideline premium limitation under present-law section 7702B(e)(2)(A) by the amount of the charges and simultaneously to reduce it by the same charges under section 7702B(e)(2)(B). Such charges that are not included in income serve to reduce premiums paid under section 7702(f)(1), and therefore would cancel each other out under 7702B(e)(2)(A) and (B).

Effective Date

The provisions are effective generally for contracts issued after December 31, 1996, but only with respect to taxable years beginning after December 31, 200**9**. The provisions relating to tax-free exchanges apply with respect to exchanges occurring after December 31, 2009. The provision relating to information reporting applies to charges made after December 31, 2009. The provision relating to policy acquisition expenses applies to specified policy acquisition expenses determined for taxable years beginning after December 31, 2009. The technical amendment relating to long-term care insurance coverage under section 7702B(e) is effective as if included with the underlying provisions of the Health Insurance Portability and Accountability Act of 1996.

5. Permit tax-free distributions from governmental retirement plans for premiums for health and long-term care insurance for public safety officers (sec. 402 of the Code)

Present Law

Under present law, a distribution from a qualified retirement plan under section 401(a), a qualified annuity plan under section 403(a), a tax-sheltered annuity under section 403(b) (a "403(b) annuity"), an eligible deferred compensation plan maintained by a State or local government under section 457 (a "governmental 457 plan"), or an individual retirement arrangement under section 408 (an "IRA") generally is included in income for the year distributed (except to the extent the amount received constitutes a return of after-tax contributions or a qualified distribution from a Roth IRA).[197] In addition, a distribution from a qualified retirement or annuity plan, a 403(b) annuity, or an IRA received before age 59½, death, or disability generally is subject to a 10-percent early withdrawal tax on the amount includible in income, unless an exception applies.[198]

Explanation of Provision

The bill provides that certain pension distributions from an eligible retirement plan used to pay for qualified health insurance premiums are excludible from income, up to a maximum exclusion of $3,000 annually. An eligible retirement plan includes a governmental qualified retirement or annuity plan, 403(b) annuity, or 457 plan. The exclusion applies with respect to eligible retired public safety officers who make an election to have qualified health insurance premiums deducted from amounts distributed from an eligible retirement plan and paid directly to the insurer. An eligible retired public safety officer is an individual who, by reason of disability or attainment of normal retirement age, is separated from service as a public safety

[197] Secs. 402(a), 403(a), 403(b), 408(d), and 457(a).

[198] Sec. 72(t).

officer[199] with the employer who maintains the eligible retirement plan from which pension distributions are made.

Qualified health insurance premiums include premiums for accident or health insurance or qualified long-term care insurance contracts covering the taxpayer, the taxpayer's spouse, and the taxpayer's dependents. The qualified health insurance premiums do not have to be for a plan sponsored by the employer; however, the exclusion does not apply to premiums paid by the employee and reimbursed with pension distributions. Amounts excluded from income under the provision are not taken into account in determining the itemized deduction for medical expenses under section 213 or the deduction for health insurance of self-employed individuals under section 162.

Effective Date

The provision is effective for distributions in taxable years beginning after December 31, 2006.

[199] The term "public safety officer" has the same meaning as under section 1204(8)(A) of the Omnibus Crime Control and Safe Streets Act of 1986.

E. United States Tax Court Modernization

1. Judges of the Tax Court (secs. 7447, 7448, and 7472 of the Code)

Present Law

The Tax Court is established by the Congress pursuant to Article I of the U.S. Constitution.[200] The salary of a Tax Court judge is the same salary as received by a U.S. District Court judge.[201] Present law also provides Tax Court judges with some benefits that correspond to benefits provided to U.S. District Court judges, including specific retirement and survivor benefit programs for Tax Court judges.[202]

Under the retirement program, a Tax Court judge may elect to receive retirement pay from the Tax Court in lieu of benefits under another Federal retirement program. A Tax Court judge may also elect to participate in a plan providing annuity benefits for the judge's surviving spouse and dependent children (the "survivors' annuity plan"). Generally, benefits under the survivors' annuity plan are payable only if the judge has performed at least five years of service. Cost-of-living increases in benefits under the survivors' annuity plan are generally based on increases in pay for active judges.

Tax Court judges participate in the Federal Employees Group Life Insurance program (the "FEGLI" program). Retired Tax Court judges are eligible to participate in the FEGLI program as the result of an administrative determination of their eligibility, rather than a specific statutory provision.

Tax Court judges are not covered by the leave system for Federal Executive Branch employees. As a result, an individual who works in the Federal Executive Branch before being appointed to the Tax Court does not continue to accrue annual leave under the same leave program and may not use leave accrued prior to his or her appointment to the Tax Court.

Tax Court judges are not eligible to participate in the Thrift Savings Plan.

Under the retirement program for Tax Court judges, retired judges generally receive retired pay equal to the rate of salary of an active judge and must be available for recall to perform judicial duties as needed by the court for up to 90 days a year (unless the judge consents to more). However, retired judges may elect to freeze the amount of their retired pay, and those who do so are not available for recall.

Retired Tax Court judges on recall are subject to the limitations on outside earned income that apply to active Federal employees under the Ethics in Government Act of 1978. However, retired District Court judges on recall may receive compensation for teaching without regard to

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[200] Sec. 7441.

[201] Sec. 7443(c).

[202] Secs. 7447 and 7448.

the limitations on outside earned income. Retired Tax Court judges who elect to freeze the amount of their retired pay (thus making themselves unavailable for recall) are not subject to the limitations on outside earned income.

Explanation of Provision

Cost-of-living adjustments for survivor annuities

The bill provides that cost–of–living increases in benefits under the survivors' annuity plan are generally based on cost–of–living increases in benefits paid under the Civil Service Retirement System.

Life insurance coverage

In the case of a Tax Court judge age 65 or over, the Tax Court is authorized to pay on behalf of the judge any increase in employee premiums under the FEGLI program that occur after the date of enactment, including expenses generated by such payment, as authorized by the chief judge of the Tax Court in a manner consistent with payments authorized by the Judicial Conference of the United States (i.e., the body with policy-making authority over the administration of the courts of the Federal judicial branch).

Thrift Savings Plan participation

Under the provision, Tax Court judges are permitted to participate in the Thrift Savings Plan. A Tax Court judge is not eligible for agency contributions to the Thrift Savings Plan.

Effective Date

The provisions are effective on the date of enactment, except that the provision relating to cost-of-living increases in benefits under the survivors' annuity plan applies with respect to increases in Civil Service Retirement benefits taking effect after the date of enactment.

2. Special trial judges of the Tax Court (sec. 7448 and new sec. 7443C of the Code)

Present Law

The Tax Court is established by the Congress pursuant to Article I of the U.S. Constitution.[203] The chief judge of the Tax Court may appoint special trial judges to handle certain cases.[204] Special trial judges serve for an indefinite term. Special trial judges receive a salary of 90 percent of the salary of a Tax Court judge and are generally covered by the benefit programs that apply to Federal executive branch employees, including the Civil Service Retirement System or the Federal Employees' Retirement System.

[203] Sec. 7441.

[204] Sec. 7443A.

Explanation of Provision

Survivors' annuity plan

Under the provision, magistrate judges of the Tax Court may elect to participate in the survivors' annuity plan for Tax Court judges. An election to participate in the survivors' annuity plan must be filed not later than the latest of: (1) twelve months after the date of enactment of the provision; (2) six months after the date the judge takes office; or (3) six months after the date the judge marries.

Recall of retired special trial judges

The provision provides rules under which a retired special trial judge may be recalled to perform services for up to 90 days a year.

Effective Date

The provisions are effective on the date of enactment.

3. Consolidate review of collection due process cases in the Tax Court (sec. 6330(d) of the Code)

Present Law

In general, the IRS is required to notify taxpayers that they have a right to a fair and impartial hearing before levy may be made on any property or right to property.[205] Similar rules apply with respect to liens.[206] The hearing is held by an impartial officer from the IRS Office of Appeals, who is required to issue a determination with respect to the issues raised by the taxpayer at the hearing. The taxpayer is entitled to appeal that determination to a court. The appeal must be brought to the Tax Court, unless the Tax Court does not have jurisdiction over the underlying tax liability. If that is the case, then the appeal must be brought in the district court of the United States.[207] If a court determines that an appeal was not made to the correct court, the taxpayer has 30 days after such determination to file with the correct court.

The Tax Court is established under Article I of the United States Constitution[208] and is a court of limited jurisdiction.[209] The Tax Court only has the jurisdiction that is expressly

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[205] Sec. 6330(a).

[206] Sec. 6320.

[207] Sec. 6330(d).

[208] Sec. 7441.

[209] Sec. 7442.

conferred on it by statute.[210] For example, the jurisdiction of the Tax Court includes the authority to hear disputes concerning notices of income tax deficiency, certain types of declaratory judgment, and worker classification status, among others, but does not include jurisdiction over most excise taxes imposed by the Internal Revenue Code. Thus, the Tax Court may not have jurisdiction over the underlying tax liability with respect to an appeal of a due process hearing relating to a collections matter. As a practical matter, many cases involving appeals of a due process hearing (whether within the jurisdiction of the Tax Court or a district court) do not involve the underlying tax liability.

Explanation of Provision

The provision modifies the jurisdiction of the Tax Court by providing that all appeals of collection due process determinations are to be made to the United States Tax Court.

Effective Date

The provision applies to determinations made after the date which is 60 days after the date of enactment.

4. Extend authority for special trial judges to hear and decide certain employment status cases (sec. 7443A of the Code)

Present Law

In connection with the audit of any person, if there is an actual controversy involving a determination by the IRS as part of an examination that (1) one or more individuals performing services for that person are employees of that person or (2) that person is not entitled to relief under section 530 of the Revenue Act of 1978, the Tax Court has jurisdiction to determine whether the IRS is correct and the proper amount of employment tax under such determination.[211] Any redetermination by the Tax Court has the force and effect of a decision of the Tax Court and is reviewable.

An election may be made by the taxpayer for small case procedures if the amount of the employment taxes in dispute is $50,000 or less for each calendar quarter involved.[212] The decision entered under the small case procedure is not reviewable in any other court and should not be cited as authority.

The chief judge of the Tax Court may assign proceedings to special trial judges. The Code enumerates certain types of proceedings that may be so assigned and may be decided by a

[210] Sec. 7442.

[211] Sec. 7436.

[212] Sec. 7436(c).

special trial judge. In addition, the chief judge may designate any other proceeding to be heard by a special trial judge.[213]

Explanation of Provision

The provision clarifies that the chief judge of the Tax Court may assign to special trial judges any employment tax cases that are subject to the small case procedure and may authorize special trial judges to decide such small tax cases.

Effective Date

The provision is effective for any action or proceeding in the Tax Court with respect to which a decision has not become final as of the date of enactment.

5. Confirmation of Tax Court authority to apply equitable recoupment (sec. 6214(b) of the Code)

Present Law

Equitable recoupment is a common-law equitable principle that permits the defensive use of an otherwise time-barred claim to reduce or defeat an opponent's claim if both claims arise from the same transaction. U.S. District Courts and the U.S. Court of Federal Claims, the two Federal tax refund forums, may apply equitable recoupment in deciding tax refund cases.[214] In Estate of Mueller v. Commissioner,[215] the Court of Appeals for the Sixth Circuit held that the United States Tax Court (the "Tax Court") may not apply the doctrine of equitable recoupment. More recently, the Court of Appeals for the Ninth Circuit, in Branson v. Commissioner,[216] held that the Tax Court may apply the doctrine of equitable recoupment.

Explanation of Provision

The provision confirms that the Tax Court may apply the principle of equitable recoupment to the same extent that it may be applied in Federal civil tax cases by the U.S. District Courts or the U.S. Court of Claims. No implication is intended as to whether the Tax Court has the authority to continue to apply other equitable principles in deciding matters over which it has jurisdiction.

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[213] Sec. 7443A.

[214] *See Stone v. White*, 301 U.S. 532 (1937); *Bull v. United States*, 295 U.S. 247 (1935).

[215] 153 F.3d 302 (6th Cir.), *cert. den.*, 525 U.S. 1140 (1999).

[216] 264 F.3d 904 (9th Cir.), *cert. den.*, 2002 U.S. LEXIS 1545 (U.S. Mar. 18, 2002).

Effective Date

The provision is effective for any action or proceeding in the Tax Court with respect to which a decision has not become final as of the date of enactment.

6. Tax Court filing fee (sec. 7451 of the Code)

Present Law

The Tax Court is authorized to impose a fee of up to $60 for the filing of any petition for the redetermination of a deficiency or for declaratory judgments relating to the status and classification of 501(c)(3) organizations, the judicial review of final partnership administrative adjustments, and the judicial review of partnership items if an administrative adjustment request is not allowed in full.[217] The statute does not specifically authorize the Tax Court to impose a filing fee for the filing of a petition for review of the IRS's failure to abate interest or for failure to award administrative costs and other areas of jurisdiction for which a petition may be filed. The practice of the Tax Court is to impose a $60 filing fee in all cases commenced by petition.[218]

Explanation of Provision

The provision provides that the Tax Court is authorized to charge a filing fee of up to $60 in all cases commenced by the filing of a petition. No negative inference is to be drawn as to whether the Tax Court has the authority under present law to impose a filing fee for any case commenced by the filing of a petition.

Effective Date

The provision is effective on the date of enactment.

7. Use of practitioner fee (sec. 7475(b) of the Code)

Present Law

The Tax Court is authorized to impose a fee of up to $30 per year on practitioners admitted to practice before the Tax Court.[219] These fees are to be used to employ independent counsel to pursue disciplinary matters.

Explanation of Provision

The provision provides that Tax Court fees imposed on practitioners also are available to provide services to pro se taxpayers (i.e., a taxpayer representing himself) that will assist such

[217] Sec. 7451.

[218] *See* Rule 20(b) of the Tax Court Rules of Practice and Procedure.

[219] Sec. 7475.

taxpayers in controversies before the Court. For example, fees could be used for programs to educate pro se taxpayers on the procedural requirements for contesting a tax deficiency before the Tax Court.

Effective Date

The provision is effective on the date of enactment.

F. Other Provisions

1. Extension to all governmental plans of moratorium on application of certain nondiscrimination rules (sec. 1505 of the Taxpayer Relief Act of 1997, and secs. 401(a) and 401(k) of the Code)

Present Law

A qualified retirement plan maintained by a State or local government is exempt from the nondiscrimination and minimum participation requirements. A cash or deferred arrangement maintained by a State or local government is also treated as meeting the participation and nondiscrimination requirements applicable to such a qualified cash or deferred arrangement. Other governmental plans are subject to these requirements.[220]

Explanation of Provision

The provision exempts all governmental plans from the nondiscrimination and minimum participation rules. The provision also treats all governmental cash or deferred arrangements as meeting the participation and nondiscrimination requirements applicable to a qualified cash or deferred arrangement.

Effective Date

The provision is effective for any year beginning after the date of enactment.

2. Eliminate aggregate limit for usage of excess funds from black lung disability trusts to pay for retiree health (secs. 501(c)(21) and 9705 of the Code)

Present Law

Qualified black lung benefit trusts

A qualified black lung benefit trust is exempt from Federal income taxation. Contributions to a qualified black lung benefit trust generally are deductible to the extent such contributions are necessary to fund the trust.

Under present law, no assets of a qualified black lung benefit trust may be used for, or diverted to, any purpose other than (1) to satisfy liabilities, or pay insurance premiums to cover liabilities, arising under the Black Lung Acts, (2) to pay administrative costs of operating the trust, (3) to pay accident and health benefits or premiums for insurance exclusively covering such benefits (including administrative and other incidental expenses relating to such benefits) for retired coal miners and their spouses and dependents (within certain limits) or (4) investment in Federal, State, or local securities and obligations, or in time demand deposits in a bank or

[220] The IRS has announced that governmental plans that are subject to the nondiscrimination requirements are deemed to satisfy such requirements pending the issuance of final regulations addressing this issue. Notice 2003-6, 2003-3 I.R.B. 298; Notice 2001-46, 2001-2 C.B. 122.

insured credit union. Additionally, trust assets may be paid into the national Black Lung Disability Trust Fund, or into the general fund of the U.S. Treasury.

The amount of assets in qualified black lung benefit trusts available to pay accident and health benefits or premiums for insurance exclusively covering such benefits (including administrative and other incidental expenses relating to such benefits) for retired coal miners and their spouses and dependents may not exceed a yearly limit or an aggregate limit, whichever is less. The yearly limit is the amount of trust assets in excess of 110 percent of the present value of the liability for black lung benefits determined as of the close of the preceding taxable year of the trust. The aggregate limit is the excess of the sum of the yearly limit as of the close of the last taxable year ending before October 24, 1992, plus earnings thereon as of the close of the taxable year preceding the taxable year involved over the aggregate payments for accident of health benefits for retired coal miners and their spouses and dependents made from the trust since October 24, 1992. Each of these determinations is required to be made by an independent actuary.

In general, amounts used to pay retiree accident or health benefits are not includible in the income of the company, nor is a deduction allowed for such amounts.

United Mine Workers of America Combined Benefit Fund

The United Mine Workers of America ("UMWA") Combined Benefit Fund was established by the Coal Industry Retiree Health Benefit Act of 1992 to assume responsibility of payments for medical care expenses of retired miners and their dependents who were eligible for heath care from the private 1950 and 1974 UMWA Benefit Plans. The UMWA Combined Benefit Fund is financed by assessments on current and former signatories to labor agreements with the UMWA, past transfers from an overfunded United Mine Workers pension fund, and transfers from the Abandoned Mine Reclamation Fund.

Explanation of Provision

The provision eliminates the aggregate limit on the amount of excess black lung benefit trust assets that may be used to pay accident and health benefits or premiums for insurance exclusively covering such benefits (including administrative and other incidental expenses relating to such benefits) for retired coal miners and their spouses and dependents.

Effective Date

The provision is effective for taxable years beginning after December 31, 2006.

3. Tax treatment of company-owned life insurance ("COLI") (new secs. 101(j) and 6039I of the Code)

Present Law

Amounts received under a life insurance contract

Amounts received under a life insurance contract paid by reason of the death of the insured are not includible in gross income for Federal tax purposes.[221] No Federal income tax generally is imposed on a policyholder with respect to the earnings under a life insurance contract (inside buildup). [222]

Distributions from a life insurance contract (other than a modified endowment contract) that are made prior to the death of the insured generally are includible in income to the extent that the amounts distributed exceed the taxpayer's investment in the contract (i.e., basis). Such distributions generally are treated first as a tax-free recovery of basis, and then as income.[223]

Premium and interest deduction limitations[224]

Premiums

Under present law, no deduction is permitted for premiums paid on any life insurance, annuity or endowment contract, if the taxpayer is directly or indirectly a beneficiary under the contract.[225]

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[221] Sec. 101(a).

[222] This favorable tax treatment is available only if a life insurance contract meets certain requirements designed to limit the investment character of the contract (sec. 7702).

[223] Sec. 72(e). In the case of a modified endowment contract, however, in general, distributions are treated as income first, loans are treated as distributions (i.e., income rather than basis recovery first), and an additional 10-percent tax is imposed on the income portion of distributions made before age 59½ and in certain other circumstances (secs. 72(e) and (v)). A modified endowment contract is a life insurance contract that does not meet a statutory "7-pay" test, i.e., generally is funded more rapidly than seven annual level premiums (sec. 7702A).

[224] In addition to the statutory limitations described below, interest deductions under company-owned life insurance arrangements have also been limited by recent cases applying general principles of tax law. See *Winn-Dixie Stores, Inc. v. Commissioner*, 113 T.C. 254 (1999), aff'd 254 F.3d 1313 (11th Cir. 2001), cert. denied, April 15, 2002; *Internal Revenue Service v. CM Holdings, Inc.*, 254 B.R. 578 (D. Del. 2000), aff'd, 301 F.3d 96 (3d Cir. 2002); *American Electric Power, Inc. v. U.S.*, 136 F. Supp. 2d 762 (S. D. Ohio 2001), aff'd, 326 F.3d 737 (6th Cir. 2003), reh. denied, 338 F.3d 534 (6th Cir. 2003), cert. denied, U.S. No. 03-529 (Jan. 12, 2004); *Dow Chemical Company v. U.S.*, 435 F.3d 594 (6th Cir. 2006), rev'g 250 F. Supp. 2d 748 (E.D. Mich. 2003) as modified, 278 F. Supp. 2d 844 (E.D. Mich. 2003).

[225] Sec. 264(a)(1).

Interest paid or accrued with respect to the contract

No deduction generally is allowed for interest paid or accrued on any debt with respect to a life insurance, annuity or endowment contract covering the life of any individual.[226] An exception is provided under this provision for insurance of key persons.

Interest that is otherwise deductible (e.g., is not disallowed under other applicable rules or general principles of tax law) may be deductible under the key person exception, to the extent that the aggregate amount of the debt does not exceed $50,000 per insured individual. The deductible interest may not exceed the amount determined by applying a rate based on a Moody's Corporate Bond Yield Average-Monthly Average Corporates. A key person is an individual who is either an officer or a 20-percent owner of the taxpayer. The number of individuals that can be treated as key persons may not exceed the greater of (1) five individuals, or (2) the lesser of five percent of the total number of officers and employees of the taxpayer, or 20 individuals.[227]

Pro rata interest limitation

A pro rata interest deduction disallowance rule also applies. Under this rule, in the case of a taxpayer other than a natural person, no deduction is allowed for the portion of the taxpayer's interest expense that is allocable to unborrowed policy cash surrender values.[228] Interest expense is allocable to unborrowed policy cash values based on the ratio of (1) the taxpayer's average unborrowed policy cash values of life insurance, annuity and endowment contracts, to (2) the sum of the average unborrowed cash values (or average adjusted bases, for other assets) of all the taxpayer's assets.

Under the pro rata interest disallowance rule, an exception is provided for any contract owned by an entity engaged in a trade or business, if the contract covers an individual who is a 20-percent owner of the entity, or an officer, director, or employee of the trade or business. The exception also applies to a joint-life contract covering a 20-percent owner and his or her spouse.

"Single premium" and "4-out-of-7" limitations

Other interest deduction limitation rules also apply with respect to life insurance, annuity and endowment contracts. Present law provides that no deduction is allowed for any amount paid or accrued on debt incurred or continued to purchase or carry a single premium life insurance, annuity or endowment contract.[229] In addition, present law provides that no deduction is allowed for any amount paid or accrued on debt incurred or continued to purchase or carry a

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[226] Sec. 264(a)(4).

[227] Sec. 264(e)(3).

[228] Sec. 264(f). This applies to any life insurance, annuity or endowment contract issued after June 8, 1997.

[229] Sec. 264(a)(2).

life insurance, annuity or endowment contract pursuant to a plan of purchase that contemplates the systematic direct or indirect borrowing of part or all of the increases in the cash value of the contract (either from the insurer or otherwise).[230] Under this rule, several exceptions are provided, including an exception if no part of four of the annual premiums due during the initial seven-year period is paid by means of such debt (known as the "4-out-of-7 rule").

Definitions of highly compensated employee

Present law defines highly compensated employees and individuals for various purposes. For purposes of nondiscrimination rules relating to qualified retirement plans, an employee, including a self-employed individual, is treated as highly compensated with respect to a year if the employee (1) was a five-percent owner of the employer at any time during the year or the preceding year or (2) either (a) had compensation for the preceding year in excess of $95,000 (for 2005) or (b) at the election of the employer had compensation in excess of $95,000 (for 2005) and was in the highest paid 20 percent of employees for such year.[231] The $95,000 dollar amount is indexed for inflation.

For purposes of nondiscrimination rules relating to self-insured medical reimbursement plans, a highly compensated individual is an employee who is one of the five highest paid officers of the employer, a shareholder who owns more than 10 percent of the value of the stock of the employer, or is among the highest paid 25 percent of all employees.[232]

Explanation of Provision

The provision provides generally that, in the case of an employer-owned life insurance contract, the amount excluded from the applicable policyholder's income as a death benefit cannot exceed the premiums and other amounts paid by such applicable policyholder for the contract. The excess death benefit is included in income.

Exceptions to this income inclusion rule are provided. In the case of an employer-owned life insurance contract with respect to which the notice and consent requirements of the provision are met, the income inclusion rule does not apply to an amount received by reason of the death of an insured individual who, with respect to the applicable policyholder, was an employee at any time during the 12-month period before the insured's death, or who, at the time the contract was issued, was a director or highly compensated employee or highly compensated individual. For this purpose, such a person is one who is either: (1) a highly compensated employee as defined under the rules relating to qualified retirement plans, determined without regard to the election regarding the top-paid 20 percent of employees; or (2) a highly compensated individual as

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[230] Sec. 264(a)(3).

[231] Sec. 414(q). For purposes of determining the top-paid 20 percent of employees, certain employees, such as employees subject to a collective bargaining agreement, are disregarded.

[232] Sec. 105(h)(5). For purposes of determining the top-paid 25 percent of employees, certain employees, such as employees subject to a collective bargaining agreement, are disregarded.

defined under the rules relating to self-insured medical reimbursement plans, determined by substituting the highest-paid 35 percent of employees for the highest-paid 25 percent of employees.[233]

In the case of an employer-owned life insurance contract with respect to which the notice and consent requirements of the provision are met, the income inclusion rule does not apply to an amount received by reason of the death of an insured, to the extent the amount is (1) paid to a member of the family[234] of the insured, to an individual who is the designated beneficiary of the insured under the contract (other than an applicable policyholder), to a trust established for the benefit of any such member of the family or designated beneficiary, or to the estate of the insured; or (2) used to purchase an equity (or partnership capital or profits) interest in the applicable policyholder from such a family member, beneficiary, trust or estate. It is intended that such amounts be so paid or used by the due date of the tax return for the taxable year of the applicable policyholder in which they are received as a death benefit under the insurance contract, so that the payment of the amount to such a person or persons, or the use of the amount to make such a purchase, is known in the taxable year for which the exception from the income inclusion rule is claimed.

An employer-owned life insurance contract is defined for purposes of the provision as a life insurance contract which (1) is owned by a person engaged in a trade or business and under which such person (or a related person) is directly or indirectly a beneficiary, and (2) covers the life of an individual who is an employee with respect to the trade or business of the applicable policyholder on the date the contract is issued.

An applicable policyholder means, with respect to an employer-owned life insurance contract, the person (including related persons) that owns the contract, if the person is engaged in a trade or business, and if the person (or a related person) is directly or indirectly a beneficiary under the contract.

For purposes of the provision, a related person includes any person that bears a relationship specified in section 267(b) or 707(b)(1)[235] or is engaged in trades or businesses that are under common control (within the meaning of section 52(a) or (b)).

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[233] As under present law, certain employees are disregarded in making the determinations regarding the top-paid groups.

[234] For this purpose, a member of the family is defined in section 267(c)(4) to include only the individual's brothers and sisters (whether by the whole or half blood), spouse, ancestors, and lineal descendants.

[235] The relationships include specified relationships among family members, shareholders and corporations, corporations that are members of a controlled group, trust grantors and fiduciaries, tax-exempt organizations and persons that control such organizations, commonly controlled S corporations, partnerships and C corporations, estates and beneficiaries, commonly controlled partnerships, and partners and partnerships. Detailed rules apply to determine the specific relationships.

The notice and consent requirements of the provision are met if, before the issuance of the contract, (1) the employee is notified in writing that the applicable policyholder intends to insure the employee's life, and is notified of the maximum face amount at issue of the life insurance contract that the employer might take out on the life of the employee, (2) the employee provides written consent to being insured under the contract and that such coverage may continue after the insured terminates employment, and (3) the employee is informed in writing that an applicable policyholder will be a beneficiary of any proceeds payable on the death of the employee.

For purposes of the provision, an employee includes an officer, a director, and a highly compensated employee; an insured means, with respect to an employer-owned life insurance contract, an individual covered by the contract who is a U.S. citizen or resident. In the case of a contract covering the joint lives of two individuals, references to an insured include both of the individuals.

The provision requires annual reporting and recordkeeping by applicable policyholders that own one or more employer-owned life insurance contracts. The information to be reported is (1) the number of employees of the applicable policyholder at the end of the year, (2) the number of employees insured under employer-owned life insurance contracts at the end of the year, (3) the total amount of insurance in force at the end of the year under such contracts, (4) the name, address, and taxpayer identification number of the applicable policyholder and the type of business in which it is engaged, and (5) a statement that the applicable policyholder has a valid consent (in accordance with the consent requirements under the provision) for each insured employee and, if all such consents were not obtained, the total number of insured employees for whom such consent was not obtained. The applicable policyholder is required to keep records necessary to determine whether the requirements of the reporting rule and the income inclusion rule of new section 101(j) are met.

Effective Date

The provision generally appleis to contracts issued after the date of enactment, except for contracts issued after such date pursuant to an exchange described in section 1035 of the Code. In addition, certain material increases in the death benefit or other material changes will generally cause a contract to be treated as a new contract, with an exception for existing lives under a master contract. Increases in the death benefit that occur as a result of the operation of section 7702 of the Code or the terms of the existing contract, provided that the insurer's consent to the increase is not required, will not cause a contract to be treated as a new contract. In addition, certain changes to a contract will not be considered material changes so as to cause a contract to be treated as a new contract. These changes include administrative changes, changes from general to separate account, or changes as a result of the exercise of an option or right granted under the contract as originally issued.

Examples of situations in which death benefit increases would not cause a contract to be treated as a new contract include the following:

1. Section 7702 provides that life insurance contracts need to either meet the cash value accumulation test of section 7702(b) or the guideline premium requirements of section

7702(c) and the cash value corridor of section 7702(d). Under the corridor test, the amount of the death benefit may not be less than the applicable percentage of the cash surrender value. Contracts may be written to comply with the corridor requirement by providing for automatic increases in the death benefit based on the cash surrender value. Death benefit increases required by the corridor test or the cash value accumulation test do not require the insurer's consent at the time of increase and occur in order to keep the contact in compliance with section 7702.

2. Death benefits may also increase due to normal operation of the contract. For example, for some contracts, policyholder dividends paid under the contract may be applied to purchase paid-up additions, which increase the death benefits. The insurer's consent is not required for these death benefit increases.

3. For variable contacts and universal life contracts, the death benefit may increase as a result of market performance or the contract design. For example, some contracts provide that the death benefit will equal the cash value plus a specified amount at risk. With these contracts, the amount of the death benefit at any time will vary depending on changes in the cash value of the contract. The insurance company's consent is not required for these death benefit increases.

4. Treatment of test room supervisors and proctors who assist in the administration of college entrance and placement exams (sec. 530 of the Revenue Reconciliation Act of 1978)

Present Law

Section 530 of the Revenue Act of 1978 prohibits the Internal Revenue Service from challenging a taxpayer's treatment of an individual as an independent contractor for employment tax purposes if the taxpayer (1) has a reasonable basis for such treatment and (2) consistently treats the individual, and any other individual holding a substantially similar position, as an independent contractor.

Explanation of Provision

Under the bill, section 530 of the Revenue Act of 1978 is amended to provide that in the case of an individual providing services as a test proctor or room supervisor by assisting in the administration of college entrance or placements examinations, the consistency requirement does not apply with respect to services performed after December 31, 2006 (and remuneration paid with respect to such services). The provision applies if the individual (1) is performing the services for a tax-exempt organization, and (2) is not otherwise treated as an employee of such organization for purposes of employment taxes. Thus, under the bill, if the requirements are satisfied, the IRS is prohibited from challenging the treatment of such individuals as independent contractors for employment tax purposes, even if the organization previously treated such individuals as employees.

Effective Date

The provision is effective for remuneration paid for services performed after December 31, 2006.

5. Rule for church plans which self-annuitize (sec. 401(a)(9) of the Code)

Present Law

Minimum distribution rules apply to qualified retirement plans (sec. 401(a)(9)). Special rules apply in the case of payments under an annuity contract purchased with the employee's benefit by the plan from an insurance company.[236] If certain requirements are satisfied, these special rules apply to annuity payments from a retirement income account maintained by a church (or certain other organizations as described in sec. 403(b)(9)) even though the payments are not made under an annuity purchased from an insurance company.[237]

Explanation of Provision

The bill provides that annuity payments provided with respect to any account maintained for a participant or beneficiary under a qualified church plan does not fail to meet the minimum distribution rules merely because the payments are not made under an annuity contract purchased from an insurance company if such payments would not fail such requirements if provided with respect to a retirement income account described in section 403(b)(9).

For purposes of the provision, a qualified church plan means any money purchase plan described in section 401(a) which (1) is a church plan (as defined in section 414(e)) with respect to which the election provided by section 410(d) has not been made, and (2) was in existence on April 17, 2002.

Effective Date

The provision is effective for years beginning after the date of enactment. No inference is intended from the provision with respect to the proper application of the minimum distribution rules to church plans before the effective date.

6. Exemption for income from leveraged real estate held by church plans (sec. 514(c)(9) of the Code)

Present Law

Debt-financed income of a tax-exempt entity is subject to unrelated business income tax ("UBIT") under section 514 of the Code. Debt-financed property generally is property that is held to produce income and with respect to which there is acquisition indebtedness.

There is an exception to the UBIT rules for debt-financed property held by qualifying organizations (sec. 514(c)(9)). Qualified organizations include retirement plans qualified under section 401(a).

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[236] Treas. Reg. sec. 1.401(a)(9)-6, A-4.

[237] Treas. Reg. sec. 1.403(b)-3, A-1(c)(3).

Explanation of Provision

The bill provides that a retirement income account of a church (or certain other organizations) as defined in section 403(b)(9) is a qualified organization for purposes of the exemption from the UBIT debt-financed property rules.

Effective Date

The provision is effective for taxable years beginning on or after the date of enactment.

7. Church plan rule for benefit limitations (sec. 415 of the Code)

Present Law

Section 415 limits the amount of benefits and contributions that may be provided under a tax-qualified plan. In the case of a defined benefit plan, the limit on annual benefits payable under the plan is the lesser of: (1) a dollar amount which is adjusted for inflation ($175,000 for 2006); and (2) 100 percent of the participant's compensation for the highest three years. Special rules apply in some cases.

Explanation of Provision

The provision provides that the 100 percent of compensation limit does not apply to a plan maintained by a church or qualified church controlled organization defined in section 3121(w)(3)(A) except with respect to "highly compensated benefits". The term "highly compensated benefits" means any benefits accrued for an employee in any year on or after the first year in which such employee is a highly compensated employee (as defined in sec. 414(q)) of the organization. For purposes of applying the 100 percent of compensation limit to highly compensated benefits, all the benefits of the employee which would otherwise be taken into account in applying the limit shall be taken into account, i.e., the limit does not apply only to those benefits accrued on or after the first year in which the employee is a highly compensated employee.

Effective Date

The provision is effective for years beginning after December 31, 2006.

8. Gratuitous transfers for the benefit of employees (sec. 664 of the Code)

Present Law

Present law permits certain limited transfers of qualified employer securities by charitable remainder trusts to an employee stock ownership plan ("ESOP") without adversely affecting the status of the charitable remainder trusts under section 664. In addition, the ESOP does not fail to be a qualified plan because it complies with the requirements with respect to a qualified gratuitous transfer.

A number of requirements must be satisfied for a transfer of securities to be a qualified gratuitous transfer, including the following: (1) the securities transferred to the ESOP must previously have passed from the decedent to a charitable remainder trust; (2) at the time of the transfer to the ESOP, family members own no more than a certain percentage of the outstanding stock of the company; (3) immediately after the transfer the ESOP owns at least 60 percent of the value of the outstanding stock of company; and (4) the ESOP meets certain requirements.

Among other requirements applicable to the ESOP, securities transferred to the ESOP are required to be allocated each year up to the applicable limit (after first allocating all other annual additions for the limitation year). The applicable limit is the lesser of (1) $30,000 (as indexed) or (2) 25 percent of the participant's compensation.

Explanation of Provision

The provision clarifies that, under section 664, the amount of transferred securities required to be allocated each year is determined on the basis of fair market value of the securities when allocated to participants.

Effective Date

The provision is effective on the date of enactment.

TITLE IX: INCREASE IN PENSION PLAN DIVERSIFICATION AND PARTICIPATION

A. Defined Contribution Plans Required to Provide Employees with Freedom to Invest Their Plan Assets (new sec. 401(a)(35) of the Code and new sec. 204(j) of ERISA)

Present Law

In general

Defined contribution plans may permit both employees and employers to make contributions to the plan. Under a qualified cash or deferred arrangement (commonly referred to as a "section 401(k) plan"), employees may elect to make pretax contributions to a plan, referred to as elective deferrals. Employees may also be permitted to make after-tax contributions to a plan. In addition, a plan may provide for employer nonelective contributions or matching contributions. Nonelective contributions are employer contributions that are made without regard to whether the employee makes elective deferrals or after-tax contributions. Matching contributions are employer contributions that are made only if the employee makes elective deferrals or after-tax contributions.

Under the Code, elective deferrals, after-tax employee contributions, and employer matching contributions are subject to special nondiscrimination tests. Certain employer nonelective contributions may be used to satisfy these special nondiscrimination tests. In addition, plans may satisfy the special nondiscrimination tests by meeting certain safe harbor contribution requirements.

The Code requires employee stock ownership plans ("ESOPs") to offer certain plan participants the right to diversify investments in employer securities. The Employee Retirement Income Security Act of 1974 ("ERISA") limits the amount of employer securities and employer real property that can be acquired or held by certain employer-sponsored retirement plans. The extent to which the ERISA limits apply depends on the type of plan and the type of contribution involved.

Diversification requirements applicable to ESOPs under the Code

An ESOP is a defined contribution plan that is designated as an ESOP and is designed to invest primarily in qualifying employer securities and that meets certain other requirements under the Code. For purposes of ESOP investments, a "qualifying employer security" is defined as: (1) publicly traded common stock of the employer or a member of the same controlled group; (2) if there is no such publicly traded common stock, common stock of the employer (or member of the same controlled group) that has both voting power and dividend rights at least as great as any other class of common stock; or (3) noncallable preferred stock that is convertible into common stock described in (1) or (2) and that meets certain requirements. In some cases, an employer may design a class of preferred stock that meets these requirements and that is held only by the ESOP.

An ESOP can be an entire plan or it can be a component of a larger defined contribution plan. An ESOP may provide for different types of contributions. For example, an ESOP may include a qualified cash or deferred arrangement that permits employees to make elective deferrals.[238]

Under the Code, ESOPs are subject to a requirement that a participant who has attained age 55 and who has at least 10 years of participation in the plan must be permitted to diversify the investment of the participant's account in assets other than employer securities.[239] The diversification requirement applies to a participant for six years, starting with the year in which the individual first meets the eligibility requirements (i.e., age 55 and 10 years of participation). The participant must be allowed to elect to diversify up to 25 percent of the participant's account (50 percent in the sixth year), reduced by the portion of the account diversified in prior years.

The participant must be given 90 days after the end of each plan year in the election period to make the election to diversify. In the case of participants who elect to diversify, the plan satisfies the diversification requirement if: (1) the plan distributes the applicable amount to the participant within 90 days after the election period; (2) the plan offers at least three investment options (not inconsistent with Treasury regulations) and, within 90 days of the election period, invests the applicable amount in accordance with the participant's election; or (3) the applicable amount is transferred within 90 days of the election period to another qualified defined contribution plan of the employer providing investment options in accordance with (2).[240]

ERISA limits on investments in employer securities and real property

ERISA imposes restrictions on the investment of retirement plan assets in employer securities or employer real property.[241] A retirement plan may hold only a "qualifying" employer security and only "qualifying" employer real property.

Under ERISA, any stock issued by the employer or an affiliate of the employer is a qualifying employer security.[242] Qualifying employer securities also include certain publicly traded partnership interests and certain marketable obligations (i.e., a bond, debenture, note, certificate or other evidence of indebtedness). Qualifying employer real property means parcels of employer real property: (1) if a substantial number of the parcels are dispersed geographically;

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[238] Such an ESOP design is sometimes referred to as a "KSOP."

[239] Sec. 401(a)(28). The present-law diversification requirements do not apply to employer securities held by an ESOP that were acquired before January 1, 1987.

[240] IRS Notice 88-56, 1988-1 C.B. 540, Q&A-16.

[241] ERISA sec. 407.

[242] Certain additional requirements apply to employer stock held by a defined benefit pension plan or a money purchase pension plan (other than certain plans in existence before the enactment of ERISA).

(2) if each parcel of real property and the improvements thereon are suitable (or adaptable without excessive cost) for more than one use; (3) even if all of the real property is leased to one lessee (which may be an employer, or an affiliate of an employer); and (4) if the acquisition and retention of such property generally comply with the fiduciary rules of ERISA (with certain specified exceptions).

ERISA also prohibits defined benefit pension plans and money purchase pension plans (other than certain plans in existence before the enactment of ERISA) from acquiring employer securities or employer real property if, after the acquisition, more than 10 percent of the assets of the plan would be invested in employer securities and real property. Except as discussed below with respect to elective deferrals, this 10-percent limitation generally does not apply to defined contribution plans other than money purchase pension plans.[243] In addition, a fiduciary generally is deemed not to violate the requirement that plan assets be diversified with respect to the acquisition or holding of employer securities or employer real property in a defined contribution plan.[244]

The 10-percent limitation on the acquisition of employer securities and real property applies separately to the portion of a plan consisting of elective deferrals (and earnings thereon) if any portion of an individual's elective deferrals (or earnings thereon) are required to be invested in employer securities or real property pursuant to plan terms or the direction of a person other than the participant. This restriction does not apply if: (1) the amount of elective deferrals required to be invested in employer securities and real property does not exceed more than one percent of any employee's compensation; (2) the fair market value of all defined contribution plans maintained by the employer is no more than 10 percent of the fair market value of all retirement plans of the employer; or (3) the plan is an ESOP.

Explanation of Provision

In general

Under the provision, in order to satisfy the plan qualification requirements of the Code and the vesting requirements of ERISA, certain defined contribution plans are required to provide diversification rights with respect to amounts invested in employer securities. Such a plan is required to permit applicable individuals to direct that the portion of the individual's account held in employer securities be invested in alternative investments. An applicable individual includes: (1) any plan participant; and (2) any beneficiary who has an account under the plan with respect to which the beneficiary is entitled to exercise the rights of a participant.

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[243] The 10-percent limitation also applies to a defined contribution plan that is part of an arrangement under which benefits payable to a participant under a defined benefit pension plan are reduced by benefits under the defined contribution plan (i.e., a "floor-offset" arrangement).

[244] Under ERISA, a defined contribution plan is generally referred to as an individual account plan. Plans that are not subject to the 10-percent limitation on the acquisition of employer securities and employer real property are referred to as "eligible individual account plans."

The time when the diversification requirements apply depends on the type of contributions invested in employer securities.

Plans subject to requirements

The diversification requirements generally apply to an "applicable defined contribution plan,"[245] which means a defined contribution plan holding publicly-traded employer securities (i.e., securities issued by the employer or a member of the employer's controlled group of corporations[246] that are readily tradable on an established securities market).

For this purpose, a plan holding employer securities that are not publicly traded is generally treated as holding publicly–traded employer securities if the employer (or any member of the employer's controlled group of corporations) has issued a class of stock that is a publicly-traded employer security. This treatment does not apply if neither the employer nor any parent corporation[247] of the employer has issued any publicly–traded security or any special class of stock that grants particular rights to, or bears particular risks for, the holder or the issuer with respect to any member of the employer's controlled group that has issued any publicly–traded employer security. For example, a controlled group that generally consists of corporations that have not issued publicly-traded securities may include a member that has issued publicly–traded stock (the "publicly–traded member"). In the case of a plan maintained by an employer that is another member of the controlled group, the diversification requirements do not apply to the plan, provided that neither the employer nor a parent corporation of the employer has issued any publicly–traded security or any special class of stock that grants particular rights to, or bears particular risks for, the holder or issuer with respect to the member that has issued publicly–traded stock. The Secretary of the Treasury has the authority to provide other exceptions in regulations. For example, an exception may be appropriate if no stock of the employer maintaining the plan (including stock held in the plan) is publicly traded, but a member of the employer's controlled group has issued a small amount of publicly-traded stock.

The diversification requirements do not apply to an ESOP that: (1) does not hold contributions (or earnings thereon) that are subject to the special nondiscrimination tests that apply to elective deferrals, employee after-tax contributions, and matching contributions; and (2) is a separate plan from any other qualified retirement plan of the employer. Accordingly, an ESOP that holds elective deferrals, employee contributions, employer matching contributions, or nonelective employer contributions used to satisfy the special nondiscrimination tests (including

[245] Under ERISA, the diversification requirements apply to an "applicable individual account plan."

[246] For this purpose, "controlled group of corporations" has the same meaning as under section 1563(a), except that, in applying that section, 50 percent is substituted for 80 percent.

[247] For this purpose, "parent corporation" has the same meaning as under section 424(e), i.e., any corporation (other than the employer) in an unbroken chain of corporations ending with the employer if each corporation other than the employer owns stock possessing at least 50 percent of the total combined voting power of all classes of stock with voting rights or at least 50 percent of the total value of shares of all classes of stock in one of the other corporations in the chain.

the safe harbor methods of satisfying the tests) is subject to the diversification requirements under the Provision. The diversification rights applicable under the provision are broader than those applicable under the Code's present-law ESOP diversification rules. Thus, an ESOP that is subject to the new requirements is excepted from the present-law rules.[248]

The new diversification requirements also do not apply to a one–participant retirement plan. For purposes of the Code, a one–participant retirement plan is a plan that: (1) on the first day of the plan year, either covered only one individual (or the individual and his or her spouse) and the individual owned 100 percent of the plan sponsor (i.e., the employer maintaining the plan), whether or not incorporated, or covered only one or more partners (or partners and their spouses) in the plan sponsor; (2) meets the minimum coverage requirements without being combined with any other plan of the business that covers employees of the business; (3) does not provide benefits to anyone except the individuals and partners (and spouses) described in (1); (4) does not cover a business that is a member of an affiliated service group, a controlled group of corporations, or a group of corporations under common control; and (5) does not cover a business that uses the services of leased employees.[249] It is intended that, for this purpose, a "partner" includes an owner of a business that is treated as a partnership for tax purposes. In addition, it includes a two-percent shareholder of an S corporation.[250]

Elective deferrals and after–tax employee contributions

In the case of amounts attributable to elective deferrals under a qualified cash or deferred arrangement and employee after-tax contributions that are invested in employer securities, any applicable individual must be permitted to direct that such amounts be invested in alternative investments.

Other contributions

In the case of amounts attributable to contributions other than elective deferrals and after-tax employees contributions (i.e., nonelective employer contributions and employer matching contributions) that are invested in employer securities, an applicable individual who is a participant with three years of service,[251] a beneficiary of such a participant, or a beneficiary of a deceased participant must be permitted to direct that such amounts be invested in alternative investments.

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[248] An ESOP will not be treated as failing to be designed to invest primarily in qualifying employer securities merely because the plan provides diversification rights as required under the provision or greater diversification rights than required under the provision.

[249] For purposes of ERISA, a one-participant retirement plan is defined as under the provision of ERISA that requires advance notice of a blackout period to be provided to participants and beneficiaries affected by the blackout period, as discussed below.

[250] Under section 1372, a two-percent shareholder of an S corporation is treated as a partner for fringe benefit purposes.

[251] Years of service is defined as under the rules relating to vesting (sec. 411(a)).

A transition rule applies to amounts attributable to these other contributions that are invested in employer securities acquired before the first plan year for which the new diversification requirements apply. Under the transition rule, for the first three years for which the new diversification requirements apply to the plan, the applicable percentage of such amounts is subject to diversification as shown in Table 1, below. The applicable percentage applies separately to each class of employer security in an applicable individual's account. The transition rule does not apply to plan participants who have three years of service and who have attained age 55 by the beginning of the first plan year beginning after December 31, 2005.

Table 1.–Applicable Percentage for Employer Securities Held on Effective Date

Plan year for which diversification applies:	Applicable percentage:
First year	33 percent
Second year	66 percent
Third year	100 percent

The application of the transition rule is illustrated by the following example. Suppose that the account of a participant with at least three years of service held 120 shares of employer common stock contributed as matching contributions before the diversification requirements became effective. In the first year for which diversification applies, 33 percent (i.e., 40 shares) of that stock is subject to the diversification requirements. In the second year for which diversification applies, a total of 66 percent of 120 shares of stock (i.e., 79 shares, or an additional 39 shares) is subject to the diversification requirements. In the third year for which diversification applies, 100 percent of the stock, or all 120 shares, is subject to the diversification requirements. In addition, in each year, employer stock in the account attributable to elective deferrals and employee after-tax contributions is fully subject to the diversification requirements, as is any new stock contributed to the account.

Rules relating to the election of investment alternatives

A plan subject to the diversification requirements is required to give applicable individuals a choice of at least three investment options, other than employer securities, each of which is diversified and has materially different risk and return characteristics. It is intended that other investment options generally offered by the plan also must be available to applicable individuals.

A plan does not fail to meet the diversification requirements merely because the plan limits the times when divestment and reinvestment can be made to periodic, reasonable opportunities that occur at least quarterly. It is intended that applicable individuals generally be given the opportunity to make investment changes with respect to employer securities on the same basis as the opportunity to make other investment changes, except in unusual circumstances. Thus, in general, applicable individuals must be given the opportunity to request

changes with respect to investments in employer securities with the same frequency as the opportunity to make other investment changes and that such changes are implemented in the same timeframe as other investment changes, unless circumstances require different treatment.

Except as provided in regulations, a plan may not impose restrictions or conditions with respect to the investment of employer securities that are not imposed on the investment of other plan assets (other than restrictions or conditions imposed by reason of the application of securities laws). For example, such a restriction or condition includes a provision under which a participant who divests his or her account of employer securities receives less favorable treatment (such as a lower rate of employer contributions) than a participant whose account remains invested in employer securities. On the other hand, such a restriction does not include the imposition of fees with respect to other investment options under the plan, merely because fees are not imposed with respect to investments in employer securities.

Effective Date

The provision is effective for plan years beginning after December 31, 2006.

In the case of a plan maintained pursuant to one or more collective bargaining agreements, the provision is effective for plan years beginning after the earlier of (1) the later of December 31, 2007, or the date on which the last of such collective bargaining agreements terminates (determined without regard to any extension thereof after the date of enactment), or (2) December 31, 2008.

A special effective date applies with respect to employer matching and nonelective contributions (and earnings thereon) that are invested in employer securities that, as of September 17, 2003: (1) consist of preferred stock; and (2) are held within an ESOP, under the terms of which the value of the preferred stock is subject to a guaranteed minimum. Under the special rule, the diversification requirements apply to such preferred stock for plan years beginning after the earlier of (1) December 31, 2007; or (2) the first date as of which the actual value of the preferred stock equals or exceeds the guaranteed minimum. When the new diversification requirements become effective for the plan under the special rule, the applicable percentage of employer securities held on the effective date that is subject to diversification is determined without regard to the special rule.

B. Increasing Participation Through Automatic Enrollment Arrangements (secs. 404(c) and 514 of ERISA and secs. 401(k), 401(m), 414 and 4979 of the Code)

Present Law

Qualified cash or deferred arrangements–in general

Under present law, most defined contribution plans may include a qualified cash or deferred arrangement (commonly referred to as a "section 401(k)" or "401(k)" plan),[252] under which employees may elect to receive cash or to have contributions made to the plan by the employer on behalf of the employee in lieu of receiving cash. Contributions made to the plan at the election of the employee are referred to as "elective deferrals" or "elective contributions".[253] A 401(k) plan may be designed so that the employee will receive cash unless an affirmative election to make contributions is made. Alternatively, a plan may provide that elective contributions are made at a specified rate unless the employee elects otherwise (i.e., elects not to make contributions or to make contributions at a different rate). Arrangements that operate in this manner are sometimes referred to as "automatic enrollment" or "negative election" plans. In either case, the employee must have an effective opportunity to elect to receive cash in lieu of contributions.[254]

Nondiscrimination rules

A special nondiscrimination test applies to elective deferrals under a section 401(k) plan, called the actual deferral percentage test or the "ADP" test. The ADP test compares the actual deferral percentages ("ADPs") of the highly compensated employee group and the nonhighly compensated employee group. The ADP for each group generally is the average of the deferral percentages separately calculated for the employees in the group who are eligible to make elective deferrals for all or a portion of the relevant plan year. Each eligible employee's deferral percentage generally is the employee's elective deferrals for the year divided by the employee's compensation for the year.

The plan generally satisfies the ADP test if the ADP of the highly compensated employee group for the current plan year is either (1) not more than 125 percent of the ADP of the

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[252] Legally, a section 401(k) plan is not a separate type of plan, but is a profit-sharing, stock bonus, or pre-ERISA money purchase plan that contains a qualified cash or deferred arrangement. The terms "section 401(k) plan" and "401(k) plan" are used here for convenience.

[253] The maximum annual amount of elective deferrals that can be made by an individual is subject to a limit ($15,000 for 2006). An individual who has attained age 50 before the end of the taxable year may also make catch-up contributions to a section 401(k) plan, subject to a limit ($5,000 for 2006).

[254] Treasury regulations provide that whether an employee has an effective opportunity to receive cash is based on all the relevant facts and circumstances, including the adequacy of notice of the availability of the election, the period of time during which an election may be made, and any other conditions on elections. Treas. Reg. sec. 1.401(k)-1(e)(2).

nonhighly compensated employee group for the prior plan year, or (2) not more than 200 percent of the ADP of the nonhighly compensated employee group for the prior plan year and not more than two percentage points greater than the ADP of the nonhighly compensated employee group for the prior plan year.

Under a safe harbor, a section 401(k) plan is deemed to satisfy the special nondiscrimination test if the plan satisfies one of two contribution requirements and satisfies a notice requirement (a "safe harbor section 401(k) plan"). A plan satisfies the contribution requirement under the safe harbor rule if the employer either (1) satisfies a matching contribution requirement or (2) makes a nonelective contribution to a defined contribution plan of at least three percent of an employee's compensation on behalf of each nonhighly compensated employee who is eligible to participate in the arrangement. A plan generally satisfies the matching contribution requirement if, under the arrangement: (1) the employer makes a matching contribution on behalf of each nonhighly compensated employee that is equal to (a) 100 percent of the employee's elective deferrals up to three percent of compensation and (b) 50 percent of the employee's elective deferrals from three to five percent of compensation; [255] and (2) the rate of match with respect to any elective deferrals for highly compensated employees is not greater than the rate of match for nonhighly compensated employees.

Employer matching contributions are also subject to a special nondiscrimination test, the "ACP test," which compares the average actual contribution percentages ("ACPs") of matching contributions for the highly compensated employee group and the nonhighly compensated employee group. The plan generally satisfies the ACP test if the ACP of the highly compensated employee group for the current plan year is either (1) not more than 125 percent of the ACP of the nonhighly compensated employee group for the prior plan year, or (2) not more than 200 percent of the ACP of the nonhighly compensated employee group for the prior plan year and not more than two percentage points greater than the ACP of the nonhighly compensated employee group for the prior plan year.

A safe harbor section 401(k) plan that provides for matching contributions is deemed to satisfy the ACP test if, in addition to meeting the safe harbor contribution and notice requirements under section 401(k), (1) matching contributions are not provided with respect to elective deferrals in excess of six percent of compensation, (2) the rate of matching contribution does not increase as the rate of an employee's elective deferrals increases, and (3) the rate of matching contribution with respect to any rate of elective deferral of a highly compensated employee is no greater than the rate of matching contribution with respect to the same rate of deferral of a nonhighly compensated employee.

[255] In lieu of matching contributions at rates equal to the safe harbor rates, a plan may provide for an alternative match if (1) the rate of the matching contributions does not increase as an employee's rate of elective deferrals increases and (2) the amount of matching contributions at such rate of elective deferrals is at lest equal to the aggregate amount of contributions which would be made if rate of the matching contributions equaled the safe harbor rates.

Top-heavy rules

Special rules apply in the case of a top-heavy plan. In general, a defined contribution plan is a top-heavy plan if the accounts of key employees account for more than 60 percent of the aggregate value of accounts under the plan. If a plan is a top-heavy plan, then certain minimum vesting standards and minimum contribution requirements apply.

A plan that consists solely of contributions that satisfy the safe harbor plan rules for elective and matching contributions is not considered a top-heavy plan.

Tax-sheltered annuities

Tax-sheltered annuities ("section 403(b) annuities") may provide for contributions on a salary reduction basis, similar to section 401(k) plans. Matching contributions under a section 403(b) annuity are subject to the same nondiscrimination rules under section 401(m) as matching contributions under a section 401(k) plan (sec. 403(b)(12)). Thus, for example, the safe harbor method of satisfying the section 401(m) rules for matching contributions under a 401(k) plan applies to section 403(b) annuities.

Erroneous automatic elective contributions

Present law provides special rules for distributions of elective contributions that exceed the amount permitted under the nondiscrimination rules or the dollar limit on such contributions.

Fiduciary rules applicable to default investments of individual account plans

ERISA imposes standards on the conduct of plan fiduciaries, including persons who make investment decisions with respect to plan assets. Fiduciaries are personally liable for any losses to the plan due to a violation of fiduciary standards.

An individual account plan may permit participants to make investment decisions with respect to their accounts. ERISA fiduciary liability does not apply to investment decisions made by plan participants if participants exercise control over the investment of their individual accounts, as determined under ERISA regulations. In that case, a plan fiduciary may be responsible for the investment alternatives made available, but not for the specific investment decisions made by participants.

Preemption of State law

ERISA generally preempts all State laws relating to employee benefit plans, other than generally applicable criminal laws and laws relating to insurance, banking, or securities.

Excess contributions

An excise tax is imposed on an employer making excess contributions or excess aggregate contributions to a qualified retirement plan. Excess contributions are elective contributions, including qualified nonelective contributions and qualified matching contributions that are treated as elective contributions, made to a plan on behalf of highly compensated

employees to the extent that the contributions fail to satisfy the applicable nondiscrimination tests for such plan for the year. Excess aggregate contributions are the aggregate amount of employer matching contributions and employee after-tax contributions to a plan for highly compensated employees to the extent that the contributions fail to satisfy the applicable nondiscrimination tests for such plan for the year.

The excise tax is equal to 10 percent of the excess contributions or excess aggregate contributions under a plan for the plan year ending in the taxable year. The tax does not apply to any excess contributions or excess aggregate contributions that, together with income allocable to the contributions, are distributed or forfeited (if forfeitable) within 2½ months after the close of the plan year. Any excess contributions or excess aggregate contributions that are distributed within 2½ months after the close of the plan year are treated as received and earned by the recipient in the taxable year for which such contributions are made. If the total of such distributions to a recipient under a plan for any plan year is less than $100, such distributions (and any income allocable thereto) are treated as earned and received by the recipient in the taxable year in which the distributions are made.

Additionally, if certain requirements are met, excess contributions may be recharacterized as after-tax employee contributions, no later than 2½ months after the close of the plan year to which the excess contributions relate.[256]

Explanation of Provision

In general

Under the provision, a 401(k) plan that contains an automatic enrollment feature that satisfies certain requirements (a "qualified automatic enrollment feature") is treated as meeting the ADP test with respect to elective deferrals and the ACP test with respect to matching contributions. In addition, a plan consisting solely of contributions made pursuant to a qualified automatic enrollment feature is not subject to the top-heavy rules.

A qualified automatic enrollment feature must meet certain requirements with respect to: (1) automatic deferral; (2) matching or nonelective contributions; and (3) notice to employees.

Automatic deferral/amount of elective contributions

A qualified automatic enrollment feature must provide that, unless an employee elects otherwise, the employee is treated as making an election to make elective deferrals equal to a stated percentage of compensation not in excess of 10 percent and at least equal to: three percent of compensation for the first year the deemed election applies to the participant; four percent during the second year; five percent during the third year; and six percent during the fourth year and thereafter. The stated percentage must be applied uniformly to all eligible employees.

[256] Treas. Reg. sec. 1.401(k)-2(b)(3).

Eligible employees mean all employees eligible to participate in the arrangement, other than employees eligible to participate in the arrangement immediately before the date on which the arrangement became a qualified automatic contribution arrangement with an election in effect (either to participate at a certain percentage or not to participate).

Matching or nonelective contribution requirement

Contributions

An automatic enrollment feature satisfies the contribution requirement if the employer either (1) satisfies a matching contribution requirement or (2) makes a nonelective contribution to a defined contribution plan of at least three percent of an employee's compensation on behalf of each nonhighly compensated employee who is eligible to participate in the automatic enrollment feature. A plan generally satisfies the matching contribution requirement if, under the arrangement: (1) the employer makes a matching contribution on behalf of each nonhighly compensated employee that is equal to 100 percent of the employee's elective deferrals as do not exceed one percent of compensation and 50 percent of the employee's elective deferrals as exceeds one percent but does not exceed six percent of compensation and (2) the rate of match with respect to any elective deferrals for highly compensated employees is not greater than the rate of match for nonhighly compensated employees. It is intended that the provision apply to section 403(b) annuities.

A plan including an automatic enrollment feature that provides for matching contributions is deemed to satisfy the ACP test if, in addition to meeting the safe harbor contribution requirements applicable to the qualified automatic enrollment feature: (1) matching contributions are not provided with respect to elective deferrals in excess of six percent of compensation, (2) the rate of matching contribution does not increase as the rate of an employee's elective deferrals increases, and (3) the rate of matching contribution with respect to any rate of elective deferral of a highly compensated employee is no greater than the rate of matching contribution with respect to the same rate of deferral of a nonhighly compensated employee.

Vesting

Any matching or other employer contributions taken into account in determining whether the requirements for a qualified automatic enrollment feature are satisfied must vest at least as rapidly as under two-year cliff vesting. That is, employees with at least two years of service must be 100 percent vested with respect to such contributions.

Withdrawal restrictions

Under the provision, any matching or other employer contributions taken into account in determining whether the requirements for a qualified automatic enrollment feature are satisfied are subject to the withdrawal rules applicable to elective contributions.

Notice requirement

Under a notice requirement, each employee eligible to participate in the arrangement must receive notice of the arrangement which is sufficiently accurate and comprehensive to apprise the employee of such rights and obligations and is written in a manner calculated to be understood by the average employee to whom the arrangement applies. The notice must explain: (1) the employee's right under the arrangement to elect not to have elective contributions made on the employee's behalf or to elect to have contributions made in a different amount; and (2) how contributions made under the automatic enrollment arrangement will be invested in the absence of any investment election by the employee. The employee must be given a reasonable period of time after receipt of the notice and before the first election contribution is to be made to make an election with respect to contributions and investments.

Application to tax-sheltered annuities

The new safe harbor rules for automatic contribution plans apply with respect to matching contributions under a section 403(b) annuity through the operation of section 403(b)(12).

Corrective distributions

The provision includes rules under which erroneous automatic contributions may be distributed from the plan no later than 90 days after the date of the first elective contribution with respect to the employee under the arrangement. The amount that is treated as an erroneous contribution is limited to the amount of automatic contributions made during the 90-day period that the employee elects to treat as an erroneous contribution. It is intended that distributions of such amounts are generally treated as a payment of compensation, rather than as a contribution to and then a distribution from the plan. The 10-percent early withdrawal tax does not apply to distributions of erroneous automatic contributions. In addition, it is intended that such contributions are not taken into account for purposes of applying the nondiscrimination rules, or the limit on elective deferrals. Similarly, it is intended that distributions of such contributions are not subject to the otherwise applicable withdrawal restrictions. The rules for corrective distributions apply to distributions from (1) qualified pension plans under Code section 401(a), (2) plans under which amounts are contributed by an individual's employer for Code section 403(b) annuity contract and (3) governmental eligible deferred compensation plans under Code section 457(b).

The corrective distribution rules are not limited to arrangements meeting the requirements of a qualified enrollment feature.

Excess contributions

In the case of an eligible automatic contribution arrangement, the excise tax on excess contributions does not apply to any excess contributions or excess aggregate contributions which, together with income allocable to the contributions, are distributed or forfeited (if forfeitable) within six months after the close of the plan year. Additionally, any excess contributions or excess aggregate contributions (and any income allocable thereto) that are distributed within the period required to avoid application of the excise tax are treated as earned

and received by the recipient in the taxable year in which the distribution is made (regardless of the amount distributed), and the income allocable to excess contributions or excess aggregate contributions that must be distributed is determined through the end of the year for which the contributions were made.

Preemption of State law

The provision preempts any State law that would directly or indirectly prohibit or restrict the inclusion in a plan of an automatic contribution arrangement. The Labor Secretary may establish minimum standards for such arrangements in order for preemption to apply. An automatic contribution arrangement is an arrangement: (1) under which a participant may elect to have the plan sponsor make payments as contributions under the plan on behalf of the participant, or to the participant directly in cash, (2) under which a participant is treated as having elected to have the plan sponsor make such contributions in an amount equal to a uniform percentage of compensation provided under the plan until the participant specifically elects not to have such contributions made (or elects to have contributions made at a different percentage), and (3) under which contributions are invested in accordance with regulations issued by the Secretary of Labor relating to default investments as provided under the bill. The State preemption rules under the bill are not limited to arrangements that meet the requirements of a qualified enrollment feature.

A plan administrator must provide notice to each participant to whom the automatic contribution arrangement applies. If the notice requirement is not satisfied, an ERISA penalty of $1,100 per day applies.

Effective Date

The provision is effective for years beginning after December 31, 2007. The preemption of conflicting State regulations is effective on the date of enactment. No inference is intended as to the effect of conflicting State regulations prior to date of enactment.

C. Treatment of Eligible Combined Defined Benefit Plans and Qualified Cash or Deferred Arrangements (new sec. 414(x) of the Code and new sec. 210(e) of ERISA)

Present Law

In general

Under present law, most defined contribution plans may include a qualified cash or deferred arrangement (commonly referred to as a "section 401(k)" or "401(k)" plan),[257] under which employees may elect to receive cash or to have contributions made to the plan by the employer on behalf of the employee in lieu of receiving cash (referred to as "elective deferrals" or "elective contributions").[258] A section 401(k) plan may provide that elective deferrals are made for an employee at a specified rate unless the employee elects otherwise (i.e., elects not to make contributions or to make contributions at a different rate), provided that the employee has an effective opportunity to elect to receive cash in lieu of the default contributions. Such a design is sometimes referred to as "automatic enrollment."

Besides elective deferrals, a section 401(k) plan may provide for: (1) matching contributions, which are employer contributions that are made only if an employee makes elective deferrals; and (2) nonelective contributions, which are employer contributions that are made without regard to whether an employee makes elective deferrals. Under a section 401(k) plan, no benefit other than matching contributions can be contingent on whether an employee makes elective deferrals. Thus, for example, an employee's eligibility for benefits under a defined benefit pension plan cannot be contingent on whether the employee makes elective deferrals.

A cash balance plan is a defined benefit pension plan with benefits resembling the benefits associated with defined contribution plans. Cash balance plans are sometimes referred to as "hybrid" plans because they combine features of a defined benefit pension plan and a defined contribution plan. Under a cash balance plan, benefits are determined by reference to a hypothetical account balance. An employee's hypothetical account balance is determined by reference to hypothetical annual allocations to the account ("pay credits") (e.g., a certain percentage of the employee's compensation for the year) and hypothetical earnings on the account ("interest credits"). Other types of hybrid plans exist as well, such as so-called "pension equity" plans.

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[257] Legally, a section 401(k) plan is not a separate type of plan, but is a profit-sharing, stock bonus, or pre-ERISA money purchase plan that contains a qualified cash or deferred arrangement. The terms "section 401(k) plan" and "401(k) plan" are used here for convenience.

[258] The maximum annual amount of elective deferrals that can be made by an individual is subject to a dollar limit ($15,000 for 2006). An individual who has attained age 50 before the end of the taxable year may also make catch-up contributions to a section 401(k) plan, subject to a limit ($5,000 for 2006).

The assets of a qualified retirement plan (either a defined contribution plan or a defined benefit pension plan) must be held in trust for the exclusive benefit of participants and beneficiaries. Defined benefit pension plans are subject to funding rules, which require employers to make contributions at specified minimum levels.[259] In addition, limits apply on the extent to which defined benefit pension plan assets may be invested in employer securities or real property. The minimum funding rules and limits on investments in employer securities or real property generally do not apply to defined contribution plans.

Nondiscrimination requirements

Under a general nondiscrimination requirement, the contributions or benefits provided under a qualified retirement plan must not discriminate in favor of highly compensated employees.[260] Treasury regulations provide detailed and exclusive rules for determining whether a plan satisfies the general nondiscrimination rules. Under the regulations, the amount of contributions or benefits provided under the plan and the benefits, rights and features offered under the plan must be tested.

A special nondiscrimination test applies to elective deferrals under a section 401(k) plan, called the actual deferral percentage test or the "ADP" test. The ADP test compares the actual deferral percentages ("ADPs") of the highly compensated employee group and the nonhighly compensated employee group. The ADP for each group generally is the average of the deferral percentages separately calculated for the employees in the group who are eligible to make elective deferrals for all or a portion of the relevant plan year. Each eligible employee's deferral percentage generally is the employee's elective deferrals for the year divided by the employee's compensation for the year.

The plan generally satisfies the ADP test if the ADP of the highly compensated employee group for the current plan year is either (1) not more than 125 percent of the ADP of the nonhighly compensated employee group for the prior plan year, or (2) not more than 200 percent of the ADP of the nonhighly compensated employee group for the prior plan year and not more than two percentage points greater than the ADP of the nonhighly compensated employee group for the prior plan year.

Under a safe harbor, a section 401(k) plan is deemed to satisfy the special nondiscrimination test if the plan satisfies one of two contribution requirements and satisfies a notice requirement (a "safe harbor section 401(k) plan"). A plan satisfies the contribution requirement under the safe harbor rule if the employer either (1) satisfies a matching contribution requirement or (2) makes a nonelective contribution to a defined contribution plan of at least three percent of an employee's compensation on behalf of each nonhighly compensated

[259] The Pension Benefit Guaranty Corporation generally guarantees a minimum level of benefits under a defined benefit plan.

[260] Under special rules, referred to as the permitted disparity rules, higher contributions or benefits can be provided to higher-paid employees in certain circumstances without violating the general nondiscrimination rules.

employee who is eligible to participate in the arrangement. A plan generally satisfies the matching contribution requirement if, under the arrangement: (1) the employer makes a matching contribution on behalf of each nonhighly compensated employee that is equal to (a) 100 percent of the employee's elective deferrals up to three percent of compensation and (b) 50 percent of the employee's elective deferrals from three to five percent of compensation; and (2) the rate of matching contribution with respect to any rate of elective deferrals of a highly compensated employee is not greater than the rate of matching contribution with respect to the same rate of elective deferral of a nonhighly compensated employee.[261]

Employer matching contributions are also subject to a special nondiscrimination test, the "ACP test," which compares the average actual contribution percentages ("ACPs") of matching contributions for the highly compensated employee group and the nonhighly compensated employee group. The plan generally satisfies the ACP test if the ACP of the highly compensated employee group for the current plan year is either (1) not more than 125 percent of the ACP of the nonhighly compensated employee group for the prior plan year, or (2) not more than 200 percent of the ACP of the nonhighly compensated employee group for the prior plan year and not more than two percentage points greater than the ACP of the nonhighly compensated employee group for the prior plan year.

A safe harbor section 401(k) plan that provides for matching contributions must satisfy the ACP test. Alternatively, it is deemed to satisfy the ACP test if it satisfies a matching contribution safe harbor, under which (1) matching contributions are not provided with respect to elective deferrals in excess of six percent of compensation, (2) the rate of matching contribution does not increase as the rate of an employee's elective deferrals increases, and (3) the rate of matching contribution with respect to any rate of elective deferral of a highly compensated employee is no greater than the rate of matching contribution with respect to the same rate of deferral of a nonhighly compensated employee.

Vesting rules

A qualified retirement plan generally must satisfy one of two alternative minimum vesting schedules. A plan satisfies the first schedule if a participant acquires a nonforfeitable right to 100 percent of the participant's accrued benefit derived from employer contributions upon the completion of five years of service. A plan satisfies the second schedule if a participant has a nonforfeitable right to at least 20 percent of the participant's accrued benefit derived from employer contributions after three years of service, 40 percent after four years of service, 60 percent after five years of service, 80 percent after six years of service, and 100 percent after seven years of service.

Special vesting rules apply to elective deferrals and matching contributions. Elective deferrals must be immediately vested. Matching contributions generally must vest at least as

[261] Alternatively, matching contributions may be provided at a different rate, provided that: (1) the rate of matching contribution doesn't increase as the rate of elective deferral increases; and (2) the aggregate amount of matching contributions with respect to each rate of elective deferral is not less than the amount that would be provided under the general rule.

rapidly as under one of two alternative minimum vesting schedules. A plan satisfies the first schedule if a participant acquires a nonforfeitable right to 100 percent of matching contributions upon the completion of three years of service. A plan satisfies the second schedule if a participant has a nonforfeitable right to 20 percent of matching contributions for each year of service beginning with the participant's second year of service and ending with 100 percent after six years of service. However, matching contributions under a safe harbor section 401(k) plan must be immediately vested.

Top-heavy rules

Under present law, a top-heavy plan is a qualified retirement plan under which cumulative benefits are provided primarily to key employees. An employee is considered a key employee if, during the prior year, the employee was (1) an officer with compensation in excess of a certain amount ($140,000 for 2006), (2) a five-percent owner, or (3) a one-percent owner with compensation in excess of $150,000. A plan that is top-heavy must provide (1) minimum employer contributions or benefits to participants who are not key employees and (2) more rapid vesting for participants who are not key employees (as discussed below).

In the case of a defined contribution plan, the minimum contribution is the lesser of (1) three percent of compensation, or (2) the highest percentage of compensation at which contributions were made for any key employee. In the case of a defined benefit pension, the minimum benefit is the lesser of (1) two percent of average compensation multiplied by the participant's years of service, or (2) 20 percent of average compensation. For this purpose, a participant's average compensation is generally average compensation for the consecutive-year period (not exceeding five years) during which the participant's aggregate compensation is the greatest.

Top-heavy plans must satisfy one of two alternative minimum vesting schedules. A plan satisfies the first schedule if a participant acquires a nonforfeitable right to 100 percent of contributions or benefits upon the completion of three years of service. A plan satisfies the second schedule if a participant has a nonforfeitable right to 20 percent of contributions or benefits for each year of service beginning with the participant's second year of service and ending with 100 percent after six years of service.[262]

A safe harbor section 401(k) plan is not subject to the top-heavy rules, provided that, if the plan provides for matching contributions, it must also satisfy the matching contribution safe harbor.

Other qualified retirement plan requirements

Qualified retirement plans are subject to various other requirements, some of which depend on whether the plan is a defined contribution plan or a defined benefit pension. Such requirements include limits on contributions and benefits and spousal protections.

[262] The top-heavy vesting schedules are the same as the vesting schedules that apply to matching contributions.

In the case of a defined contribution plan, annual additions with respect to each plan participant cannot exceed the lesser of: (1) 100 percent of the participant's compensation; or (2) a dollar amount, indexed for inflation ($44,000 for 2006). Annual additions are the sum of employer contributions, employee contributions, and forfeitures with respect to an individual under all defined contribution plans of the same employer. In the case of a defined benefit pension, annual benefits payable under the plan generally may not exceed the lesser of: (1) 100 percent of average compensation; or (2) a dollar amount, indexed for inflation ($175,000 for 2006).

Defined benefit pension plans are required to provide benefits in the form of annuity unless the participant (and his or her spouse, in the case of a married participant) consents to another form of benefit. In addition, in the case of a married participant, benefits generally must be paid in the form of a qualified joint and survivor annuity ("QJSA") unless the participant and his or her spouse consent to a distribution in another form. A QJSA is an annuity for the life of the participant, with a survivor annuity for the life of the spouse which is not less than 50 percent (and not more than 100 percent) of the amount of the annuity payable during the joint lives of the participant and his or her spouse. These spousal protection requirements generally do not apply to a defined contribution plan that does not offer annuity distributions.

Annual reporting by qualified retirement plans

The plan administrator of a qualified retirement plan generally must file an annual return with the Secretary of the Treasury and an annual report with the Secretary of Labor. In addition, in the case of a defined benefit pension, certain information is generally required to be filed with the Pension Benefit Guaranty Corporation ("PBGC"). Form 5500, which consists of a primary form and various schedules, includes the information required to be filed with all three agencies. The plan administrator satisfies the reporting requirement with respect to each agency by filing the Form 5500 with the Department of Labor.

The Form 5500 is due by the last day of the seventh month following the close of the plan year. The due date may be extended up to two and one-half months. Copies of filed Form 5500s are available for public examination at the U.S. Department of Labor.

A plan administrator must automatically provide participants with a summary of the annual report within two months after the due date of the annual report (i.e., by the end of the ninth month after the end of the plan year unless an extension applies). In addition, a copy of the full annual report must be provided to participants on written request.

Explanation of Provision

In general

The provision provides rules for an "eligible combined plan." An eligible combined plan is a plan: (1) that is maintained by an employer that is a small employer at the time the plan is established; (2) that consists of a defined benefit plan and an "applicable" defined contribution plan; (3) the assets of which are held in a single trust forming part of the plan and are clearly identified and allocated to the defined benefit plan and the applicable defined contribution plan to the extent necessary for the separate application of the Code and ERISA; and (4) that meets

certain benefit, contribution, vesting and nondiscrimination requirements as discussed below. For this purpose, an applicable defined contribution plan is a defined contribution plan that includes a qualified cash or deferred arrangement (i.e., a section 401(k) plan). A small employer is an employer that employed an average of at least two, but not more than 500, employees on business days during the preceding calendar year and at least two employees on the first day of the plan year.

Except as specified in the provision, the provisions of the Code and ERISA are applied to any defined benefit plan and any applicable defined contribution plan that are part of an eligible combined plan in the same manner as if each were not part of the eligible combined plan. Thus, for example, the present-law limits on contributions and benefits apply separately to contributions under an applicable defined contribution plan that is part of an eligible combined plan and to benefits under the defined benefit plan that is part of the eligible combined plan. In addition, the spousal protection rules apply to the defined benefit plan, but not to the applicable defined contribution plan except to the extent provided under present law. Moreover, although the assets of an eligible combined plan are held in a single trust, the funding rules apply to a defined benefit plan that is part of an eligible combined plan on the basis of the assets identified and allocated to the defined benefit, and the limits on investing defined benefit plan assets in employer securities or real property apply to such assets. Similarly, separate participant accounts are required to be maintained under the applicable defined contribution plan that is part of the eligible combined plan, and earnings (or losses) on participants' account are based on the earnings (or losses) with respect to the assets of the applicable defined contribution plan.

Requirements with respect to defined benefit plan

A defined benefit plan that is part of an eligible combined plan is required to provide each participant with a benefit of not less than the applicable percentage of the participant's final average pay. The applicable percentage is the lesser of: (1) one percent multiplied by the participant's years of service; or (2) 20 percent. For this purpose, final average pay is determined using the consecutive-year period (not exceeding five years) during which the participant has the greatest aggregate compensation.

If the defined benefit plan is an applicable defined benefit plan,[263] the plan is treated as meeting this benefit requirement if each participant receives a pay credit for each plan year of not less than the percentage of compensation determined in accordance with the following table:

[263] Applicable defined benefit plan is defined as under the TITLE VII of the bill.

Table 2.–Percentage of Compensation

Participant's age as of the beginning of the plan year:	Percentage:
30 or less	2 percent
Over 30 but less than 40	4 percent
Over 40 but less than 50	6 percent
50 or over	8 percent

A defined benefit that is part of an eligible combined plan must provide the required benefit to each participant, regardless of whether the participant makes elective deferrals to the applicable defined contribution plan that is part of the eligible combined plan.

Any benefits provided under the defined benefit plan (including any benefits provided in addition to required benefits) must be fully vested after three years of service.

Requirements with respect to applicable defined contribution plan

Certain automatic enrollment and matching contribution requirements must be met with respect to an applicable defined contribution plan that is part of an eligible combined plan. First, the qualified cash or deferred arrangement under the plan must constitute an automatic contribution arrangement, under which each employee eligible to participate is treated as having elected to make deferrals of four percent of compensation unless the employee elects otherwise (i.e., elects not to make deferrals or to make deferrals at a different rate). Participants must be given notice of their right to elect otherwise and must be given a reasonable period of time after receiving notice in which to make an election. In addition, participants must be given notice of their rights and obligations within a reasonable period before each year.

Under the applicable defined contribution plan, the employer must be required to make matching contributions on behalf of each employee eligible to participate in the arrangement in an amount equal to 50 percent of the employee's elective deferrals up to four percent of compensation, and the rate of matching contribution with respect to any elective deferrals for highly compensated employees must not be not greater than the rate of match for nonhighly compensated employees.[264] Matching contributions in addition to the required matching contributions may also be made. The employer may also make nonelective contributions under the applicable defined contribution plan, but any nonelective contributions are not taken into account in determining whether the matching contribution requirement is met.

[264] As under present law, matching contributions may be provided at a different rate, provided that: (1) the rate of matching contribution doesn't increase as the rate of elective deferral increases; and (2) the aggregate amount of matching contributions with respect to each rate of elective deferral is not less than the amount that would be provided under the general rule.

Any matching contributions under the applicable defined contribution plan (including any in excess of required matching contributions) must be fully vested when made. Any nonelective contributions made under the applicable defined contribution plan must be fully vested after three years of service.

Nondiscrimination and other rules

An applicable defined contribution plan satisfies the ADP test on a safe-harbor basis. Matching contributions under an applicable defined contribution plan must satisfy the ACP test or may satisfy the matching contribution safe harbor under present law, as modified to reflect the matching contribution requirements applicable under the provision.

Nonelective contributions under an applicable defined contribution plan and benefits under a defined benefit plan that are part of an eligible combined plan are generally subject to the nondiscrimination rules as under present law. However, neither a defined benefit plan nor an applicable defined contribution plan that is part of an eligible combined plan may be combined with another plan in determining whether the nondiscrimination requirements are met.[265]

An applicable defined contribution plan and a defined benefit plan that are part of an eligible combined plan are treated as meeting the top-heavy requirements.

All contributions, benefits, and other rights and features that are provided under a defined benefit plan or an applicable defined contribution plan that is part of an eligible combined plan must be provided uniformly to all participants. This requirement applies regardless of whether nonuniform contributions, benefits, or other rights or features could be provided without violating the nondiscrimination rules. However, it is intended that a plan will not violate the uniformity requirement merely because benefits accrued for periods before a defined benefit or defined contribution plan became part of an eligible combined plan are protected (as required under the anticutback rules).

Annual reporting

An eligible combined plan is treated as a single plan for purposes of annual reporting. Thus, only a single Form 5500 is required. All of the information required under present law with respect to a defined benefit plan or a defined contribution plan must be provided in the Form 5500 for the eligible combined plan. In addition, only a single summary annual report must be provided to participants.

Other rules

The provision of the bill relating to default investment options and the preemption of State laws with respect to automatic enrollment arrangements are applicable to eligible combined

[265] The permitted disparity rules do not apply in determining whether an applicable defined contribution plan or a defined benefit plan that is part of an eligible combined plan satisfies (1) the contribution or benefit requirements under the provision or (2) the nondiscrimination requirements.

plans. It is intended that in the case that an eligible combined plan terminates, the PBGC guarantee applies only to benefits under the defined benefit portion of the plan.

Effective Date

The provision is effective for plan years beginning after December 31, 2009.

D. Faster Vesting of Employer Nonelective Contributions (sec. 203 of ERISA, and sec. 411 of the Code)

Present Law

Under present law, in general, a plan is not a qualified plan unless a participant's employer-provided benefit vests at least as rapidly as under one of two alternative minimum vesting schedules. A plan satisfies the first schedule if a participant acquires a nonforfeitable right to 100 percent of the participant's accrued benefit derived from employer contributions upon the completion of five years of service. A plan satisfies the second schedule if a participant has a nonforfeitable right to at least 20 percent of the participant's accrued benefit derived from employer contributions after three years of service, 40 percent after four years of service, 60 percent after five years of service, 80 percent after six years of service, and 100 percent after seven years of service.[266]

Faster vesting schedules apply to employer matching contributions. Employer matching contributions are required to vest at least as rapidly as under one of the following two alternative minimum vesting schedules. A plan satisfies the first schedule if a participant acquires a nonforfeitable right to 100 percent of employer matching contributions upon the completion of three years of service. A plan satisfies the second schedule if a participant has a nonforfeitable right to 20 percent of employer matching contributions for each year of service beginning with the participant's second year of service and ending with 100 percent after six years of service.

Explanation of Provision

The provision applies the present-law vesting schedule for matching contributions to all employer contributions to defined contribution plans.

The provision does not apply to any employee until the employee has an hour of service after the effective date. In applying the new vesting schedule, service before the effective date is taken into account.

Effective Date

The provision is generally effective for contributions for plan years beginning after December 31, 2006.

In the case of a plan maintained pursuant to one or more collective bargaining agreements, the provision is not effective for contributions (including allocations of forfeitures) for plan years beginning before the earlier of (1) the later of the date on which the last of such collective bargaining agreements terminates (determined without regard to any extension thereof on or after the date of enactment) or January 1, 2007, or (2) January 1, 2009.

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[266] The minimum vesting requirements are also contained in Title I of the Employee Retirement Income Security Act of 1974 ("ERISA").

In the case of an employee stock ownership plan ("ESOP") which on September 26, 2005, had outstanding a loan incurred for the purpose of acquiring qualifying employer securities, the provision does not apply to any plan year beginning before the earlier of (1) the date on which the loan is fully repaid, or (2) the date on which the loan was, as of September 26, 2005, scheduled to be fully repaid.

E. Distributions During Working Retirement (sec. 3(2) of ERISA and new sec. 401(a)(35) of the Code)

Present Law

Under ERISA, a pension plan is a plan, fund, or program established or maintained by an employer or an employee organization, or by both, to the extent that, by its express terms or surrounding circumstances, the plan, fund, or program: (1) provides retirement income to employees, or (2) results in a deferral of income by employees for periods extending to the termination of covered employment or beyond, regardless of the method of calculating contributions made to or benefits under the plan or the method of distributing benefits from the plan.

For purposes of the qualification requirements applicable to pension plans, stock bonus plans, and profit-sharing plans under the Code, a pension plan is a plan established and maintained primarily to provide systematically for the payment of definitely determinable benefits to employees over a period of years, usually life, after retirement.[267] A pension plan (i.e., a defined benefit plan or money purchase pension plan) may not provide for distributions before the attainment of normal retirement age (commonly age 65) to participants who have not separated from employment.[268]

Under proposed regulations, in the case of a phased retirement program, a pension plan is permitted to pay a portion of a participant's benefits before attainment of normal retirement age.[269] A phased retirement program is a program under which employees who are at least age 59½ and are eligible for retirement may reduce (by at least 20 percent) the number of hours they customarily work and receive a pro rata portion of their retirement benefits, based on the reduction in their work schedule.

Explanation of Provision

Under the provision, for purposes of the definition of pension plan under ERISA, a distribution from a plan, fund, or program is not treated as made in a form other than retirement income or as a distribution prior to termination of covered employment solely because the distribution is made to an employee who has attained age 62 and who is not separated from employment at the time of such distribution.

In addition, under the Code, a pension plan does not fail to be a qualified retirement plan solely because the plan provides that a distribution may be made to an employee who has attained age 62 and who is not separated from employment at the time of the distribution.

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[267] Treas. Reg. sec. 1.401-1(b)(1)(i).

[268] See, e.g., Rev. Rul. 74-254.

[269] Prop. Treas. Reg. secs. 1.401(a)-1(b)(1)(iv) and 1.401(a)-3.

Effective Date

The provision is effective for distributions in plan years beginning after December 31, 2006.

F. Treatment of Plans Maintained by Indian Tribes (sec. 414(d) of the Code and sec. 3(32) of ERISA)

Present Law

Governmental plans are exempt from ERISA and from Code requirements that correspond to ERISA requirements, such as the vesting rules and the funding rules. A governmental plan is generally a plan established and maintained for its employees by (1) the Federal government, (2) the government of a State or political subdivision of a State, or (3) any agency or instrumentality of any of the foregoing.

Benefits under a defined benefit pension plan generally cannot exceed the lesser of (1) 100 percent of average compensation, or (2) a dollar amount ($175,000 for 2006), subject to certain special rules for defined benefit plans maintained by State and local government employers and other special rules for employees of a police or fire department. Employee contributions to a defined benefit pension plan are generally subject to tax; however, employee contributions may be made to a State or local government defined benefit pension plan on a pretax basis (referred to as "pickup" contributions).

Governmental defined benefit pension plans are not covered by the PBGC insurance program.

Explanation of Provision

Under the provision, the term "governmental plan" for purposes of section 414 of the Code, section 3(32) of ERISA, and the PBGC termination insurance program includes a plan: (1) which is established and maintained by an Indian tribal government (as defined in Code sec. 7701(a)(40)), a subdivision of an Indian tribal government (determined in accordance with Code sec. 7871(d)), or an agency or instrumentality of either; and (2) all of the participants of which are qualified employees of such entity. A qualified employee is an employee of an entity described in (1) all of whose services for such entity are in the performance of essential governmental services and not in the performance of commercial activities (whether or not such activities are an essential governmental function). Thus, for example, a governmental plan would include a plan of a tribal government all of the participants of which are teachers in tribal schools. On the other hand, a governmental plan would not include a plan covering tribal employees who are employed by a hotel, casino, service station, convenience store, or marina operated by a tribal government.

Under the provision, the special benefit limitations applicable to employees of police and fire departments of a State or political subdivision (Code sec. 415(b)(2)(H)) apply to such employees of an Indian tribe or any political subdivision thereof. In addition, the rules relating to pick up contribution under governmental plans (Code sec. 414(h)) and special benefit limitations for governmental plans (sec. 415(b)(10)) apply to tribal plans treated as governmental plans under the provision.

Effective Date

The provision is effective for plan years beginning on or after the date of enactment.

TITLE X: SPOUSAL PENSION PROTECTION

A. Regulations on Time and Order of Issuance of Domestic Relations Orders

Present Law

Benefits provided under a qualified retirement plan for a participant may not be assigned or alienated to creditors of the participant, except in very limited circumstances.[270] One exception to the prohibition on assignment or alienation is a qualified domestic relations order ("QDRO").[271] A QDRO is a domestic relations order that creates or recognizes a right of an alternate payee, including a former spouse, to any plan benefit payable with respect to a participant and that meets certain procedural requirements. In addition, a QDRO generally may not require the plan to provide any type or form of benefit, or any option, not otherwise provided under the plan, or to provide increased benefits.

Present law also provides that a QDRO may not require the payment of benefits to an alternate payee that are required to be paid to another alternate payee under a domestic relations order previously determined to be a QDRO. This rule implicitly recognizes that a domestic relations order issued after a QDRO may also qualify as a QDRO. However, present law does not otherwise provide specific rules for the treatment of a domestic relations order as a QDRO if the order is issued after another domestic relations order or a QDRO (including an order issued after a divorce decree) or revises another domestic relations order or a QDRO.

Present law provides specific rules that apply during any period in which the status of a domestic relations order as a QDRO is being determined (by the plan administrator, by a court, or otherwise). During such a period, the plan administrator is required to account separately for the amounts that would have been payable to the alternate payee during the period if the order had been determined to be a QDRO (referred to as "segregated amounts"). If, within the 18-month period beginning with the date on which the first payment would be required to be made under the order, the order (or modification thereof) is determined to be a QDRO, the plan administrator is required to pay the segregated amounts (including any interest thereon) to the person or persons entitled thereto. If, within the 18-month period, the order is determined not to be a QDRO, or its status as a QDRO is not resolved, the plan administrator is required to pay the segregated amounts (including any interest) to the person or persons who would be entitled to such amounts if there were no order. In such a case, any subsequent determination that the order is a QDRO is applied prospectively only.

Explanation of Provision

The Secretary of Labor is directed to issue, not later than one year after the date of enactment of the provision, regulations to clarify the status of certain domestic relations orders. In particular, the regulations are to clarify that a domestic relations order otherwise meeting the

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[270] Code sec. 401(a)(13); ERISA sec. 206(d).

[271] Code secs. 401(a)(13)(B) and 414(p); ERISA sec. 206(d)(3).

QDRO requirements will not fail to be treated as a QDRO solely because of the time it is issued or because it is issued after or revises another domestic relations order or QDRO. The regulations are also to clarify that such a domestic relations order is in all respects subject to the same requirements and protections that apply to QDROs. For example, as under present law, such a domestic relations order may not require the payment of benefits to an alternate payee that are required to be paid to another alternate payee under an earlier QDRO. In addition, the present-law rules regarding segregated amounts that apply while the status of a domestic relations order as a QDRO is being determined continue to apply.

Effective Date

The provision is effective on the date of enactment.

B. Benefits Under the Railroad Retirement System for Former Spouses (secs. 2 and 5 of the Railroad Retirement Act of 1974)

Present Law

In general

The Railroad Retirement System has two main components. Tier I of the system is financed by taxes on employers and employees equal to the Social Security payroll tax and provides qualified railroad retirees (and their qualified spouses, dependents, widows, or widowers) with benefits that are roughly equal to Social Security. Covered railroad workers and their employers pay the Tier I tax instead of the Social Security payroll tax, and most railroad retirees collect Tier I benefits instead of Social Security. Tier II of the system replicates a private pension plan, with employers and employees contributing a certain percentage of pay toward the system to finance defined benefits to eligible railroad retirees (and qualified spouses, dependents, widows, or widowers) upon retirement; however, the Federal Government collects the Tier II payroll contribution and pays out the benefits.

Former spouses of living railroad employees

Generally, a former spouse of a railroad employee who is otherwise eligible for any Tier I or Tier II benefit cannot receive either benefit until the railroad employee actually retires and begins receiving his or her retirement benefits. This is the case regardless of whether a State divorce court has awarded such railroad retirement benefits to the former spouse.

Former spouses of deceased railroad employees

The former spouse of a railroad employee may be eligible for survivors' benefits under Tier I of the Railroad Retirement System. However, a former spouse loses eligibility for any otherwise allowable Tier II benefits upon the death of the railroad employee.

Explanation of Provision

Former spouses of living railroad employees

The provision eliminates the requirement that a railroad employee actually receive railroad retirement benefits for the former spouse to be entitled to any Tier I benefit or Tier II benefit awarded under a State divorce court decision.

Former spouses of deceased railroad employees

The provision provides that a former spouse of a railroad employee does not lose eligibility for otherwise allowable Tier II benefits upon the death of the railroad employee.

Effective Date

The provision is effective one year after the date of enactment.

C. Requirement for Additional Survivor Annuity Option (sec. 417 of the Code and sec. 205 of ERISA)

Present Law

Defined benefit pension plans and money purchase pension plans are required to provide benefits in the form of a qualified joint and survivor annuity ("QJSA") unless the participant and his or her spouse consent to another form of benefit. A QJSA is an annuity for the life of the participant, with a survivor annuity for the life of the spouse which is not less than 50 percent (and not more than 100 percent) of the amount of the annuity payable during the joint lives of the participant and his or her spouse.[272] In the case of a married participant who dies before the commencement of retirement benefits, the surviving spouse must be provided with a qualified preretirement survivor annuity ("QPSA"), which must provide the surviving spouse with a benefit that is not less than the benefit that would have been provided under the survivor portion of a QJSA.

The participant and his or her spouse may waive the right to a QJSA and QPSA provided certain requirements are satisfied. In general, these conditions include providing the participant with a written explanation of the terms and conditions of the survivor annuity, the right to make, and the effect of, a waiver of the annuity, the rights of the spouse to waive the survivor annuity, and the right of the participant to revoke the waiver. In addition, the spouse must provide a written consent to the waiver, witnessed by a plan representative or a notary public, which acknowledges the effect of the waiver.

Defined contribution plans other than money purchase pension plans are not required to provide a QJSA or QPSA if the participant does not elect an annuity as the form of payment, the surviving spouse is the beneficiary of the participant's entire vested account balance under the plan (unless the spouse consents to designation of another beneficiary),[273] and, with respect to the participant, the plan has not received a transfer from a plan to which the QJSA and QPSA requirements applied (or separately accounts for the transferred assets). In the case of a defined contribution plan subject to the QJSA and QPSA requirements, a QPSA means an annuity for the life of the surviving spouse that has an actuarial value of at least 50 percent of the participant's vested account balance as of the date of death.

Explanation of Provision

The provision revises the minimum survivor annuity requirements to require that, at the election of the participant, benefits will be paid in the form of a "qualified optional survivor annuity." A qualified optional survivor annuity means an annuity for the life of the participant

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[272] Thus, for example, a QJSA could consist of an annuity for the life of the participant, with a survivor annuity for the life of the spouse equal to 75 percent of the amount of the annuity payable during the joint lives of the participant and his or her spouse.

[273] Waiver and election rules apply to the waiver of the right of the spouse to be the beneficiary under a defined contribution plan that is not required to provide a QJSA.

with a survivor annuity for the life of the spouse which is equal to the applicable percentage of the amount of the annuity that is: (1) payable during the joint lives of the participant and the spouse; and (2) the actuarial equivalent of a single annuity for the life of the participant.

If the survivor annuity provided by the QJSA under the plan is less than 75 percent of the annuity payable during the joint lives of the participant and spouse, the applicable percentage is 75 percent. If the survivor annuity provided by the QJSA under the plan is greater than or equal to 75 percent of the annuity payable during the joint lives of the participant and spouse, the applicable percentage is 50 percent. Thus, for example, if the survivor annuity provided by the QJSA under the plan is 50 percent, the survivor annuity provided under the qualified optional survivor annuity must be 75 percent.

The written explanation required to be provided to participants explaining the terms and conditions of the qualified joint and survivor annuity must also include the terms and conditions of the qualified optional survivor annuity.

Under the provision of the bill relating to plan amendments, a plan amendment made pursuant to a provision of the bill generally will not violate the anticutback rule if certain requirements are met. Thus, a plan is not treated as having decreased the accrued benefit of a participant solely by reason of the adoption of a plan amendment pursuant to the provision requiring that the plan offer a qualified optional survivor annuity. The elimination of a subsidized QJSA is not protected by the anticutback provision in the bill unless an equivalent or greater subsidy is retained in one of the forms offered under the plan as amended. For example, if a plan that offers a subsidized 50 percent QJSA is amended to provide an unsubsidized 50 percent QJSA and an unsubsidized 75 percent joint and survivor annuity as its qualified optional survivor annuity, the replacement of the subsidized 50 percent QJSA with the unsubsidized 50 percent QJSA is not protected by the anticutback protection.

Effective Date

The provision applies generally to plan years beginning after December 31, 2007. In the case of a plan maintained pursuant to one or more collective bargaining agreements, the provision applies to plan years beginning on or after the earlier of (1) the later of January 1, 2008, and the last date on which an applicable collective bargaining agreement terminates (without regard to extensions), and (2) January 1, 2009.

TITLE XI: ADMINISTRATIVE PROVISIONS

A. Updating of Employee Plans Compliance Resolution System

Present Law

Tax-favored treatment is provided to various retirement savings arrangements that meet certain requirements under the Code, including qualified retirement plans and annuities (secs. 401(a) and 403(a)), tax-sheltered annuities (sec. 403(b)), simplified employee pensions ("SEPs") (sec. 408(k)), and SIMPLE IRAs (sec. 408(p)). The Internal Revenue Service ("IRS") has established the Employee Plans Compliance Resolution System ("EPCRS"), which is a comprehensive system of correction programs for sponsors of retirement plans and annuities that are intended to satisfy the requirements of section 401(a), section 403(a), section 403(b), section 408(k), or section 408(p), as applicable. The IRS has updated and expanded EPCRS several times.[274]

EPCRS permits employers to correct compliance failures and continue to provide their employees with retirement benefits on a tax-favored basis. EPCRS is based on the following general principles:

- Plans sponsors and administrators should be encouraged to establish administrative practices and procedures that ensure that plans are operated properly in accordance with applicable Code requirements;
- Plans sponsors and administrators should satisfy applicable plan document requirements;
- Plans sponsors and administrators should make voluntary and timely correction of any plan failures, whether involving discrimination in favor of highly compensated employees, plan operations, the terms of the plan document, or adoption of a plan by an ineligible employer; timely and efficient correction protects participating employees by providing them with their expected retirement benefits, including favorable tax treatment;
- Voluntary compliance is promoted by providing for limited fees for voluntary corrections approved by the Service, thereby reducing employers' uncertainty regarding their potential tax liability and participants' potential tax liability;
- Fees and sanctions should be graduated in a series of steps so that there is always an incentive to correct promptly;
- Sanctions for plan failures identified on audit should be reasonable in light of the nature, extent, and severity of the violation;
- Administration of EPCRS should be consistent and uniform; and

[274] See Rev. Proc. 2006-27, 2006-22 IRB 945.

- Sponsors should be able to rely on the availability of EPCRS in taking corrective actions to maintain the tax-favored status of their plans.

The components of EPCRS provide for self-correction, voluntary correction with IRS approval, and correction on audit. The Self-Correction Program ("SCP") generally permits a plan sponsor that has established compliance practices and procedures to correct certain insignificant failures at any time (including during an audit), and certain significant failures generally within a 2-year period, without payment of any fee or sanction. The Voluntary Correction Program ("VCP") permits an employer, at any time before an audit, to pay a limited fee and receive IRS approval of a correction. For a failure that is discovered on audit and corrected, the Audit Closing Agreement Program ("Audit CAP") provides for a sanction that bears a reasonable relationship to the nature, extent, and severity of the failure and that takes into account the extent to which correction occurred before audit.

Explanation of Provision

The provision clarifies that the Secretary has the full authority to establish and implement EPCRS (or any successor program) and any other employee plans correction policies, including the authority to waive income, excise or other taxes to ensure that any tax, penalty or sanction is not excessive and bears a reasonable relationship to the nature, extent and severity of the failure.

Under the provision, the Secretary of the Treasury is directed to continue to update and improve EPCRS (or any successor program), giving special attention to (1) increasing the awareness and knowledge of small employers concerning the availability and use of EPCRS, (2) taking into account special concerns and circumstances that small employers face with respect to compliance and correction of compliance failures, (3) extending the duration of the self-correction period under SCP for significant compliance failures, (4) expanding the availability to correct insignificant compliance failures under SCP during audit, and (5) assuring that any tax, penalty, or sanction that is imposed by reason of a compliance failure is not excessive and bears a reasonable relationship to the nature, extent, and severity of the failure.

Effective Date

The provision is effective on the date of enactment.

B. Notice and Consent Period Regarding Distributions (sec. 417(a) of the Code, and sec. 205(c) of ERISA)

Present Law

Notice and consent requirements apply to certain distributions from qualified retirement plans. These requirements relate to the content and timing of information that a plan must provide to a participant prior to a distribution, and to whether the plan must obtain the participant's consent to the distribution. The nature and extent of the notice and consent requirements applicable to a distribution depend upon the value of the participant's vested accrued benefit and whether the joint and survivor annuity requirements apply to the participant.

If the present value of the participant's vested accrued benefit exceeds $5,000,[275] the plan may not distribute the participant's benefit without the written consent of the participant. The participant's consent to a distribution is not valid unless the participant has received from the plan a notice that contains a written explanation of (1) the material features and the relative values of the optional forms of benefit available under the plan, (2) the participant's right to defer the receipt of a distribution, or, as applicable, to have the distribution directly transferred to another retirement plan or individual retirement arrangement ("IRA"), and (3) the rules concerning taxation of a distribution. If the joint and survivor annuity requirements are applicable, this notice also must contain a written explanation of (1) the terms and conditions of the qualified joint and survivor annuity ("QJSA"), (2) the participant's right to make, and the effect of, an election to waive the QJSA, (3) the rights of the participant's spouse with respect to a participant's waiver of the QJSA, and (4) the right to make, and the effect of, a revocation of a waiver of the QJSA. The plan generally must provide this notice to the participant no less than 30 and no more than 90 days before the date distribution commences.[276]

Explanation of Provision

Under the provision, a qualified retirement plan is required to provide the applicable distribution notice no less than 30 days and no more than 180 days before the date distribution commences. The Secretary of the Treasury is directed to modify the applicable regulations to reflect the extension of the notice period to 180 days and to provide that the description of a participant's right, if any, to defer receipt of a distribution shall also describe the consequences of failing to defer such receipt.

Effective Date

The provision and the modifications required to be made under the provision apply to years beginning after December 31, 2006. In the case of a description of the consequences of a

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[275] The portion of a participant's benefit that is attributable to amounts rolled over from another plan may be disregarded in determining the present value of the participant's vested accrued benefit.

[276] Code sec. 417(a)(6)(A); ERISA sec. 205(c)(7)(A); Treas. Reg. secs. 1.402(f)-1, 1.411(a)-11(c), and 1.417(e)-1(b).

participant’s failure to defer receipt of a distribution that is made before the date 90 days after the date on which the Secretary of the Treasury makes modifications to the applicable regulations, the plan administrator is required to make a reasonable attempt to comply with the requirements of the provision.

C. Pension Plan Reporting Simplification

Present Law

The plan administrator of a pension plan generally must file an annual return with the Secretary of the Treasury, an annual report with the Secretary of Labor, and certain information with the Pension Benefit Guaranty Corporation ("PBGC"). Form 5500, which consists of a primary form and various schedules, includes the information required to be filed with all three agencies. The plan administrator satisfies the reporting requirement with respect to each agency by filing the Form 5500 with the Department of Labor.

The Form 5500 series consists of 2 different forms: Form 5500 and Form 5500-EZ. Form 5500 is the more comprehensive of the forms and requires the most detailed financial information. The plan administrator of a "one-participant plan" generally may file Form 5500-EZ. For this purpose, a plan is a one-participant plan if: (1) the only participants in the plan are the sole owner of a business that maintains the plan (and such owner's spouse), or partners in a partnership that maintains the plan (and such partners' spouses);[277] (2) the plan is not aggregated with another plan in order to satisfy the minimum coverage requirements of section 410(b); (3) the plan does not provide benefits to anyone other than the sole owner of the business (or the sole owner and spouse) or the partners in the business (or the partners and spouses); (4) the employer is not a member of a related group of employers; and (5) the employer does not use the services of leased employees. In addition, the plan administrator of a one-participant plan is not required to file a return if the plan does not have an accumulated funding deficiency and the total value of the plan assets as of the end of the plan year and all prior plan years beginning on or after January 1, 1994, does not exceed $100,000.

With respect to a plan that does not satisfy the eligibility requirements for Form 5500-EZ, the characteristics and the size of the plan determine the amount of detailed financial information that the plan administrator must provide on Form 5500. If the plan has more than 100 participants at the beginning of the plan year, the plan administrator generally must provide more information.

Explanation of Provision

The Secretary of the Treasury is directed to modify the annual return filing requirements with respect to a one-participant plan to provide that if the total value of the plan assets of such a plan as of the end of the plan year does not exceed $250,000, the plan administrator is not required to file a return. In addition, the Secretary of the Treasury and the Secretary of Labor are directed to provide simplified reporting requirements for plan years beginning after December 31, 2006, for certain plans with fewer than 25 participants.

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[277] Under Department of Labor regulations, certain business owners and their spouses are not treated as employees. 29 C.F.R. sec. 2510.3-3(c) (2006). Thus, plans covering only such individuals are not subject to ERISA.

Effective Date

The provision relating to one-participant retirement plans is effective for plan years beginning on or after January 1, 2007. The provision relating to simplified reporting for plans with fewer than 25 participants is effective on the date of enactment.

D. Voluntary Early Retirement Incentive and Employment Retention Plans Maintained by Local Educational Agencies and Other Entities (secs. 457(e)(11) and 457(f) of the Code, sec. 3(2)(B) of ERISA, and sec. 4(l)(1) of the ADEA)

Present Law

Eligible deferred compensation plans of State and local governments and tax-exempt employers

A "section 457 plan" is an eligible deferred compensation plan of a State or local government or tax-exempt employer that meets certain requirements. For example, the amount that can be deferred annually under section 457 cannot exceed a certain dollar limit ($14,000 for 2005). Amounts deferred under a section 457 plan are generally includible in gross income when paid or made available (or, in the case of governmental section 457 plans, when paid). Subject to certain exceptions, amounts deferred under a plan that does not comply with section 457 (an "ineligible plan") are includible in income when the amounts are not subject to a substantial risk of forfeiture. Section 457 does not apply to any bona fide vacation leave, sick leave, compensatory time, severance pay, disability pay, or death benefit plan. Additionally, section 457 does not apply to qualified retirement plans or qualified governmental excess benefit plans that provide benefits in excess of those that are provided under a qualified retirement plan maintained by the governmental employer.

ERISA

ERISA provides rules governing the operation of most employee benefit plans. The rules to which a plan is subject depend on whether the plan is an employee welfare benefit plan or an employee pension benefit plan. For example, employee pension benefit plans are subject to reporting and disclosure requirements, participation and vesting requirements, funding requirements, and fiduciary provisions. Employee welfare benefit plans are not subject to all of these requirements. Governmental plans are exempt from ERISA.

Age Discrimination in Employment Act

The Age Discrimination in Employment Act ("ADEA") generally prohibits discrimination in employment because of age. However, certain defined benefit pension plans may lawfully provide payments that constitute the subsidized portion of an early retirement benefit or social security supplements pursuant to ADEA[278], and employers may lawfully provide a voluntary early retirement incentive plan that is consistent with the purposes of ADEA.[279]

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[278] See ADEA sec. 4(l)(1).

[279] See ADEA sec. 4(f)(2).

Explanation of Provision

Early retirement incentive plans of local educational agencies and education associations

In general

The provision addresses the treatment of certain voluntary early retirement incentive plans under section 457, ERISA, and ADEA.

Code section 457

Under the provision, special rules apply under section 457 to a voluntary early retirement incentive plan that is maintained by a local educational agency or a tax-exempt education association which principally represents employees of one or more such agencies and that makes payments or supplements as an early retirement benefit, a retirement-type subsidy, or a social security supplement in coordination with a defined benefit pension plan maintained by a State or local government or by such an association. Such a voluntary early retirement incentive plan is treated as a bona fide severance plan for purposes of section 457, and therefore is not subject to the limits under section 457, to the extent the payments or supplements could otherwise be provided under the defined benefit pension plan. For purposes of the provision, the payments or supplements that could otherwise be provided under the defined benefit pension plan are to be determined by applying the accrual and vesting rules for defined benefit pension plans.[280]

ERISA

Under the provision, voluntary early retirement incentive plans (as described above) are treated as welfare benefit plans for purposes of ERISA (other than governmental plans that are exempt from ERISA).

ADEA

The provision also addresses the treatment under ADEA of voluntary early retirement incentive plans that are maintained by local educational agencies and tax-exempt education associations which principally represent employees of one or more such agencies, and that make payments or supplements that constitute the subsidized portion of an early retirement benefit or a social security supplement and that are made in coordination with a defined benefit pension plan maintained by a State or local government or by such an association. For purposes of ADEA, such a plan is treated as part of the defined benefit pension plan and the payments or supplements under the plan are not severance pay that may be subject to certain deductions under ADEA.

[280] The accrual and vesting rules have the effect of limiting the social security supplements and early retirement benefits that may be provided under a defined benefit pension plan; however, government plans are exempt from these rules.

Employment retention plans of local educational agencies and education associations

The provision addresses the treatment of certain employment retention plans under section 457 and ERISA. The provision applies to employment retention plans that are maintained by local educational agencies or tax-exempt education associations which principally represent employees of one or more such agencies and that provide compensation to an employee (payable on termination of employment) for purposes of retaining the services of the employee or rewarding the employee for service with educational agencies or associations.

Under the provision, special tax treatment applies to the portion of an employment retention plan that provides benefits that do not exceed twice the applicable annual dollar limit on deferrals under section 457 ($14,000 for 2005). The provision provides an exception from the rules under section 457 for ineligible plans with respect to such portion of an employment retention plan. This exception applies for years preceding the year in which benefits under the employment retention plan are paid or otherwise made available to the employee. In addition, such portion of an employment retention plan is not treated as providing for the deferral of compensation for tax purposes.

Under the provision, an employment retention plan is also treated as a welfare benefit plan for purposes of ERISA (other than a governmental plan that is exempt from ERISA).

Effective Date

The provision is generally effective on the date of enactment. The amendments to section 457 apply to taxable years ending after the date of enactment. The amendments to ERISA apply to plan years ending after the date of enactment. Nothing in the provision alters or affects the construction of the Code, ERISA, or ADEA as applied to any plan, arrangement, or conduct to which the provision does not apply.

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E. No Reduction in Unemployment Compensation as a Result of Pension Rollovers (sec. 3304(a)(15) of the Code)

Present Law

Under present law, unemployment compensation payable by a State to an individual generally is reduced by the amount of retirement benefits received by the individual. Distributions from certain employer-sponsored retirement plans or IRAs that are transferred to a similar retirement plan or IRA ("rollover distributions") generally are not includible in income. Some States currently reduce the amount of an individual's unemployment compensation by the amount of a rollover distribution.

Explanation of Provision

The provision amends the Code so that the reduction of unemployment compensation payable to an individual by reason of the receipt of retirement benefits does not apply in the case of a rollover distribution.

Effective Date

The provision is effective for weeks beginning on or after the date of enactment.

F. Revocation of Election Relating to Treatment as Multiemployer Plan (sec. 3(37) of ERISA and sec. 414(f) of the Code)

Present Law

A multiemployer plan mean a plan (1) to which more than one employer is required to contribute; (2) which is maintained pursuant to one or more collective bargaining agreements between one or more employee organizations and more than one employer; and (3) which satisfies such other requirements as the Secretary of Labor may prescribe.[281] Present law provides that within one year after the date of enactment of the Multiemployer Pension Plan Amendments Act of 1980, a multiemployer plan could irrevocably elect for the plan not to be treated as a multiemployer plan if certain requirements were satisfied.

Explanation of Provision

The provision allows multiemployer plans to revoke an existing election not to treat the plan as a multiemployer plan if, for each of the three plan years prior to the date of enactment, the plan would have been a multiemployer plan, but for the extension in place. The revocation must be pursuant to procedures prescribed by the PBGC.

The provision also provides that a plan to which more than one employer is required to contribute which is maintained pursuant to one or more collective bargaining agreements between one or more employee organizations and more than one employer (collectively the "criteria") may, pursuant to procedures prescribed by the PBGC, elect to be a multiemployer plan if (1) for each of the three plan years prior to the date of enactment, the plan has met the criteria; (2) substantially all of the plan's employer contributions for each of those plan years were made or required to be made by organizations that were tax-exempt; and (3) the plan was established prior to September 2, 1974. Such election is also available in the case of a plan sponsored by an organization that was established in Chicago, Illinois, on August 12, 1881, and is described in Code section 501(c)(5). There is no inference that a plan that makes an election to be a multiemployer plan was not a multiemployer plan prior to the date of enactment or would not be a multiemployer plan without regard to the election.

An election made under the provision is effective beginning with the first plan year ending after date of enactment and is irrevocable. A plan that elects to be a multiemployer plan under the provision will cease to be a multiemployer plan as of the plan year beginning immediately after the first plan year for which the majority of its employer contributions were made or required to be made by organizations that were not tax-exempt. Elections and revocations under the provision must be made within one year after the date of enactment.

Not later than 30 days before an election is made, the plan administrator must provide notice of the pending election to each plan participant and beneficiary, each labor organization representing such participants or beneficiaries, and to each employer that has an obligation to

[281] ERISA sec. 3(36); Code sec. 414(f).

contribute to the plan. Such notice must include the principal differences between the guarantee programs and benefit restrictions for single employer and multiemployer plans. The Secretary of Labor must prescribe a model notice within 180 days after date of enactment. The plan administrator's failure to provide the notice is treated as a failure to file an annual report. Thus, an ERISA penalty of $1,100 per day applies.

Effective Date

The provision is effective on the date of enactment.

G. Provisions Relating to Plan Amendments

Present Law

Present law provides a remedial amendment period during which, under certain circumstances, a plan may be amended retroactively in order to comply with the qualification requirements.[282] In general, plan amendments to reflect changes in the law generally must be made by the time prescribed by law for filing the income tax return of the employer for the employer's taxable year in which the change in law occurs. The Secretary of the Treasury may extend the time by which plan amendments need to be made.

The Code and ERISA provide that, in general, accrued benefits cannot be reduced by a plan amendment.[283] This prohibition on the reduction of accrued benefits is commonly referred to as the "anticutback rule."

Explanation of Provision.

A plan amendment made pursuant to the changes made by the bill or regulations issued thereunder, may be retroactively effective and will not violate the anticutback rule, if, in addition to meeting the other applicable requirements, the amendment is made on or before the last day of the first plan year beginning on or after January 1, 2009 (2011 in the case of a governmental plan).

A plan amendment will not be considered to be pursuant to the bill (or applicable regulations) if it has an effective date before the effective date of the provision under the bill (or regulations) to which it relates. Similarly, the provision does not provide relief from the anticutback rule for periods prior to the effective date of the relevant provision (or regulations) or the plan amendment. The Secretary of the Treasury is authorized to provide exceptions to the relief from the prohibition on reductions in accrued benefits. It is intended that the Secretary will not permit inappropriate reductions in contributions or benefits that are not directly related to the provisions under the bill.

Effective Date

The provision is effective on the date of enactment.

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[282] Sec. 401(b).

[283] Code sec. 411(d)(6); ERISA sec. 204(g).

TITLE XII: PROVISIONS RELATING TO EXEMPT ORGANIZATIONS

A. Charitable Giving Incentives

1. Tax-free distributions from individual retirement plans for charitable purposes (secs. 408, 6034, 6104, and 6652 of the Code)

Present Law

In general

If an amount withdrawn from a traditional individual retirement arrangement ("IRA") or a Roth IRA is donated to a charitable organization, the rules relating to the tax treatment of withdrawals from IRAs apply to the amount withdrawn and the charitable contribution is subject to the normally applicable limitations on deductibility of such contributions.

Charitable contributions

In computing taxable income, an individual taxpayer who itemizes deductions generally is allowed to deduct the amount of cash and up to the fair market value of property contributed to a charity described in section 501(c)(3), to certain veterans' organizations, fraternal societies, and cemetery companies,[284] or to a Federal, State, or local governmental entity for exclusively public purposes.[285] The deduction also is allowed for purposes of calculating alternative minimum taxable income.

The amount of the deduction allowable for a taxable year with respect to a charitable contribution of property may be reduced depending on the type of property contributed, the type of charitable organization to which the property is contributed, and the income of the taxpayer.[286]

A taxpayer who takes the standard deduction (i.e., who does not itemize deductions) may not take a separate deduction for charitable contributions.[287]

A payment to a charity (regardless of whether it is termed a "contribution") in exchange for which the donor receives an economic benefit is not deductible, except to the extent that the donor can demonstrate, among other things, that the payment exceeds the fair market value of the benefit received from the charity. To facilitate distinguishing charitable contributions from purchases of goods or services from charities, present law provides that no charitable contribution deduction is allowed for a separate contribution of $250 or more unless the donor obtains a contemporaneous written acknowledgement of the contribution from the charity

[284] Secs. 170(c)(3)-(5).

[285] Sec. 170(c)(1).

[286] Secs. 170(b) and (e).

[287] Sec. 170(a).

indicating whether the charity provided any good or service (and an estimate of the value of any such good or service) to the taxpayer in consideration for the contribution.[288] In addition, present law requires that any charity that receives a contribution exceeding $75 made partly as a gift and partly as consideration for goods or services furnished by the charity (a "quid pro quo" contribution) is required to inform the contributor in writing of an estimate of the value of the goods or services furnished by the charity and that only the portion exceeding the value of the goods or services may be deductible as a charitable contribution.[289]

Under present law, total deductible contributions of an individual taxpayer to public charities, private operating foundations, and certain types of private nonoperating foundations may not exceed 50 percent of the taxpayer's contribution base, which is the taxpayer's adjusted gross income for a taxable year (disregarding any net operating loss carryback). To the extent a taxpayer has not exceeded the 50-percent limitation, (1) contributions of capital gain property to public charities generally may be deducted up to 30 percent of the taxpayer's contribution base, (2) contributions of cash to private foundations and certain other charitable organizations generally may be deducted up to 30 percent of the taxpayer's contribution base, and (3) contributions of capital gain property to private foundations and certain other charitable organizations generally may be deducted up to 20 percent of the taxpayer's contribution base.

Contributions by individuals in excess of the 50-percent, 30-percent, and 20-percent limits may be carried over and deducted over the next five taxable years, subject to the relevant percentage limitations on the deduction in each of those years.

In addition to the percentage limitations imposed specifically on charitable contributions, present law imposes a reduction on most itemized deductions, including charitable contribution deductions, for taxpayers with adjusted gross income in excess of a threshold amount, which is indexed annually for inflation. The threshold amount for 2006 is $150,500 ($75,250 for married individuals filing separate returns). For those deductions that are subject to the limit, the total amount of itemized deductions is reduced by three percent of adjusted gross income over the threshold amount, but not by more than 80 percent of itemized deductions subject to the limit. Beginning in 2006, the overall limitation on itemized deductions phases-out for all taxpayers. The overall limitation on itemized deductions is reduced by one-third in taxable years beginning in 2006 and 2007, and by two-thirds in taxable years beginning in 2008 and 2009. The overall limitation on itemized deductions is eliminated for taxable years beginning after December 31, 2009; however, this elimination of the limitation sunsets on December 31, 2010.

In general, a charitable deduction is not allowed for income, estate, or gift tax purposes if the donor transfers an interest in property to a charity (e.g., a remainder) while also either retaining an interest in that property (e.g., an income interest) or transferring an interest in that property to a noncharity for less than full and adequate consideration.[290] Exceptions to this

[288] Sec. 170(f)(8).

[289] Sec. 6115.

[290] Secs. 170(f), 2055(e)(2), and 2522(c)(2).

general rule are provided for, among other interests, remainder interests in charitable remainder annuity trusts, charitable remainder unitrusts, and pooled income funds, and present interests in the form of a guaranteed annuity or a fixed percentage of the annual value of the property.[291] For such interests, a charitable deduction is allowed to the extent of the present value of the interest designated for a charitable organization.

IRA rules

Within limits, individuals may make deductible and nondeductible contributions to a traditional IRA. Amounts in a traditional IRA are includible in income when withdrawn (except to the extent the withdrawal represents a return of nondeductible contributions). Individuals also may make nondeductible contributions to a Roth IRA. Qualified withdrawals from a Roth IRA are excludable from gross income. Withdrawals from a Roth IRA that are not qualified withdrawals are includible in gross income to the extent attributable to earnings. Includible amounts withdrawn from a traditional IRA or a Roth IRA before attainment of age 59-½ are subject to an additional 10-percent early withdrawal tax, unless an exception applies. Under present law, minimum distributions are required to be made from tax-favored retirement arrangements, including IRAs. Minimum required distributions from a traditional IRA must generally begin by the April 1 of the calendar year following the year in which the IRA owner attains age 70-½.[292]

If an individual has made nondeductible contributions to a traditional IRA, a portion of each distribution from an IRA is nontaxable until the total amount of nondeductible contributions has been received. In general, the amount of a distribution that is nontaxable is determined by multiplying the amount of the distribution by the ratio of the remaining nondeductible contributions to the account balance. In making the calculation, all traditional IRAs of an individual are treated as a single IRA, all distributions during any taxable year are treated as a single distribution, and the value of the contract, income on the contract, and investment in the contract are computed as of the close of the calendar year.

In the case of a distribution from a Roth IRA that is not a qualified distribution, in determining the portion of the distribution attributable to earnings, contributions and distributions are deemed to be distributed in the following order: (1) regular Roth IRA contributions; (2) taxable conversion contributions;[293] (3) nontaxable conversion contributions; and (4) earnings. In determining the amount of taxable distributions from a Roth IRA, all Roth IRA distributions in the same taxable year are treated as a single distribution, all regular Roth IRA contributions for a year are treated as a single contribution, and all conversion contributions during the year are treated as a single contribution.

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[291] Sec. 170(f)(2).

[292] Minimum distribution rules also apply in the case of distributions after the death of a traditional or Roth IRA owner.

[293] Conversion contributions refer to conversions of amounts in a traditional IRA to a Roth IRA.

Distributions from an IRA (other than a Roth IRA) are generally subject to withholding unless the individual elects not to have withholding apply.[294] Elections not to have withholding apply are to be made in the time and manner prescribed by the Secretary.

Split-interest trust filing requirements

Split-interest trusts, including charitable remainder annuity trusts, charitable remainder unitrusts, and pooled income funds, are required to file an annual information return (Form 1041A).[295] Trusts that are not split-interest trusts but that claim a charitable deduction for amounts permanently set aside for a charitable purpose[296] also are required to file Form 1041A. The returns are required to be made publicly available.[297] A trust that is required to distribute all trust net income currently to trust beneficiaries in a taxable year is exempt from this return requirement for such taxable year. A failure to file the required return may result in a penalty on the trust of $10 a day for as long as the failure continues, up to a maximum of $5,000 per return.

In addition, split-interest trusts are required to file annually Form 5227.[298] Form 5227 requires disclosure of information regarding a trust's noncharitable beneficiaries. The penalty for failure to file this return is calculated based on the amount of tax owed. A split-interest trust generally is not subject to tax and therefore, in general, a penalty may not be imposed for the failure to file Form 5227. Form 5227 is not required to be made publicly available.

Explanation of Provision

Qualified charitable distributions from IRAs

The provision provides an exclusion from gross income for otherwise taxable IRA distributions from a traditional or a Roth IRA in the case of qualified charitable distributions.[299] The exclusion may not exceed $100,000 per taxpayer per taxable year. Special rules apply in determining the amount of an IRA distribution that is otherwise taxable. The present-law rules regarding taxation of IRA distributions and the deduction of charitable contributions continue to apply to distributions from an IRA that are not qualified charitable distributions. Qualified charitable distributions are taken into account for purposes of the minimum distribution rules applicable to traditional IRAs to the same extent the distribution would have been taken into account under such rules had the distribution not been directly distributed under the provision.

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[294] Sec. 3405.

[295] Sec. 6034. This requirement applies to all split-interest trusts described in section 4947(a)(2).

[296] Sec. 642(c).

[297] Sec. 6104(b).

[298] Sec. 6011; Treas. Reg. sec. 53.6011-1(d).

[299] The provision does not apply to distributions from employer-sponsored retirements plans, including SIMPLE IRAs and simplified employee pensions ("SEPs").

An IRA does not fail to qualify as an IRA merely because qualified charitable distributions have been made from the IRA. It is intended that the Secretary will prescribe rules under which IRA owners are deemed to elect out of withholding if they designate that a distribution is intended to be a qualified charitable distribution.

A qualified charitable distribution is any distribution from an IRA directly by the IRA trustee to an organization described in section 170(b)(1)(A) (other than an organization described in section 509(a)(3) or a donor advised fund (as defined in section 4966(d)(2)). Distributions are eligible for the exclusion only if made on or after the date the IRA owner attains age 70-½.

The exclusion applies only if a charitable contribution deduction for the entire distribution otherwise would be allowable (under present law), determined without regard to the generally applicable percentage limitations. Thus, for example, if the deductible amount is reduced because of a benefit received in exchange, or if a deduction is not allowable because the donor did not obtain sufficient substantiation, the exclusion is not available with respect to any part of the IRA distribution.

If the IRA owner has any IRA that includes nondeductible contributions, a special rule applies in determining the portion of a distribution that is includible in gross income (but for the provision) and thus is eligible for qualified charitable distribution treatment. Under the special rule, the distribution is treated as consisting of income first, up to the aggregate amount that would be includible in gross income (but for the provision) if the aggregate balance of all IRAs having the same owner were distributed during the same year. In determining the amount of subsequent IRA distributions includible in income, proper adjustments are to be made to reflect the amount treated as a qualified charitable distribution under the special rule.

Distributions that are excluded from gross income by reason of the provision are not taken into account in determining the deduction for charitable contributions under section 170.

Qualified charitable distribution examples

The following examples illustrate the determination of the portion of an IRA distribution that is a qualified charitable distribution. In each example, it is assumed that the requirements for qualified charitable distribution treatment are otherwise met (e.g., the applicable age requirement and the requirement that contributions are otherwise deductible) and that no other IRA distributions occur during the year.

Example 1.−Individual A has a traditional IRA with a balance of $100,000, consisting solely of deductible contributions and earnings. Individual A has no other IRA. The entire IRA balance is distributed in a distribution to an organization described in section 170(b)(1)(A) (other than an organization described in section 509(a)(3) or a donor advised fund). Under present law, the entire distribution of $100,000 would be includible in Individual A's income. Accordingly, under the provision, the entire distribution of $100,000 is a qualified charitable distribution. As a result, no amount is included in Individual A's income as a result of the distribution and the distribution is not taken into account in determining the amount of Individual A's charitable deduction for the year.

Example 2.−Individual B has a traditional IRA with a balance of $100,000, consisting of $20,000 of nondeductible contributions and $80,000 of deductible contributions and earnings. Individual B has no other IRA. In a distribution to an organization described in section 170(b)(1)(A) (other than an organization described in section 509(a)(3) or a donor advised fund), $80,000 is distributed from the IRA. Under present law, a portion of the distribution from the IRA would be treated as a nontaxable return of nondeductible contributions. The nontaxable portion of the distribution would be $16,000, determined by multiplying the amount of the distribution ($80,000) by the ratio of the nondeductible contributions to the account balance ($20,000/$100,000). Accordingly, under present law, $64,000 of the distribution ($80,000 minus $16,000) would be includible in Individual B's income.

Under the provision, notwithstanding the present-law tax treatment of IRA distributions, the distribution is treated as consisting of income first, up to the total amount that would be includible in gross income (but for the provision) if all amounts were distributed from all IRAs otherwise taken into account in determining the amount of IRA distributions. The total amount that would be includible in income if all amounts were distributed from the IRA is $80,000. Accordingly, under the provision, the entire $80,000 distributed to the charitable organization is treated as includible in income (before application of the provision) and is a qualified charitable distribution. As a result, no amount is included in Individual B's income as a result of the distribution and the distribution is not taken into account in determining the amount of Individual B's charitable deduction for the year. In addition, for purposes of determining the tax treatment of other distributions from the IRA, $20,000 of the amount remaining in the IRA is treated as Individual B's nondeductible contributions (i.e., not subject to tax upon distribution).

Split-interest trust filing requirements

The provision increases the penalty on split-interest trusts for failure to file a return and for failure to include any of the information required to be shown on such return and to show the correct information. The penalty is $20 for each day the failure continues up to $10,000 for any one return. In the case of a split-interest trust with gross income in excess of $250,000, the penalty is $100 for each day the failure continues up to a maximum of $50,000. In addition, if a person (meaning any officer, director, trustee, employee, or other individual who is under a duty to file the return or include required information)[300] knowingly failed to file the return or include required information, then that person is personally liable for such a penalty, which would be imposed in addition to the penalty that is paid by the organization. Information regarding beneficiaries that are not charitable organizations as described in section 170(c) is exempt from the requirement to make information publicly available. In addition, the provision repeals the present-law exception to the filing requirement for split-interest trusts that are required in a taxable year to distribute all net income currently to beneficiaries. Such exception remains available to trusts other than split-interest trusts that are otherwise subject to the filing requirement.

[300] Sec. 6652(c)(4)(C).

Effective Date

The provision relating to qualified charitable distributions is effective for distributions made in taxable years beginning after December 31, 2005, and taxable years beginning before January 1, 2008. The provision relating to information returns of split-interest trusts is effective for returns for taxable years beginning after December 31, 2006.

2. Charitable deduction for contributions of food inventory (sec. 170 of the Code)

Present Law

Under present law, a taxpayer's deduction for charitable contributions of inventory generally is limited to the taxpayer's basis (typically, cost) in the inventory, or if less the fair market value of the inventory.

For certain contributions of inventory, C corporations may claim an enhanced deduction equal to the lesser of (1) basis plus one-half of the item's appreciation (i.e., basis plus one half of fair market value in excess of basis) or (2) two times basis (sec. 170(e)(3)). In general, a C corporation's charitable contribution deductions for a year may not exceed 10 percent of the corporation's taxable income (sec. 170(b)(2)). To be eligible for the enhanced deduction, the contributed property generally must be inventory of the taxpayer, contributed to a charitable organization described in section 501(c)(3) (except for private nonoperating foundations), and the donee must (1) use the property consistent with the donee's exempt purpose solely for the care of the ill, the needy, or infants, (2) not transfer the property in exchange for money, other property, or services, and (3) provide the taxpayer a written statement that the donee's use of the property will be consistent with such requirements. In the case of contributed property subject to the Federal Food, Drug, and Cosmetic Act, the property must satisfy the applicable requirements of such Act on the date of transfer and for 180 days prior to the transfer.

A donor making a charitable contribution of inventory must make a corresponding adjustment to the cost of goods sold by decreasing the cost of goods sold by the lesser of the fair market value of the property or the donor's basis with respect to the inventory (Treas. Reg. sec. 1.170A-4A(c)(3)). Accordingly, if the allowable charitable deduction for inventory is the fair market value of the inventory, the donor reduces its cost of goods sold by such value, with the result that the difference between the fair market value and the donor's basis may still be recovered by the donor other than as a charitable contribution.

To use the enhanced deduction, the taxpayer must establish that the fair market value of the donated item exceeds basis. The valuation of food inventory has been the subject of disputes between taxpayers and the IRS.[301]

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[301] *Lucky Stores Inc. v. Commissioner*, 105 T.C. 420 (1995) (holding that the value of surplus bread inventory donated to charity was the full retail price of the bread rather than half the retail price, as the IRS asserted).

Under the Katrina Emergency Tax Relief Act of 2005, any taxpayer, whether or not a C corporation, engaged in a trade or business is eligible to claim the enhanced deduction for certain donations made after August 28, 2005, and before January 1, 2006, of food inventory. For taxpayers other than C corporations, the total deduction for donations of food inventory in a taxable year generally may not exceed 10 percent of the taxpayer's net income for such taxable year from all sole proprietorships, S corporations, or partnerships (or other entity that is not a C corporation) from which contributions of "apparently wholesome food" are made. "Apparently wholesome food" is defined as food intended for human consumption that meets all quality and labeling standards imposed by Federal, State, and local laws and regulations even though the food may not be readily marketable due to appearance, age, freshness, grade, size, surplus, or other conditions.

Explanation of Provision

The provision extends the provision enacted as part of the Katrina Emergency Tax Relief Act of 2005. As under such Act, under the provision, any taxpayer, whether or not a C corporation, engaged in a trade or business is eligible to claim the enhanced deduction for donations of food inventory. For taxpayers other than C corporations, the total deduction for donations of food inventory in a taxable year generally may not exceed 10 percent of the taxpayer's net income for such taxable year from all sole proprietorships, S corporations, or partnerships (or other non C corporation) from which contributions of apparently wholesome food are made. For example, as under the Katrina Emergency Tax Relief Act of 2005, if a taxpayer is a sole proprietor, a shareholder in an S corporation, and a partner in a partnership, and each business makes charitable contributions of food inventory, the taxpayer's deduction for donations of food inventory is limited to 10 percent of the taxpayer's net income from the sole proprietorship and the taxpayer's interests in the S corporation and partnership. However, if only the sole proprietorship and the S corporation made charitable contributions of food inventory, the taxpayer's deduction would be limited to 10 percent of the net income from the trade or business of the sole proprietorship and the taxpayer's interest in the S corporation, but not the taxpayer's interest in the partnership.[302]

Under the provision, the enhanced deduction for food is available only for food that qualifies as "apparently wholesome food." "Apparently wholesome food" is defined as it is defined under the Katrina Emergency Tax Relief Act of 2005.

[302] The 10 percent limitation does not affect the application of the generally applicable percentage limitations. For example, if 10 percent of a sole proprietor's net income from the proprietor's trade or business was greater than 50 percent of the proprietor's contribution base, the available deduction for the taxable year (with respect to contributions to public charities) would be 50 percent of the proprietor's contribution base. Consistent with present law, such contributions may be carried forward because they exceed the 50 percent limitation. Contributions of food inventory by a taxpayer that is not a C corporation that exceed the 10 percent limitation but not the 50 percent limitation could not be carried forward.

Effective Date

The provision is effective for contributions made after December 31, 2005, and before January 1, 2008.

3. Basis adjustment to stock of S corporation contributing property (sec. 1367 of the Code)

Present Law

Under present law, if an S corporation contributes money or other property to a charity, each shareholder takes into account the shareholder's pro rata share of the contribution in determining its own income tax liability.[303] A shareholder of an S corporation reduces the basis in the stock of the S corporation by the amount of the charitable contribution that flows through to the shareholder.[304]

Explanation of Provision

The provision provides that the amount of a shareholder's basis reduction in the stock of an S corporation by reason of a charitable contribution made by the corporation will be equal to the shareholder's pro rata share of the adjusted basis of the contributed property.[305]

Thus, for example, assume an S corporation with one individual shareholder makes a charitable contribution of stock with a basis of $200 and a fair market value of $500. The shareholder will be treated as having made a $500 charitable contribution (or a lesser amount if the special rules of section 170(e) apply), and will reduce the basis of the S corporation stock by $200.[306]

Effective Date

The provision applies to contributions made in taxable years beginning after December 31, 2005, and taxable years beginning before January 1, 2008.

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[303] Sec. 1366(a)(1)(A).

[304] Sec. 1367(a)(2)(B).

[305] *See* Rev. Rul. 96-11 (1996-1 C.B. 140) for a rule reaching a similar result in the case of charitable contributions made by a partnership.

[306] This example assumes that basis of the S corporation stock (before reduction) is at least $200.

4. Charitable deduction for contributions of book inventory (sec. 170 of the Code)

Present Law

Under present law, a taxpayer's deduction for charitable contributions of inventory generally is limited to the taxpayer's basis (typically, cost) in the inventory, or if less the fair market value of the inventory.

For certain contributions of inventory, C corporations may claim an enhanced deduction equal to the lesser of (1) basis plus one-half of the item's appreciation (i.e., basis plus one half of fair market value in excess of basis) or (2) two times basis (sec. 170(e)(3)). In general, a C corporation's charitable contribution deductions for a year may not exceed 10 percent of the corporation's taxable income (sec. 170(b)(2)). To be eligible for the enhanced deduction, the contributed property generally must be inventory of the taxpayer, contributed to a charitable organization described in section 501(c)(3) (except for private nonoperating foundations), and the donee must (1) use the property consistent with the donee's exempt purpose solely for the care of the ill, the needy, or infants, (2) not transfer the property in exchange for money, other property, or services, and (3) provide the taxpayer a written statement that the donee's use of the property will be consistent with such requirements. In the case of contributed property subject to the Federal Food, Drug, and Cosmetic Act, the property must satisfy the applicable requirements of such Act on the date of transfer and for 180 days prior to the transfer.

A donor making a charitable contribution of inventory must make a corresponding adjustment to the cost of goods sold by decreasing the cost of goods sold by the lesser of the fair market value of the property or the donor's basis with respect to the inventory (Treas. Reg. sec. 1.170A-4A(c)(3)). Accordingly, if the allowable charitable deduction for inventory is the fair market value of the inventory, the donor reduces its cost of goods sold by such value, with the result that the difference between the fair market value and the donor's basis may still be recovered by the donor other than as a charitable contribution.

To use the enhanced deduction, the taxpayer must establish that the fair market value of the donated item exceeds basis.

The Katrina Emergency Tax Relief Act of 2005 extended the present-law enhanced deduction for C corporations to certain qualified book contributions made after August 28, 2005, and before January 1, 2006. For such purposes, a qualified book contribution means a charitable contribution of books to a public school that provides elementary education or secondary education (kindergarten through grade 12) and that is an educational organization that normally maintains a regular faculty and curriculum and normally has a regularly enrolled body of pupils or students in attendance at the place where its educational activities are regularly carried on. The enhanced deduction under the Katrina Emergency Tax Relief Act of 2005 is not allowed unless the donee organization certifies in writing that the contributed books are suitable, in terms of currency, content, and quantity, for use in the donee's educational programs and that the donee will use the books in such educational programs.

Explanation of Provision

The provision extends the provision enacted as part of the Katrina Emergency Tax Relief Act of 2005. As under such Act, an enhanced deduction for C corporations for qualified book contributions is allowed.

Effective Date

The provision is effective for contributions made after December 31, 2005, and before January 1, 2008.

5. Modify tax treatment of certain payments to controlling exempt organizations (secs. 512 and 6033 of the Code)

Present Law

In general, interest, rents, royalties, and annuities are excluded from the unrelated business income of tax-exempt organizations. However, section 512(b)(13) generally treats otherwise excluded rent, royalty, annuity, and interest income as unrelated business income if such income is received from a taxable or tax-exempt subsidiary that is 50 percent controlled by the parent tax-exempt organization. In the case of a stock subsidiary, "control" means ownership by vote or value of more than 50 percent of the stock. In the case of a partnership or other entity, control means ownership of more than 50 percent of the profits, capital or beneficial interests. In addition, present law applies the constructive ownership rules of section 318 for purposes of section 512(b)(13). Thus, a parent exempt organization is deemed to control any subsidiary in which it holds more than 50 percent of the voting power or value, directly (as in the case of a first-tier subsidiary) or indirectly (as in the case of a second-tier subsidiary).

Under present law, interest, rent, annuity, or royalty payments made by a controlled entity to a tax-exempt organization are includable in the latter organization's unrelated business income and are subject to the unrelated business income tax to the extent the payment reduces the net unrelated income (or increases any net unrelated loss) of the controlled entity (determined as if the entity were tax exempt).

Explanation of Provision

The provision provides that the general rule of section 512(b)(13), which includes interest, rent, annuity, or royalty payments made by a controlled entity to the controlling tax-exempt organization in the latter organization's unrelated business income to the extent the payment reduces the net unrelated income (or increases any net unrelated loss) of the controlled entity, applies only to the portion of payments received or accrued in a taxable year that exceeds the amount of the specified payment that would have been paid or accrued if such payment had been determined under the principles of section 482. Thus, if a payment of rent by a controlled subsidiary to its tax-exempt parent organization exceeds fair market value, the excess amount of such payment over fair market value (as determined in accordance with section 482) is included in the parent organization's unrelated business income, to the extent that such excess reduced the net unrelated income (or increased any net unrelated loss) of the controlled entity (determined as if the entity were tax exempt). In addition, the provision imposes a 20-percent penalty on the

larger of such excess determined without regard to any amendment or supplement to a return of tax, or such excess determined with regard to all such amendments and supplements. The provision applies only to payments made pursuant to a binding written contract in effect on the date of enactment (or renewal of such a contract on substantially similar terms). It is intended that there should be further study of such arrangements in light of the provision before any determination about whether to extend or expand the provision is made.

The provision requires that a tax-exempt organization that receives interest, rent, annuity, or royalty payments from a controlled entity report such payments on its annual information return as well as any loans made to any controlled entity and any transfers between such organization and a controlled entity.

The provision provides that, not later than January 1, 2009, the Secretary shall submit a report to the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives a report on the effectiveness of the Internal Revenue Service in administering the provision and on the extent to which payments by controlled entities to the controlling exempt organization meet the requirements of section 482 of the Code. Such report shall include the results of any audit of any controlling organization or controlled entity and recommendations relating to the tax treatment of payments from controlled entities to controlling organizations.

Effective Date

The provision related to payments to controlling organizations applies to payments received or accrued after December 31, 2005 and before January 1, 2008. The provision relating to reporting is effective for returns the due date (determined without regard to extensions) of which is after the date of enactment. The provision relating to a report is effective on the date of enactment.

6. Encourage contributions of real property made for conservation purposes (sec. 170 of the Code)

Present Law

Charitable contributions generally

In general, a deduction is permitted for charitable contributions, subject to certain limitations that depend on the type of taxpayer, the property contributed, and the donee organization. The amount of deduction generally equals the fair market value of the contributed property on the date of the contribution. Charitable deductions are provided for income, estate, and gift tax purposes.[307]

In general, in any taxable year, charitable contributions by a corporation are not deductible to the extent the aggregate contributions exceed 10 percent of the corporation's

[307] Secs. 170, 2055, and 2522, respectively.

taxable income computed without regard to net operating or capital loss carrybacks. For individuals, the amount deductible is a percentage of the taxpayer's contribution base, which is the taxpayer's adjusted gross income computed without regard to any net operating loss carryback. The applicable percentage of the contribution base varies depending on the type of donee organization and property contributed. Cash contributions of an individual taxpayer to public charities, private operating foundations, and certain types of private nonoperating foundations may not exceed 50 percent of the taxpayer's contribution base. Cash contributions to private foundations and certain other organizations generally may be deducted up to 30 percent of the taxpayer's contribution base.

In general, a charitable deduction is not allowed for income, estate, or gift tax purposes if the donor transfers an interest in property to a charity while also either retaining an interest in that property or transferring an interest in that property to a noncharity for less than full and adequate consideration. Exceptions to this general rule are provided for, among other interests, remainder interests in charitable remainder annuity trusts, charitable remainder unitrusts, and pooled income funds, present interests in the form of a guaranteed annuity or a fixed percentage of the annual value of the property, and qualified conservation contributions.

Capital gain property

Capital gain property means any capital asset or property used in the taxpayer's trade or business the sale of which at its fair market value, at the time of contribution, would have resulted in gain that would have been long-term capital gain. Contributions of capital gain property to a qualified charity are deductible at fair market value within certain limitations. Contributions of capital gain property to charitable organizations described in section 170(b)(1)(A) (e.g., public charities, private foundations other than private non-operating foundations, and certain governmental units) generally are deductible up to 30 percent of the taxpayer's contribution base. An individual may elect, however, to bring all these contributions of capital gain property for a taxable year within the 50-percent limitation category by reducing the amount of the contribution deduction by the amount of the appreciation in the capital gain property. Contributions of capital gain property to charitable organizations described in section 170(b)(1)(B) (e.g., private non-operating foundations) are deductible up to 20 percent of the taxpayer's contribution base.

For purposes of determining whether a taxpayer's aggregate charitable contributions in a taxable year exceed the applicable percentage limitation, contributions of capital gain property are taken into account after other charitable contributions. Contributions of capital gain property that exceed the percentage limitation may be carried forward for five years.

Qualified conservation contributions

Qualified conservation contributions are not subject to the "partial interest" rule, which generally bars deductions for charitable contributions of partial interests in property. A qualified conservation contribution is a contribution of a qualified real property interest to a qualified organization exclusively for conservation purposes. A qualified real property interest is defined as: (1) the entire interest of the donor other than a qualified mineral interest; (2) a remainder interest; or (3) a restriction (granted in perpetuity) on the use that may be made of the real

property. Qualified organizations include certain governmental units, public charities that meet certain public support tests, and certain supporting organizations. Conservation purposes include: (1) the preservation of land areas for outdoor recreation by, or for the education of, the general public; (2) the protection of a relatively natural habitat of fish, wildlife, or plants, or similar ecosystem; (3) the preservation of open space (including farmland and forest land) where such preservation will yield a significant public benefit and is either for the scenic enjoyment of the general public or pursuant to a clearly delineated Federal, State, or local governmental conservation policy; and (4) the preservation of an historically important land area or a certified historic structure.

Qualified conservation contributions of capital gain property are subject to the same limitations and carryover rules of other charitable contributions of capital gain property.

Explanation of Provision

In general

Under the provision, the 30-percent contribution base limitation on contributions of capital gain property by individuals does not apply to qualified conservation contributions (as defined under present law). Instead, individuals may deduct the fair market value of any qualified conservation contribution to an organization described in section 170(b)(1)(A) to the extent of the excess of 50 percent of the contribution base over the amount of all other allowable charitable contributions. These contributions are not taken into account in determining the amount of other allowable charitable contributions.

Individuals are allowed to carryover any qualified conservation contributions that exceed the 50-percent limitation for up to 15 years.

For example, assume an individual with a contribution base of $100 makes a qualified conservation contribution of property with a fair market value of $80 and makes other charitable contributions subject to the 50-percent limitation of $60. The individual is allowed a deduction of $50 in the current taxable year for the non-conservation contributions (50 percent of the $100 contribution base) and is allowed to carryover the excess $10 for up to 5 years. No current deduction is allowed for the qualified conservation contribution, but the entire $80 qualified conservation contribution may be carried forward for up to 15 years.

Farmers and ranchers

Individuals

In the case of an individual who is a qualified farmer or rancher for the taxable year in which the contribution is made, a qualified conservation contribution is allowable up to 100 percent of the excess of the taxpayer's contribution base over the amount of all other allowable charitable contributions.

In the above example, if the individual is a qualified farmer or rancher, in addition to the $50 deduction for non-conservation contributions, an additional $50 for the qualified

conservation contribution is allowed and $30 may be carried forward for up to 15 years as a contribution subject to the 100-percent limitation.

Corporations

In the case of a corporation (other than a publicly traded corporation) that is a qualified farmer or rancher for the taxable year in which the contribution is made, any qualified conservation contribution is allowable up to 100 percent of the excess of the corporation's taxable income (as computed under section 170(b)(2)) over the amount of all other allowable charitable contributions. Any excess may be carried forward for up to 15 years as a contribution subject to the 100-percent limitation.

Requirement that land be available for agriculture or livestock production

As an additional condition of eligibility for the 100 percent limitation, with respect to any contribution of property in agriculture or livestock production, or that is available for such production, by a qualified farmer or rancher, the qualified real property interest must include a restriction that the property remain generally available for such production. (There is no requirement as to any specific use in agriculture or farming, or necessarily that the property be used for such purposes, merely that the property remain available for such purposes.) Such additional condition does not apply to contributions made after December 31, 2005, and on or before the date of enactment.

Definition

A qualified farmer or rancher means a taxpayer whose gross income from the trade of business of farming (within the meaning of section 2032A(e)(5)) is greater than 50 percent of the taxpayer's gross income for the taxable year.

Effective Date

The provision applies to contributions made in taxable years beginning after December 31, 2005, and before January 1, 2008.

7. Excise tax exemptions for blood collector organizations (secs. 4041, 4221, 4253, 4483, 6416, and 7701 of the Code)

Present Law

American National Red Cross

The American National Red Cross ("Red Cross") is a Congressionally chartered corporation. It is responsible for giving aid to members of the U.S. Armed Forces, to disaster victims in the United States and abroad to help people prevent, prepare for, and respond to

emergencies.[308] The Red Cross is responsible for over half of the nation's blood supply and blood products.

Exemption from certain retail and manufacturers excise taxes

The Code permits the Secretary to exempt from excise tax certain articles and services to be purchased for the exclusive use of the United States (sec. 4293). This authority is conditioned upon the Secretary determining (1) that the imposition of such taxes will cause substantial burden or expense which can be avoided by granting tax exemption and (2) that full benefit of such exemption, if granted, will accrue to the United States.

On April 18, 1979, the Secretary exercised this authority to exempt, with limited exceptions, the Red Cross from the taxes imposed by chapters 31 and 32 of the Code with respect to articles sold to the Red Cross for its exclusive use.[309] An exemption is also authorized from the taxes imposed with respect to tires and inner tubes if such tire or inner tube is sold by any person on or in connection with the sale of any article to the American National Red Cross, for its exclusive use.[310] No exemption is provided from the gas guzzler tax (sec. 4064), and the taxes imposed on aviation fuel, on fuel used on inland waterways (sec. 4042), and on coal (sec. 4121).[311] The exemption is subject to registration requirements for tax-free sales contained in Treasury regulations. Credit and refund of tax is subject to the requirements set forth in section 6416 relating to the exemption for taxable articles sold for the exclusive use of State and local governments.

Exemption from heavy highway motor vehicle use tax

An annual use tax is imposed on highway motor vehicles, at the rates below (sec. 4481).

Under 55,000 pounds	No tax
55,000-75,000 pounds	$100 plus $22 per 1,000 pounds over 55,000
Over 75,000 pounds	$550

[308] *See* 36 U.S.C. sec. 300102.

[309] Department of the Treasury, *Notice-Manufacturers and Retailers Excise Taxes -Exemption from Tax of Sales of Certain Articles to the American Red Cross*, 44 F.R. 23407, 1979-1 C.B. 478 (1979). At the time the notice was issued the following taxes were covered in Chapters 31 and 32: special fuels, automotive and related items (motor vehicles, tires and tubes, petroleum products, coal, and recreational equipment (sporting goods and firearms).

[310] Under present law, there is no longer a tax on inner tubes.

[311] Department of the Treasury, *Notice-Manufacturers and Retailers Excise Taxes -Exemption from Tax of Sales of Certain Articles to the American Red Cross*, 44 F.R. 23407, 1979-1 C.B. 478, at 479 (1979). The Treasury notice also exempts the Red Cross from tax on aircraft tires and tubes, however, present law currently limits the tax to highway vehicle tires (sec. 4071(a)).

The Code provides that the Secretary may authorize exemption from the heavy highway vehicle use tax as to the use by the United States of any particular highway motor vehicle or class of highway motor vehicles if the Secretary determines that the imposition of such tax with respect to such use will cause substantial burden or expense which can be avoided by granting tax exemption and that the full benefit of such exemption, if granted will accrue to the United States (sec. 4483(b)). The IRS has ruled that the Red Cross comes within the term "United States" for purposes of the exemption from the heavy highway motor vehicle use tax (Rev. Rul. 76-510).

Exemption from communications excise tax

The Code imposes a three-percent tax on amounts paid for local telephone service; toll telephone service and teletypewriter exchange service (sec. 4251). These taxes do not apply to amounts paid for services furnished to the Red Cross (sec. 4253(c)).

Certain other tax-free sales

Exemption from certain manufacturer and retail sale excise taxes

The following sales generally are exempt from certain manufacturer and retail sale excise taxes: (1) for use by the purchaser for further manufacture, or for resale to a second purchaser in further manufacture; (2) for export or for resale to a second purchaser for export; (3) for use by the purchaser as supplies for vessels or aircraft; (4) to a State or local government for the exclusive use of a State or local government; and (5) to a nonprofit educational organization for its exclusive use (sec. 4221). The exemption generally applies to manufacturers taxes imposed by chapter 32 of the Code (the gas guzzlers tax, and the taxes imposed on tires, certain vaccines, and recreational equipment) and the tax on retail sales of heavy trucks and trailers.[312]

The manufacturers excise taxes on coal (sec. 4121), on gasoline, diesel fuel, and kerosene (sec. 4081) are not covered by the exemption. The exemption for a sale to a State or local government for their exclusive use and the exemption for sales to a nonprofit educational organization does not apply to the gas guzzlers tax, and the tax on vaccines. In addition, the exemption of sales for use as supplies for vessels and aircraft does not apply to the vaccine tax.

Exempt sales of special fuels

A retail excise tax is imposed on special motor fuels, including propane, compressed natural gas, and certain alcohol mixtures (sec. 4041). Section 4041 also serves as a back-up tax for diesel fuel or kerosene that was not subject to the manufacturers taxes under section 4081 (other than the Leaking Underground Storage Tank Trust Fund tax) if such fuel is delivered into

[312] The tax imposed by subchapter A of chapter 31 (relating to luxury passenger vehicles) are also exempt pursuant to this provision, however, this tax expired on December 31, 2002. (sec. 4001(g).)

the fuel supply tank of a diesel-powered highway vehicle or train.[313] No tax is imposed on these fuels for nontaxable uses, including fuel: (1) sold for use or used as supplies for vessels or aircraft, (2) sold for the exclusive use of any State, any political subdivision of a State, or the District of Columbia or used by such entity as fuel, (3) sold for export, or for shipment to a possession of the United States and is actually exported or shipped, (4) sold to a nonprofit educational organization for its exclusive use, or used by such entity as fuel (sec. 4041(g)).

Credits and refunds

In general

A credit or refund is allowed for overpayment of manufacturers or retail excise taxes (sec. 6416). Overpayments include (1) certain uses and resales, (2) price adjustments, and (3) further manufacture.

Specified uses and resales

The special fuel taxes, the retail tax on heavy trucks and trailers, and any of the manufacturers excise taxes paid on any article will be a deemed overpayment subject to credit or refund if sold for certain specified uses (sec. 6416(b)(2)). These uses are (1) export, (2) used or sold for use as supplies for vessels or aircraft, (3) sold to a State or local government for the exclusive use of a State or local government, (4) sold to a nonprofit educational organization for its exclusive use; (5) taxable tires sold to any person for use in connection with a qualified bus, or (6) the case of gasoline used or sold for use in the production of a special fuel. Certain exceptions apply in that this deemed overpayment rule does not apply to the taxes imposed by sections 4041 and 4081 on diesel fuel and kerosene, and the coal taxes (sec. 4121). Additionally, the deemed overpayment rule does not apply to the gas guzzler tax in the case of an article sold to a state or local government for its exclusive use or sold to an educational organization for its exclusive use.

Special rule for tires sold in connection with other articles

If the tax imposed on tires (sec. 4071) has been paid with respect to the sale of any tire by the manufacturer, producer, or importer, and such tire is sold by any person in connection with the sale of any other article, such tax will be deemed an overpayment by person if such other article (1) is an automobile bus chassis or an automobile bus body, or (2) is by any person exported, sold to a State or local government for exclusive use of a State or local government, sold to a nonprofit educational organization for its exclusive use, or used or sold for use as supplies for vessels or aircraft (sec. 6416(b)(4)).

Gasoline used for exempt purposes

[313] For example, tax is imposed on the delivery of any of the following into the fuel supply tank of a diesel powered highway vehicle or train of any dyed diesel or dyed kerosene for other than a nontaxable use; any undyed diesel fuel or undyed kerosene on which a credit or refund.

If gasoline is sold to any person for certain specified purposes, the Secretary is required to pay (without interest) to such person an amount equal to the product of the number of gallons of gasoline so sold multiplied by the rate at which tax was imposed on such gasoline under section 4081 (sec. 6421(c)). Under this provision, the specified purposes are (1) for export or for resale to a second purchaser for export; (2) for use by the purchaser as supplies for vessels or aircraft; (3) to a State or local government for exclusive use of a State or local government; and (4) to a nonprofit educational organization for its exclusive use (sec. 4221(a), 6421(c)).

Diesel fuel or kerosene used in a nontaxable use

If diesel fuel or kerosene, upon which tax has been imposed is used by any person in a nontaxable use, the Code authorizes the Secretary to pay (without interest) an amount equal to the aggregate amount of tax imposed on such fuel (sec. 6427(l)). Nontaxable uses include any exemption from the tax imposed by section 4041(a) (except prior taxation).

Explanation of Provision

The provision exempts qualified blood collector organizations from certain retail and manufacturers excise taxes to the extent such items are for the exclusive use of such an organization for the distribution or collection of blood. A qualified blood collector organization means an organization that is (1) described in section 501(c)(3) and exempt from tax under section 501(a), (2) primarily engaged in the activity of the collection of blood, (3) registered with the Secretary for purposes of excise tax exemptions, and (4) registered by the Food and Drug Administration to collect blood.

Under the provision, qualified blood collector organizations are exempt from the communications excise tax as provided by Treasury regulations. The provision also provides an exemption from the special fuels tax, and certain taxes imposed by chapter 32 and subchapter A and C of chapter 31 of the Code (i.e., the retail excise tax on heavy trucks and trailers, and the manufacturers excise taxes on tires). 314 The provision also makes conforming amendments to allow for the credit or refund of these taxes and any tax paid on gasoline for the exclusive use of the blood collector organization. The provision also permits a refund of tax for diesel fuel or kerosene used by a qualified blood collector organization. Finally, the provision provides an exemption from the heavy vehicle use tax of a "qualified blood collector vehicle" by a qualified blood collector organization. A "qualified blood collector vehicle" means a vehicle at least 80 percent of the use of which during the prior taxable period was by a qualified blood collector organization in the collection, storage, or transportation of blood. A special rule is provided for the first taxable period a vehicle is placed in service by the qualified blood collector organization. For the first taxable period a vehicle is placed in service by the organization, the vehicle will be treated as a "qualified blood collector vehicle" for that period if the organization certifies that it reasonably expects that at least 80 percent of the use of the vehicle during such

[314] Such organizations are also exempt from the expired retail excise tax on luxury passenger vehicles. No exemption is provided from the gas guzzler tax (sec. 4064), the taxes imposed on fuel used on inland waterways (sec. 4042), on coal (sec. 4121), and on recreational equipment (sport fishing equipment, bows, arrow components, and firearms).

taxable period will be by the organization in the collection, storage, or transportation of blood. Such certification is to be provided to the Secretary on such forms and in such manner as the Secretary may require.

It is expected that the excise tax exemptions of the Red Cross will be reexamined in conjunction with a review of its charter.

Effective Date

Generally, the provision is effective on January 1, 2007. The exemption from the heavy vehicle use tax is effective for taxable periods beginning July 1, 2007.

B. Reforming Exempt Organizations

1. Reporting on certain acquisitions of interests in insurance contracts in which certain exempt organizations hold interests (new sec. 6050V of the Code)

Present Law

Amounts received under a life insurance contract

Amounts received under a life insurance contract paid by reason of the death of the insured are not includible in gross income for Federal tax purposes.[315] No Federal income tax generally is imposed on a policyholder with respect to the earnings under a life insurance contract (inside buildup).[316]

Distributions from a life insurance contract (other than a modified endowment contract) that are made prior to the death of the insured generally are includible in income to the extent that the amounts distributed exceed the taxpayer's investment in the contract (i.e., basis). Such distributions generally are treated first as a tax-free recovery of basis, and then as income.[317]

Transfers for value

A limitation on the exclusion for amounts received under a life insurance contract is provided in the case of transfers for value. If a life insurance contract (or an interest in the contract) is transferred for valuable consideration, the amount excluded from income by reason of the death of the insured is limited to the actual value of the consideration plus the premiums and other amounts subsequently paid by the acquiror of the contract.[318]

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[315] Sec. 101(a).

[316] This favorable tax treatment is available only if a life insurance contract meets certain requirements designed to limit the investment character of the contract. Sec. 7702.

[317] Sec. 72(e). In the case of a modified endowment contract, however, in general, distributions are treated as income first, loans are treated as distributions (i.e., income rather than basis recovery first), and an additional 10-percent tax is imposed on the income portion of distributions made before age 59-½ and in certain other circumstances. Secs. 72(e) and (v). A modified endowment contract is a life insurance contract that does not meet a statutory "7-pay" test, i.e., generally is funded more rapidly than seven annual level premiums. Sec. 7702A.

[318] Section 101(a)(2). The transfer-for-value rule does not apply, however, in the case of a transfer in which the life insurance contract (or interest in the contract) transferred has a basis in the hands of the transferee that is determined by reference to the transferor's basis. Similarly, the transfer-for-value rule generally does not apply if the transfer is between certain parties (specifically, if the transfer is to the insured, a partner of the insured, a partnership in which the insured is a partner, or a corporation in which the insured is a shareholder or officer).

Tax treatment of charitable organizations and donors

Present law generally provides tax-exempt status for charitable, educational and certain other organizations, no part of the net earnings of which inures to the benefit of any private shareholder or individual, and which meet certain other requirements.[319] Governmental entities, including some educational organizations, are exempt from tax on income under other tax rules providing that gross income does not include income derived from the exercise of any essential governmental function and accruing to a State or any political subdivision thereof.[320]

In computing taxable income, a taxpayer who itemizes deductions generally is allowed to deduct the amount of cash and the fair market value of property contributed to an organization described in section 501(c)(3) or to a Federal, State, or local governmental entity for exclusively public purposes.[321]

State-law insurable interest rules

State laws generally provide that the owner of a life insurance contract must have an insurable interest in the insured person when the life insurance contract is issued. State laws vary as to the insurable interest of a charitable organization in the life of any individual. Some State laws provide that a charitable organization meeting the requirements of section 501(c)(3) of the Code is treated as having an insurable interest in the life of any donor,[322] or, in other States, in the life of any individual who consents (whether or not the individual is a donor).[323] Other States' insurable interest rules permit the purchase of a life insurance contract even though the person paying the consideration has no insurable interest in the life of the person insured if a charitable, benevolent, educational or religious institution is designated irrevocably as the beneficiary.[324]

Transactions involving charities and non-charities acquiring life insurance

Recently, there has been an increase in transactions involving the acquisition of life insurance contracts using arrangements in which both exempt organizations, primarily charities,

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[319] Section 501(c)(3).

[320] Section 115.

[321] Section 170.

[322] See, e.g., Mass. Gen. Laws Ann. ch. 175, sec. 123A(2) (West 2005); Iowa Code Ann. sec. 511.39 (West 2004) ("a person who, when purchasing a life insurance policy, makes a donation to the charitable organization or makes the charitable organization the beneficiary of all or a part of the proceeds of the policy . . .).

[323] See, e.g., Cal. Ins. Code sec. 10110.1(f) (West 2005); 40 Pa. Cons. Stat. Ann. sec. 40-512 (2004); Fla. Stat. Ann. sec. 27.404 (2) (2004); Mich. Comp. Laws Ann. sec. 500.2212 (West 2004).

[324] Or. Rev. Stat. sec. 743.030 (2003); Del. Code Ann. Tit. 18, sec. 2705(a) (2004).

and private investors have an interest in the contract.[325] The exempt organization has an insurable interest in the insured individuals, either because they are donors, because they consent, or otherwise under applicable State insurable interest rules. Private investors provide capital used to fund the purchase of the life insurance contracts, sometimes together with annuity contracts. Both the private investors and the charity have an interest in the contracts, directly or indirectly, through the use of trusts, partnerships, or other arrangements for sharing the rights to the contracts. Both the charity and the private investors receive cash amounts in connection with the investment in the contracts while the life insurance is in force or as the insured individuals die.

Explanation of Provision

The provision includes a temporary reporting requirement with respect to the acquisition of interests in certain life insurance contracts by certain exempt organizations, together with a Treasury study.

The provision provides that, for reportable acquisitions occurring after the date of enactment and on or before the date two years from the date of enactment, an applicable exempt organization that makes a reportable acquisition is required to file an information return. The information return is to contain the name, address, and taxpayer identification number of the organization and of the issuer of the applicable insurance contract, and such other information as the Secretary of the Treasury prescribes. It is intended that the Treasury Department may require the reporting of other information relevant to the study required under the provision. The report is to be in the form prescribed by the Treasury Secretary and is required to be filed at the time established by the Treasury Secretary. It is intended that the Treasury Department may require the report to be filed within a certain period after the reportable acquisition takes place in order to gather information in a timely manner that is relevant to the study required under the provision.

For this purpose, a reportable acquisition means the acquisition by an applicable exempt organization of a direct or indirect interest in a contract that the applicable exempt organization knows or has reason to know is an applicable insurance contract, if such acquisition is a part of a structured transaction involving a pool of such contracts.

An applicable insurance contract means any life insurance, annuity, or endowment contract with respect to which both an applicable exempt organization and a person other than an applicable exempt organization have directly or indirectly held an interest in the contract (whether or not at the same time). Exceptions apply under this definition. First, the term does not apply if each person (other than an applicable exempt organization) with a direct or indirect interest in the contract has an insurable interest in the insured independent of any interest of the exempt organization in the contract. Second, the term does not apply if the sole interest in the contract of the applicable exempt organization or each person other than the applicable exempt

[325] Davis, Wendy, "Death-Pool Donations," Trusts and Estates, May 2004, 55; Francis, Theo, "Tax May Thwart Investment Plans Enlisting Charities," Wall St. J., Feb. 8, 2005, A-10.

organization is as a named beneficiary. Third, the term does not apply if the sole interest in the contract of each person other than the applicable exempt organization is either (1) as a beneficiary of a trust holding an interest in the contract, but only if the person's designation as such a beneficiary was made without consideration and solely on a purely gratuitous basis, or (2) as a trustee who holds an interest in the contract in a fiduciary capacity solely for the benefit of applicable exempt organizations or of persons otherwise meeting one of the first two exceptions.

An applicable exempt organization is any organization described in section 170(c), 168(h)(2)(A)(iv), 2055(a), or 2522(a). Thus, for example, an applicable exempt organization generally includes an organization that is exempt from Federal income tax by reason of being described in section 501(c)(3) (including one organized outside the United States), a government or political subdivision of a government, and an Indian tribal government.

Under the provision, penalties apply for failure to file the return.

The reporting requirement terminates with respect to reportable acquisitions occurring after the date that is 2 years after the date of enactment.

The provision requires the Treasury Secretary to undertake a study on the use by tax-exempt organizations of applicable insurance contracts for the purpose of sharing the benefits of the organization's insurable interest in insured individuals under such contracts with investors, and whether such activities are consistent with the tax-exempt status of the organizations. The study may, for example, address whether certain such arrangements are or may be used to improperly shelter income from tax, and whether they should be listed transactions within the meaning of Treasury Regulation section 1.6011-4(b)(2). No later than 30 months after the date of enactment, the Treasury Secretary is required to report on the study to the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives.

Effective Date

The reporting provision is effective for acquisitions of contracts after the date of enactment. The study provision is effective on the date of enactment.

2. Increase the amounts of excise taxes imposed relating to public charities, social welfare organizations, and private foundations (secs. 4941, 4942, 4943, 4944, 4945, and 4958 of the Code)

Present Law

Public charities and social welfare organizations

The Code imposes excise taxes on excess benefit transactions between disqualified persons (as defined in section 4958(f)) and charitable organizations (other than private

foundations) or social welfare organizations (as described in section 501(c)(4)).[326] An excess benefit transaction generally is a transaction in which an economic benefit is provided by a charitable or social welfare organization directly or indirectly to or for the use of a disqualified person, if the value of the economic benefit provided exceeds the value of the consideration (including the performance of services) received for providing such benefit.

The excess benefit tax is imposed on the disqualified person and, in certain cases, on the organization manager, but is not imposed on the exempt organization. An initial tax of 25 percent of the excess benefit amount is imposed on the disqualified person that receives the excess benefit. An additional tax on the disqualified person of 200 percent of the excess benefit applies if the violation is not corrected. A tax of 10 percent of the excess benefit (not to exceed $10,000 with respect to any excess benefit transaction) is imposed on an organization manager that knowingly participated in the excess benefit transaction, if the manager's participation was willful and not due to reasonable cause, and if the initial tax was imposed on the disqualified person.[327] If more than one person is liable for the tax on disqualified persons or on management, all such persons are jointly and severally liable for the tax.[328]

Private foundations

Self-dealing by private foundations

Excise taxes are imposed on acts of self-dealing between a disqualified person (as defined in section 4946) and a private foundation.[329] In general, self-dealing transactions are any direct or indirect: (1) sale or exchange, or leasing, of property between a private foundation and a disqualified person; (2) lending of money or other extension of credit between a private foundation and a disqualified person; (3) the furnishing of goods, services, or facilities between a private foundation and a disqualified person; (4) the payment of compensation (or payment or reimbursement of expenses) by a private foundation to a disqualified person; (5) the transfer to, or use by or for the benefit of, a disqualified person of the income or assets of the private foundation; and (6) certain payments of money or property to a government official.[330] Certain exceptions apply.[331]

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[326] Sec. 4958. The excess benefit transaction tax commonly is referred to as "intermediate sanctions," because it imposes penalties generally considered to be less punitive than revocation of the organization's exempt status.

[327] Sec. 4958(d)(2). Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

[328] Sec. 4958(d)(1).

[329] Sec. 4941.

[330] Sec. 4941(d)(1).

[331] See sec. 4941(d)(2).

An initial tax of five percent of the amount involved with respect to an act of self-dealing is imposed on any disqualified person (other than a foundation manager acting only as such) who participates in the act of self-dealing. If such a tax is imposed, a 2.5-percent tax of the amount involved is imposed on a foundation manager who participated in the act of self-dealing knowing it was such an act (and such participation was not willful and was due to reasonable cause) up to $10,000 per act. Such initial taxes may not be abated.[332] Such initial taxes are imposed for each year in the taxable period, which begins on the date the act of self-dealing occurs and ends on the earliest of the date of mailing of a notice of deficiency for the tax, the date on which the tax is assessed, or the date on which correction of the act of self-dealing is completed. A government official (as defined in section 4946(c)) is subject to such initial tax only if the official participates in the act of self-dealing knowing it is such an act. If the act of self-dealing is not corrected, a tax of 200 percent of the amount involved is imposed on the disqualified person and a tax of 50 percent of the amount involved (up to $10,000 per act) is imposed on a foundation manager who refused to agree to correcting the act of self-dealing. Such additional taxes are subject to abatement.[333]

Tax on failure to distribute income

Private nonoperating foundations are required to pay out a minimum amount each year as qualifying distributions. In general, a qualifying distribution is an amount paid to accomplish one or more of the organization's exempt purposes, including reasonable and necessary administrative expenses.[334] Failure to pay out the minimum results in an initial excise tax on the foundation of 15 percent of the undistributed amount. An additional tax of 100 percent of the undistributed amount applies if an initial tax is imposed and the required distributions have not been made by the end of the applicable taxable period.[335] A foundation may include as a qualifying distribution the salaries, occupancy expenses, travel costs, and other reasonable and necessary administrative expenses that the foundation incurs in operating a grant program. A qualifying distribution also includes any amount paid to acquire an asset used (or held for use) directly in carrying out one or more of the organization's exempt purposes and certain amounts set-aside for exempt purposes.[336] Private operating foundations are not subject to the payout requirements.

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[332] Sec. 4962(b).

[333] Sec. 4961.

[334] Sec. 4942(g)(1)(A).

[335] Sec. 4942(a) and (b). Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

[336] Sec. 4942(g)(1)(B) and 4942(g)(2). In general, an organization is permitted to adjust the distributable amount in those cases where distributions during the five preceding years have exceeded the payout requirements. Sec. 4942(i).

Tax on excess business holdings

Private foundations are subject to tax on excess business holdings.[337] In general, a private foundation is permitted to hold 20 percent of the voting stock in a corporation, reduced by the amount of voting stock held by all disqualified persons (as defined in section 4946). If it is established that no disqualified person has effective control of the corporation, a private foundation and disqualified persons together may own up to 35 percent of the voting stock of a corporation. A private foundation shall not be treated as having excess business holdings in any corporation if it owns (together with certain other related private foundations) not more than two percent of the voting stock and not more than two percent in value of all outstanding shares of all classes of stock in that corporation. Similar rules apply with respect to holdings in a partnership ("profits interest" is substituted for "voting stock" and "capital interest" for "nonvoting stock") and to other unincorporated enterprises (by substituting "beneficial interest" for "voting stock"). Private foundations are not permitted to have holdings in a proprietorship. Foundations generally have a five-year period to dispose of excess business holdings (acquired other than by purchase) without being subject to tax.[338] This five-year period may be extended an additional five years in limited circumstances.[339] The excess business holdings rules do not apply to holdings in a functionally related business or to holdings in a trade or business at least 95 percent of the gross income of which is derived from passive sources.[340]

The initial tax is equal to five percent of the value of the excess business holdings held during the foundation's applicable taxable year. An additional tax is imposed if an initial tax is imposed and at the close of the applicable taxable period, the foundation continues to hold excess business holdings. The amount of the additional tax is equal to 200 percent of such holdings.

Tax on jeopardizing investments

Private foundations and foundation managers are subject to tax on investments that jeopardize the foundation's charitable purpose.[341] In general, an initial tax of five percent of the amount of the investment applies to the foundation and to foundation managers who participated in the making of the investment knowing that it jeopardized the carrying out of the foundation's exempt purposes. The initial tax on foundation managers may not exceed $5,000 per investment. If the investment is not removed from jeopardy (e.g., sold or otherwise disposed of), an additional tax of 25 percent of the amount of the investment is imposed on the foundation and five percent of the amount of the investment on a foundation manager who refused to agree to removing the investment from jeopardy. The additional tax on foundation managers may not exceed $10,000 per investment. An investment, the primary purpose of which is to accomplish a

[337] Sec. 4943. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

[338] Sec. 4943(c)(6).

[339] Sec. 4943(c)(7).

[340] Sec. 4943(d)(3).

[341] Sec. 4944. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

charitable purpose and no significant purpose of which is the production of income or the appreciation of property, is not considered a jeopardizing investment.[342]

Tax on taxable expenditures

Certain expenditures of private foundations are subject to tax.[343] In general, taxable expenditures are expenses: (1) for lobbying; (2) to influence the outcome of a public election or carry on a voter registration drive (unless certain requirements are met); (3) as a grant to an individual for travel, study, or similar purposes unless made pursuant to procedures approved by the Secretary; (4) as a grant to an organization that is not a public charity or exempt operating foundation unless the foundation exercises expenditure responsibility[344] with respect to the grant; or (5) for any non-charitable purpose. For each taxable expenditure, a tax is imposed on the foundation of 10 percent of the amount of the expenditure, and an additional tax of 100 percent is imposed on the foundation if the expenditure is not corrected. A tax of 2.5 percent of the expenditure (up to $5,000) also is imposed on a foundation manager who agrees to making a taxable expenditure knowing that it is a taxable expenditure. An additional tax of 50 percent of the amount of the expenditure (up to $10,000) is imposed on a foundation manager who refuses to agree to correction of such expenditure.

Explanation of Provision

Self-dealing and excess benefit transaction initial taxes and dollar limitations

For acts of self-dealing by a private foundation to a disqualified person, the provision increases the initial tax on the self-dealer from five percent of the amount involved to 10 percent of the amount involved. The provision increases the initial tax on foundation managers from 2.5 percent of the amount involved to five percent of the amount involved and increases the dollar limitation on the amount of the initial and additional taxes on foundation managers per act of self-dealing from $10,000 per act to $20,000 per act. Similarly, the provision doubles the dollar limitation on organization managers of public charities and social welfare organizations for participation in excess benefit transactions from $10,000 per transaction to $20,000 per transaction.

Failure to distribute income, excess business holdings, jeopardizing investments, and taxable expenditures

The provision doubles the amounts of the initial taxes and the dollar limitations on foundation managers with respect to the private foundation excise taxes on the failure to distribute income, excess business holdings, jeopardizing investments, and taxable expenditures.

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[342] Sec. 4944(c).

[343] Sec. 4945. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

[344] In general, expenditure responsibility requires that a foundation make all reasonable efforts and establish reasonable procedures to ensure that the grant is spent solely for the purpose for which it was made, to obtain reports from the grantee on the expenditure of the grant, and to make reports to the Secretary regarding such expenditures. Sec. 4945(h).

Specifically, for the failure to distribute income, the initial tax on the foundation is increased from 15 percent of the undistributed amount to 30 percent of the undistributed amount.

For excess business holdings, the initial tax on excess business holdings is increased from five percent of the value of such holdings to 10 percent of such value.

For jeopardizing investments, the initial tax of five percent of the amount of the investment that is imposed on the foundation and on foundation managers is increased to 10 percent of the amount of the investment. The dollar limitation on the initial tax on foundation managers of $5,000 per investment is increased to $10,000 and the dollar limitation on the additional tax on foundation managers of $10,000 per investment is increased to $20,000.

For taxable expenditures, the initial tax on the foundation is increased from 10 percent of the amount of the expenditure to 20 percent, the initial tax on the foundation manager is increased from 2.5 percent of the amount of the expenditure to five percent, the dollar limitation on the initial tax on foundation managers is increased from $5,000 to $10,000, and the dollar limitation on the additional tax on foundation managers is increased from $10,000 to $20,000.

Effective Date

The provision is effective for taxable years beginning after the date of enactment.

3. Reform rules for charitable contributions of easements in registered historic districts and take account of rehabilitation credit in easement donations (sec. 170 of the Code)

Present Law

In general

Present law provides special rules that apply to charitable deductions of qualified conservation contributions, which include conservation easements and façade easements.[345] Qualified conservation contributions are not subject to the "partial interest" rule, which generally bars deductions for charitable contributions of partial interests in property.[346] Accordingly, qualified conservation contributions are contributions of partial interests that are eligible for a fair market value charitable deduction.

A qualified conservation contribution is a contribution of a qualified real property interest to a qualified organization exclusively for conservation purposes. A qualified real property interest is defined as: (1) the entire interest of the donor other than a qualified mineral interest; (2) a remainder interest; or (3) a restriction (granted in perpetuity) on the use that may be made

[345] Sec. 170(h).

[346] Sec. 170(f)(3).

of the real property.[347] Qualified organizations include certain governmental units, public charities that meet certain public support tests, and certain supporting organizations.

Conservation purposes include: (1) the preservation of land areas for outdoor recreation by, or for the education of, the general public; (2) the protection of a relatively natural habitat of fish, wildlife, or plants, or similar ecosystem; (3) the preservation of open space (including farmland and forest land) where such preservation will yield a significant public benefit and is either for the scenic enjoyment of the general public or pursuant to a clearly delineated Federal, State, or local governmental conservation policy; and (4) the preservation of an historically important land area or a certified historic structure.[348]

In general, no deduction is available if the property may be put to a use that is inconsistent with the conservation purpose of the gift.[349] A contribution is not deductible if it accomplishes a permitted conservation purpose while also destroying other significant conservation interests.[350]

Taxpayers are required to obtain a qualified appraisal for donated property with a value of $5,000 or more, and to attach an appraisal summary to the tax return.[351] Under Treasury regulations, a qualified appraisal means an appraisal document that, among other things: (1) relates to an appraisal that is made not earlier than 60 days prior to the date of contribution of the appraised property and not later than the due date (including extensions) of the return on which a deduction is first claimed under section 170;[352] (2) is prepared, signed, and dated by a qualified appraiser; (3) includes (a) a description of the property appraised; (b) the fair market value of such property on the date of contribution and the specific basis for the valuation; (c) a statement that such appraisal was prepared for income tax purposes; (d) the qualifications of the qualified appraiser; and (e) the signature and taxpayer identification number of such appraiser; and (4) does not involve an appraisal fee that violates certain prescribed rules.[353]

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[347] Charitable contributions of interests that constitute the taxpayer's entire interest in the property are not regarded as qualified real property interests within the meaning of section 170(h), but instead are subject to the general rules applicable to charitable contributions of entire interests of the taxpayer (i.e., generally are deductible at fair market value, without regard to satisfaction of the requirements of section 170(h)).

[348] Sec. 170(h)(4)(A).

[349] Treas. Reg. sec. 1.170A-14(e)(2).

[350] Treas. Reg. sec. 1.170A-14(e)(2).

[351] Sec. 170(f)(11)(C).

[352] In the case of a deduction first claimed or reported on an amended return, the deadline is the date on which the amended return is filed.

[353] Treas. Reg. sec. 1.170A-13(c)(3).

Valuation

The value of a conservation restriction granted in perpetuity generally is determined under the "before and after approach." Such approach provides that the fair market value of the restriction is equal to the difference (if any) between the fair market value of the property the restriction encumbers before the restriction is granted and the fair market value of the encumbered property after the restriction is granted.[354]

If the granting of a perpetual restriction has the effect of increasing the value of any other property owned by the donor or a related person, the amount of the charitable deduction for the conservation contribution is to be reduced by the amount of the increase in the value of the other property.[355] In addition, the donor is to reduce the amount of the charitable deduction by the amount of financial or economic benefits that the donor or a related person receives or can reasonably be expected to receive as a result of the contribution.[356] If such benefits are greater than those that will inure to the general public from the transfer, no deduction is allowed.[357] In those instances where the grant of a conservation restriction has no material effect on the value of the property, or serves to enhance, rather than reduce, the value of the property, no deduction is allowed.[358]

Preservation of a certified historic structure

A certified historic structure means any building, structure, or land which is (i) listed in the National Register, or (ii) located in a registered historic district (as defined in section 47(c)(3)(B)) and is certified by the Secretary of the Interior to the Secretary of the Treasury as being of historic significance to the district.[359] For this purpose, a structure means any structure, whether or not it is depreciable, and, accordingly, easements on private residences may qualify.[360] If restrictions to preserve a building or land area within a registered historic district permit future development on the site, a deduction will be allowed only if the terms of the restrictions require that such development conform with appropriate local, State, or Federal standards for construction or rehabilitation within the district.[361]

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[354] Treas. Reg. sec. 1.170A-14(h)(3).

[355] Treas. Reg. sec. 1.170A-14(h)(3)(i).

[356] *Id*.

[357] *Id*.

[358] Treas. Reg. sec. 1.170A-14(h)(3)(ii).

[359] Sec. 170(h)(4)(B).

[360] Treas. Reg. sec. 1.170A-14(d)(5)(iii).

[361] Treas. Reg. sec. 1.170A-14(d)(5)(i).

The IRS and the courts have held that a facade easement may constitute a qualifying conservation contribution.[362] In general, a facade easement is a restriction the purpose of which is to preserve certain architectural, historic, and cultural features of the facade, or front, of a building. The terms of a facade easement might permit the property owner to make alterations to the facade of the structure if the owner obtains consent from the qualified organization that holds the easement.

Rehabilitation credit

In general, present law allows as part of the general business credit an investment tax credit.[363] The amount of the investment tax credit includes the amount of a rehabilitation credit.[364] The rehabilitation credit for any taxable year is the sum of ten percent of the qualified rehabilitation expenditures with respect to any qualified rehabilitated building other than a certified historic structure and 20 percent of the qualified rehabilitation expenditures with respect to any certified historic structure.[365] In general, a qualified rehabilitated building is a depreciable building (and its structural components) if the building has been substantially rehabilitated, was placed in service before the beginning of the rehabilitation, and (except for a certified historic structure) in the rehabilitation process a certain percentage of the existing internal and external walls and internal structural framework are retained in place as internal and external walls and internal structural framework. A qualified rehabilitation expenditure is, in general, an amount properly chargeable to a capital account (i) for depreciable property that is nonresidential real property, residential rental property, real property that has a class life of more than 12.5 years, or an addition or improvement to any such property and (ii) in connection with the rehabilitation of a qualified rehabilitation building.

Explanation of Provision

Easements in registered historic districts

The provision revises the rules for qualified conservation contributions with respect to property for which a charitable deduction is allowable under section 170(h)(4)(B)(ii) by reason of a property's location in a registered historic district. Under the provision, a charitable deduction is not allowable with respect to a structure or land area located in such a district (by reason of the structure or land area's location in such a district). A charitable deduction is

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[362] *Hillborn v. Commissioner*, 85 T.C. 677 (1985) (holding the fair market value of a facade donation generally is determined by applying the "before and after" valuation approach); *Richmond v. U.S.*, 699 F. Supp. 578 (E.D. La. 1988); Priv. Ltr. Rul. 199933029 (May 24, 1999) (ruling that a preservation and conservation easement relating to the facade and certain interior portions of a fraternity house was a qualified conservation contribution).

[363] Sec. 38(b)(1).

[364] Sec. 46.

[365] Sec. 47(a).

allowable with respect to buildings (as is the case under present law) but the qualified real property interest that relates to the exterior of the building must preserve the entire exterior of the building, including the space above the building, the sides, the rear, and the front of the building. In addition, such qualified real property interest must provide that no portion of the exterior of the building may be changed in a manner inconsistent with the historical character of such exterior.

For any contribution relating to a registered historic district made after the date of enactment of the provision, taxpayers must include with the return for the taxable year of the contribution a qualified appraisal of the qualified real property interest (irrespective of the claimed value of such interest) and attach the appraisal with the taxpayer's return, photographs of the entire exterior of the building,[366] and descriptions of all current restrictions on development of the building, including, for example, zoning laws, ordinances, neighborhood association rules, restrictive covenants, and other similar restrictions. Failure to obtain and attach an appraisal or to include the required information results in disallowance of the deduction. In addition, the donor and the donee must enter into a written agreement certifying, under penalty of perjury, that the donee is a qualified organization, with a purpose of environmental protection, land conservation, open space preservation, or historic preservation, and that the donee has the resources to manage and enforce the restriction and a commitment to do so.

Taxpayers claiming a deduction for a qualified conservation contribution with respect to the exterior of a building located in a registered historic district in excess of $10,000 must pay a $500 fee to the Internal Revenue Service or the deduction is not allowed. Amounts paid are required to be dedicated to Internal Revenue Service enforcement of qualified conservation contributions.

Reduction of deduction to take account of rehabilitation credit

The provision provides that in the case of any qualified conservation contribution, the amount of the deduction is reduced by an amount that bears the same ratio to the fair market value of the contribution as the sum of the rehabilitation credits under section 47 for the preceding five taxable years with respect to a building that is part of the contribution bears to the fair market value of the building on the date of the contribution. For example, if a taxpayer makes a qualified conservation contribution with respect to a building, and such taxpayer has claimed a rehabilitation credit with respect to such building in any of the five taxable years preceding the year in which the contribution is claimed, the taxpayer must reduce the amount of the contribution. If the aggregate amount of credits claimed by the taxpayer within such five year period is $100,000, and the fair market value of the building with respect to which the contribution is made is $1,000,000, the taxpayer must reduce the amount of the deduction by 10 percent (or 100,000 over 1,000,000).

[366] Photographs of the entire exterior of the building are required to the extent practicable. For example, if the building is a skyscraper, aerial photographs of the roof would not be required, but photographs sufficient to establish the existing exterior still must be submitted.

Effective Date

The provisions relating to deductions for contributions relating to structures and land areas and to the rehabilitation credit are effective for contributions made after the date of enactment. The provision relating to a filing fee is effective for contributions made 180 days after the date of enactment. The rest of the provision is effective for contributions made after July 25, 2006.

4. Reform rules relating to charitable contributions of taxidermy (sec. 170 of the Code)

Present Law

In computing taxable income, a taxpayer who itemizes deductions generally is allowed to deduct the amount of cash and the fair market value of property contributed to an organization described in section 501(c)(3) or to a Federal, State, or local governmental entity.[367] The amount of the deduction allowable for a taxable year with respect to a charitable contribution of property may be reduced or limited depending on the type of property contributed, the type of charitable organization to which the property is contributed, and the income of the taxpayer.[368] In general, more generous charitable contribution deduction rules apply to gifts made to public charities than to gifts made to private foundations. Within certain limitations, donors also are entitled to deduct their contributions to section 501(c)(3) organizations for Federal estate and gift tax purposes. By contrast, contributions to nongovernmental, non-charitable tax-exempt organizations generally are not deductible by the donor,[369] though such organizations are eligible for the exemption from Federal income tax with respect to such donations.

The amount of the deduction for charitable contributions of capital gain property generally equals the fair market value of the contributed property on the date of the contribution. Capital gain property means any capital asset, or property used in the taxpayer's trade or business, the sale of which at its fair market value, at the time of contribution, would have resulted in gain that would have been long-term capital gain. Contributions of capital gain property are subject to different percentage limitations (i.e., limitations based on the donor's income) than other contributions of property.

For certain contributions of property, the deductible amount is reduced from the fair market value of the contributed property by the amount of any gain, generally resulting in a

[367] The deduction also is allowed for purposes of calculating alternative minimum taxable income.

[368] Secs. 170(b) and (e).

[369] Exceptions to the general rule of non-deductibility include certain gifts made to a veterans' organization or to a domestic fraternal society. In addition, contributions to certain nonprofit cemetery companies are deductible for Federal income tax purposes, but generally are not deductible for Federal estate and gift tax purposes. Secs. 170(c)(3), 170(c)(4), 170(c)(5), 2055(a)(3), 2055(a)(4), 2106(a)(2)(A)(iii), 2522(a)(3), and 2522(a)(4).

deduction equal to the taxpayer's basis. This rule applies to contributions of: (1) ordinary income property, e.g., property that, at the time of contribution, would not have resulted in long-term capital gain if the property was sold by the taxpayer on the contribution date;[370] (2) tangible personal property that is used by the donee in a manner unrelated to the donee's exempt (or governmental) purpose; and (3) property to or for the use of a private foundation (other than a foundation defined in section 170(b)(1)(E)).

Charitable contributions of taxidermy are subject to the tangible personal property rule (number (2) above). For example, for appreciated taxidermy, if the property is used to further the donee's exempt purpose, the deduction is fair market value. But if the property is not used to further the donee's exempt purpose, the deduction is the donor's basis. If the taxidermy is depreciated, i.e., the value is less than the taxpayer's basis in such property, taxpayers generally deduct the fair market value of such contributions, regardless of whether the property is used for exempt or unrelated purposes by the donee.

Explanation of Provision

In general, the provision provides that the amount allowed as a deduction for charitable contributions of taxidermy property that is contributed by the person who prepared, stuffed, or mounted the property (or by any person who paid or incurred the cost of such preparation, stuffing, or mounting) is the lesser of the taxpayer's basis in the property or the fair market value of the property. Specifically, a taxpayer that makes such a charitable contribution of taxidermy property for a use related to the donee's exempt purpose or function must, in determining the amount of the deduction, reduce the fair market value of the property by the amount of gain that would have been long-term capital gain if the property contributed had been sold by the taxpayer at its fair market value (determined at the time of the contribution). Taxidermy property is defined as any work of art that is the reproduction or preservation of an animal in whole or in part, is prepared, stuffed or mounted for purposes of recreating one or more characteristics of such animal, and contains a part of the body of the dead animal.

For purposes of determining a taxpayer's basis in taxidermy property that is contributed by the person who prepared, stuffed, or mounted the property (or by any person who paid or incurred the cost of such preparation, stuffing, or mounting), the provision provides a special rule that the basis of such property may include only the cost of the preparing, stuffing, or mounting. For purposes of the special rule, it is intended that only the direct costs of the preparing, stuffing, or mounting may be included in basis. Indirect costs, not included in the basis, include the costs of transportation relating to any aspect of the taxidermy or the hunting of the animal, and the direct or indirect costs relating to the hunting or killing of an animal (including the cost of equipment and the costs of preparing an animal carcass for taxidermy).

[370] For certain contributions of inventory, C corporations may claim an enhanced deduction equal to the lesser of (1) basis plus one-half of the item's appreciation (i.e., basis plus one half of fair market value in excess of basis) or (2) two times basis. Sec. 170(e)(3), 170(e)(4), 170(e)(6).

Effective Date

The provision is effective for contributions made after July 25, 2006.

5. Recapture of tax benefit on property not used for an exempt use (new sec. 6720B of the Code)

Present Law

Deductibility of charitable contributions

In general

In computing taxable income, a taxpayer who itemizes deductions generally is allowed to deduct the amount of cash and the fair market value of property contributed to an organization described in section 501(c)(3) or to a Federal, State, or local governmental entity.[371] The amount of the deduction allowable for a taxable year with respect to a charitable contribution of property may be reduced or limited depending on the type of property contributed, the type of charitable organization to which the property is contributed, and the income of the taxpayer.[372] In general, more generous charitable contribution deduction rules apply to gifts made to public charities than to gifts made to private foundations. Within certain limitations, donors also are entitled to deduct their contributions to section 501(c)(3) organizations for Federal estate and gift tax purposes. By contrast, contributions to nongovernmental, non-charitable tax-exempt organizations generally are not deductible by the donor,[373] though such organizations are eligible for the exemption from Federal income tax with respect to such donations.

Contributions of property

The amount of the deduction for charitable contributions of capital gain property generally equals the fair market value of the contributed property on the date of the contribution. Capital gain property means any capital asset, or property used in the taxpayer's trade or business, the sale of which at its fair market value, at the time of contribution, would have resulted in gain that would have been long-term capital gain. Contributions of capital gain property are subject to different percentage limitations (i.e., limitations based on the donor's income) than other contributions of property.

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[371] The deduction also is allowed for purposes of calculating alternative minimum taxable income.

[372] Secs. 170(b) and (e).

[373] Exceptions to the general rule of non-deductibility include certain gifts made to a veterans' organization or to a domestic fraternal society. In addition, contributions to certain nonprofit cemetery companies are deductible for Federal income tax purposes, but generally are not deductible for Federal estate and gift tax purposes. Secs. 170(c)(3), 170(c)(4), 170(c)(5), 2055(a)(3), 2055(a)(4), 2106(a)(2)(A)(iii), 2522(a)(3), and 2522(a)(4).

For certain contributions of property, the deductible amount is reduced from the fair market value of the contributed property by the amount of any gain, generally resulting in a deduction equal to the taxpayer's basis. This rule applies to contributions of: (1) ordinary income property, e.g., property that, at the time of contribution, would not have resulted in long-term capital gain if the property was sold by the taxpayer on the contribution date;[374] (2) tangible personal property that is used by the donee in a manner unrelated to the donee's exempt (or governmental) purpose; and (3) property to or for the use of a private foundation (other than a foundation defined in section 170(b)(1)(E)).

Substantiation

No charitable deduction is allowed for any contribution of $250 or more unless the taxpayer substantiates the contribution by a contemporaneous written acknowledgement of the contribution by the donee organization.[375] Such acknowledgement must include the amount of cash and a description (but not value) of any property other than cash contributed, whether the donee provided any goods or services in consideration for the contribution (and a good faith estimate of the value of any such goods or services).

In general, if the total charitable deduction claimed for non-cash property is more than $500, the taxpayer must attach a completed Form 8283 (Noncash Charitable Contributions) to the taxpayer's return or the deduction is not allowed.[376] C corporations (other than personal service corporations and closely-held corporations) are required to file Form 8283 only if the deduction claimed is more than $5,000. Information required on the Form 8283 includes, among other things, a description of the property, the appraised fair market value (if an appraisal is required), the donor's basis in the property, how the donor acquired the property, a declaration by the appraiser regarding the appraiser's general qualifications, an acknowledgement by the donee that it is eligible to receive deductible contributions, and an indication by the donee whether the property is intended for an unrelated use.

Taxpayers are required to obtain a qualified appraisal for donated property with a value of more than $5,000, and to attach an appraisal summary to the tax return.[377] Under Treasury regulations, a qualified appraisal means an appraisal document that, among other things: (1) relates to an appraisal that is made not earlier than 60 days prior to the date of contribution of the appraised property and not later than the due date (including extensions) of the return on which a

[374] For certain contributions of inventory, C corporations may claim an enhanced deduction equal to the lesser of (1) basis plus one-half of the item's appreciation (i.e., basis plus one half of fair market value in excess of basis) or (2) two times basis. Sec. 170(e)(3), 170(e)(4), 170(e)(6).

[375] Sec. 170(f)(8).

[376] Sec. 170(f)(11).

[377] *Id.*

deduction is first claimed under section 170;[378] (2) is prepared, signed, and dated by a qualified appraiser; (3) includes (a) a description of the property appraised; (b) the fair market value of such property on the date of contribution and the specific basis for the valuation; (c) a statement that such appraisal was prepared for income tax purposes; (d) the qualifications of the qualified appraiser; and (e) the signature and taxpayer identification number of such appraiser; and (4) does not involve an appraisal fee that violates certain prescribed rules.[379] In the case of contributions of art valued at more than $20,000 and other contributions of more than $500,000, taxpayers are required to attach the appraisal to the tax return. Taxpayers may request a Statement of Value from the Internal Revenue Service in order to substantiate the value of art with an appraised value of $50,000 or more for income, estate, or gift tax purposes.[380] The fee for such a Statement is $2,500 for one, two, or three items or art plus $250 for each additional item.

If a donee organization sells, exchanges, or otherwise disposes of contributed property with a claimed value of more than $5,000 (other than publicly traded securities) within two years of the property's receipt, the donee is required to file a return (Form 8282) with the Secretary, and to furnish a copy of the return to the donor, showing the name, address, and taxpayer identification number of the donor, a description of the property, the date of the contribution, the amount received on the disposition, and the date of the disposition.[381]

Explanation of Provision

In general, the provision recovers the tax benefit for charitable contributions of tangible personal property with respect to which a fair market value deduction is claimed and which is not used for exempt purposes. The provision applies to appreciated tangible personal property that is identified by the donee organization, for example on the Form 8283, as for a use related to the purpose or function constituting the donee's basis for tax exemption, and for which a deduction of more than $5,000 is claimed ("applicable property").[382]

Under the provision, if a donee organization disposes of applicable property within three years of the contribution of the property, the donor is subject to an adjustment of the tax benefit. If the disposition occurs in the tax year of the donor in which the contribution is made, the donor's deduction generally is basis and not fair market value.[383] If the disposition occurs in a

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[378] In the case of a deduction first claimed or reported on an amended return, the deadline is the date on which the amended return is filed.

[379] Treas. Reg. sec. 1.170A-13(c)(3). Sec. 170(f)(11)(E).

[380] Rev. Proc. 96-15, 1996-1 C.B. 627.

[381] Sec. 6050L(a)(1).

[382] Present law rules continue to apply to any contribution of exempt use property for which a deduction of $5,000 or less is claimed.

[383] The disposition proceeds are regarded as relevant to a determination of fair market value.

subsequent year, the donor must include as ordinary income for its taxable year in which the disposition occurs an amount equal to the excess (if any) of (i) the amount of the deduction previously claimed by the donor as a charitable contribution with respect to such property, over (ii) the donor's basis in such property at the time of the contribution.

There is no adjustment of the tax benefit if the donee organization makes a certification to the Secretary, by written statement signed under penalties of perjury by an officer of the organization. The statement must either (1) certify that the use of the property by the donee was related to the purpose or function constituting the basis for the donee's exemption, and describe how the property was used and how such use furthered such purpose or function; or (2) state the intended use of the property by the donee at the time of the contribution and certify that such use became impossible or infeasible to implement. The organization must furnish a copy of the certification to the donor (for example, as part of the Form 8282, a copy of which is supplied to the donor).

A penalty of $10,000 applies to a person that identifies applicable property as having a use that is related to a purpose or function constituting the basis for the donee's exemption knowing that it is not intended for such a use.[384]

Reporting of exempt use property contributions

The provision modifies the present-law information return requirements that apply upon the disposition of contributed property by a charitable organization (Form 8282, sec. 6050L). The return requirement is extended to dispositions made within three years after receipt (from two years). The donee organization also must provide, in addition to the information already required to be provided on the return, a description of the donee's use of the property, a statement of whether use of the property was related to the purpose or function constituting the basis for the donee's exemption, and, if applicable, a certification of any such use (described above).

Effective Date

The provision is effective for contributions made and returns filed after September 1, 2006, and with respect to the penalty, for identifications made after the date of enactment.

[384] Other present-law penalties also may apply, such as the penalty for aiding and abetting the understatement of tax liability under section 6701.

6. Limit charitable deduction for contributions of clothing and household items (sec. 170 of the Code)

Present Law

In general

In computing taxable income, a taxpayer who itemizes deductions generally is allowed to deduct the amount of cash and the fair market value of property contributed to an organization described in section 501(c)(3) or to a Federal, State, or local governmental entity.[385] The amount of the deduction allowable for a taxable year with respect to a charitable contribution of property may be reduced or limited depending on the type of property contributed, the type of charitable organization to which the property is contributed, and the income of the taxpayer.[386] In general, more generous charitable contribution deduction rules apply to gifts made to public charities than to gifts made to private foundations. Within certain limitations, donors also are entitled to deduct their contributions to section 501(c)(3) organizations for Federal estate and gift tax purposes. By contrast, contributions to nongovernmental, non-charitable tax-exempt organizations generally are not deductible by the donor,[387] though such organizations are eligible for the exemption from Federal income tax with respect to such donations.

Contributions of property

The amount of the deduction for charitable contributions of capital gain property generally equals the fair market value of the contributed property on the date of the contribution. Capital gain property means any capital asset or property used in the taxpayer's trade or business the sale of which at its fair market value, at the time of contribution, would have resulted in gain that would have been long-term capital gain. Contributions of capital gain property are subject to different percentage limitations than other contributions of property.

For certain contributions of property, the deductible amount is reduced from the fair market value of the contributed property by the amount of any gain, generally resulting in a deduction equal to the taxpayer's basis. This rule applies to contributions of: (1) ordinary income property, e.g., property that, at the time of contribution, would not have resulted in long-

[385] The deduction also is allowed for purposes of calculating alternative minimum taxable income.

[386] Secs. 170(b) and (e).

[387] Exceptions to the general rule of non-deductibility include certain gifts made to a veterans' organization or to a domestic fraternal society. In addition, contributions to certain nonprofit cemetery companies are deductible for Federal income tax purposes, but generally are not deductible for Federal estate and gift tax purposes. Secs. 170(c)(3), 170(c)(4), 170(c)(5), 2055(a)(3), 2055(a)(4), 2106(a)(2)(A)(iii), 2522(a)(3), and 2522(a)(4).

term capital gain if the property was sold by the taxpayer on the contribution date;[388] (2) tangible personal property that is used by the donee in a manner unrelated to the donee's exempt (or governmental) purpose; and (3) property to or for the use of a private foundation (other than a foundation defined in section 170(b)(1)(E)).

Charitable contributions of clothing and household items are subject to the tangible personal property rule (number (2) above). If such contributed property is appreciated property in the hands of the taxpayer, and is not used to further the donee's exempt purpose, the deduction is basis. In general, however, the value of clothing and household items is less than the taxpayer's basis in such property, with the result that taxpayers generally deduct the fair market value of such contributions, regardless of whether the property is used for exempt or unrelated purposes by the donee.

Substantiation

A donor who claims a deduction for a charitable contribution must maintain reliable written records regarding the contribution, regardless of the value or amount of such contribution. For a contribution of money, the donor generally must maintain one of the following: (1) a cancelled check; (2) a receipt (or a letter or other written communication) from the donee showing the name of the donee organization, the date of the contribution, and the amount of the contribution; or (3) in the absence of a cancelled check or a receipt, other reliable written records showing the name of the donee, the date of the contribution, and the amount of the contribution. For a contribution of property other than money, the donor generally must maintain a receipt from the donee organization showing the name of the donee, the date and location of the contribution, and a detailed description (but not the value) of the property.[389] A donor of property other than money need not obtain a receipt, however, if circumstances make obtaining a receipt impracticable. Under such circumstances, the donor must maintain reliable written records regarding the contribution. The required content of such a record varies depending upon factors such as the type and value of property contributed.[390]

In addition to the foregoing recordkeeping requirements, substantiation requirements apply in the case of charitable contributions with a value of $250 or more. No charitable deduction is allowed for any contribution of $250 or more unless the taxpayer substantiates the contribution by a contemporaneous written acknowledgement of the contribution by the donee organization. Such acknowledgement must include the amount of cash and a description (but not value) of any property other than cash contributed, whether the donee provided any goods or services in consideration for the contribution, and a good faith estimate of the value of any such

[388] For certain contributions of inventory and other property, C corporations may claim an enhanced deduction equal to the lesser of (1) basis plus one-half of the item's appreciation (i.e., basis plus one half of fair market value in excess of basis) or (2) two times basis. Sec. 170(e)(3), 170(e)(4), 170(e)(6).

[389] Treas. Reg. sec. 1.170A-13(a).

[390] Treas. Reg. sec. 1.170A-13(b).

goods or services.[391] In general, if the total charitable deduction claimed for non-cash property is more than $500, the taxpayer must attach a completed Form 8283 (Noncash Charitable Contributions) to the taxpayer's return or the deduction is not allowed.[392] In general, taxpayers are required to obtain a qualified appraisal for donated property with a value of more than $5,000, and to attach an appraisal summary to the tax return.

Explanation of Provision

The provision provides that no deduction is allowed for a charitable contribution of clothing or household items unless the clothing or household item is in good used condition or better. The Secretary is authorized to deny by regulation a deduction for any contribution of clothing or a household item that has minimal monetary value, such as used socks and used undergarments. It is noted that the President's Advisory Panel on Federal Tax Reform and the staff of the Joint Committee on Taxation both have concluded that the fair market value-based deduction for contributions of clothing and household items present difficult tax administration issues, as determining the correct value of an item is a fact intensive, and thus also a resource intensive matter.[393] As recently reported by the IRS, the amount claimed as deductions in tax year 2003 for clothing and household items was more than $9 billion.[394] It is expected that the Secretary, in consultation with affected charities, will exercise assiduously the authority to disallow a deduction for some items of low value, consistent with the goals of improving tax administration and ensure that donated clothing and households items are of meaningful use to charitable organizations.

Under the provision, a deduction may be allowed for a charitable contribution of an item of clothing or a household item not in good used condition or better if the amount claimed for the item is more than $500 and the taxpayer includes with the taxpayer's return a qualified appraisal with respect to the property. Household items include furniture, furnishings, electronics, appliances, linens, and other similar items. Food, paintings, antiques, and other objects of art, jewelry and gems, and collections are excluded from the provision.

Effective Date

The provision is effective for contributions made after the date of enactment.

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[391] Sec. 170(f)(8).

[392] Sec. 170(f)(11).

[393] See *The President's Advisory Panel on Federal Tax Reform*, 78 (2005); Joint Committee on Taxation, *Options to Improve Tax Compliance and Reform Tax Expenditures* 288 (JCS-02-05), January 27, 2005.

[394] Internal Revenue Service, Statistics of Income Division, *Individual Noncash Charitable Contributions, 2003*, Figure A (Spring 2006).

7. Modify recordkeeping and substantiation requirements for certain charitable contributions (sec. 170 of the Code)

Present Law

A donor who claims a deduction for a charitable contribution must maintain reliable written records regarding the contribution, regardless of the value or amount of such contribution. For a contribution of money, the donor generally must maintain one of the following: (1) a cancelled check; (2) a receipt (or a letter or other written communication) from the donee showing the name of the donee organization, the date of the contribution, and the amount of the contribution; or (3) in the absence of a cancelled check or a receipt, other reliable written records showing the name of the donee, the date of the contribution, and the amount of the contribution. For a contribution of property other than money, the donor generally must maintain a receipt from the donee organization showing the name of the donee, the date and location of the contribution, and a detailed description (but not the value) of the property.[395] A donor of property other than money need not obtain a receipt, however, if circumstances make obtaining a receipt impracticable. Under such circumstances, the donor must maintain reliable written records regarding the contribution. The required content of such a record varies depending upon factors such as the type and value of property contributed.[396]

In addition to the foregoing recordkeeping requirements, substantiation requirements apply in the case of charitable contributions with a value of $250 or more. No charitable deduction is allowed for any contribution of $250 or more unless the taxpayer substantiates the contribution by a contemporaneous written acknowledgement of the contribution by the donee organization. Such acknowledgement must include the amount of cash and a description (but not value) of any property other than cash contributed, whether the donee provided any goods or services in consideration for the contribution, and a good faith estimate of the value of any such goods or services.[397] In general, if the total charitable deduction claimed for non-cash property is more than $500, the taxpayer must attach a completed Form 8283 (Noncash Charitable Contributions) to the taxpayer's return or the deduction is not allowed.[398] In general, taxpayers are required to obtain a qualified appraisal for donated property with a value of more than $5,000, and to attach an appraisal summary to the tax return.

Explanation of Provision

The provision more closely aligns the substantiation rules for money to the substantiation rules for property by providing that in the case of a charitable contribution of money, regardless of the amount, applicable recordkeeping requirements are satisfied only if the donor maintains as

[395] Treas. Reg. sec. 1.170A-13(a).

[396] Treas. Reg. sec. 1.170A-13(b).

[397] Sec. 170(f)(8).

[398] Sec. 170(f)(11).

a record of the contribution a bank record or a written communication from the donee showing the name of the donee organization, the date of the contribution, and the amount of the contribution. The recordkeeping requirements may not be satisfied by maintaining other written records. It is noted that currently, taxpayers are required to have a contemporaneous record of contributions of money, but that many taxpayers may not be aware of the requirement and do not keep a log of such contributions. The provision is intended to provide greater certainty, both to taxpayers and to the Secretary, in determining what may be deducted as a charitable contribution.

Effective Date

The provision is effective for contributions made in taxable years beginning after the date of enactment.

8. Contributions of fractional interests in tangible personal property (secs. 170, 2055, and 2522 of the Code)

Present Law

In general, a charitable deduction is not allowable for a contribution of a partial interest in property, such as an income interest, a remainder interest, or a right to use property.[399] A gift of an undivided portion of a donor's entire interest in property generally is not treated as a nondeductible gift of a partial interest in property.[400] For this purpose, an undivided portion of a donor's entire interest in property must consist of a fraction or percentage of each and every substantial interest or right owned by the donor in such property and must extend over the entire term of the donor's interest in such property.[401] A gift generally is treated as a gift of an undivided portion of a donor's entire interest in property if the donee is given the right, as a tenant in common with the donor, to possession, dominion, and control of the property for a portion of each year appropriate to its interest in such property.[402]

A charitable contribution deduction generally is not allowable for a contribution of a future interest in tangible personal property.[403] For this purpose, a future interest is one "in which a donor purports to give tangible personal property to a charitable organization, but has an understanding, arrangement, agreement, etc., whether written or oral, with the charitable organization which has the effect of reserving to, or retaining in, such donor a right to the use, possession, or enjoyment of the property."[404] Treasury regulations provide that section

[399] Secs. 170(f)(3)(A) (income tax), 2055(e)(2) (estate tax), and 2522(c)(2) (gift tax).

[400] Sec. 170(f)(3)(B)(ii).

[401] Treas. Reg. sec. 1.170A-7(b)(1).

[402] Treas. Reg. sec. 1.170A-7(b)(1).

[403] Sec. 170(a)(3).

[404] Treas. Reg. sec. 1.170A-5(a)(4).

170(a)(3), which generally denies a deduction for a contribution of a future interest in tangible personal property, "[has] no application in respect of a transfer of an undivided present interest in property. For example, a contribution of an undivided one-quarter interest in a painting with respect to which the donee is entitled to possession during three months of each year shall be treated as made upon the receipt by the donee of a formally executed and acknowledged deed of gift. However, the period of initial possession by the donee may not be deferred in time for more than one year."[405]

Explanation of Provision

In general, under present law and the provision a donor may take a deduction for a charitable contribution of a fractional interest in tangible personal property (such as an artwork), provided the donor satisfies the requirements for deductibility (including the requirements concerning contributions of partial interests and future interests in property), and in subsequent years make additional charitable contributions of interests in the same property.[406] Under the provision, the value of a donor's charitable deduction for the initial contribution of a fractional interest in an item of tangible personal property (or collection of such items) shall be determined as under current law (e.g., based upon the fair market value of the artwork at the time of the contribution of the fractional interest and considering whether the use of the artwork will be related to the donee's exempt purposes). For purposes of determining the deductible amount of each additional contribution of an interest (whether or not a fractional interest) in the same item of property, the fair market value of the item is the lesser of: (1) the value used for purposes of determining the charitable deduction for the initial fractional contribution; or (2) the fair market value of the item at the time of the subsequent contribution. This portion of the provision applies for income, gift, and estate tax purposes.

The provision provides for recapture of the income tax charitable deduction and gift tax charitable deduction under certain circumstances. First, if a donor makes an initial fractional contribution, then fails to contribute all of the donor's remaining interest in such property to the same donee before the earlier of 10 years from the initial fractional contribution or the donor's death, then the donee's charitable income and gift tax deductions for all previous contributions of interests in the item shall be recaptured (plus interest). If the donee of the initial contribution is no longer in existence as of such time, the donor's remaining interest may be contributed to another organization described in section 170(c) (which describes organizations to which contributions that are deductible for income tax purposes may be made). Second, if the donee of a fractional interest in an item of tangible personal property fails to take substantial physical possession of the item during the period described above (the possession requirement) or fails to use the property for an exempt use during the period described above (the related-use requirement), then the donee's charitable income and gift tax deductions for all previous contributions of interests in the item shall be recaptured (plus interest). If, for example, an art museum described in section 501(c)(3) that is the donee of a fractional interest in a painting

[405] Treas. Reg. sec. 1.170A-5(a)(2).

[406] See, e.g., *Winokur v. Commissioner*, 90 T.C. 733 (1988).

includes the painting in an art exhibit sponsored by the museum, such use generally will be treated as satisfying the related-use requirement of the provision.

In any case in which there is a recapture of a deduction as described in the preceding paragraph, the provision also imposes an additional tax in an amount equal to 10 percent of the amount recaptured.

Under the provision, no income or gift tax charitable deduction is allowed for a contribution of a fractional interest in an item of tangible personal property unless immediately before such contribution all interests in the item are owned (1) by the donor or (2) by the donor and the donee organization. The Secretary is authorized to make exceptions to this rule in cases where all persons who hold an interest in the item make proportional contributions of undivided interests in their respective shares of such item to the donee organization. For example, if A owns an undivided 40 percent interest in a painting and B owns an undivided 60 percent interest in the same painting, the Secretary may provide that A may take a deduction for a charitable contribution of less than the entire interest held by A, provided that both A and B make proportional contributions of undivided fractional interests in their respective shares of the painting to the same donee organization (e.g., if A contributes 50 percent of A's interest and B contributes 50 percent of B's interest).

It is intended that a contribution occurring before the date of enactment not be treated as an initial fractional contribution for purposes of the provision. Instead, the first fractional contribution by a taxpayer after the date of enactment would be considered the initial fractional contribution under the provision, regardless of whether the taxpayer had made a contribution of a fractional interest in the same item of tangible personal property prior to the date of enactment.

Effective Date

The provision is applicable for contributions, bequests, and gifts made after the date of enactment.

9. Proposals relating to appraisers and substantial and gross overstatement of valuations of property (secs. 170, 6662, 6664, 6696 and new sec. 6695A of the Code)

Present Law

Taxpayer penalties

Present law imposes accuracy-related penalties on a taxpayer in cases involving a substantial valuation misstatement or gross valuation misstatement relating to an underpayment of income tax.[407] For this purpose, a substantial valuation misstatement generally means a value claimed that is at least twice (200 percent or more) the amount determined to be the correct value, and a gross valuation misstatement generally means a value claimed that is at least four times (400 percent or more) the amount determined to be the correct value.

[407] Sec. 6662(b)(3) and (h).

The penalty is 20 percent of the underpayment of tax resulting from a substantial valuation misstatement and rises to 40 percent for a gross valuation misstatement. No penalty is imposed unless the portion of the underpayment attributable to the valuation misstatement exceeds $5,000 ($10,000 in the case of a corporation other than an S corporation or a personal holding company). Under present law, no penalty is imposed with respect to any portion of the understatement attributable to any item if (1) the treatment of the item on the return is or was supported by substantial authority, or (2) facts relevant to the tax treatment of the item were adequately disclosed on the return or on a statement attached to the return and there is a reasonable basis for the tax treatment. Special rules apply to tax shelters.

Present law also imposes an accuracy-related penalty on substantial or gross estate or gift tax valuation understatements.[408] In general, there is a substantial estate or gift tax understatement if the value of any property claimed on any return is 50 percent or less of the amount determined to be the correct amount, and a gross estate or gift tax understatement if such value is 25 percent or less of the amount determined to be the correct amount.

In addition, the accuracy-related penalties do not apply if a taxpayer shows there was reasonable cause for an underpayment and the taxpayer acted in good faith.[409]

Penalty for aiding and abetting understatement of tax

A penalty is imposed on a person who: (1) aids or assists in or advises with respect to a tax return or other document; (2) knows (or has reason to believe) that such document will be used in connection with a material tax matter; and (3) knows that this would result in an understatement of tax of another person. In general, the amount of the penalty is $1,000. If the document relates to the tax return of a corporation, the amount of the penalty is $10,000.

Qualified appraisals

Present law requires a taxpayer to obtain a qualified appraisal for donated property with a value of more than $5,000, and to attach an appraisal summary to the tax return.[410] Treasury Regulations state that a qualified appraisal means an appraisal document that, among other things: (1) relates to an appraisal that is made not earlier than 60 days prior to the date of contribution of the appraised property and not later than the due date (including extensions) of the return on which a deduction is first claimed under section 170; (2) is prepared, signed, and dated by a qualified appraiser; (3) includes (a) a description of the property appraised; (b) the fair market value of such property on the date of contribution and the specific basis for the valuation; (c) a statement that such appraisal was prepared for income tax purposes; (d) the qualifications of

[408] Sec. 6662(g) and (h).

[409] Sec. 6664(c).

[410] Sec. 170(f)(11).

the qualified appraiser; and (e) the signature and taxpayer identification number of such appraiser; and (4) does not involve an appraisal fee that violates certain prescribed rules.[411]

Qualified appraisers

Treasury Regulations define a qualified appraiser as a person who holds himself or herself out to the public as an appraiser or performs appraisals on a regular basis, is qualified to make appraisals of the type of property being valued (as determined by the appraiser's background, experience, education and membership, if any, in professional appraisal associations), is independent, and understands that an intentionally false or fraudulent overstatement of the value of the appraised property may subject the appraiser to civil penalties.[412]

Appraiser oversight

The Secretary is authorized to regulate the practice of representatives of persons before the Department of the Treasury ("Department").[413] After notice and hearing, the Secretary is authorized to suspend or disbar from practice before the Department or the Internal Revenue Service ("IRS") a representative who is incompetent, who is disreputable, who violates the rules regulating practice before the Department or the IRS, or who (with intent to defraud) willfully and knowingly misleads or threatens the person being represented (or a person who may be represented).

The Secretary also is authorized to bar from appearing before the Department or the IRS, for the purpose of offering opinion evidence on the value of property or other assets, any individual against whom a civil penalty for aiding and abetting the understatement of tax has been assessed. Thus, an appraiser who aids or assists in the preparation or presentation of an appraisal will be subject to disciplinary action if the appraiser knows that the appraisal will be used in connection with the tax laws and will result in an understatement of the tax liability of another person. The Secretary has authority to provide that the appraisals of an appraiser who has been disciplined have no probative effect in any administrative proceeding before the Department or the IRS.

Explanation of Provision

Taxpayer penalties

The provision lowers the thresholds for imposing accuracy-related penalties on a taxpayer. Under the provision, a substantial valuation misstatement exists when the claimed value of any property is 150 percent or more of the amount determined to be the correct value. A

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[411] Treas. Reg. sec. 1.170A-13(c)(3).

[412] Treas. Reg. sec. 1.170A-13(c)(5)(i).

[413] 31 U.S.C. sec. 330.

gross valuation misstatement occurs when the claimed value of any property is 200 percent or more of the amount determined to be the correct value.

The provision tightens the thresholds for imposing accuracy-related penalties with respect to the estate or gift tax. Under the provision, a substantial estate or gift tax valuation misstatement exists when the claimed value of any property is 65 percent or less of the amount determined to be the correct value. A gross estate or gift tax valuation misstatement exists when the claimed value of any property is 40 percent or less of the amount determined to be the correct value.

Under the provision, the reasonable cause exception to the accuracy-related penalty does not apply in the case of gross valuation misstatements.

Appraiser oversight

Appraiser penalties

The provision establishes a civil penalty on any person who prepares an appraisal that is to be used to support a tax position if such appraisal results in a substantial or gross valuation misstatement. The penalty is equal to the greater of $1,000 or 10 percent of the understatement of tax resulting from a substantial or gross valuation misstatement, up to a maximum of 125 percent of the gross income derived from the appraisal. Under the provision, the penalty does not apply if the appraiser establishes that it was "more likely than not" that the appraisal was correct.

Disciplinary proceeding

The provision eliminates the requirement that the Secretary assess against an appraiser the civil penalty for aiding and abetting the understatement of tax before such appraiser may be subject to disciplinary action. Thus, the Secretary is authorized to discipline appraisers after notice and hearing. Disciplinary action may include, but is not limited to, suspending or barring an appraiser from: preparing or presenting appraisals on the value of property or other assets to the Department or the IRS; appearing before the Department or the IRS for the purpose of offering opinion evidence on the value of property or other assets; and providing that the appraisals of an appraiser who has been disciplined have no probative effect in any administrative proceeding before the Department or the IRS.

Qualified appraisers

The provision defines a qualified appraiser as an individual who (1) has earned an appraisal designation from a recognized professional appraiser organization or has otherwise met minimum education and experience requirements to be determined by the IRS in regulations; (2) regularly performs appraisals for which he or she receives compensation; (3) can demonstrate verifiable education and experience in valuing the type of property for which the appraisal is being performed; (4) has not been prohibited from practicing before the IRS by the Secretary at any time during the three years preceding the conduct of the appraisal; and (5) is not excluded from being a qualified appraiser under applicable Treasury regulations.

Qualified appraisals

The provision defines a qualified appraisal as an appraisal of property prepared by a qualified appraiser (as defined by the provision) in accordance with generally accepted appraisal standards and any regulations or other guidance prescribed by the Secretary.

Effective Date

The provision amending the accuracy-related penalty applies to returns filed after the date of enactment. The provision establishing a civil penalty that may be imposed on any person who prepares an appraisal that is to be used to support a tax position if such appraisal results in a substantial or gross valuation misstatement applies to appraisals prepared with respect to returns or submissions filed after the date of enactment. The provisions relating to appraiser oversight apply to appraisals prepared with respect to returns or submissions filed after the date of enactment. With respect to any contribution of a qualified real property interest which is a restriction with respect to the exterior of a building described in section 170(h)(4)(C)(ii) (currently designated section 170(h)(4)(B)(ii), relating to certain property located in a registered historic district and certified as being of historic significance to the district), and any appraisal with respect to such contribution, the provision generally applies to returns filed after July 25, 2006.

10. Establish additional exemption standards for credit counseling organizations (secs. 501 and 513 of the Code)

Present Law

Under present law, a credit counseling organization may be exempt as a charitable or educational organization described in section 501(c)(3), or as a social welfare organization described in section 501(c)(4). The IRS has issued two revenue rulings holding that certain credit counseling organizations are exempt as charitable or educational organizations or as social welfare organizations.

In Revenue Ruling 65-299,[414] an organization whose purpose was to assist families and individuals with financial problems, and help reduce the incidence of personal bankruptcy, was determined to be a social welfare organization described in section 501(c)(4). The organization counseled people in financial difficulties, advised applicants on payment of debts, and negotiated with creditors and set up debt repayment plans. The organization did not restrict its services to the poor, made no charge for counseling services, and made a nominal charge for certain services to cover postage and supplies. For financial support, the organization relied on voluntary contributions from local businesses, lending agencies, and labor unions.

[414] Rev. Rul. 65-299, 1965-2 C.B. 165.

In Revenue Ruling 69-441,[415] the IRS ruled an organization was a charitable or educational organization exempt under section 501(c)(3) by virtue of aiding low-income people who had financial problems and providing education to the public. The organization in that ruling had two functions: (1) educating the public on personal money management, such as budgeting, buying practices, and the sound use of consumer credit through the use of films, speakers, and publications; and (2) providing individual counseling to low-income individuals and families without charge. As part of its counseling activities, the organization established debt management plans for clients who required such services, at no charge to the clients.[416] The organization was supported by contributions primarily from creditors, and its board of directors was comprised of representatives from religious organizations, civic groups, labor unions, business groups, and educational institutions.

In 1976, the IRS denied exempt status to an organization, Consumer Credit Counseling Service of Alabama, whose activities were distinguishable from those in Revenue Ruling 69-441 in that (1) it did not restrict its services to the poor, and (2) it charged a nominal fee for its debt management plans.[417] The organization provided free information to the general public through the use of speakers, films, and publications on the subjects of budgeting, buying practices, and the use of consumer credit. It also provided counseling to debt-distressed individuals, not necessarily poor or low-income, and provided debt management plans at the cost of $10 per month, which was waived in cases of financial hardship. Its debt management activities were a relatively small part of its overall activities. The district court determined the organization qualified as charitable and educational within section 501(c)(3), finding the debt management plans to be an integral part of the agency's counseling function, and that its debt management activities were incidental to its principal functions, as only approximately 12 percent of the counselors' time was applied to such programs and the charge for the service was nominal. The court also considered the facts that the agency was publicly supported, and that it had a board dominated by members of the general public, as factors indicating a charitable operation.[418]

A recent estimate shows the number of credit counseling organizations increased from approximately 200 in 1990 to over 1,000 in 2002.[419] During the period from 1994 to late 2003,

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[415] Rev. Rul. 69-441, 1969-2 C.B. 115.

[416] Debt management plans are debt payment arrangements, including debt consolidation arrangements, entered into by a debtor and one or more of the debtor's creditors, generally structured to reduce the amount of a debtor's regular ongoing payment by modifying the interest rate, minimum payment, maturity or other terms of the debt. Such plans frequently are promoted as a means for a debtor to restructure debt without filing for bankruptcy.

[417] *Consumer Credit Counseling Service of Alabama, Inc. v. U.S.*, 44 A.F.T.R. 2d (RIA) 5122 (D.D.C. 1978). The case involved 24 agencies throughout the United States.

[418] *See also, Credit Counseling Centers of Oklahoma, Inc., v. U.S.*, 45 A.F.T.R. 2d (RIA) 1401 (D.D.C. 1979) (holding the same on virtually identical facts).

[419] Opening Statement of The Honorable Max Sandlin, Hearing on Non-Profit Credit Counseling Organizations, House Ways and Means Committee, Subcommittee on Oversight (November 20, 2003).

1,215 credit counseling organizations applied to the IRS for tax exempt status under section 501(c)(3), including 810 during 2000 to 2003.[420] The IRS has recognized more than 850 credit counseling organizations as tax exempt under section 501c)((3).[421] Few credit counseling organizations have sought section 501(c)(4) status, and the IRS reports it has not seen any significant increase in the number or activity of such organizations operating as social welfare organizations.[422] As of late 2003, there were 872 active tax-exempt credit counseling agencies operating in the United States.[423]

A credit counseling organization described in section 501(c)(3) is exempt from certain Federal and State consumer protection laws that provide exemptions for organizations described therein.[424] Some believe that these exclusions from Federal and State regulation may be a primary motivation for the recent increase in the number of organizations seeking and obtaining exempt status under section 501(c)(3).[425] Such regulatory exemptions generally are not available for social welfare organizations described in section 501(c)(4).

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[420] United States Senate Permanent Subcommittee on Investigations, Committee on Governmental Affairs, *Profiteering in a Non-Profit Industry: Abusive Practices in Credit Counseling*, Report Prepared by the Majority & Minority Staffs of the Permanent Subcommittee on Investigations and Released in Conjunction with the Permanent Subcommittee Investigations' Hearing on March 24, 2004, p. 3 (citing letter dated December 18, 2003, to the Subcommittee from IRS Commissioner Everson).

[421] Testimony of Commissioner Mark Everson before the House Ways and Means Committee, Subcommittee on Oversight (November 20, 2003).

[422] Testimony of Commissioner Mark Everson before the House Ways and Means Committee, Subcommittee on Oversight (November 20, 2003).

[423] United States Senate Permanent Subcommittee on Investigations, Committee on Governmental Affairs, *Profiteering in a Non-Profit Industry: Abusive Practices in Credit Counseling*, Report Prepared by the Majority & Minority Staffs of the Permanent Subcommittee on Investigations and Released in Conjunction with the Permanent Subcommittee Investigations' Hearing on March 24, 2004, p. 3 (citing letter dated December 18, 2003 to the Subcommittee from IRS Commissioner Everson).

[424] *E.g.*, The Credit Repair Organizations Act, 15 U.S.C. section 1679 *et seq*., effective April 1, 1997 (imposing restrictions on credit repair organizations that are enforced by the Federal Trade Commission, including forbidding the making of untrue or misleading statements and forbidding advance payments; section 501(c)(3) organizations are explicitly exempt from such regulation). Testimony of Commissioner Mark Everson before the House Ways and Means Committee, Subcommittee on Oversight (November 20, 2003) (California's consumer protections laws that impose strict standards on credit service organizations and the credit repair industry do not apply to nonprofit organizations that have received a final determination from the IRS that they are exempt from tax under section 501(c)(3) and are not private foundations).

[425] Testimony of Commissioner Mark Everson before the House Ways and Means Committee, Subcommittee on Oversight (November 20, 2003).

Congress recently conducted hearings investigating the activities of credit counseling organizations under various consumer protection laws,[426] such as the Federal Trade Commission Act.[427] In addition, the IRS commenced a broad examination and compliance program with respect to the credit counseling industry. On May 15, 2006, the IRS announced that over the past two years, it had been auditing 63 credit counseling agencies, representing more than 40 percent of the revenue in the industry. Audits of 41 organizations, representing more than 40 percent of the revenue in the industry have been completed as of that date. All of such completed audits resulted in revocation, proposed revocation, or other termination of tax-exempt status.[428] In addition, the IRS released two legal documents that provide a legal framework for determining the exempt status and related issues with respect to credit counseling organizations.[429] In CCA 200620001, the IRS found that "[t]he critical inquiry is whether a credit counseling organization conducts its counseling program to improve an individual debtor's understanding of his financial problems and improve his ability to address those problems." The CCA concluded that whether a credit counseling organization primarily furthers educational purposes

> can be determined by assessing the methodology by which the organization conducts its counseling activities. The process an organization uses to interview clients and develop recommendations, train its counselors and market its services can distinguish between an organization whose object is to improve a person's knowledge and skills to manage his personal debt, and an organization that is offering counseling primarily as a mechanism to enroll individuals in a specific option (e.g., debt management plans) without considering the individual's best interest.

Under the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005, Public Law 109-8, an individual generally may not be a debtor in bankruptcy unless such individual has, within 180 days of filing a petition for bankruptcy, received from an approved nonprofit budget and credit counseling agency an individual or group briefing that outlines the opportunities for available credit counseling and assists the individual in performing a related

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[426] United States Senate Permanent Subcommittee on Investigations, Committee on Governmental Affairs, *Profiteering in a Non-Profit Industry: Abusive Practices in Credit Counseling*, Report Prepared by the Majority & Minority Staffs of the Permanent Subcommittee on Investigations and Released in Conjunction with the Permanent Subcommittee Investigations' Hearing on March 24, 2004.

[427] 15 U.S.C. sec. 45(a) (prohibiting unfair and deceptive acts or practices in or affecting commerce; although the Federal Trade Commission generally lacks jurisdiction to enforce consumer protection laws against bona fide nonprofit organizations, it may assert jurisdiction over a nonprofit, including a credit counseling organization, if it demonstrates the organization is organized to carry on business for profit, is a mere instrumentality of a for-profit entity, or operates through a common enterprise with one or more for-profit entities).

[428] IRS News Release, IR-2006-80, May 15, 2006.

[429] Chief Counsel Advice 200431023 (July 13, 2004); Chief Counsel Advice 200620001 (May 9, 2006).

budget analysis.[430] The clerk of the court must maintain a publicly available list of nonprofit budget and credit counseling agencies approved by the U.S. Trustee (or bankruptcy administrator). In general, the U.S. Trustee (or bankruptcy administrator) shall only approve an agency that demonstrates that it will provide qualified counselors, maintain adequate provision for safekeeping and payment of client funds, provide adequate counseling with respect to client credit problems, and deal responsibly and effectively with other matters relating to the quality, effectiveness, and financial security of the services it provides. The minimum qualifications for approval of such an agency include: (1) in general, having an independent board of directors; (2) charging no more than a reasonable fee, and providing services without regard to ability to pay; (3) adequate provision for safekeeping and payment of client funds; (4) provision of full disclosures to clients; (5) provision of adequate counseling with respect to a client's credit problems; (6) trained counselors who receive no commissions or bonuses based on the outcome of the counseling services; (7) experience and background in providing credit counseling; and (8) adequate financial resources to provide continuing support services for budgeting plans over the life of any repayment plan. An individual debtor must file with the court a certificate from the approved nonprofit budget and credit counseling agency that provided the required services describing the services provided, and a copy of the debt management plan, if any, developed through the agency.[431]

Explanation of Provision

Requirements for exempt status of credit counseling organizations

The provision establishes standards that a credit counseling organization must satisfy, in addition to present law requirements, in order to be organized and operated either as an organization described in section 501(c)(3) or in section 501(c)(4). The provision does not diminish the requirements set forth recently by the IRS in Chief Counsel Advice 200431023 or Chief Counsel Advice 200620001 but builds on and is consistent with such requirements, and the analysis therein. The provision is not intended to raise any question about IRS actions taken, and the IRS is expected to continue its vigorous examination of the credit counseling industry, applying the additional standards provided by the provision. The provision does not and is not intended to affect the approval process for credit counseling agencies under Public Law 109-8. Public Law 109-8 requires that an approved credit counseling agency be a nonprofit, and does not require that an approved agency be a section 501(c)(3) organization. It is expected that the

[430] This requirement does not apply in certain circumstances, such as: (1) in general, where a debtor resides in a district for which the U.S. Trustee has determined that the approved counseling agencies for such district are not reasonably able to provide adequate services to additional individuals; (2) where exigent circumstances merit a waiver, the individual seeking bankruptcy protection files an appropriate certification with the court, and the certification is acceptable to the court; and (3) in general, where a court determines, after notice and hearing, that the individual is unable to complete the requirement because of incapacity, disability, or active military duty in a military combat zone.

[431] The Act also requires that, prior to discharge of indebtedness under chapter 7 or chapter 13, a debtor complete an approved instructional course concerning personal financial management, which course need not be conducted by a nonprofit agency.

Department of Justice shall continue to approve agencies for purposes of providing pre-bankruptcy counseling based on criteria that are consistent with such Public Law.

Under the provision, an organization that provides credit counseling services as a substantial purpose of the organization ("credit counseling organization") is eligible for exemption from Federal income tax only as a charitable or educational organization under section 501(c)(3) or as a social welfare organization under section 501(c)(4), and only if (in addition to present-law requirements) the credit counseling organization is organized and operated in accordance with the following:

1. The organization provides credit counseling services tailored to the specific needs and circumstances of the consumer;

2. The organization makes no loans to debtors (other than loans with no fees or interest) and does not negotiate the making of loans on behalf of debtors;[432]

3. The organization provides services for the purpose of improving a consumer's credit record, credit history, or credit rating only to the extent that such services are incidental to providing credit counseling services and does not charge any separately stated fee for any such services;[433]

4. The organization does not refuse to provide credit counseling services to a consumer due to inability of the consumer to pay, the ineligibility of the consumer for debt management plan enrollment, or the unwillingness of a consumer to enroll in a debt management plan;

5. The organization establishes and implements a fee policy to require that any fees charged to a consumer for its services are reasonable,[434] allows for the waiver of fees if the consumer is unable to pay, and except to the extent allowed by State law prohibits charging any fee based in whole or in part on a percentage of the consumer's debt, the consumer's payments to be made pursuant to a debt management plan, or on the projected or actual savings to the consumer resulting from enrolling in a debt management plan;

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[432] In general, negotiation of a loan involves negotiation of the terms of a loan, rather than the processing of a loan. Organizations that provide assistance to consumers to obtain a loan from the Department of Housing and Urban Development, for example, are not necessarily negotiating a loan for a consumer.

[433] Accordingly, a credit counseling organization may provide credit repair type services, but only to the extent that the provision of such services is a direct outgrowth of the provision of credit counseling services.

[434] Whether a credit counseling organization's fees are consistent with specific State law requirements is evidence of the reasonableness of fees but is not determinative.

6. The organization at all times has a board of directors or other governing body (a) that is controlled by persons who represent the broad interests of the public, such as public officials acting in their capacities as such, persons having special knowledge or expertise in credit or financial education, and community leaders; (b) not more than 20 percent of the voting power of which is vested in persons who are employed by the organization or who will benefit financially, directly or indirectly, from the organization's activities (other than through the receipt of reasonable directors' fees or the repayment of consumer debt to creditors other than the credit counseling organization or its affiliates) and (c) not more than 49 percent of the voting power of which is vested in persons who are employed by the organization or who will benefit financially, directly or indirectly, from the organization's activities (other than through the receipt of reasonable directors' fees);[435]

7. The organization does not own (except with respect to a section 501(c)(3) organization) more than 35 percent of the total combined voting power of a corporation (or profits or beneficial interest in the case of a partnership or trust or estate) that is in the trade or business of lending money, repairing credit, or providing debt management plan services, payment processing, and similar services; and

8. The organization receives no amount for providing referrals to others for debt management plan services, and pays no amount to others for obtaining referrals of consumers.[436]

Additional requirements for charitable and educational organizations

Under the provision, a credit counseling organization is described in section 501(c)(3) only if, in addition to satisfying the above requirements and the requirements of section 501(c)(3), the organization is organized and operated such that the organization (1) does not solicit contributions from consumers during the initial counseling process or while the consumer is receiving services from the organization and (2) the aggregate revenues of the organization that are from payments of creditors of consumers of the organization and that are attributable to debt management plan services do not exceed the applicable percentage of the total revenues of the organization. For credit counseling organizations in existence on the date of enactment, the

[435] The requirements described in paragraphs 4, 5, and 6 above address core issues that are related to tax-exempt status and that have proved to be problematic in the credit counseling industry--the provision of services and waiver of fees without regard to ability to pay, the establishment of a reasonable fee policy, and the presence of independent board members. No inference is intended through the provision of these specific requirements on credit counseling organizations that similar or more stringent requirements should not be adhered to by other exempt organizations providing fees for services. Rather, the provision affirms the importance of these core issues to the matter of tax exemption, both to credit counseling organizations and to other types of exempt organizations.

[436] If a credit counseling organization pays or receives a fee, for example, for using or maintaining a locator service for consumers to find a credit counseling organization, such a fee is not considered a referral.

applicable percentage is 80 percent for the first taxable year of the organization beginning after the date which is one year after the date of enactment, 70 percent for the second such taxable year beginning after such date, 60 percent for the third such taxable year beginning after such date, and 50 percent thereafter. For new credit counseling organizations, the applicable percentage is 50 percent for taxable years beginning after the date of enactment. Satisfaction of the aggregate revenues requirement is not a safe harbor; all other requirements of the provision (and of section 501(c)(3)) pertaining to section 501(c)(3) organizations also must be satisfied. Satisfaction of the aggregate revenues requirement means only that an organization has not automatically failed to be organized or operated consistent with exempt purposes. Compliance with the revenues test does not mean that the organization's debt management plan services activity is at a level that organizationally or operationally is consistent with exempt status. In other words, satisfaction of the aggregate revenues requirement (as a preliminary matter in an exemption application, or on an ongoing operational basis) provides no affirmative evidence that an organization's primary purpose is an exempt purpose, or that the revenues that are subject to the limitation (or debt management plan services revenues more generally) are related to exempt purposes. As described below, whether revenues from such activity are substantially related to exempt purposes depends on the facts and circumstances, that is, satisfaction of the aggregate revenues requirement generally is not relevant for purposes of whether any of an organization's revenues are revenues from an unrelated trade or business. Failure to satisfy the aggregate revenues requirement does not disqualify the organization from recognition of exemption under section 501(c)(4).

Additional requirement for social welfare organizations

Under the provision, a credit counseling organization is described in section 501(c)(4) only if, in addition to satisfying the above requirements applicable to such organizations, the organization notifies the Secretary, in such manner as the Secretary may by regulations prescribe, that it is applying for recognition as a credit counseling organization.

Debt management plan services treated as an unrelated trade or business

Under the provision, debt management plan services are treated as an unrelated trade or business for purposes of the tax on income from an unrelated trade or business to the extent such services are provided by an organization that is not a credit counseling organization. With respect to the provision of debt management plan services by a credit counseling organization, in order for the income from such services not to be unrelated business income, it is intended that, consistent with current law, the debt management plan service with respect to such income (1) must contribute importantly to the accomplishment of credit counseling services, and (2) must not be conducted on a larger scale than reasonably is necessary for the accomplishment of such services. For example, the provision of debt management plan services would not be substantially related to accomplishing exempt purposes if the organization recommended and enrolled an individual in a debt management plan only after determining whether the individual satisfied the financial criteria established by the creditors for such plan, without (1) considering whether it was an appropriate action in light of the individual's particular needs and objectives, (2) discussing the disadvantages of a debt management plan with the consumer, and (3) presenting other possible options to such consumer.

Definitions

Credit counseling services

Credit counseling services are (a) the provision of educational information to the general public on budgeting, personal finance, financial literacy, saving and spending practices, and the sound use of consumer credit; (b) the assisting of individuals and families with financial problems by providing them with counseling; or (c) any combination of such activities.

Debt management plan services

Debt management plan services are services related to the repayment, consolidation, or restructuring of a consumer's debt, and includes the negotiation with creditors of lower interest rates, the waiver or reduction of fees, and the marketing and processing of debt management plans.

Effective Date

In general, the provision applies to taxable years beginning after the date of enactment. For a credit counseling organization that is described in section 501(c)(3) or 501(c)(4) on the date of enactment, the provision is effective for taxable years beginning after the date that is one year after the date of enactment.

11. Expand the base of the tax on private foundation net investment income (sec. 4940 of the Code)

Present Law

In general

Under section 4940(a) of the Code, private foundations that are recognized as exempt from Federal income tax under section 501(a) of the Code are subject to a two-percent excise tax on their net investment income. Private foundations that are not exempt from tax, such as certain charitable trusts,[437] also are subject to an excise tax under section 4940(b) based on net investment income and unrelated business income. The two-percent rate of tax is reduced to one-percent if certain requirements are met in a taxable year.[438] Unlike certain other excise taxes imposed on private foundations, the tax based on investment income does not result from a violation of substantive law by the private foundation; it is solely an excise tax.

The tax on taxable private foundations under section 4940(b) is equal to the excess of the sum of the excise tax that would have been imposed under section 4940(a) if the foundation were tax exempt and the amount of the unrelated business income tax that would have been imposed if

[437] *See* sec. 4947(a)(1).

[438] Sec. 4940(e).

the foundation were tax exempt, over the income tax imposed on the foundation under subtitle A of the Code.

Net investment income

Internal Revenue Code

In general, net investment income is defined as the amount by which the sum of gross investment income and capital gain net income exceeds the deductions relating to the production of gross investment income.[439]

Gross investment income is the gross amount of income from interest, dividends, rents, payments with respect to securities loans, and royalties. Gross investment income does not include any income that is included in computing a foundation's unrelated business taxable income.[440]

Capital gain net income takes into account only gains and losses from the sale or other disposition of property used for the production of interest, dividends, rents, and royalties, and property used for the production of income included in computing the unrelated business income tax (except to the extent the gain or loss is taken into account for purposes of such tax). Losses from sales or other dispositions of property are allowed only to the extent of gains from such sales or other dispositions, and no capital loss carryovers are allowed.[441]

Treasury Regulations and case law

The Treasury regulations elaborate on the Code definition of net investment income. The regulations cite items of investment income listed in the Code, and in addition clarify that net investment income includes interest, dividends, rents, and royalties derived from all sources, including from assets devoted to charitable activities. For example, interest received on a student loan is includible in the gross investment income of a foundation making the loan.[442]

The regulations further provide that gross investment income includes certain items of investment income that are described in the unrelated business income tax regulations.[443] Such additional items include payments with respect to securities loans (an item added to the Code in

[439] Sec. 4940(c)(1). Net investment income also is determined by applying section 103 (generally providing an exclusion for interest on certain State and local bonds) and section 265 (generally disallowing the deduction for interest and certain other expenses with respect to tax-exempt income). Sec. 4940(c)(5).

[440] Sec. 4940(c)(2).

[441] Sec. 4940(c)(4).

[442] Treas. Reg. sec. 53.4940-1(d)(1).

[443] *Id.*

1978), annuities, income from notional principal contracts, and other substantially similar income from ordinary and routine investments to the extent determined by the Commissioner.[444] These latter three categories of income are not enumerated as net investment income in the Code.

The Treasury regulations also elaborate on the Code definition of capital gain net income. The regulations provide that the only capital gains and losses that are taken into account are (1) gains and losses from the sale or other disposition of property held by a private foundation for investment purposes (other than program related investments), and (2) property used for the production of income included in computing the unrelated business income tax (except to the extent the gain or loss is taken into account for purposes of such tax).

This definition of capital gain net income builds on the definition provided in the Code by providing an exception for gain and loss from program related investments and by stating, in addition, that "gains and losses from the sale or other disposition of property used for the exempt purposes of the private foundation are excluded."[445] As an example, the regulations provide that gain or loss on the sale of buildings used for the foundation's exempt activities are not taken into account for purposes of the section 4940 tax. If a foundation uses exempt income for exempt purposes and (other than incidentally) for investment purposes, then the portion of the gain or loss received upon sale or other disposition that is allocable to the investment use is taken into account for purposes of the tax.

The regulations further provide that "property shall be treated as held for investment purposes even though such property is disposed of by the foundation immediately upon its receipt, if it is property of a type which generally produces interest, dividends, rents, royalties, or capital gains through appreciation (for example, rental real estate, stock, bonds, mineral interest, mortgages, and securities)."[446]

This regulation has been challenged in the courts. The regulation says that property is treated as held for investment purposes if it is of a type that "generally produces" certain types of income. By contrast, the Code provides that the property be "used" to produce such income. In Zemurray Foundation v. United States, 687 F.2d 97 (5th Cir. 1982), the taxpayer foundation challenged the Treasury's attempt to tax under section 4940 capital gain on the sale of timber property. The taxpayer asserted that the property was not actually used to produce investment income, and that the Treasury Regulation was invalid because the regulation would subject to tax property that is of a type that could generally be used to produce investment income. On this issue, the court upheld the Treasury regulation, reasoning that the regulation's use of the phrase "generally used," though permitting taxation "so long as the property sold is usable to produce the applicable types of income, regardless of whether the property is actually used to produce income or not" was not unreasonable or plainly inconsistent with the statute.[447] However, on

[444] Treas. Reg. sec. 1.512(b)-1(a)(1).

[445] Treas. Reg. sec. 53.4940-1(f)(1).

[446] *Id.*

[447] *Zemurray Foundation v. United States*, 687 F.2d 97, 100 (5th Cir. 1982).

remand to the district court, the district court concluded that the timber property at issue, though a type of property generally used to produce investment income, was not susceptible for such use.[448] Thus, the district court concluded that the Treasury could not tax the gain under this portion of the regulation.

The question then turned to the taxpayer's second challenge to the regulation. At issue was the meaning of the regulatory phrase "capital gains through appreciation." The regulation provides that if property is of a type that generally produces capital gains through appreciation, then the gain is subject to tax. The Treasury argued that the timber property at issue, although held by the court not to be property (in this case) susceptible for use to produce interest, dividends, rents, or royalties, still was held by the taxpayer to produce capital gain through appreciation and therefore the gain should be subject to tax under the regulation.

On this issue, the court held for the taxpayer, reasoning that the language of the Code clearly is limited to certain gains and losses, e.g., the court cited the Code language providing that "there shall be taken into account only gains and losses from the sale or other disposition of property used for the production of interest, dividends, rents, and royalties . . . ."[449] The court noted that "capital gains through appreciation" is not enumerated in the statute. The court used as an example a jade figurine held by a foundation. Jade figurines do not generally produce interest, dividends, rents, or royalties, but gain on the sale of such a figurine would be taxable under the "capital gains through appreciation" standard, yet such standard does not appear in the statute. After Zemurray, the Treasury generally conceded this issue.[450]

With respect to capital losses, the Code provides that carryovers are not permitted, whereas the regulations state that neither carryovers nor carrybacks are permitted.[451]

Application of Zemurray to the Code and the regulations

Applying the Zemurray case to the Code and regulations results in a general principle for purposes of present law: private foundations are subject to tax under section 4940 only on the items of income and only on gains and losses specifically enumerated therein. Under this principle, private foundations generally are not subject to the section 4940 tax on other substantially similar types of income from ordinary and routine investments, notwithstanding Treasury regulations to the contrary. In addition, the regulations provide that gain or loss from the sale or other disposition of assets used for exempt purposes, with specific reference to program-related investments, is excluded. The Code provides for no such blanket exclusion; thus, under the language of the Code and the reasoning of Zemurray, if a foundation provided

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[448] *Zemurray Foundation v. United States*, 53 A.F.T.R. 2d (RIA) 842 (E. D. La. 1983).

[449] *Zemurray Foundation v. United States*, 755 F.2d 404 (5th Cir. 1985), 413 (citing Code sec. 4940(c)(4)(A).

[450] G.C.M. 39538 (July 23, 1986).

[451] Treas. Reg. sec. 53.4940-1(f)(3).

office space at below market rent to a charitable organization for use in the organization's exempt purposes, gain on the sale of the building by the foundation should be subject to the section 4940 tax despite the Treasury regulations.[452]

In addition, under the logic of Zemurray, capital loss carrybacks arguably are permitted, notwithstanding Treasury regulations to the contrary, because the Code mentions only a bar on use of carryovers and says nothing about carrybacks.

Explanation of Provision

The provision amends the definition of gross investment income (including for purposes of capital gain net income) to include items of income that are similar to the items presently enumerated in the Code. Such similar items include income from notional principal contracts, annuities, and other substantially similar income from ordinary and routine investments, and, with respect to capital gain net income, capital gains from appreciation, including capital gains and losses from the sale or other disposition of assets used to further an exempt purpose.

Certain gains and losses are not taken into account in determining capital gain net income. Specifically, under the provision, no gain or loss shall be taken into account with respect to any portion of property used for a period of not less than one year for a purpose or function constituting the basis of the private foundation's exemption, if the entire property is exchanged immediately following such period solely for property of like kind which is to be used primarily for a purpose or function constituting the basis for such foundation's exemption. Rules similar to the rules of section 1031 (relating to exchange of property held for productive use or investment) apply, including, but not limited to, the exceptions of section 1031(a)(2) and the rule of section 1031(a)(3) regarding completion of the exchange within 180 days.

The provision provides that there are no carrybacks of losses from sales or other dispositions of property.

Effective Date

The provision is effective for taxable years beginning after the date of enactment.

12. Definition of convention or association of churches (sec. 7701 of the Code)

Present Law

Under present law, an organization that qualifies as a "convention or association of churches" (within the meaning of sec. 170(b)(1)(A)(i)) is not required to file an annual return,[453] is subject to the church tax inquiry and church tax examination provisions applicable to

[452] *See also* the example in Treas. Reg. sec. 53.4940-1(f)(1).

[453] Sec. 6033(a)(2)(A)(i).

organizations claiming to be a church,[454] and is subject to certain other provisions generally applicable to churches.[455] The Internal Revenue Code does not define the term "convention or association of churches."

Explanation of Provision

The provision provides that an organization that otherwise is a convention or association of churches does not fail to so qualify merely because the membership of the organization includes individuals as well as churches, or because individuals have voting rights in the organization.

Effective Date

The provision is effective on the date of enactment.

13. Notification requirement for exempt entities not currently required to file an annual information return (secs. 6033, 6652, and 7428 of the Code)

Present Law

Under present law, the requirement that an exempt organization file an annual information return does not apply to several categories of exempt organizations. Organizations excepted from the filing requirement include organizations (other than private foundations), the gross receipts of which in each taxable year normally are not more than $25,000.[456] Also exempt from the requirement are churches, their integrated auxiliaries, and conventions or associations of churches; the exclusively religious activities of any religious order; section 501(c)(1)

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[454] Sec. 7611(h)(1)(B).

[455] *See, e.g.*, Sec. 402(g)(8)(B) (limitation on elective deferrals); sec. 403(b)(9)(B) (definition of retirement income account); sec. 410(d) (election to have participation, vesting, funding, and certain other provisions apply to church plans); sec. 414(e) (definition of church plan); sec. 415(c)(7) (certain contributions by church plans); sec. 501(h)(5) (disqualification of certain organizations from making the sec. 501(h) election regarding lobbying expenditure limits); sec. 501(m)(3) (definition of commercial-type insurance); sec. 508(c)(1)(A) (exception from requirement to file application seeking recognition of exempt status); sec. 512(b)(12) (allowance of up to $1,000 deduction for purposes of determining unrelated business taxable income); sec. 514(b)(3)(E) (definition of debt-financed property); sec. 3121(w)(3)(A) (election regarding exemption from social security taxes); sec. 3309(b)(1) (application of federal unemployment tax provisions to services performed in the employ of certain organizations); sec. 6043(b)(1) (requirement to file a return upon liquidation or dissolution of the organization); and sec. 7702(j)(3)(A) (treatment of certain death benefit plans as life insurance).

[456] Sec. 6033(a)(2); Treas. Reg. sec. 1.6033-2(a)(2)(i); Treas. Reg. sec. 1.6033-2(g)(1). Sec. 6033(a)(2)(A)(ii) provides a $5,000 annual gross receipts exception from the annual reporting requirements for certain exempt organizations. In Announcement 82-88, 1982-25 I.R.B. 23, the IRS exercised its discretionary authority under section 6033 to increase the gross receipts exception to $25,000, and enlarge the category of exempt organizations that are not required to file Form 990.

instrumentalities of the United States; section 501(c)(21) trusts; an interchurch organization of local units of a church; certain mission societies; certain church-affiliated elementary and high schools; certain State institutions whose income is excluded from gross income under section 115; certain governmental units and affiliates of governmental units; and other organizations that the IRS has relieved from the filing requirement pursuant to its statutory discretionary authority.

Explanation of Provision

The provision requires organizations that are excused from filing an information return by reason of normally having gross receipts below a certain specified amount (generally, under $25,000) to furnish to the Secretary annually, in electronic form, the legal name of the organization, any name under which the organization operates or does business, the organization's mailing address and Internet web site address (if any), the organization's taxpayer identification number, the name and address of a principal officer, and evidence of the organization's continuing basis for its exemption from the generally applicable information return filing requirements. Upon such organization's termination of existence, the organization is required to furnish notice of such termination.

The provision provides that if an organization fails to provide the required notice for three consecutive years, the organization's tax-exempt status is revoked. In addition, if an organization that is required to file an annual information return under section 6033(a) (Form 990) fails to file such an information return for three consecutive years, the organization's tax-exempt status is revoked. If an organization fails to meet its filing obligation to the IRS for three consecutive years in cases where the organization is subject to the information return filing requirement in one or more years during a three-year period and also is subject to the notice requirement for one or more years during the same three-year period, the organization's tax-exempt status is revoked.

A revocation under the provision is effective from the date that the Secretary determines was the last day the organization could have timely filed the third required information return or notice. To again be recognized as tax-exempt, the organization must apply to the Secretary for recognition of tax-exemption, irrespective of whether the organization was required to make an application for recognition of tax-exemption in order to gain tax-exemption originally.

If, upon application for tax-exempt status after a revocation under the provision, the organization shows to the satisfaction of the Secretary reasonable cause for failing to file the required annual notices or returns, the organization's tax-exempt status may, in the discretion of the Secretary, be reinstated retroactive to the date of revocation. An organization may not challenge under the Code's declaratory judgment procedures (section 7428) a revocation of tax-exemption made pursuant to the provision.

There is no monetary penalty for failure to file the notice under the provision. Like other information returns, the notices are subject to the public disclosure and inspection rules generally applicable to exempt organizations. The provision does not affect an organization's obligation under present law to file required information returns or existing penalties for failure to file such returns.

The Secretary is required to notify every organization that is subject to the notice filing requirement of the new filing obligation in a timely manner. Notification by the Secretary shall be by mail, in the case of any organization the identity and address of which is included in the list of exempt organizations maintained by the Secretary, and by Internet or other means of outreach, in the case of any other organization. In addition, the Secretary is required to publicize in a timely manner in appropriate forms and instructions and other means of outreach the new penalty imposed for consecutive failures to file the information return.

The Secretary is authorized to publish a list of organizations whose exempt status is revoked under the provision.

Effective Date

The provision is effective for notices and returns with respect to annual periods beginning after 2006.

14. Disclosure to State officials relating to section 501(c) organizations (secs. 6103, 6104, 7213, 7213A, and 7431 of the Code)

Present Law

In the case of organizations that are described in section 501(c)(3) and exempt from tax under section 501(a) or that have applied for exemption as an organization so described, present law (sec. 6104(c)) requires the Secretary to notify the appropriate State officer of (1) a refusal to recognize such organization as an organization described in section 501(c)(3), (2) a revocation of a section 501(c)(3) organization's tax-exempt status, and (3) the mailing of a notice of deficiency for any tax imposed under section 507, chapter 41, or chapter 42.[457] In addition, at the request of such appropriate State officer, the Secretary is required to make available for inspection and copying, such returns, filed statements, records, reports, and other information relating to the above-described disclosures, as are relevant to any State law determination. An appropriate State officer is the State attorney general, State tax officer, or any State official charged with overseeing organizations of the type described in section 501(c)(3).

In general, returns and return information (as such terms are defined in section 6103(b)) are confidential and may not be disclosed or inspected unless expressly provided by law.[458] Present law requires the Secretary to keep records of disclosures and requests for inspection[459]

[457] The applicable taxes include the termination tax on private foundations; taxes on public charities for certain excess lobbying expenses; taxes on a private foundation's net investment income, self-dealing activities, undistributed income, excess business holdings, investments that jeopardize charitable purposes, and taxable expenditures (some of these taxes also apply to certain non-exempt trusts); taxes on the political expenditures and excess benefit transactions of section 501(c)(3) organizations; and certain taxes on black lung benefit trusts and foreign organizations.

[458] Sec. 6103(a).

[459] Sec. 6103(p)(3).

and requires that persons authorized to receive returns and return information maintain various safeguards to protect such information against unauthorized disclosure.[460] Willful unauthorized disclosure or inspection of returns or return information is subject to a fine and/or imprisonment.[461] The knowing or negligent unauthorized inspection or disclosure of returns or return information gives the taxpayer a right to bring a civil suit.[462] Such present-law protections against unauthorized disclosure or inspection of returns and return information do not apply to the disclosures or inspections, described above, that are authorized by section 6104(c).

Explanation of Provision

The provision provides that upon written request by an appropriate State officer, the Secretary may disclose: (1) a notice of proposed refusal to recognize an organization as a section 501(c)(3) organization; (2) a notice of proposed revocation of tax-exemption of a section 501(c)(3) organization; (3) the issuance of a proposed deficiency of tax imposed under section 507, chapter 41, or chapter 42; (4) the names, addresses, and taxpayer identification numbers of organizations that have applied for recognition as section 501(c)(3) organizations; and (5) returns and return information of organizations with respect to which information has been disclosed under (1) through (4) above.[463] Disclosure or inspection is permitted for the purpose of, and only to the extent necessary in, the administration of State laws regulating section 501(c)(3) organizations, such as laws regulating tax-exempt status, charitable trusts, charitable solicitation, and fraud. Such disclosure or inspection may be made only to or by an appropriate State officer or to an officer or employee of the State who is designated by the appropriate State officer, and may not be made by or to a contractor or agent. The Secretary also is permitted to disclose or open to inspection the returns and return information of an organization that is recognized as tax-exempt under section 501(c)(3), or that has applied for such recognition, to an appropriate State officer if the Secretary determines that disclosure or inspection may constitute evidence of noncompliance under the laws within the jurisdiction of the appropriate State officer. For this purpose, appropriate State officer means the State attorney general, the State tax officer, or any other State official charged with overseeing organizations of the type described in section 501(c)(3).

In addition, the provision provides that upon the written request by an appropriate State officer, the Secretary may make available for inspection or disclosure returns and return information of an organization described in section 501(c) (other than section 501(c)(1) or section 501(c)(3)). Such returns and return information are available for inspection or disclosure only for the purpose of, and to the extent necessary in, the administration of State laws regulating the solicitation or administration of the charitable funds or charitable assets of such

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[460] Sec. 6103(p)(4).

[461] Secs. 7213 and 7213A.

[462] Sec. 7431.

[463] Such returns and return information also may be open to inspection by an appropriate State officer.

organizations. Such disclosure or inspection may be made only to or by an appropriate State officer or to an officer or employee of the State who is designated by the appropriate State officer, and may not be made by or to a contractor or agent. For this purpose, appropriate State officer means the State attorney general, the State tax officer, and the head of an agency designated by the State attorney general as having primary responsibility for overseeing the solicitation of funds for charitable purposes of such organizations.

In addition, the provision provides that any returns and return information disclosed under section 6104(c) may be disclosed in civil administrative and civil judicial proceedings pertaining to the enforcement of State laws regulating the applicable tax-exempt organization in a manner prescribed by the Secretary. Returns and return information are not to be disclosed under section 6104(c), or in such an administrative or judicial proceeding, to the extent that the Secretary determines that such disclosure would seriously impair Federal tax administration. The provision makes disclosures of returns and return information under section 6104(c) subject to the disclosure, recordkeeping, and safeguard provisions of section 6103, including through requirements that the Secretary maintain a permanent system of records of requests for disclosure (sec. 6103(p)(3)) and that the appropriate State officer maintain various safeguards that protect against unauthorized disclosure (sec. 6103(p)(4)). The provision provides that the willful unauthorized disclosure of returns or return information described in section 6104(c) is a felony subject to a fine of up to $5,000 and/or imprisonment of up to five years (sec. 7213(a)(2)), the willful unauthorized inspection of returns or return information described in section 6104(c) is subject to a fine of up to $1,000 and/or imprisonment of up to one year (sec. 7213A), and provides the taxpayer the right to bring a civil action for damages in the case of knowing or negligent unauthorized disclosure or inspection of such information (sec. 7431(a)(2)).

Effective Date

The provision is effective on the date of enactment but does not apply to requests made before such date.

15. Require that unrelated business income tax returns of section 501(c)(3) organizations be made publicly available (sec. 6104 of the Code)

Present Law

In general, an organization described in section 501(c) or (d) is required to make available for public inspection a copy of its annual information return (Form 990) and exemption application materials.[464] A penalty may be imposed on any person who does not make an organization's annual returns or exemption application materials available for public inspection. The penalty amount is $20 for each day during which a failure occurs. If more than one person fails to comply, each person is jointly and severally liable for the full amount of the penalty. The maximum penalty that may be imposed on all persons for any one annual return is $10,000. There is no maximum penalty amount for failing to make exemption application materials

[464] Sec. 6104(d).

available for public inspection. Any person who willfully fails to comply with the public inspection requirements is subject to an additional penalty of $5,000.[465]

These requirements do not apply to an organization's annual return for unrelated business income tax (generally Form 990-T).[466]

Explanation of Provision

The provision extends the present-law public inspection and disclosure requirements and penalties applicable to the Form 990 to the unrelated business income tax return (Form 990-T) of organizations described in section 501(c)(3). The provision provides that certain information may be withheld by the organization from public disclosure and inspection if public availability would adversely affect the organization, similar to the information that may be withheld under present law with respect to applications for tax exemption and the Form 990 (e.g., information relating to a trade secret, patent, process, style of work, or apparatus of the organization, if the Secretary determines that public disclosure of such information would adversely affect the organization).

Effective Date

The provision is effective for returns filed after the date of enactment.

16. Treasury study on donor advised funds and supporting organizations

Present Law

Donor advised funds

Some charitable organizations (including community foundations) establish accounts to which donors may contribute and thereafter provide nonbinding advice or recommendations with regard to distributions from the fund or the investment of assets in the fund. Such accounts are commonly referred to as "donor advised funds." Donors who make contributions to charities for maintenance in a donor advised fund generally claim a charitable contribution deduction at the time of the contribution. Although sponsoring charities frequently permit donors (or other persons appointed by donors) to provide nonbinding recommendations concerning the distribution or investment of assets in a donor advised fund, sponsoring charities generally must have legal ownership and control of such assets following the contribution. If the sponsoring charity does not have such control (or permits a donor to exercise control over amounts contributed), the donor's contributions may not qualify for a charitable deduction, and, in the case of a community foundation, the contribution may be treated as being subject to a material restriction or condition by the donor.

[465] Sec. 6685.

[466] Treas. Reg. sec. 301.6104(d)-1(b)(4)(ii).

In recent years, a number of financial institutions have formed charitable corporations for the principal purpose of offering donor advised funds, sometimes referred to as "commercial" donor advised funds. In addition, some established charities have begun operating donor advised funds in addition to their primary activities. The IRS has recognized several organizations that sponsor donor advised funds, including "commercial" donor advised funds, as section 501(c)(3) public charities. The term "donor advised fund" is not defined in statute or regulations.

Supporting organizations

The Code provides that certain "supporting organizations" (in general, organizations that provide support to another section 501(c)(3) organization that is not a private foundation) are classified as public charities rather than private foundations.[467] To qualify as a supporting organization, an organization must meet all three of the following tests: (1) it must be organized and at all times operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more "publicly supported organizations"[468] (the "organizational and operational tests");[469] (2) it must be operated, supervised, or controlled by or in connection with one or more publicly supported organizations (the "relationship test");[470] and (3) it must not be controlled directly or indirectly by one or more disqualified persons (as defined in section 4946) other than foundation managers and other than one or more publicly supported organizations (the "lack of outside control test").[471]

To satisfy the relationship test, a supporting organization must hold one of three statutorily described close relationships with the supported organization. The organization must be: (1) operated, supervised, or controlled by a publicly supported organization (commonly referred to as "Type I" supporting organizations); (2) supervised or controlled in connection with a publicly supported organization ("Type II" supporting organizations); or (3) operated in connection with a publicly supported organization ("Type III" supporting organizations).[472]

Type I supporting organizations

In the case of supporting organizations that are operated, supervised, or controlled by one or more publicly supported organizations (Type I supporting organizations), one or more supported organizations must exercise a substantial degree of direction over the policies,

[467] Sec. 509(a)(3).

[468] In general, supported organizations of a supporting organization must be publicly supported charities described in sections 509(a)(1) or (a)(2).

[469] Sec. 509(a)(3)(A).

[470] Sec. 509(a)(3)(B).

[471] Sec. 509(a)(3)(C).

[472] Treas. Reg. sec. 1.509(a)-4(f)(2).

programs, and activities of the supporting organization.[473] The relationship between the Type I supporting organization and the supported organization generally is comparable to that of a parent and subsidiary. The requisite relationship may be established by the fact that a majority of the officers, directors, or trustees of the supporting organization are appointed or elected by the governing body, members of the governing body, officers acting in their official capacity, or the membership of one or more publicly supported organizations.[474]

Type II supporting organizations

Type II supporting organizations are supervised or controlled in connection with one or more publicly supported organizations. Rather than the parent-subsidiary relationship characteristic of Type I organizations, the relationship between a Type II organization and its supported organizations is more analogous to a brother-sister relationship. In order to satisfy the Type II relationship requirement, generally there must be common supervision or control by the persons supervising or controlling both the supporting organization and the publicly supported organizations.[475] An organization generally is not considered to be "supervised or controlled in connection with" a publicly supported organization merely because the supporting organization makes payments to the publicly supported organization, even if the obligation to make payments is enforceable under state law.[476]

Type III supporting organizations

Type III supporting organizations are "operated in connection with" one or more publicly supported organizations. To satisfy the "operated in connection with" relationship, Treasury regulations require that the supporting organization be responsive to, and significantly involved in the operations of, the publicly supported organization. This relationship is deemed to exist where the supporting organization meets both a "responsiveness test" and an "integral part test."[477] In general, the responsiveness test requires that the Type III supporting organization be responsive to the needs or demands of the publicly supported organizations. In general, the integral part test requires that the Type III supporting organization maintain significant involvement in the operations of one or more publicly supported organizations, and that such publicly supported organizations are in turn dependent upon the supporting organization for the type of support which it provides.

There are two alternative methods for satisfying the integral part test. The first alternative is to establish that (1) the activities engaged in for or on behalf of the publicly

[473] Treas. Reg. sec. 1.509(a)-4(g)(1)(i).

[474] Id.

[475] Treas. Reg. sec. 1.509(a)- 4(h)(1).

[476] Treas. Reg. sec. 1.509(a)-4(h)(2).

[477] Treas. Reg. sec. 1.509(a)-4(i)(1).

supported organization are activities to perform the functions of, or carry out the purposes of, such organizations; and (2) these activities, but for the involvement of the supporting organization, normally would be engaged in by the publicly supported organizations themselves.[478] Organizations that satisfy this "but for" test sometimes are referred to as "functionally integrated" Type III supporting organizations. The second method for satisfying the integral part test is to establish that: (1) the supporting organization pays substantially all of its income to or for the use of one or more publicly supported organizations;[479] (2) the amount of support received by one or more of the publicly supported organizations is sufficient to insure the attentiveness of the organization or organizations to the operations of the supporting organization (this is known as the "attentiveness requirement");[480] and (3) a significant amount of the total support of the supporting organization goes to those publicly supported organizations that meet the attentiveness requirement.[481]

Explanation of Provision

Elsewhere in the bill, provision is made for new rules with respect to donor advised funds and supporting organizations. Many issues arise under current law with respect to such organizations, some of which are addressed by the bill and some of which would benefit from additional study. The provision provides that the Secretary of the Treasury shall undertake a study on the organization and operation of donor advised funds (as defined in section 4966(d)(2)) and of supporting organizations (organizations described in section 509(a)(3)). The study shall specifically consider (1) whether the amount and availability of the income, gift, or estate tax charitable deductions allowed for charitable contributions to sponsoring organizations (as defined in section 4966(d)(1)) of donor advised funds or to organizations described in section 509(a)(3) is appropriate in consideration of (i) the use of contributed assets (including the type, extent, and timing of such use) or (ii) the use of the assets of such organizations for the benefit of the person making the charitable contribution (or a person related to such person), (2) whether donor advised funds should be required to distribute for charitable purposes a specified amount (whether based on the income or assets of the fund) in order to ensure that the sponsoring organization with respect to the fund is operating consistent with the purposes or functions constituting the basis for its exemption under section 501 or its status as an organization

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[478] Treas. Reg. sec. 1.509(a)-4(i)(3)(ii).

[479] For this purpose, the IRS has defined the term "substantially all" of an organization's income to mean 85 percent or more. Rev. Rul. 76-208, 1976-1 C.B. 161.

[480] Although the regulations do not specify the requisite level of support in numerical or percentage terms, the IRS has suggested that grants that represent less than 10 percent of the beneficiary's support likely would be viewed as insufficient to ensure attentiveness. Gen. Couns. Mem. 36379 (August 15, 1975). As an alternative to satisfying the attentiveness standard by the foregoing method, a supporting organization may demonstrate attentiveness by showing that, in order to avoid the interruption of the carrying on of a particular function or activity, the beneficiary organization will be sufficiently attentive to the operations of the supporting organization. Treas. Reg. sec. 1.509(a)-4(i)(3)(iii)(b).

[481] Treas. Reg. sec. 1.509(a)-4(i)(3)(iii).

described in section 509(a), (3) whether the retention by donors to donor advised funds or supporting organizations of rights or privileges with respect to amounts transferred to such organizations (including advisory rights or privileges with respect to the making of grants or the investment of assets) is consistent with the treatment of such transfers as completed gifts that qualify for an income, gift, or estate tax charitable deduction, and (4) whether any of the issues addressed above also raise issues with respect to other forms of charities or charitable donations.

Not later than one year after the date of enactment of this Act, the Secretary shall submit a report on the study, comment on any actions (audits, guidance, regulations, etc.) taken by the Secretary with respect to the issues discussed in the study, and make recommendations to the Committee on Finance of the Senate and the Committee on Ways and Means of the House of Representatives.

Effective Date

The provision is effective on the date of enactment.

17. Improve accountability of donor advised funds (new secs. 4966 and 4967 of the Code)

Present Law

Requirements for section 501(c)(3) tax-exempt status

Charitable organizations, i.e., organizations described in section 501(c)(3), generally are exempt from Federal income tax and are eligible to receive tax deductible contributions. A charitable organization must operate primarily in pursuance of one or more tax-exempt purposes constituting the basis of its tax exemption.[482] In order to qualify as operating primarily for a purpose described in section 501(c)(3), an organization must satisfy the following operational requirements: (1) the net earnings of the organization may not inure to the benefit of any person in a position to influence the activities of the organization; (2) the organization must operate to provide a public benefit, not a private benefit;[483] (3) the organization may not be operated primarily to conduct an unrelated trade or business;[484] (4) the organization may not engage in substantial legislative lobbying; and (5) the organization may not participate or intervene in any political campaign.

[482] Treas. Reg. sec. 1.501(c)(3)-1(c)(1). The Code specifies such purposes as religious, charitable, scientific, testing for public safety, literary, or educational purposes, or to foster international amateur sports competition, or for the prevention of cruelty to children or animals. In general, an organization is organized and operated for charitable purposes if it provides relief for the poor and distressed or the underprivileged. Treas. Reg. sec. 1.501(c)(3)-1(d)(2).

[483] Treas. Reg. sec. 1.501(c)(3)-1(d)(1)(ii).

[484] Treas. Reg. sec. 1.501(c)(3)-1(e)(1). Conducting a certain level of unrelated trade or business activity will not jeopardize tax-exempt status.

Classification of section 501(c)(3) organizations

Section 501(c)(3) organizations are classified either as "public charities" or "private foundations."[485] Private foundations generally are defined under section 509(a) as all organizations described in section 501(c)(3) other than an organization granted public charity status by reason of: (1) being a specified type of organization (i.e., churches, educational institutions, hospitals and certain other medical organizations, certain organizations providing assistance to colleges and universities, or a governmental unit); (2) receiving a substantial part of its support from governmental units or direct or indirect contributions from the general public; or (3) providing support to another section 501(c)(3) entity that is not a private foundation. In contrast to public charities, private foundations generally are funded from a limited number of sources (e.g., an individual, family, or corporation). Donors to private foundations and persons related to such donors together often control the operations of private foundations.

Because private foundations receive support from, and typically are controlled by, a small number of supporters, private foundations are subject to a number of anti-abuse rules and excise taxes not applicable to public charities.[486] For example, the Code imposes excise taxes on acts of "self-dealing" between disqualified persons (generally, an enumerated class of foundation insiders[487]) and a private foundation. Acts of self-dealing include, for example, sales or exchanges, or leasing, of property; lending of money; or the furnishing of goods, services, or facilities between a disqualified person and a private foundation.[488] In addition, private non-operating foundations are required to pay out a minimum amount each year as qualifying distributions. In general, a qualifying distribution is an amount paid to accomplish one or more of the organization's exempt purposes, including reasonable and necessary administrative expenses.[489] Certain expenditures of private foundations are also subject to tax.[490] In general, taxable expenditures are expenditures: (1) for lobbying; (2) to influence the outcome of a public election or carry on a voter registration drive (unless certain requirements are met); (3) as a grant to an individual for travel, study, or similar purposes unless made pursuant to procedures approved by the Secretary; (4) as a grant to an organization that is not a public charity or exempt

[485] Sec. 509(a). Private foundations are either private operating foundations or private non-operating foundations. In general, private operating foundations operate their own charitable programs in contrast to private non-operating foundations, which generally are grant-making organizations. Most private foundations are non-operating foundations.

[486] Secs. 4940 - 4945.

[487] See sec. 4946(a).

[488] Sec. 4941.

[489] Sec. 4942(g)(1)(A). A qualifying distribution also includes any amount paid to acquire an asset used (or held for use) directly in carrying out one or more of the organization's exempt purposes and certain amounts set-aside for exempt purposes. Sec. 4942(g)(1)(B) and 4942(g)(2).

[490] Sec. 4945. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

operating foundation unless the foundation exercises expenditure responsibility[491] with respect to the grant; or (5) for any non-charitable purpose. Additional excise taxes may also apply in the event a private foundation holds certain business interests ("excess business holdings")[492] or makes an investment that jeopardizes the foundation's exempt purposes.[493]

Supporting organizations

The Code provides that certain "supporting organizations" (in general, organizations that provide support to another section 501(c)(3) organization that is not a private foundation) are classified as public charities rather than private foundations.[494] To qualify as a supporting organization, an organization must meet all three of the following tests: (1) it must be organized and at all times operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more "publicly supported organizations"[495] (the "organizational and operational tests");[496] (2) it must be operated, supervised, or controlled by or in connection with one or more publicly supported organizations (the "relationship test");[497] and (3) it must not be controlled directly or indirectly by one or more disqualified persons (as defined in section 4946) other than foundation managers and other than one or more publicly supported organizations (the "lack of outside control test").[498]

To satisfy the relationship test, a supporting organization must hold one of three statutorily described close relationships with the supported organization. The organization must be: (1) operated, supervised, or controlled by a publicly supported organization (commonly referred to as "Type I" supporting organizations); (2) supervised or controlled in connection with a publicly supported organization ("Type II" supporting organizations); or (3) operated in connection with a publicly supported organization ("Type III" supporting organizations).[499]

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[491] In general, expenditure responsibility requires that a foundation make all reasonable efforts and establish reasonable procedures to ensure that the grant is spent solely for the purpose for which it was made, to obtain reports from the grantee on the expenditure of the grant, and to make reports to the Secretary regarding such expenditures. Sec. 4945(h).

[492] Sec. 4943.

[493] Sec. 4944.

[494] Sec. 509(a)(3).

[495] In general, supported organizations of a supporting organization must be publicly supported charities described in sections 509(a)(1) or (a)(2).

[496] Sec. 509(a)(3)(A).

[497] Sec. 509(a)(3)(B).

[498] Sec. 509(a)(3)(C).

[499] Treas. Reg. sec. 1.509(a)-4(f)(2).

Type I supporting organizations

In the case of supporting organizations that are operated, supervised, or controlled by one or more publicly supported organizations (Type I supporting organizations), one or more supported organizations must exercise a substantial degree of direction over the policies, programs, and activities of the supporting organization.[500] The relationship between the Type I supporting organization and the supported organization generally is comparable to that of a parent and subsidiary. The requisite relationship may be established by the fact that a majority of the officers, directors, or trustees of the supporting organization are appointed or elected by the governing body, members of the governing body, officers acting in their official capacity, or the membership of one or more publicly supported organizations.[501]

Type II supporting organizations

Type II supporting organizations are supervised or controlled in connection with one or more publicly supported organizations. Rather than the parent-subsidiary relationship characteristic of Type I organizations, the relationship between a Type II organization and its supported organizations is more analogous to a brother-sister relationship. In order to satisfy the Type II relationship requirement, generally there must be common supervision or control by the persons supervising or controlling both the supporting organization and the publicly supported organizations.[502] An organization generally is not considered to be "supervised or controlled in connection with" a publicly supported organization merely because the supporting organization makes payments to the publicly supported organization, even if the obligation to make payments is enforceable under state law.[503]

Type III supporting organizations

Type III supporting organizations are "operated in connection with" one or more publicly supported organizations. To satisfy the "operated in connection with" relationship, Treasury regulations require that the supporting organization be responsive to, and significantly involved in the operations of, the publicly supported organization. This relationship is deemed to exist where the supporting organization meets both a "responsiveness test" and an "integral part test."[504] In general, the responsiveness test requires that the Type III supporting organization be responsive to the needs or demands of the publicly supported organizations. In general, the integral part test requires that the Type III supporting organization maintain significant involvement in the operations of one or more publicly supported organizations, and that such

[500] Treas. Reg. sec. 1.509(a)-4(g)(1)(i).

[501] Id.

[502] Treas. Reg. sec. 1.509(a)- 4(h)(1).

[503] Treas. Reg. sec. 1.509(a)-4(h)(2).

[504] Treas. Reg. sec. 1.509(a)-4(i)(1).

publicly supported organizations are in turn dependent upon the supporting organization for the type of support which it provides.

There are two alternative methods for satisfying the integral part test. The first alternative is to establish that (1) the activities engaged in for or on behalf of the publicly supported organization are activities to perform the functions of, or carry out the purposes of, such organizations; and (2) these activities, but for the involvement of the supporting organization, normally would be engaged in by the publicly supported organizations themselves.[505] Organizations that satisfy this "but for" test sometimes are referred to as "functionally integrated" Type III supporting organizations. The second method for satisfying the integral part test is to establish that: (1) the supporting organization pays substantially all of its income to or for the use of one or more publicly supported organizations;[506] (2) the amount of support received by one or more of the publicly supported organizations is sufficient to insure the attentiveness of the organization or organizations to the operations of the supporting organization (this is known as the "attentiveness requirement");[507] and (3) a significant amount of the total support of the supporting organization goes to those publicly supported organizations that meet the attentiveness requirement.[508]

Charitable contributions

Contributions to organizations described in section 501(c)(3) are deductible, subject to certain limitations, as an itemized deduction from Federal income taxes.[509] Such contributions also generally are deductible for estate and gift tax purposes.[510] However, if the taxpayer retains control over the assets transferred to charity, the transfer may not qualify as a completed gift for purposes of claiming an income, estate, or gift tax deduction.

Public charities enjoy certain advantages over private foundations regarding the deductibility of contributions. For example, contributions of appreciated capital gain property to

[505] Treas. Reg. sec. 1.509(a)-4(i)(3)(ii).

[506] For this purpose, the IRS has defined the term "substantially all" of an organization's income to mean 85 percent or more. Rev. Rul. 76-208, 1976-1 C.B. 161.

[507] Although the regulations do not specify the requisite level of support in numerical or percentage terms, the IRS has suggested that grants that represent less than 10 percent of the beneficiary's support likely would be viewed as insufficient to ensure attentiveness. Gen. Couns. Mem. 36379 (August 15, 1975). As an alternative to satisfying the attentiveness standard by the foregoing method, a supporting organization may demonstrate attentiveness by showing that, in order to avoid the interruption of the carrying on of a particular function or activity, the beneficiary organization will be sufficiently attentive to the operations of the supporting organization. Treas. Reg. sec. 1.509(a)-4(i)(3)(iii)(b).

[508] Treas. Reg. sec. 1.509(a)-4(i)(3)(iii).

[509] Sec. 170.

[510] Secs. 2055 and 2522.

a private foundation generally are deductible only to the extent of the donor's cost basis.[511] In contrast, contributions to public charities generally are deductible in an amount equal to the property's fair market value, except for gifts of inventory and other ordinary income property, short-term capital gain property, and tangible personal property the use of which is unrelated to the donee organization's exempt purpose. In addition, under present law, a taxpayer's deductible contributions generally are limited to specified percentages of the taxpayer's contribution base, which generally is the taxpayer's adjusted gross income for a taxable year. The applicable percentage limitations vary depending upon the type of property contributed and the classification of the donee organization. In general, contributions to non-operating private foundations are limited to a smaller percentage of the donor's contribution base (up to 30 percent) than contributions to public charities (up to 50 percent).[512]

In general, taxpayers who make contributions and claim a charitable deduction must satisfy recordkeeping and substantiation requirements.[513] The requirements vary depending on the type and value of property contributed. A deduction generally may be denied if the donor fails to satisfy applicable recordkeeping or substantiation requirements.

Intermediate sanctions (excess benefit transaction tax)

The Code imposes excise taxes on excess benefit transactions between disqualified persons and public charities.[514] An excess benefit transaction generally is a transaction in which an economic benefit is provided by a public charity directly or indirectly to or for the use of a disqualified person, if the value of the economic benefit provided exceeds the value of the consideration (including the performance of services) received for providing such benefit.

For purposes of the excess benefit transaction rules, a disqualified person is any person in a position to exercise substantial influence over the affairs of the public charity at any time in the five-year period ending on the date of the transaction at issue.[515] Persons holding certain powers, responsibilities, or interests (e.g., officers, directors, or trustees) are considered to be in a position to exercise substantial influence over the affairs of the public charity.

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[511] A special rule in section 170(e)(5) provides that taxpayer are allowed a deduction equal to the fair market value of certain contributions of appreciated, publicly traded stock contributed to a private foundation.

[512] Sec. 170(b).

[513] Sec. 170(f)(8).

[514] Sec. 4958. The excess benefit transaction tax is commonly referred to as "intermediate sanctions," because it imposes penalties generally considered to be less punitive than revocation of the organization's exempt status. The tax also applies to transactions between disqualified persons and social welfare organizations (as described in section 501(c)(4)).

[515] Sec. 4958(f)(1). A disqualified person also includes certain family members of such a person, and certain entities that satisfy a control test with respect to such persons.

An excess benefit transaction tax is imposed on the disqualified person and, in certain cases, on the organization managers, but is not imposed on the public charity. An initial tax of 25 percent of the excess benefit amount is imposed on the disqualified person that receives the excess benefit. An additional tax on the disqualified person of 200 percent of the excess benefit applies if the violation is not corrected within a specified period. A tax of 10 percent of the excess benefit (not to exceed $10,000 with respect to any excess benefit transaction) is imposed on an organization manager that knowingly participated in the excess benefit transaction, if the manager's participation was willful and not due to reasonable cause, and if the initial tax was imposed on the disqualified person.

Community foundations

Community foundations generally are broadly supported section 501(c)(3) public charities that make grants to other charitable organizations located within a community foundation's particular geographic area. Donors sometimes make contributions to a community foundation through transfers to a separate trust or fund, the assets of which are held and managed by a bank or investment company.

Certain community foundations are subject to special rules that permit them to treat the separate funds or trusts maintained by the community foundation as a single entity for tax purposes. This "single entity" status allows the community foundation to be classified as a public charity. One of the requirements that community foundations must meet is that funds maintained by the community foundation may not be subject by the donor to any material restrictions or conditions. The prohibition against material restrictions or conditions is designed to prevent a donor from encumbering a fund in a manner that prevents the community foundation from freely distributing the assets and income from it in furtherance of the community foundation's charitable purposes. Under Treasury regulations, whether a particular restriction or condition placed by the donor on the transfer of assets is material must be determined from all of the facts and circumstances of the transfer. The regulations set out some of the more significant facts and circumstances to be considered in making a determination, including: (1) whether the transferee public charity is the fee owner of the assets received; (2) whether the assets are held and administered by the public charity in a manner consistent with its own exempt purposes; (3) whether the governing body of the public charity has the ultimate authority and control over the assets and the income derived from them; and (4) whether the governing body of the public charity is independent from the donor. The regulations provide several non-adverse factors for determining whether a particular restriction or condition placed by the donor on the transfer of assets is material. In addition, the regulations list numerous factors and subfactors that indicate that the community foundation is prevented from freely and effectively employing the donated assets and the income thereon.

Donor advised funds

Some charitable organizations (including community foundations) establish accounts to which donors may contribute and thereafter provide nonbinding advice or recommendations with regard to distributions from the fund or the investment of assets in the fund. Such accounts are commonly referred to as "donor advised funds." Donors who make contributions to charities for maintenance in a donor advised fund generally claim a charitable contribution deduction at the

time of the contribution. Although sponsoring charities frequently permit donors (or other persons appointed by donors) to provide nonbinding recommendations concerning the distribution or investment of assets in a donor advised fund, sponsoring charities generally must have legal ownership and control of such assets following the contribution. If the sponsoring charity does not have such control (or permits a donor to exercise control over amounts contributed), the donor's contributions may not qualify for a charitable deduction, and, in the case of a community foundation, the contribution may be treated as being subject to a material restriction or condition by the donor.

In recent years, a number of financial institutions have formed charitable corporations for the principal purpose of offering donor advised funds, sometimes referred to as "commercial" donor advised funds. In addition, some established charities have begun operating donor advised funds in addition to their primary activities. The IRS has recognized several organizations that sponsor donor advised funds, including "commercial" donor advised funds, as section 501(c)(3) public charities. The term "donor advised fund" is not defined in statute or regulations.

Under the Katrina Emergency Tax Relief Act of 2005, certain of the above-described percent limitations on contributions to public charities are temporarily suspended for purposes of certain "qualified contributions" to public charities. Under the Act, qualified contributions do not include a contribution if the contribution is for establishment of a new, or maintenance in an existing, segregated fund or account with respect to which the donor (or any person appointed or designated by such donor) has, or reasonably expects to have, advisory privileges with respect to distributions or investments by reason of the donor's status as a donor.

Excess business holdings of private foundations

Private foundations are subject to tax on excess business holdings.[516] In general, a private foundation is permitted to hold 20 percent of the voting stock in a corporation, reduced by the amount of voting stock held by all disqualified persons (as defined in section 4946). If it is established that no disqualified person has effective control of the corporation, a private foundation and disqualified persons together may own up to 35 percent of the voting stock of a corporation. A private foundation shall not be treated as having excess business holdings in any corporation if it owns (together with certain other related private foundations) not more than two percent of the voting stock and not more than two percent in value of all outstanding shares of all classes of stock in that corporation. Similar rules apply with respect to holdings in a partnership ("profits interest" is substituted for "voting stock" and "capital interest" for "nonvoting stock") and to other unincorporated enterprises (by substituting "beneficial interest" for "voting stock"). Private foundations are not permitted to have holdings in a proprietorship. Foundations generally have a five-year period to dispose of excess business holdings (acquired other than by purchase) without being subject to tax.[517] This five-year period may be extended an additional five years in limited circumstances.[518] The excess business holdings rules do not apply to

[516] Sec. 4943. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

[517] Sec. 4943(c)(6).

[518] Sec. 4943(c)(7).

holdings in a functionally related business or to holdings in a trade or business at least 95 percent of the gross income of which is derived from passive sources.[519]

The initial tax is equal to five percent of the value of the excess business holdings held during the foundation's applicable taxable year. An additional tax is imposed if an initial tax is imposed and at the close of the applicable taxable period, the foundation continues to hold excess business holdings. The amount of the additional tax is equal to 200 percent of such holdings.

Explanation of Provision

Definition of a donor advised fund

General rule

In general, the provision defines a "donor advised fund" as a fund or account that is: (1) separately identified by reference to contributions of a donor or donors (2) owned and controlled by a sponsoring organization and (3) with respect to which a donor (or any person appointed or designated by such donor (a "donor advisor") has, or reasonably expects to have, advisory privileges with respect to the distribution or investment of amounts held in the separately identified fund or account by reason of the donor's status as a donor. All three prongs of the definition must be met in order for a fund or account to be treated as a donor advised fund.

The provision defines a "sponsoring organization" as an organization that: (1) is described in section 170(c)[520] (other than a governmental entity described in section 170(c)(1), and without regard to any requirement that the organization be organized in the United States[521]); (2) is not a private foundation (as defined in section 509(a)); and (3) maintains one or more donor advised funds.

The first prong of the definition requires that a donor advised fund be separately identified by reference to contributions of a donor or donors. A distinct fund or account of a sponsoring organization does not meet this prong of the definition unless the fund or account refers to contributions of a donor or donors, such as by naming the fund after a donor, or by treating a fund on the books of the sponsoring organization as attributable to funds contributed by a specific donor or donors. Although a sponsoring organization's general fund is a "fund or account," such fund will not, as a general matter, be treated as a donor advised fund because the general funds of an organization typically are not separately identified by reference to contributions of a specific donor or donors; rather contributions are pooled anonymously within the general fund. Similarly, a fund or account of a sponsoring organization that is distinct from the organization's general fund and that pools contributions of multiple donors generally will not

[519] Sec. 4943(d)(3).

[520] Section 170(c) describes organizations to which charitable contributions that are deductible for income tax purposes can be made.

[521] See sec. 170(c)(2)(A).

meet the first prong of the definition unless the contributions of specific donors are in some manner tracked and accounted for within the fund. Accordingly, if a sponsoring organization establishes a fund dedicated to the relief of poverty within a specific community, or a scholarship fund, and the fund attracts contributions from several donors but does not separately identify or refer to contributions of a donor or donors, the fund is not a donor advised fund even if a donor has advisory privileges with respect to the fund. However, a fund or account may not avoid treatment as a donor advised fund even though there is no formal recognition of such separate contributions on the books of the sponsoring organization if the fund or account operates as if contributions of a donor or donors are separately identified. The Secretary has the authority to look to the substance of an arrangement, and not merely its form. In addition, a fund or account may be treated as identified by reference to contributions of a donor or donors if the reference is to persons related to a donor. For example, if a husband made contributions to a fund or account that in turn is named after the husband's wife, the fund is treated as being separately identified by reference to contributions of a donor.

The second prong of the definition provides that the fund be owned and controlled by a sponsoring organization. To the extent that a donor or person other than the sponsoring organization owns or controls amounts deposited to a sponsoring organization, a fund or account is not a donor advised fund. (In cases where a donor retains control of an amount provided to a sponsoring organization, there may not be a completed gift for purposes of the charitable contribution deduction.)

The third prong of the definition provides that with respect to a fund or account of a sponsoring organization, a donor or donor advisor has or reasonably expects to have advisory privileges with respect to the distribution or investment of amounts held in the fund or account by reason of a donor's status as a donor. Advisory privileges are distinct from a legal right or obligation. For example, if a donor executes a gift agreement with a sponsoring organization that specifies certain enforceable rights of the donor with respect to a gift, the donor will not be treated as having "advisory privileges" due to such enforceable rights for purposes of the donor advised fund definition.

The presence of an advisory privilege may be evident through a written document that describes an arrangement between the donor or donor adviser and the sponsoring organization whereby a donor or donor advisor may provide advice to the sponsoring organization about the investment or distribution of amounts held by a sponsoring organization, even if such privileges are not exercised. The presence of an advisory privilege also may be evident through the conduct of a donor or donor advisor and the sponsoring organization. For example, even in the absence of a writing, if a donor regularly provides advice to a sponsoring organization and the sponsoring organization regularly considers such advice, the donor has advisory privileges under the provision. Even if advisory privileges do not exist at the time of a contribution, later acts by the donor (through the provision of advice) and by the sponsoring organization (through the regular consideration of advice) may establish advisory privileges subsequent to the time of the contribution. For example, if a past donor of $100,000 telephones a sponsoring organization and states that he would like the sponsoring organization to distribute $10,000 to an organization described in section 170(b)(1)(A), although the mere act of providing advice does not establish an advisory privilege, if the sponsoring organization distributed the $10,000 to the organization specified by the donor in consideration of the donor's advice, and reinforced the donor in some

manner that future advice similarly would be considered, advisory privileges (or the reasonable expectation thereof) might be established. However, the mere provision of advice by a donor or donor advisor does not mean the donor or donor advisor has advisory privileges. For example, a donor's singular belief that he or she has advisory privileges with respect to the contribution does not establish an advisory privilege − there must be some reciprocity on the part of the sponsoring organization.

A person reasonably expects to have advisory privileges if both the donor or donor advisor and the sponsoring organization have reason to believe that the donor or donor advisor will provide advice and that the sponsoring organization generally will consider it. Thus, a person reasonably may expect to have advisory privileges even in the absence of the actual provision of advice. However, a donor's expectation of advisory privileges is not reasonable unless it is reinforced in some manner by the conduct of the sponsoring organization. If, at the time of the contribution, the sponsoring organization had no knowledge that the donor had an expectation of advisory privileges, or no intention of considering any advice provided by the donor, then the donor does not have a reasonable expectation of advisory privileges. Ultimately, the presence or absence of advisory privileges (or a reasonable expectation thereof) depends upon the facts and circumstances, which in turn depend upon the conduct (including any agreement) of both the donor or donor advisor and the sponsoring organization with respect to the making and consideration of advice.

A further requirement of the third prong is that the reasonable expectation of advisory privileges is by reason of the donor's status as a donor. Under this requirement, if a donor's reasonable expectation of advisory privileges is due solely to the donor's service to the organization, for example, by reason of the donor's position as an officer, employee, or director of the sponsoring organization, then the third prong of the definition is not satisfied. For instance, in general, a donor that is a member of the board of directors of the sponsoring organization may provide advice in his or her capacity as a board member with respect to the distribution or investment of amounts in a fund to which the board member contributed. However, if by reason of such donor's contribution to such fund, the donor secured an appointment on a committee of the sponsoring organization that advises how to distribute or invest amounts in such fund, the donor may have a reasonable expectation of advisory privileges, notwithstanding that the donor is an officer, employee, or director of the sponsoring organization.

The third prong of the definition is applicable to a donor or any person appointed or designated by such donor (the donor advisor). For purposes of this prong, a person appointed or designated by a donor advisor is treated as being appointed or designated by a donor. In addition, for purposes of any exception to the definition of a donor advised fund provided under the provision, to the extent a donor recommends to a sponsoring organization the selection of members of a committee that will advise as to distributions or investments of amounts in a fund or account of such sponsoring organization, such members are not treated as appointed or designated by the donor if the recommendation of such members by such donor is based on objective criteria related to the expertise of the member. For example, if a donor recommends that a committee of a sponsoring organization that will provide advice regarding scholarship grants for the advancement of science at local secondary schools should consist of persons who are the heads of the science departments of such schools, then the donor generally would not be

considered to have appointed or designated such persons, i.e., they would not be treated as donor advisors.

Exceptions

A donor advised fund does not include a fund or account that makes distributions only to a single identified organization or governmental entity. For example, an endowment fund owned and controlled by a sponsoring organization that is held exclusively to for the benefit of such sponsoring organization is not a donor advised fund even if the fund is named after its principal donor and such donor has advisory privileges with respect to the distribution of amounts held in the fund to such sponsoring organization. Accordingly, a donor that contributes to a university for purposes of establishing a fund named after the donor that exclusively supports the activities of the university is not a donor advised fund even if the donor has advisory privileges regarding the distribution or investment of amounts in the fund.

A donor advised fund also does not include a fund or account with respect to which a donor or donor advisor provides advice as to which individuals receive grants for travel, study, or other similar purposes, provided that (1) the donor's or donor advisor's advisory privileges are performed exclusively by such donor or donor advisor in such person's capacity as a member of a committee all of the members of which are appointed by the sponsoring organization, (2) no combination of a donor or donor advisor or persons related to such persons, control, directly or indirectly, such committee, and (3) all grants from such fund or account are awarded on an objective and nondiscriminatory basis pursuant to a procedure approved in advance by the board of directors of the sponsoring organization, and such procedure is designed to ensure that all such grants meet the requirements described in paragraphs (1), (2), or (3) of section 4945(g) (concerning grants to individuals by private foundations).

In addition, the Secretary may exempt a fund or account from treatment as a donor advised fund if such fund or account is advised by a committee not directly or indirectly controlled by a donor, donor advisor, or persons related to a donor or donor advisor. For such purposes, it is intended that indirect control includes the ability to exercise effective control. For example, if a donor, a donor advisor, and an attorney hired by the donor to provide advice regarding the donor's contributions constitute three of the five members of such a committee, the committee would be treated as being controlled indirectly by the donor for purposes of such an exception. Board membership alone does not establish direct or indirect control. In general, under this authority, the Secretary may establish rules regarding committee advised funds generally that, if followed, would result in the fund not being treated as a donor advised fund. The Secretary also may establish rules excepting certain types of committee-advised funds, such as a fund established exclusively for disaster relief, from the donor advised fund definition.

The provision also provides that the Secretary may exempt a fund or account from treatment as a donor advised fund if such fund or account benefits a single identified charitable purpose.

Deductibility of contributions to a sponsoring organization for maintenance in a donor advised fund

Contributions to certain sponsoring organizations for maintenance in a donor advised fund not eligible for a charitable deduction

Under the provision, contributions to a sponsoring organization for maintenance in a donor advised fund are not eligible for a charitable deduction for income tax purposes if the sponsoring organization is a veterans' organization described in section 170(c)(3), a fraternal society described in section 170(c)(4), or a cemetery company described in section 170(c)(5); for gift tax purposes if the sponsoring organization is a fraternal society described in section 2522(a)(3) or a veterans' organization described in section 2522(a)(4); or for estate tax purposes if the sponsoring organization is a fraternal society described in section 2055(a)(3) or a veterans' organization described in section 2055(a)(4). In addition, contributions to a sponsoring organization for maintenance in a donor advised fund are not eligible for a charitable deduction for income, gift, or estate tax purposes if the sponsoring organization is a Type III supporting organization (other than a functionally integrated Type III supporting organization). A functionally integrated Type III supporting organization is a Type III supporting organization that is not required under regulations established by the Secretary to make payments to supported organizations due to the activities of the organization related to performing the functions of, or carrying out the purposes of, such supported organizations.[522]

Additional substantiation requirements

In addition to satisfying present-law substantiation requirements under section 170(f), a donor must obtain, with respect to each charitable contribution to a sponsoring organization to be maintained in a donor advised fund, a contemporaneous written acknowledgment from the sponsoring organization providing that the sponsoring organization has exclusive legal control over the assets contributed.

Excess business holdings

The excess business holdings rules of section 4943 are applied to donor advised funds. In applying such rules, the term disqualified person means, with respect to a donor advised fund, a donor, donor advisor, a member of the family of a donor or donor advisor, or a 35 percent controlled entity of any such person. Transition rules apply to the present holdings of a donor advised fund similar to those of section 4943(c)(4)-(6).

[522] The current such regulation is Treasury regulation section 1.509(a)-4(i)(3)(ii).

Automatic excess benefit transactions, disqualified persons, taxable distributions, and more than incidental benefit

Automatic excess benefit transactions

Under the provision, any grant, loan, compensation, or other similar payment from a donor advised fund to a person that with respect to such fund is a donor, donor advisor, or a person related[523] to a donor or donor advisor automatically is treated as an excess benefit transaction under section 4958, with the entire amount[524] paid to any such person treated as the amount of the excess benefit. Other similar payments include payments in the nature of a grant, loan, or payment of compensation, such as an expense reimbursement. Other similar payments do not include, for example, a payment pursuant to bona fide sale or lease of property, which instead are subject to the general rules of section 4958 under the special disqualified person rule of the provision described below. Also as described below, payment by a sponsoring organization of, for example, compensation to a person who both is a donor with respect to a donor advised fund of the sponsoring organization and a service provider with respect to the sponsoring organization generally, will not be subject to the automatic excess benefit transaction rule of the provision unless the payment (of a grant, loan, compensation, or other similar payment) properly is viewed as a payment from the donor advised fund and not from the sponsoring organization.

Any amount repaid as a result of correcting an excess benefit transaction shall not be held in any donor advised fund.

Disqualified persons

In general, the provision provides that donors and donor advisors with respect to a donor advised fund (as well as persons related to a donor or donor advisor) are treated as disqualified persons under section 4958 with respect to transactions with such donor advised fund (though not necessarily with respect to transactions with the sponsoring organization more generally). For example, if a donor to a donor advised fund purchased securities from the fund, the purchase is subject to the rules of section 4958 because, under the provision, the donor is a disqualified person with respect to the fund. Thus, if as a result of the purchase, the donor receives an excess benefit as defined under generally applicable section 4958 rules, then the donor is subject to tax under such rules. If, as generally would be the case, the purchase was of securities that were contributed by the donor, a factor that may indicate the presence of an excess benefit is if the amount paid by the donor to acquire the securities is less than the amount the donor claimed the

[523] For purposes of the provision, a person is treated as related to another person if (1) such person bears a relationship to such other person similar to the relationships described in sections 4958(f)(1)(B) and 4958(f)(1)(C).

[524] The requirement of the provision that the entire amount of the payment be treated as the amount of the excess benefit differs from the generally applicable rule of section 4958, which provides that the excess benefit is the amount by which the value of the economic benefit provided exceeds the value of the consideration received.

securities were worth for purposes of any charitable contribution deduction of the donor. In addition, if a donor advised fund distributes securities to the sponsoring organization of the fund prior to purchase by the donor, consideration should be given to whether the distribution to the sponsoring organization prior to the purchase was intended to circumvent the disqualified person rule of the provision. If so, such a distribution may be disregarded with the result that the purchase is treated as being made from the donor advised fund and not from the sponsoring organization.

As a factual matter, a person who is a donor to a donor advised fund and thus a disqualified person with respect to the fund also may be a service provider with respect to the sponsoring organization. In general, under the provision, as under present law, the sponsoring organization's transactions with the service provider are not subject to the rules of section 4958 unless the service provider is a disqualified person with respect to the sponsoring organization (e.g., if the service provider serves on the board of directors of the sponsoring organization), or unless the transaction is not properly viewed as a transaction with the sponsoring organization but in substance is a transaction with the service provider's donor advised fund. If the transaction properly is viewed as a transaction with the donor advised fund of a sponsoring organization, then the transaction is subject to the rules of section 4958, and, as described above, if the transaction involves payment of a grant, loan, compensation, or other similar payment, then the transaction is subject to the special automatic excess benefit transaction rule of the provision. For example, if a sponsoring organization pays an amount as part of a service contract to a service provider (a bank, for example) who also is a donor to a donor advised fund of the sponsoring organization, and such amounts reasonably are charged uniformly in whole or in part as routine fees to all of the sponsoring organization's donor advised funds, the transaction generally is considered to be between the sponsoring organization and the service provider in such service provider's capacity as a service provider. The transaction is not considered to be a transaction between a donor advised fund and the service provider even though an amount paid under the contract was charged to a donor advised fund of the service provider.

The provision provides that an investment advisor (as well as persons related to the investment advisor) is treated as a disqualified person under section 4958 with respect to the sponsoring organization. Under the provision, the term "investment advisor" means, with respect to any sponsoring organization, any person (other than an employee of the sponsoring organization) compensated by the sponsoring organization for managing the investment of, or providing investment advice with respect to, assets maintained in donor advised funds (including pools of assets all or part of which are attributed to donor advised funds) owned by the sponsoring organization.

Taxable distributions

Under the provision, certain distributions from a donor advised fund are subject to tax. A "taxable distribution" is any distribution from a donor advised fund to (1) any natural person;[525]

[525] Under the provision, the term disqualified supporting organization means, with respect to any distribution from a donor advised fund: (1) a Type III supporting organization, other than a functionally integrated Type III supporting organization; and (2) any other supporting organization if either (a) the

(2) to any other person for any purpose other than one specified in section 170(c)(2)(B) (generally, a charitable purpose) or, if for a charitable purpose, the sponsoring organization does not exercise expenditure responsibility with respect to the distribution in accordance with section 4945(h). The expenditure responsibility rules generally require that an organization exert all reasonable efforts and establish adequate procedures to see that the distribution is spent solely for the purposes for which made, to obtain full and complete reports from the distributee on how the funds are spent, and to make full and detailed reports with respect to such expenditures to the Secretary. **A** taxable distribution does not in any case include a distribution to (1) an organization described in section 170(b)(1)(A)[526] (other than to a disqualified supporting organization); (2) the sponsoring organization of such donor advised fund; or (3) to another donor advised fund.[527]

In the event of a taxable distribution, an excise tax equal to 20 percent of the amount of the distribution is imposed against the sponsoring organization. In addition, an excise tax equal to five percent of the amount of the distribution is imposed against any manager of the sponsoring organization (defined in a manner similar to the term "foundation manager" under section 4945) who knowingly approved the distribution, not to exceed $10,000 with respect to any one taxable distribution. The taxes on taxable distributions are subject to abatement under generally applicable present law rules.

More than incidental benefit

Under the provision, if a donor, a donor advisor, or a person related to a donor or donor advisor of a donor advised fund provides advice as to a distribution that results in any such person receiving, directly or indirectly, a more than incidental benefit, an excise tax equal to 125 percent of the amount of such benefit is imposed against the person who advised as to the

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donor or donor advisor of the distributing donor advised fund directly or indirectly controls a supported organization of the supporting organization, or (b) the Secretary determines by regulations that a distribution to such supporting organization otherwise is inappropriate.

[526] For purposes of the requirement that a distribution be "to" an organization described in section 170(b)(1)(A), in general, it is intended that rules similar to the rules of Treasury regulation section 53.4945-5(a)(5) apply. Under such regulations, for purposes of determining whether a grant by a private foundation is "to" an organization described in section 509(a)(1), (2), or (3) and so not a taxable expenditure under section 4945, a foreign organization that otherwise is not a section 509(a)(1), (2), or (3) organization is considered as such if the private foundation makes a good faith determination that the grantee is such an organization. Similarly, under the provision, if a sponsoring organization makes a good faith determination (under standards similar to those currently applicable for private foundations) that a distributee organization is an organization described in section 170(b)(1)(A) (other than a disqualified supporting organization), then a distribution to such organization is not considered a taxable distribution.

[527] Under the provision, sponsoring organizations may make grants to natural persons from amounts not held in donor advised funds and may establish scholarship funds that are not donor advised funds. A donor may choose to make a contribution directly to such a scholarship fund (or advise that a donor advised fund make a distribution to such a scholarship fund).

distribution, and against the recipient of the benefit. Persons subject to the tax are jointly and severally liable for the tax. In addition, if a manager of the sponsoring organization (defined in a manner similar to the term "foundation manager" under section 4945) agreed to the making of the distribution, knowing that the distribution would confer a more than incidental benefit on a donor, a donor advisor, or a person related to a donor or donor advisor, the manager is subject to an excise tax equal to 10 percent of the amount of such benefit, not to exceed $10,000. The taxes on more than incidental benefit are subject to abatement under generally applicable present law rules.

In general, under the provision, there is a more than incidental benefit if, as a result of a distribution from a donor advised fund, a donor, donor advisor, or related person with respect to such fund receives a benefit that would have reduced (or eliminated) a charitable contribution deduction if the benefit was received as part of the contribution to the sponsoring organization. If, for example, a donor advises a that a distribution from the donor's donor advised fund be made to the Girl Scouts of America, and the donor's daughter is a member of a local unit of the Girl Scouts of America, the indirect benefit the donor receives as a result of such contribution is considered incidental under the provision, as it generally would not have reduced or eliminated the donor's deduction if it had been received as part of a contribution by donor to the sponsoring organization.[528]

Reporting and disclosure

The provision requires each sponsoring organization to disclose on its information return: (1) the total number of donor advised funds it owns; (2) the aggregate value of assets held in those funds at the end of the organization's taxable year; and (3) the aggregate contributions to and grants made from those funds during the year.

In addition, when seeking recognition of its tax-exempt status, a sponsoring organization must disclose whether it intends to maintain donor advised funds. It is intended that the organization must provide information regarding its planned operation of such funds, including, for example, a description of procedures it intends to use to: (1) communicate to donors and donor advisors that assets held in donor advised funds are the property of the sponsoring organization; and (2) ensure that distributions from donor advised funds do not result in more than incidental benefit to any person.

Effective Date

The provision generally is effective for taxable years beginning after the date of enactment. The provision relating to excess benefit transactions is effective for transactions occurring after the date of enactment. Information return requirements are effective for taxable years ending after the date of enactment. The requirements concerning disclosures on an organization's application for tax exemption are effective for organizations applying for recognition of exempt status after the date of enactment. Requirements relating to charitable

[528] See, e.g., Rev. Rul. 80-77, 1980-1 C.B. 56; Rev. Proc. 90-12, 1990-1 C.B. 471.

contributions to donor advised funds are effective for contributions made after 180 days from the date of enactment.

18. Improve accountability of supporting organizations (secs. 509, 4942, 4943, 4945, 4958, and 6033 of the Code)

Present Law

Requirements for section 501(c)(3) tax-exempt status

Charitable organizations, i.e., organizations described in section 501(c)(3), generally are exempt from Federal income tax and are eligible to receive tax deductible contributions. A charitable organization must operate primarily in pursuance of one or more tax-exempt purposes constituting the basis of its tax exemption.[529] In order to qualify as operating primarily for a purpose described in section 501(c)(3), an organization must satisfy the following operational requirements: (1) the net earnings of the organization may not inure to the benefit of any person in a position to influence the activities of the organization; (2) the organization must operate to provide a public benefit, not a private benefit;[530] (3) the organization may not be operated primarily to conduct an unrelated trade or business;[531] (4) the organization may not engage in substantial legislative lobbying; and (5) the organization may not participate or intervene in any political campaign.

Section 501(c)(3) organizations (with certain exceptions) are required to seek formal recognition of tax-exempt status by filing an application with the IRS (Form 1023). In response to the application, the IRS issues a determination letter or ruling either recognizing the applicant as tax-exempt or not.

In general, organizations exempt from Federal income tax under section 501(a) are required to file an annual information return with the IRS.[532] Under present law, the information return requirement does not apply to several categories of exempt organizations. Organizations

[529] Treas. Reg. sec. 1.501(c)(3)-1(c)(1). The Code specifies such purposes as religious, charitable, scientific, testing for public safety, literary, or educational purposes, or to foster international amateur sports competition, or for the prevention of cruelty to children or animals. In general, an organization is organized and operated for charitable purposes if it provides relief for the poor and distressed or the underprivileged. Treas. Reg. sec. 1.501(c)(3)-1(d)(2).

[530] Treas. Reg. sec. 1.501(c)(3)-1(d)(1)(ii).

[531] Treas. Reg. sec. 1.501(c)(3)-1(e)(1). Conducting a certain level of unrelated trade or business activity will not jeopardize tax-exempt status.

[532] Sec. 6033(a)(1).

exempt from the filing requirement include organizations (other than private foundations), the gross receipts of which in each taxable year normally are not more than $25,000.[533]

Classification of section 501(c)(3) organizations

In general

Section 501(c)(3) organizations are classified either as "public charities" or "private foundations."[534] Private foundations generally are defined under section 509(a) as all organizations described in section 501(c)(3) other than an organization granted public charity status by reason of: (1) being a specified type of organization (i.e., churches, educational institutions, hospitals and certain other medical organizations, certain organizations providing assistance to colleges and universities, or a governmental unit); (2) receiving a substantial part of its support from governmental units or direct or indirect contributions from the general public; or (3) providing support to another section 501(c)(3) entity that is not a private foundation. In contrast to public charities, private foundations generally are funded from a limited number of sources (e.g., an individual, family, or corporation). Donors to private foundations and persons related to such donors together often control the operations of private foundations.

Because private foundations receive support from, and typically are controlled by, a small number of supporters, private foundations are subject to a number of anti-abuse rules and excise taxes not applicable to public charities.[535] For example, the Code imposes excise taxes on acts of "self-dealing" between disqualified persons (generally, an enumerated class of foundation insiders[536]) and a private foundation. Acts of self-dealing include, for example, sales or exchanges, or leasing, of property; lending of money; or the furnishing of goods, services, or facilities between a disqualified person and a private foundation.[537] In addition, private non-operating foundations are required to pay out a minimum amount each year as qualifying distributions. In general, a qualifying distribution is an amount paid to accomplish one or more of the organization's exempt purposes, including reasonable and necessary administrative

[533] Sec. 6033(a)(2); Treas. Reg. sec. 1.6033-2(a)(2)(i); Treas. Reg. sec. 1.6033-2(g)(1). Sec. 6033(a)(2)(A)(ii) provides a $5,000 annual gross receipts exception from the annual reporting requirements for certain exempt organizations. In Announcement 82-88, 1982-25 I.R.B. 23, the IRS exercised its discretionary authority under section 6033 to increase the gross receipts exception to $25,000, and enlarge the category of exempt organizations that are not required to file Form 990.

[534] Sec. 509(a). Private foundations are either private operating foundations or private non-operating foundations. In general, private operating foundations operate their own charitable programs in contrast to private non-operating foundations, which generally are grant-making organizations. Most private foundations are non-operating foundations.

[535] Secs. 4940 - 4945.

[536] See sec. 4946(a).

[537] Sec. 4941.

expenses.[538] Certain expenditures of private foundations are also subject to tax.[539] In general, taxable expenditures are expenditures: (1) for lobbying; (2) to influence the outcome of a public election or carry on a voter registration drive (unless certain requirements are met); (3) as a grant to an individual for travel, study, or similar purposes unless made pursuant to procedures approved by the Secretary; (4) as a grant to an organization that is not a public charity or exempt operating foundation unless the foundation exercises expenditure responsibility[540] with respect to the grant; or (5) for any non-charitable purpose. Additional excise taxes may apply in the event a private foundation holds certain business interests ("excess business holdings")[541] or makes an investment that jeopardizes the foundation's exempt purposes.[542]

Public charities also enjoy certain advantages over private foundations regarding the deductibility of contributions. For example, contributions of appreciated capital gain property to a private foundation generally are deductible only to the extent of the donor's cost basis.[543] In contrast, contributions to public charities generally are deductible in an amount equal to the property's fair market value, except for gifts of inventory and other ordinary income property, short-term capital gain property, and tangible personal property the use of which is unrelated to the donee organization's exempt purpose. In addition, under present law, a taxpayer's deductible contributions generally are limited to specified percentages of the taxpayer's contribution base, which generally is the taxpayer's adjusted gross income for a taxable year. The applicable percentage limitations vary depending upon the type of property contributed and the classification of the donee organization. In general, contributions to non-operating private foundations are limited to a smaller percentage of the donor's contribution base (up to 30 percent) than contributions to public charities (up to 50 percent).[544]

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[538] Sec. 4942(g)(1)(A). A qualifying distribution also includes any amount paid to acquire an asset used (or held for use) directly in carrying out one or more of the organization's exempt purposes and certain amounts set-aside for exempt purposes. Sec. 4942(g)(1)(B) and 4942(g)(2).

[539] Sec. 4945. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

[540] In general, expenditure responsibility requires that a foundation make all reasonable efforts and establish reasonable procedures to ensure that the grant is spent solely for the purpose for which it was made, to obtain reports from the grantee on the expenditure of the grant, and to make reports to the Secretary regarding such expenditures. Sec. 4945(h).

[541] Sec. 4943.

[542] Sec. 4944.

[543] A special rule in section 170(e)(5) provides that taxpayer are allowed a deduction equal to the fair market value of certain contributions of appreciated, publicly traded stock contributed to a private foundation.

[544] Sec. 170(b).

Supporting organizations (section 509(a)(3))

The Code provides that certain "supporting organizations" (in general, organizations that provide support to another section 501(c)(3) organization that is not a private foundation) are classified as public charities rather than private foundations.[545] To qualify as a supporting organization, an organization must meet all three of the following tests: (1) it must be organized and at all times operated exclusively for the benefit of, to perform the functions of, or to carry out the purposes of one or more "publicly supported organizations"[546] (the "organizational and operational tests");[547] (2) it must be operated, supervised, or controlled by or in connection with one or more publicly supported organizations (the "relationship test");[548] and (3) it must not be controlled directly or indirectly by one or more disqualified persons (as defined in section 4946) other than foundation managers and other than one or more publicly supported organizations (the "lack of outside control test").[549]

To satisfy the relationship test, a supporting organization must hold one of three statutorily described close relationships with the supported organization. The organization must be: (1) operated, supervised, or controlled by a publicly supported organization (commonly referred to as "Type I" supporting organizations); (2) supervised or controlled in connection with a publicly supported organization ("Type II" supporting organizations); or (3) operated in connection with a publicly supported organization ("Type III" supporting organizations).[550]

Type I supporting organizations

In the case of supporting organizations that are operated, supervised, or controlled by one or more publicly supported organizations (Type I supporting organizations), one or more supported organizations must exercise a substantial degree of direction over the policies, programs, and activities of the supporting organization.[551] The relationship between the Type I supporting organization and the supported organization generally is comparable to that of a parent and subsidiary. The requisite relationship may be established by the fact that a majority of the officers, directors, or trustees of the supporting organization are appointed or elected by

[545] Sec. 509(a)(3).

[546] In general, supported organizations of a supporting organization must be publicly supported charities described in sections 509(a)(1) or (a)(2).

[547] Sec. 509(a)(3)(A).

[548] Sec. 509(a)(3)(B).

[549] Sec. 509(a)(3)(C).

[550] Treas. Reg. sec. 1.509(a)-4(f)(2).

[551] Treas. Reg. sec. 1.509(a)-4(g)(1)(i).

the governing body, members of the governing body, officers acting in their official capacity, or the membership of one or more publicly supported organizations.[552]

Type II supporting organizations

Type II supporting organizations are supervised or controlled in connection with one or more publicly supported organizations. Rather than the parent-subsidiary relationship characteristic of Type I organizations, the relationship between a Type II organization and its supported organizations is more analogous to a brother-sister relationship. In order to satisfy the Type II relationship requirement, generally there must be common supervision or control by the persons supervising or controlling both the supporting organization and the publicly supported organizations.[553] An organization generally is not considered to be "supervised or controlled in connection with" a publicly supported organization merely because the supporting organization makes payments to the publicly supported organization, even if the obligation to make payments is enforceable under state law.[554]

Type III supporting organizations

Type III supporting organizations are "operated in connection with" one or more publicly supported organizations. To satisfy the "operated in connection with" relationship, Treasury regulations require that the supporting organization be responsive to, and significantly involved in the operations of, the publicly supported organization. This relationship is deemed to exist where the supporting organization meets both a "responsiveness test" and an "integral part test."[555]

In general, the responsiveness test requires that the Type III supporting organization be responsive to the needs or demands of the publicly supported organizations. The responsiveness test may be satisfied in one of two ways.[556] First, the supporting organization may demonstrate that: (1)(a) one or more of its officers, directors, or trustees are elected or appointed by the officers, directors, trustees, or membership of the supported organization; (b) one or more members of the governing bodies of the publicly supported organizations are also officers, directors, or trustees of the supporting organization; or (c) the officers, directors, or trustees of the supporting organization maintain a close continuous working relationship with the officers,

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[552] Id.

[553] Treas. Reg. sec. 1.509(a)- 4(h)(1).

[554] Treas. Reg. sec. 1.509(a)-4(h)(2).

[555] Treas. Reg. sec. 1.509(a)-4(i)(1).

[556] For an organization that was supporting or benefiting one or more publicly supported organizations before November 20, 1970, additional facts and circumstances, such as an historic and continuing relationship between organizations, also may be taken into consideration to establish compliance with either of the responsiveness tests. Treas. Reg. sec. 1.509(a)-4(i)(1)(ii).

directors, or trustees of the publicly supported organizations; and (2) by reason of such arrangement, the officers, directors, or trustees of the supported organization have a significant voice in the investment policies of the supporting organization, the timing and manner of making grants, the selection of grant recipients by the supporting organization, and otherwise directing the use of the income or assets of the supporting organization.[557] Alternatively, the responsiveness test may be satisfied if the supporting organization is a charitable trust under state law, each specified supported organization is a named beneficiary under the trust's governing instrument, and the beneficiary organization has the power to enforce the trust and compel an accounting under state law.[558]

In general, the integral part test requires that the Type III supporting organization maintain significant involvement in the operations of one or more publicly supported organizations, and that such publicly supported organizations are in turn dependent upon the supporting organization for the type of support which it provides. There are two alternative methods for satisfying the integral part test. The first alternative is to establish that (1) the activities engaged in for or on behalf of the publicly supported organization are activities to perform the functions of, or carry out the purposes of, such organizations; and (2) these activities, but for the involvement of the supporting organization, normally would be engaged in by the publicly supported organizations themselves.[559] Organizations that satisfy this "but for" test sometimes are referred to as "functionally integrated" Type III supporting organizations. The second method for satisfying the integral part test is to establish that: (1) the supporting organization pays substantially all of its income to or for the use of one or more publicly supported organizations;[560] (2) the amount of support received by one or more of the publicly supported organizations is sufficient to insure the attentiveness of the organization or organizations to the operations of the supporting organization (this is known as the "attentiveness requirement");[561] and (3) a significant amount of the total support of the supporting organization goes to those publicly supported organizations that meet the "attentiveness requirement."[562]

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[557] Treas. Reg. sec. 1.509(a)-4(i)(2)(ii).

[558] Treas. Reg. sec. 1.509(a)-4(i)(2)(iii).

[559] Treas. Reg. sec. 1.509(a)-4(i)(3)(ii).

[560] For this purpose, the IRS has defined the term "substantially all" of an organization's income to mean 85 percent or more. Rev. Rul. 76-208, 1976-1 C.B. 161.

[561] Although the regulations do not specify the requisite level of support in numerical or percentage terms, the IRS has suggested that grants that represent less than 10 percent of the beneficiary's support likely would be viewed as insufficient to ensure attentiveness. Gen. Couns. Mem. 36379 (August 15, 1975). As an alternative to satisfying the attentiveness standard by the foregoing method, a supporting organization may demonstrate attentiveness by showing that, in order to avoid the interruption of the carrying on of a particular function or activity, the beneficiary organization will be sufficiently attentive to the operations of the supporting organization. Treas. Reg. sec. 1.509(a)-4(i)(3)(iii)(b).

[562] Treas. Reg. sec. 1.509(a)-4(i)(3)(iii).

Intermediate sanctions (excess benefit transaction tax)

The Code imposes excise taxes on excess benefit transactions between disqualified persons and public charities.[563] An excess benefit transaction generally is a transaction in which an economic benefit is provided by a public charity directly or indirectly to or for the use of a disqualified person, if the value of the economic benefit provided exceeds the value of the consideration (including the performance of services) received for providing such benefit.

For purposes of the excess benefit transaction rules, a disqualified person is any person in a position to exercise substantial influence over the affairs of the public charity at any time in the five-year period ending on the date of the transaction at issue.[564] Persons holding certain powers, responsibilities, or interests (e.g., officers, directors, or trustees) are considered to be in a position to exercise substantial influence over the affairs of the public charity.

An excess benefit transaction tax is imposed on the disqualified person and, in certain cases, on the organization managers, but is not imposed on the public charity. An initial tax of 25 percent of the excess benefit amount is imposed on the disqualified person that receives the excess benefit. An additional tax on the disqualified person of 200 percent of the excess benefit applies if the violation is not corrected within a specified period. A tax of 10 percent of the excess benefit (not to exceed $10,000 with respect to any excess benefit transaction) is imposed on an organization manager that knowingly participated in the excess benefit transaction, if the manager's participation was willful and not due to reasonable cause, and if the initial tax was imposed on the disqualified person.

Excess business holdings of private foundations

Private foundations are subject to tax on excess business holdings.[565] In general, a private foundation is permitted to hold 20 percent of the voting stock in a corporation, reduced by the amount of voting stock held by all disqualified persons (as defined in section 4946). If it is established that no disqualified person has effective control of the corporation, a private foundation and disqualified persons together may own up to 35 percent of the voting stock of a corporation. A private foundation shall not be treated as having excess business holdings in any corporation if it owns (together with certain other related private foundations) not more than two percent of the voting stock and not more than two percent in value of all outstanding shares of all classes of stock in that corporation. Similar rules apply with respect to holdings in a partnership ("profits interest" is substituted for "voting stock" and "capital interest" for "nonvoting stock") and to other unincorporated enterprises (by substituting "beneficial interest" for "voting stock").

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[563] Sec. 4958. The excess benefit transaction tax is commonly referred to as "intermediate sanctions," because it imposes penalties generally considered to be less punitive than revocation of the organization's exempt status. The tax also applies to transactions between disqualified persons and social welfare organizations (as described in section 501(c)(4)).

[564] Sec. 4958(f)(1). A disqualified person also includes certain family members of such a person, and certain entities that satisfy a control test with respect to such persons.

[565] Sec. 4943. Taxes imposed may be abated if certain conditions are met. Secs. 4961 and 4962.

Private foundations are not permitted to have holdings in a proprietorship. Foundations generally have a five-year period to dispose of excess business holdings (acquired other than by purchase) without being subject to tax.[566] This five-year period may be extended an additional five years in limited circumstances.[567] The excess business holdings rules do not apply to holdings in a functionally related business or to holdings in a trade or business at least 95 percent of the gross income of which is derived from passive sources.[568]

The initial tax is equal to five percent of the value of the excess business holdings held during the foundation's applicable taxable year. An additional tax is imposed if an initial tax is imposed and at the close of the applicable taxable period, the foundation continues to hold excess business holdings. The amount of the additional tax is equal to 200 percent of such holdings.

Explanation of Provision

Provisions relating to all supporting organizations (Type I, Type II, and Type III)

Automatic excess benefit transactions

Under the provision, if a supporting organization (Type I, Type II, or Type III) makes a grant, loan, payment of compensation, or other similar payment to a substantial contributor (or person related to the substantial contributor) of the supporting organization, for purposes of the excess benefit transaction rules (sec. 4958), the substantial contributor is treated as a disqualified person and the payment is treated automatically as an excess benefit transaction with the entire amount of the payment treated as the excess benefit.[569] Accordingly, the substantial contributor is subject to an initial tax of 25 percent of the amount of the payment under section 4958(a)(1) and an organization manager that participated in the making of the payment, knowing that the payment was a grant, loan, payment of compensation, or other similar payment to a substantial contributor, is subject to a tax of 10 percent of the amount of the payment under section 4958(a)(2). The second tier taxes and other rules of section 4958 also apply to such payments. Other similar payments include payments in the nature of a grant, loan, or payment of compensation, such as an expense reimbursement. Other similar payments do not include, for example, a payment made pursuant to a bona fide sale or lease of property with a substantial contributor. Such payments are subject to the general rules of section 4958 if the substantial contributor meets the definition of a disqualified person under section 4958(f), but are not subject to the automatic excess benefit transaction rule of the provision. The provision applies to

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[566] Sec. 4943(c)(6).

[567] Sec. 4943(c)(7).

[568] Sec. 4943(d)(3).

[569] The requirement of the provision that the entire amount of the payment be treated as the amount of the excess benefit differs from the generally applicable rule of section 4958, which provides that the excess benefit is the amount by which the value of the economic benefit provided exceeds the value of the consideration received.

payments by a supporting organization to a substantial contributor but not to payments by a substantial contributor to a supporting organization.

Under the provision, a substantial contributor means any person who contributed or bequeathed an aggregate amount of more than $5,000 to the organization, if such amount is more than two percent of the total contributions and bequests received by the organization before the close of the taxable year of the organization in which the contribution or bequest is received by the organization from such person. In the case of a trust, a substantial contributor also includes the creator of the trust. A substantial contributor does not include a public charity (other than a supporting organization). Under the provision, mechanical rules similar to the rules that apply in determining whether a person is a substantial contributor to a private foundation (secs. 509(d)(2)(B) and (C)) apply.

Under the provision, a person is a related person ("related person") if a person is a member of the family (determined under section 4958(f)(4)) of a substantial contributor, or a 35 percent controlled entity, defined as a corporation, partnership, trust, or estate in which a substantial contributor or family member thereof owns more than 35 percent of the total combined voting power, profits interest, or beneficial interest, as the case may be.

In addition, under the provision, loans by any supporting organization (Type I, Type II, or Type III) to a disqualified person (as defined in section 4958) of the supporting organization are treated as an excess benefit transaction under section 4958 and the entire amount of the loan is treated as an excess benefit. For this purpose, a disqualified person does not include a public charity (other than a supporting organization).

Disclosure requirements

Under the provision, all supporting organizations are required to file an annual information return (Form 990 series) with the Secretary, regardless of the organization's gross receipts. A supporting organization must indicate on such annual information return whether it is a Type I, Type II, or Type III supporting organization and must identify its supported organizations.

Under the provision, supporting organizations must demonstrate annually that the organization is not controlled directly or indirectly by one or more disqualified persons (other than foundation managers and other than one or more publicly supported organizations) through a certification on the annual information return. It is intended that supporting organizations be able to certify that the majority of the organization's governing body is comprised of individuals who were selected based on their special knowledge or expertise in the particular field or discipline in which the supporting organization is operating, or because they represent the particular community that is served by the supported public charities.

Disqualified person

Under the provision, for purposes of the excess benefit transaction rules (sec. 4958), a disqualified person of a supporting organization is treated as a disqualified person of the supported organization.

Provisions that apply to Type III supporting organizations

Payout with respect to Type III supporting organizations

Under the provision, the Secretary shall promulgate new regulations on payments required by Type III supporting organizations that are not functionally integrated Type III supporting organizations.[570] Such regulations shall require such organizations to make distributions of a percentage either of income or assets to the public charities they support in order to ensure that a significant amount is paid to such supported organizations. A functionally integrated Type III supporting organization is a Type III supporting organization that is not required under regulations established by the Secretary to make payments to supported organizations due to the activities of the organization related to performing the functions of, or carrying out the purposes of, such supported organizations.[571]

Excess business holdings

Under the provision, the excess business holdings rules of section 4943 are applied to Type III supporting organizations (other than functionally integrated Type III supporting organizations). In applying such rules, the term disqualified person has the meaning provided in section 4958, and also includes substantial contributors and related persons and any organization that is effectively controlled by the same person or persons who control the supporting organization or any organization substantially all of the contributions to which were made by the same person or persons who made substantially all of the contributions to the supporting organization. The excess business holdings rules do not apply if, as of November 18, 2005, the holdings were held (and at all times thereafter, are held) for the benefit of the community pursuant to the direction (made as of such date) of a State attorney general or a State official with jurisdiction over the Type III supporting organization.

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[570] See Treas. Reg. sec. 1.509(a)-4(i)(3)(iii).

[571] The current such regulation is Treasury regulation section 1.509(a)-4(i)(3)(ii). Under Treasury regulation section 1.509(a)-4(i)(3), the integral part test of current law may be satisfied in one of two ways, one of which requires a payout of substantially all of an organization's income to or for the use of one or more publicly supported organizations, and one of which does not require such a payout. There is concern that the current income-based payout does not result in a significant amount being paid to charity if assets held by a supporting organization produce little to no income, especially in relation to the value of the assets held by the organization, and as compared to amounts paid out by nonoperating private foundations. There also is concern that the current regulatory standards for satisfying the integral part test not by reason of a payout are not sufficiently stringent to ensure that there is a sufficient nexus between the supporting and supported organizations. In revising the regulations, the Secretary has the discretion to determine whether it is appropriate to impose a pay out requirement on any or all organizations not currently required to pay out. It is intended that, in revisiting the current regulations, if the distinction between Type III supporting organizations that are required to pay out and those that are not required to pay out is retained, which may be appropriate, the Secretary nonetheless shall strengthen the standard for qualification as an organization that is not required to pay out. For example, as one requirement, the Secretary may consider whether substantially all of the activities of such an organization should be activities in direct furtherance of the functions or purposes of supported organizations.

The Secretary has the authority not to impose the excess business holdings rules if the organization establishes to the satisfaction of the Secretary that excess holdings of an organization are consistent with the purpose or function constituting the basis of the organization's exempt status. In exercising this authority, the Secretary should consider, in addition to any other factors the Secretary considers significant, as favorable, but not determinative, factors, a reasoned determination by the State attorney general with jurisdiction over the supporting organization, that disposition of the holdings would have a severe detrimental impact on the community, and a binding commitment by the supporting organization to pay out at least five percent of the value of the organization's assets each year to its supported organizations. A reasoned determination would require, among other things, evidence that any such determination was made pursuant to serious study by the State attorney general of the issues involved in disposing of the excess holdings, and findings by the State attorney general about the detrimental economic impact that would result from such disposition. If as a result of such State attorney general's study and findings, the State attorney general directed as a matter of State law that permission of the State would be required prior to any sale of the holdings, such a factor should be given strong consideration by the Secretary.

Transition rules apply to the present holdings of an organization similar to those of section 4943(c)(4)-(6).[572]

Under the provision, the excess business holdings rules also apply to Type II supporting organizations but only if such organization accepts any gift or contribution from a person (other than a public charity, not including a supporting organization) who (1) controls, directly or indirectly, either alone or together (with persons described below) the governing body of a supported organization of the supporting organization;[573] (2) is a member of the family of such a person; or (3) is a 35 percent controlled entity.

Organizational and operational requirements

[572] Under the transition rules, in general, where the existing holdings of a supporting organization and disqualified persons are in excess of 50 percent (of a voting stock interest, profits interest, or beneficial interest), and not 20 percent or 35 percent as under the general rule, but are not in excess of 75 percent, a 10-year period is available before the holdings must be reduced to 50 percent. If such holdings are more than 75 percent, the reduction to 50 percent need not occur for a 15-year period. The 15-year period is expanded to 20 years if the holdings are more than 95 percent. After the expiration of the 10, 15, or 20 year period, if disqualified persons have holdings in a business enterprise in excess of two percent of the enterprise, the supporting organization has 15 additional years to dispose of any of its own holdings that are above 25 percent of the holdings in the enterprise. If disqualified persons do not have such holdings, then the supporting organization has 15 additional years to dispose of any of its own holdings that are above 35 percent of the holdings in the enterprise.

[573] For purposes of the provision, it is intended that indirect control includes the ability to exercise effective control. For example, if a person made a gift to a supporting organization and a combination of such person, a person related to such person, and such person's personal attorney were members of the five-member board of a supported organization of the supporting organization, the organization would be treated as being indirectly controlled by such person. Board membership alone does not establish direct or indirect control.

The provision provides that, in general, after the date of enactment, a Type III supporting organization may not support an organization that is not organized in the United States.[574] But, for Type III supporting organizations that support a foreign organization on the date of enactment, the provision provides that the general rule does not apply until the first day of the third taxable year of the organization beginning after the date of enactment.

Relationship to supported organization(s)

Under the provision, a Type III supporting organization must apprise each organization it supports of information regarding the supporting organization in order to help ensure the supporting organization's responsiveness. It is intended that such a showing could be satisfied, for example, through provision of documentation such as a copy of the supporting organization's governing documents, any changes made to the governing documents, the organization's annual information return filed with the Secretary (Form 990 series), any tax return (Form 990-T) filed with the Secretary, and an annual report (including a description of all of the support provided by the supporting organization, how such support was calculated, and a projection of the next year's support). It is intended that failure to make a sufficient showing is a factor in determining whether the responsiveness test of present law is met.

In general, under the provision, a Type III supporting organization that is organized as a trust must, in addition to present law requirements, establish to the satisfaction of the Secretary, that it has a close and continuous relationship with the supported organization such that the trust is responsive to the needs or demands of the supported organization. A transition rule for existing trusts provides that the provision is not effective until one year after the date of enactment but is effective on the date of enactment for other trusts.

Other provisions

Under the provision, if a Type I or Type III supporting organization accepts any gift or contribution from a person (other than a public charity, not including a supporting organization) who (1) controls, directly or indirectly, either alone or together (with persons described below) the governing body of a supported organization of the supporting organization; (2) is a member of the family of such a person; or (3) is a 35 percent controlled entity, then the supporting organization is treated as a private foundation for all purposes until such time as the organization can demonstrate to the satisfaction of the Secretary that it qualifies as a public charity other than as a supporting organization.

Under the provision, a nonoperating private foundation may not count as a qualifying distribution under section 4942 any amount paid to (1) a Type III supporting organization that is not a functionally integrated Type III supporting organization or (2) any other supporting

[574] U.S. charities established principally to provide financial and other assistance to a foreign charity, sometimes referred to as "friends of" organizations, may not be established as supporting organizations under the provision. Such organizations may continue to obtain public charity status, however, by virtue of demonstrating broad public support (as described in sections 509(a)(1) and 509(a)(2)).

organization if a disqualified person with respect to the foundation directly or indirectly controls the supporting organization or a supported organization of such supporting organization. Any amount that does not count as a qualifying distribution under this rule is treated as a taxable expenditure under section 4945.

Effective Date

The provision generally is effective on the date of enactment. The excess benefit transaction rules are effective for transactions occurring after July 25, 2006 (except that the rule relating to the definition of a disqualified person is effective for transactions occurring after the date of enactment). The excess business holdings requirements are effective for taxable years beginning after the date of enactment. The provision relating to distributions by nonoperating private foundations is effective for distributions and expenditures made after the date of enactment. The return requirements are effective for returns filed for taxable years ending after the date of enactment.

TITLE XIII: OTHER PROVISIONS

A. Technical Corrections to Mine Safety Act[575]

The bill makes technical corrections to the Mine Improvement and New Emergency Response Act ("MINER Act") of 2006 (Pub. L. No. 109-236). Specifically, the provision corrects a drafting error by recodifying the MINER Act's provisions increasing criminal penalties under the Mine Safety and Health Act at 30 U.S.C. s. 820(d), as was intended, and makes other technical and conforming changes.

B. Going To The Sun Road

Present Law

Section 1940 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users ("SAFETEA-LU") provides authorization for the appropriation of $50 million in funding for work to resurface, repair, rehabilitate and reconstruct the Going to the Sun Road at Glacier National Park Montana ($10 million per year for fiscal years 2005 through 2009).

Section 10212 of SAFETEA-LU rescinds a specified amount of unobligated balances of funds apportioned before September 30, 2009, to States for the Interstate maintenance, national highway system, bridge, congestion mitigation and air quality improvement, surface transportation (other than the STP set-aside programs), metropolitan planning, minimum guarantee, Appalachian development highway system, recreational trails, safe routes to school, freight intermodal connectors, coordinated border infrastructure, high risk rural road, and highway safety improvement programs. The specified amount is $8,543,000,000.

Explanation of Provision

The provision eliminates the authorizations for fiscal years 2005 and 2006, and redistributes those funds as $16,666,666 per year for fiscal years 2007 through 2009. The provision further provides that funds authorized to be appropriated under the provision are contract authority to be available for obligation in the same manner as if the funds were apportioned under chapter 1 of title 23 of the United States Code. The provision increases by $50 million the specified amount subject to rescission from $8,543,000,000 to $8,593,000,000.

Effective Date

The provision is effective on the date of enactment.

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[575] The description of these provisions, which do not amend the Internal Revenue Code of 1986, was provided to the staff of the Joint Committee on Taxation by staff of the House Committee on Education and the Workforce.

C. Exception to Local Furnishing Requirements for Certain Alaska Hydroelectric Projects

Present Law

Interest on bonds issued by State and local governments generally is excluded from gross income for Federal income tax purposes if the proceeds of such bonds are used to finance direct activities of governmental units or if such bonds are repaid with revenues of governmental units. Interest on State or local government bonds issued to finance activities of private persons is taxable unless a specific exception applies ("private activity bonds").

The interest on private activity bonds is eligible for tax-exemption if such bonds are issued for certain purposes permitted by the Code ("qualified private activity bonds"). The definition of a qualified private activity bond includes bonds issued to finance certain private facilities for the "local furnishing" of electricity or gas. Generally, a facility provides local furnishing if the area served by the facility does not exceed (1) two contiguous counties or (2) a city and a contiguous county (the "two-county rule").

The Code generally limits the local furnishing exception to bonds for facilities (1) of persons who were engaged in the local furnishing of electric energy or gas on January 1, 1997 (or a successor in interest to such persons), and (2) that serve areas served by those persons on such date (the "service area limitation") (sec. 142(f)(3)). The Small Business Job Protection Act of 1996 (the "Act") provided an exception from these limitations for bonds issued to finance the acquisition of the Snettisham hydroelectric project from the Alaska Power Administration (Pub. L. No. 104-188, sec. 1804 (1996)).

Explanation of Provision

The provision provides an exception from the service area limitation under section 142(f)(3) for bonds issued prior to May 31, 2006, to finance the Lake Dorothy hydroelectric project to provide electricity to the City of Hoonah, Alaska. In addition, the furnishing of electric service to the City of Hoonah, Alaska is disregarded for purposes of applying the two-county rule to bonds issued before May 31, 2006, to finance either the Lake Dorothy hydroelectric project (as defined in the provision) or to finance the acquisition of the Snettisham hydroelectric project.

Effective Date

The provision is effective on the date of enactment.

D. Extend Certain Tax Rules for Qualified Tuition Programs (sec. 529 of the Code)

Present Law

Overview

Section 529 provides specified income tax and transfer tax rules for the treatment of accounts and contracts established under qualified tuition programs.[576] A qualified tuition program is a program established and maintained by a State or agency or instrumentality thereof, or by one or more eligible educational institutions, which satisfies certain requirements and under which a person may purchase tuition credits or certificates on behalf of a designated beneficiary that entitle the beneficiary to the waiver or payment of qualified higher education expenses of the beneficiary (a "prepaid tuition program").[577] In the case of a program established and maintained by a State or agency or instrumentality thereof, a qualified tuition program also includes a program under which a person may make contributions to an account that is established for the purpose of satisfying the qualified higher education expenses of the designated beneficiary of the account, provided it satisfies certain specified requirements (a "savings account program").[578] Under both types of qualified tuition programs, a contributor establishes an account for the benefit of a particular designated beneficiary to provide for that beneficiary's higher education expenses.

For this purpose, qualified higher education expenses means tuition, fees, books, supplies, and equipment required for the enrollment or attendance of a designated beneficiary at an eligible educational institution, and expenses for special needs services in the case of a special needs beneficiary that are incurred in connection with such enrollment or attendance.[579] Qualified higher education expenses generally also include room and board for students who are enrolled at least half-time.[580]

Income tax treatment

A qualified tuition program, including a savings account or a prepaid tuition contract established thereunder, generally is exempt from income tax, although it is subject to the tax on unrelated business income.[581] Contributions to a qualified tuition account (or with respect to a

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[576] The term "account" refers to a prepaid tuition benefit contract or a tuition savings account established pursuant to a qualified tuition program.

[577] Sec. 529(b)(1)(A).

[578] Sec. 529(b)(1)(A).

[579] Sec. 529(e)(3)(A).

[580] Sec. 529(e)(3)(B).

[581] Sec. 529(a). An interest in a qualified tuition account is not treated as debt for purposes of the debt-financed property rules under section 514. Sec. 529(e)(4).

prepaid tuition contract) are not deductible to the contributor or includible in income of the designated beneficiary or account owner. Earnings accumulate tax-free until a distribution is made. If a distribution is made to pay qualified higher education expenses, no portion of the distribution is subject to income tax.[582] If a distribution is not used to pay qualified higher education expenses, the earnings portion of the distribution is subject to Federal income tax[583] and a 10-percent additional tax (subject to exceptions for death, disability, or the receipt of a scholarship).[584] A change in the designated beneficiary of an account or prepaid contract is not treated as a distribution for income tax purposes if the new designated beneficiary is a member of the family of the old beneficiary.[585]

Gift and generation-skipping transfer (GST) tax treatment

A contribution to a qualified tuition account (or with respect to a prepaid tuition contract) is treated as a completed gift of a present interest from the contributor to the designated beneficiary.[586] Such contributions qualify for the per-donee annual gift tax exclusion ($12,000 for 2006), and, to the extent of such exclusions, also are exempt from the generation-skipping transfer (GST) tax. A contributor may contribute in a single year up to five times the per-donee annual gift tax exclusion amount to a qualified tuition account and, for gift tax and GST tax purposes, treat the contribution as having been made ratably over the five-year period beginning with the calendar year in which the contribution is made.[587]

A distribution from a qualified tuition account or prepaid tuition contract generally is not subject to gift tax or GST tax.[588] Those taxes may apply, however, to a change of designated

[582] Sec. 529(c)(3)(B). Any benefit furnished to a designated beneficiary under a qualified tuition account is treated as a distribution to the beneficiary for these purposes. Sec. 529(c)(3)(B)(iv).

[583] Sec. 529(c)(3)(A) and (B)(ii).

[584] Sec. 529(c)(6).

[585] Sec. 529(c)(3)(C)(ii). For this purpose, "member of the family" means, with respect to a designated beneficiary: (1) the spouse of such beneficiary; (2) an individual who bears a relationship to such beneficiary which is described in paragraphs (1) through (8) of section 152(a) (i.e., with respect to the beneficiary, a son, daughter, or a descendant of either; a stepson or stepdaughter; a sibling or stepsibling; a father, mother, or ancestor of either; a stepfather or stepmother; a son or daughter of a brother or sister; a brother or sister of a father or mother; and a son-in-law, daughter-in-law, father-in-law, mother-in-law, brother-in-law, or sister-in-law), or the spouse of any such individual; and (3) the first cousin of such beneficiary. Sec. 529(e)(2).

[586] Sec. 529(c)(2)(A).

[587] Sec. 529(c)(2)(B).

[588] Sec. 529(c)(5)(A).

beneficiary if the new designated beneficiary is in a generation below that of the old beneficiary or if the new beneficiary is not a member of the family of the old beneficiary.[589]

Estate tax treatment

Qualified tuition program account balances or prepaid tuition benefits generally are excluded from the gross estate of any individual.[590] Amounts distributed on account of the death of the designated beneficiary, however, are includible in the designated beneficiary's gross estate.[591] If the contributor elected the special five-year allocation rule for gift tax annual exclusion purposes, any amounts contributed that are allocable to the years within the five-year period remaining after the year of the contributor's death are includible in the contributor's gross estate.[592]

Certain provisions expiring under the Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA")

The Economic Growth and Tax Relief Reconciliation Act of 2001 ("EGTRRA") made a number of changes to the rules regarding qualified tuition programs. However, in order to comply with reconciliation procedures under the Congressional Budget Act of 1974, EGTRRA included a "sunset" provision, pursuant to which the provisions of the Act expire at the end of 2010. Specifically, EGTRRA's provisions do not apply for taxable, plan, or limitation years beginning after December 31, 2010, or to estates of decedents dying after, or gifts or generation-skipping transfers made after, December 31, 2010. EGTRRA provides that, as of the effective date of the sunset, the Code will be applied as thought EGTRRA had never been enacted.

The provisions of present-law section 529 scheduled to expire by reason of the EGTRRA sunset provision include: (1) the provision that makes qualified withdrawals from qualified tuition accounts exempt from income tax; (2) the repeal of a pre-EGTRRA requirement that there be more than a de minimis penalty imposed on amounts not used for educational purposes and the imposition of the 10-percent additional tax on distributions not used for qualified higher education purposes; (3) a provision permitting certain private educational institutions to establish prepaid tuition programs that qualify under section 529 if they receive a ruling or determination to that effect from the Internal Revenue Service, and if the assets are held in a trust created or organized for the exclusive benefit of designated beneficiaries; (4) certain provisions permitting rollovers from one account to another account; (5) certain rules regarding the treatment of room and board as qualifying expenses; (6) certain rules regarding coordination with Hope and lifetime learning credit provisions; (7) the provision that treats first cousins as members of the

[589] Sec. 529(c)(5)(B).

[590] Sec. 529(c)(4)(A).

[591] Sec. 529(c)(4)(B).

[592] Sec. 529(c)(4)(C).

family for purposes of the rollover and change in beneficiary rules; and (8) certain provisions regarding the education expenses of special needs beneficiaries.[593]

Explanation of Provision

Permanently extend EGTRRA modifications to qualified tuition program rules

The provision repeals the sunset provision of EGTRRA insofar as it applies to the EGTRRA modifications to the rules regarding qualified tuition programs. As a result, the provision permanently extends all provisions of EGTRRA that expire at the end of 2010 that relate to qualified tuition programs.

Grant of regulatory authority to Treasury

Present law regarding the transfer tax treatment of qualified tuition program accounts is unclear and in some situations imposes tax in a manner inconsistent with generally applicable transfer tax provisions. In addition, present law creates opportunities for abuse of qualified tuition programs. For example, taxpayers may seek to avoid gift and generation skipping transfer taxes by establishing and contributing to multiple qualified tuition program accounts with different designated beneficiaries (using the provision of section 529 that permits a contributor to contribute up to five times the annual exclusion amount per donee in a single year and treat the contribution as having been made ratably over five years), with the intention of subsequently changing the designated beneficiaries of such accounts to a single, common beneficiary and distributing the entire amount to such beneficiary without further transfer tax consequences. Taxpayers also may seek to use qualified tuition program accounts as retirement accounts with all of the tax benefits but none of the restrictions and requirements of qualified retirement accounts. The provision grants the Secretary broad regulatory authority to clarify the tax treatment of certain transfers and to ensure that qualified tuition program accounts are used for the intended purpose of saving for higher education expenses of the designated beneficiary, including the authority to impose related recordkeeping and reporting requirements. The provision also authorizes the Secretary to limit the persons who may be contributors to a qualified tuition program and to determine any special rules for the operation and Federal tax consequences of such programs if such contributors are not individuals.

Effective Date

The provision is effective on the date of enactment.

[593] EGTRRA sec. 402.

TITLE XIV: TARIFF PROVISIONS[594]

A. Suspension of Duties on Liquid Crystal Device (LCD) Panel Assemblies for Use in LCD Direct View Televisions

Present Law

Present law provides for a 4.5 percent ad valorem customs duty on imported liquid crystal device (LCD) panel assemblies for use in LCD direct view televisions from all sources (provided for in subheading 9013.80.90 of the Harmonized Tariff Schedule of the United States).

Explanation of Provision

The provision suspends the present customs duty applicable to LCD panel assemblies for use in LCD direct view televisions through December 31, 2009.

Effective Date

The provision applies with respect to goods entered, or withdrawn from warehouse for consumption, on or after the 15th day after the date of the enactment.

B. Suspension of Duties on Ceiling Fans

Present Law

Present law provides for a 4.7-percent ad valorem customs duty on imported ceiling fans from all sources (provided for in subheading 8414.51.00 of the Harmonized Tariff Schedule of the United States), but that duty is currently suspended for all imports until December 31, 2006.

Explanation of Provision

The provision extends the current suspension of the customs duty applicable to ceiling fans through December 31, 2009.

Effective Date

The provision applies with respect to goods entered, or withdrawn from warehouse for consumption, on or after the 15th day after the date of the enactment.

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[594] The description of these provisions, which do not amend the Internal Revenue Code of 1986, was provided to the staff of the Joint Committee on Taxation by staff of the House Committee on Ways and Means and the Senate Committee on Finance.

C. Suspension of Duties on Nuclear Steam Generators, Reactor Vessel Heads and Pressurizers

Present Law

Nuclear steam generators, as classified under heading 9902.84.02 of the Harmonized Tariff Schedule of the United States, enter the United States duty free until December 31, 2008. After December 31, 2008, the duty on nuclear steam generators returns to the column 1 rate of 5.2 percent under subheading 8402.11.00 of the Harmonized Tariff Schedule of the United States.

Nuclear reactor vessel heads and pressurizers, as classified under heading 9902.84.03 of the Harmonized Tariff Schedule of the United States, enter the United States duty free until December 31, 2008. After December 31, 2008, the duty on nuclear reactor vessel heads and pressurizers returns to the column 1 rate of 3.3 percent under subheading 8401.40.00 of the Harmonized Tariff Schedule of the United States.

Explanation of Provision

With respect to imported nuclear steam generators, reactor vessel heads, and pressurizers, that are purchased pursuant to a contract entered into on or before July 31, 2006, the provision extends the present-law suspension of applicable customs duty through December 31, 2010.

Effective Date

The provision is effective with respect to goods entered, or withdrawn from warehouse for consumption, on or after the 15th day after the date of enactment.

D. Suspension of New Shipper Bonding Privilege

Present Law

Once an antidumping or countervailing duty order is in place, importers of subject merchandise are required to post cash deposits to cover the estimated duties. An exception is made for importers of subject merchandise from new shippers (foreign producers or exporters) who were not selling to the United States at the time of the original investigation and who have requested a review of their shipments to determine individual dumping margins or countervailing duty rates. During the pendency of such a review, an importer of subject merchandise from a new shipper may choose to post a bond or security in lieu of a cash deposit of estimated duties.

Explanation of Provision

The provision temporarily suspends the ability of importers of subject merchandise from new shippers to choose to post a bond or security in lieu of a cash deposit of estimated duties during the period beginning on April 1, 2006, through June 30, 2009.

The provision requires the Secretary of the Treasury, in consultation with the Secretary of Commerce and the Secretary of Homeland Security, to submit to the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate a report describing: (1) any major problem encountered in the collection of duties, including any fraudulent activity intended to avoid the payment of duties; (2) an estimate of duties that were uncollected and a description of why the duties were uncollected; and (3) recommendations on any additional action needed to address problems related to the collection of duties.

In addition, the provision requires the Secretary of the Treasury, in consultation with the Secretary of Commerce, the United States Trade Representative, and the Secretary of Homeland Security, to submit to the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate a report containing: (1) recommendations on whether the temporary suspension of the new shipper bonding privilege should be extended beyond June 30, 2009; (2) an assessment of the effectiveness of any administrative measure taken to address problems encountered in the collection of duties from importers of subject merchandise from new shippers; and (3) an assessment of any burden imposed on legitimate trade and commerce by the temporary suspension of the new shipper bonding privilege.

Effective Date

The provision is effective on the date of enactment, and it applies to imports from new shippers during the period beginning on April 1, 2006, through June 30, 2009.

E. Wool Trust Fund and Wool Fabric Duty Suspension

Present Law

Present law enacted in the Trade Act of 2002 and extended in the Miscellaneous Trade Bill of 2004 provides for temporary duty reductions or duty suspensions of certain fabrics made from worsted wool and for payments made under the wool trust fund. The fund consists of three special refund pools for importers of wool fabric, wool yarn, and wool fiber and top, and identifies all persons eligible for the refunds including U.S. manufacturers of these products. The program expires in 2007.

Explanation of Provision

The provision extends the current program for an additional two years until 2009.

Effective Date

The provision is effective on the date of enactment.

F. Miscellaneous Trade and Technical Corrections Provisions

Present Law

Under present law, imports of the goods described in Title I of Division B of the bill enter under the specified Harmonized Tariff Schedule subheading with the associated tariff rate.

Explanation of Provision

The bill includes certain provisions taken from the House-passed H.R. 4944, the Miscellaneous Trade and Technical Corrections Act of 2006, for which there are Senate companions introduced, which suspend or reduce the tariff rate on certain selected products. The provisions also correct government errors or authorize reliquidations of duties related to certain products.

Effective Date

The effective date is the 15th day after the date of enactment.

G. Vessel Repair Duties

Present law

Under present law, section 466(h) of the Tariff Act of 1930 (19 U.S.C. 1466(h)), the cost of equipment, repair parts, and materials that are installed on a vessel documented under the laws of the United States and engaged in the foreign or coasting trade, if the installation is done by members of the regular crew of such vessel while the vessel is on the high seas, is excluded from a 50 percent ad valorem duty.

Explanation of Provision

This provision clarifies that the 50 percent ad valorem duty on vessel repairs excludes the cost of equipment, repair parts, and materials that are installed on a vessel documented under the laws of the United States and engaged in the foreign or coasting trade, if the installation is done by members of the regular crew of such vessel while the vessel is on the high seas, in foreign waters, or in a foreign port, and does not involve foreign shipyard repairs by foreign labor.

Effective Date

The provision is effective on the date of enactment, and it applies to vessel equipment, repair parts, and materials installed on or after April 25, 2001.

H. CAFTA-DR Provisions Related to Agreement Implementation

Present Law

Present law enacted in the Dominican Republic-Central America-United States Free Trade Agreement (CAFTA-DR) Implementation Act allows the President to exercise proclamation authority to implement provisions of the Agreement including tariffs and rules of origin changes, except for rules of origin changes for certain textile and apparel items. Also, current law was drafted under the assumption at the time of enactment of this legislation that the entry into force for all CAFTA-DR countries would be identical including for the purpose of determining the rule of origin covering co-produced products.

Explanation of Provision

The provision extends narrow proclamation authority to the President to implement specific proposed changes to the rules of origin for certain apparel items and certain trade preference level administrative changes as embodied in letters of understanding between the United States and several of the CAFTA-DR countries. For those countries that have not implemented the Agreement and have not negotiated letters of understanding with the United States for rules of origin changes, the provision grants limited proclamation authority to the President to proclaim changes yet to be agreed upon related to rules of origin for articles containing pocketing material, but the President's authority is subject to consultation and layover requirements and Congressional disapproval action. These limitations are considered appropriate given the extraordinary nature of granting open-ended proclamation authority to a President in this sensitive product area.

In addition, the provision provides a technical correction with respect to application of a retroactive effective date for certain liquidations and reliquidations of co-produced products. The provision also creates a reporting requirement for the U.S. Trade Representative's Office on the status of negotiations related to other CAFTA-DR textile changes concerning socks and technical corrections.

Effective Date

The effective date is the date of enactment, and the apparel proclamation authority extends until December 31, 2007.

PETITIONER'S EXHIBIT KAH

INDIANA-AMERICAN WATER COMPANY
I.U.R.C. CAUSE NO. 43187

DIRECT TESTIMONY

OF

KERRY A. HEID

ON

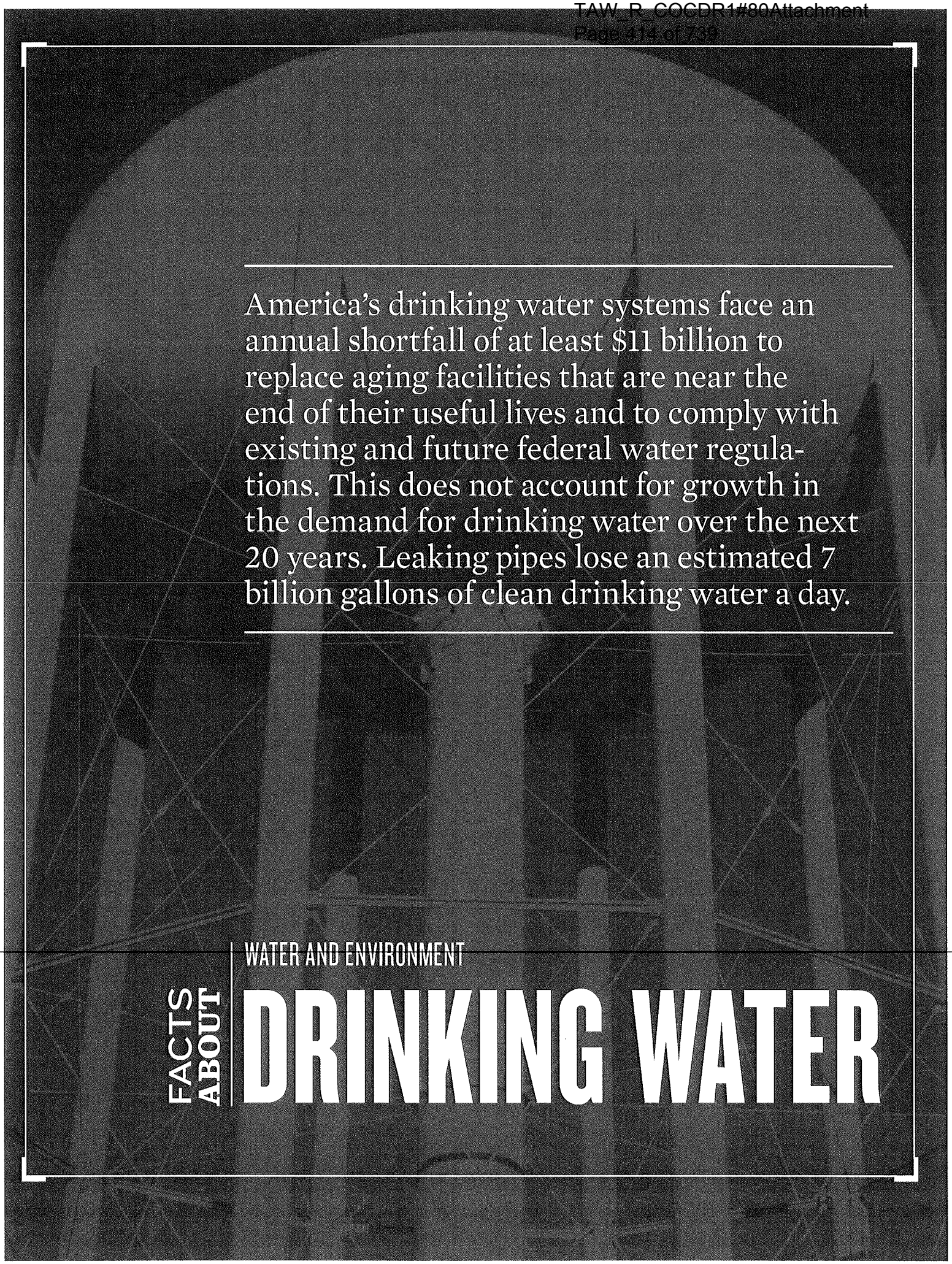
PURCHASED POWER ADJUSTMENT

SPONSORING PETITIONER'S EXHIBITS
KAH-1 THROUGH KAH-7

2009

INFRASTRUCTURE FACT SHEET

ASCE American Society of Civil Engineers



America's drinking water systems face an annual shortfall of at least $11 billion to replace aging facilities that are near the end of their useful lives and to comply with existing and future federal water regulations. This does not account for growth in the demand for drinking water over the next 20 years. Leaking pipes lose an estimated 7 billion gallons of clean drinking water a day.

WATER AND ENVIRONMENT

FACTS ABOUT

DRINKING WATER

WATER AND ENVIRONMENT

DRINKING WATER

2009 GRADE **D-**

RAISING THE GRADES

SOLUTIONS

THAT WILL WORK **NOW**

A = Exceptional
B = Good
C = Mediocre
D = Poor
F = Failing

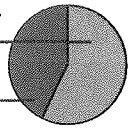
AMERICA'S INFRASTRUCTURE G.P.A. **D**

ESTIMATED 5-YEAR FUNDING REQUIREMENTS FOR **DRINKING WATER AND WASTEWATER**

Total investment needs
$255 BILLION

Estimated spending
$146.4 BILLION

Projected shortfall
$108.6 BILLION



★ **INCREASE** funding for water infrastructure system improvements and associated operations through a comprehensive federal program;

★ **CREATE** a Water Infrastructure Trust Fund to finance the national shortfall in funding of infrastructure systems under the Clean Water Act and the Safe Drinking Water Act, including storm-water management and other projects designed to improve the nation's water quality;

★ **EMPLOY** a range of financing mechanisms, such as appropriations from general treasury funds, issuance of revenue bonds and tax exempt financing at state and local levels, public-private partnerships, state infrastructure banks, and user fees on certain consumer products as well as innovative financing mechanisms, including broad-based environmental restoration taxes to address problems associated with water pollution, wastewater management and treatment, and storm-water management.

CONDITIONS

The nation's drinking-water systems face staggering public investment needs over the next 20 years. Although America spends billions on infrastructure each year, drinking water systems face an annual shortfall of at least $11 billion in funding needed to replace aging facilities that are near the end of their useful life and to comply with existing and future federal water regulations. The shortfall does not account for any growth in the demand for drinking water over the next 20 years.[2]

Of the nearly 53,000 community water systems, approximately 83% serve 3,300 or fewer people. These systems provide water to just 9% of the total U.S. population served by all community systems. In contrast, 8% of community water systems serve more than 10,000 people and provide water to 81% of the population served. Eighty-five percent (16,348) of nontransient, noncommunity water systems and 97% (83,351) of transient noncommunity water systems serve 500 or fewer people. These smaller systems face huge financial, technological, and managerial challenges in meeting a growing number of federal drinking-water regulations.

In 2002, the U.S. Environmental Protection Agency (EPA) issued The Clean Water and Drinking Water Infrastructure Gap Analysis, which identified potential funding gaps between projected needs and spending from 2000 through 2019. This analysis estimated a potential 20-year funding gap for drinking water capital expenditures as well as operations and maintenance, ranging from $45 billion to $263 billion, depending on spending levels. Capital needs alone were pegged at $161 billion.[2]

The Congressional Budget Office (CBO) concluded in 2003 that "current funding from all levels of government and current revenues generated from ratepayers will not be sufficient to meet the nation's future demand for water infrastructure." The CBO estimated the nation's needs for drinking water investments at between $10 billion and $20 billion over the next 20 years.[3]

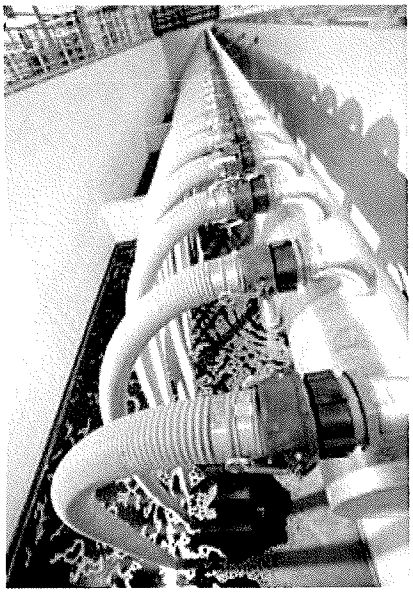
In 1996, Congress enacted the drinking-water state revolving loan fund (SRF) program. The program authorizes the EPA to award annual capitalization grants to states. States then use their grants (plus a 20% state match) to provide loans and other assistance to public water systems. Communities repay loans into the fund, thus replenishing the fund and making resources available for projects in other communities. Eligible projects include installation and replacement of treatment facilities, distribution systems, and some storage facilities. Projects to replace aging infrastructure are eligible if they are needed to maintain compliance or to further public health protection goals.

Federal assistance has not kept pace with demand, however. Between FY 1997 and FY 2008, Congress appropriated approximately $9.5 billion for the SRF. This 11-year total is only slightly more than the annual capital investment gap for each of those years as calculated by the EPA in 2002.

RAISING THE GRADES
CASE STUDIES

ORANGE COUNTY, CA ★ Groundwater Replenishment System

The California Department of Water Resources predicts that by 2020, the entire state will experience water shortages equal to the needs of 4 to 12 million families of four for one year. To meet growing demand and reduce reliance on water imported from northern California and the Colorado River, the Orange County Water District developed the Groundwater Replenishment (GWR) System that takes highly treated sewer water and purifies it to levels that meet state and federal drinking water standards. GWR System water will be between 35% to 75% cheaper than water produced by seawater desalination and the purification process will consume about half the energy. *Photos courtesy of Orange County Water District.*



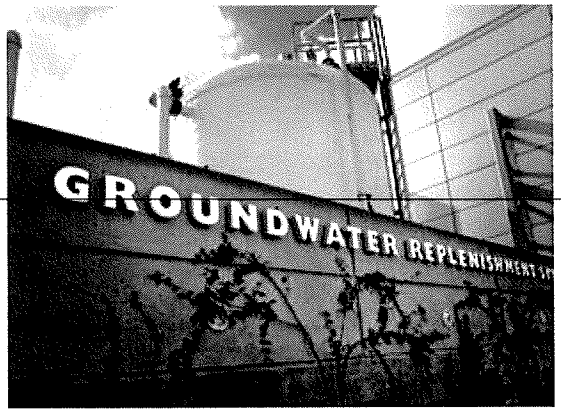


TABLE 2.1 ★ Design Life of Drinking Water Systems

COMPONENTS	YEARS OF DESIGN LIFE
Reservoirs and Dams	50–80
Treatment Plants—Concrete Structures	60–70
Treatment Plants—Mechanical and Electrical	15–25
Trunk Mains	65–95
Pumping Stations—Concrete Structures	60–70
Pumping Stations—Mechanical and Electrical	25
Distribution	60–95

SOURCE US EPA Clean Water and Drinking Water Infrastructure Gap Analysis Report, September 2002

TABLE 2.2 ★ Water Usage: 1950 and 2000

	1950	2000	PERCENT CHANGE
Population (Millions)	93.4	242	159%
Usage (Billions of Gallons per Day)	14	43	207%
Per Capita Usage (Gallons per Person per Day)	149	179	20%

SOURCE US EPA Clean Water and Drinking Water Infrastructure Gap Analysis Report, September 2002

RESILIENCE

Drinking water systems provide a critical public health function and are essential to life, economic development, and growth. Disruptions in service can hinder disaster response and recovery efforts, expose the public to water-borne contaminants, and cause damage to roadways, structures, and other infrastructure, endangering lives and resulting in billions of dollars in losses.

The nation's drinking-water systems are not highly resilient; present capabilities to prevent failure and properly maintain or reconstitute services are inadequate. Additionally, the lack of investment and the interdependence on the energy sector contribute to the lack of overall system resilience. These shortcomings are currently being addressed through the construction of dedicated emergency power generation at key drinking water utility facilities, increased connections with adjacent utilities for emergency supply, and the development of security and criticality criteria. Investment prioritization must take into consideration system vulnerabilities, interdependencies, improved efficiencies in water usage via market incentives, system robustness, redundancy, failure consequences, and ease and cost of recovery.

The question is not whether the federal government should take more responsibility for drinking water improvements but how it should take more responsibility.

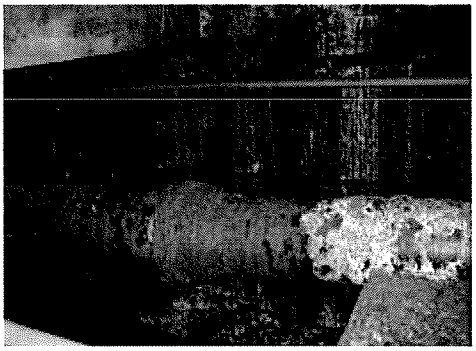
RAISING THE GRADES
CASE STUDIES

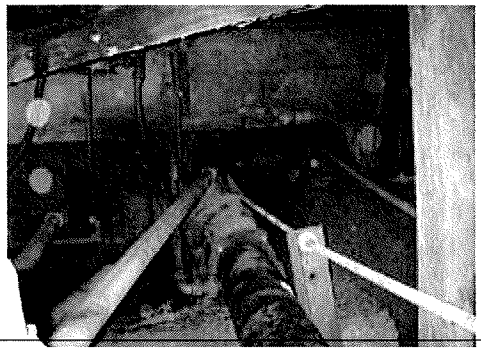
LOUISVILLE, KY ★ American Recovery and Reinvestment Act Funding

The Louisville Water Company has proposed $11 million in projects that could be funded as part of the 2009 American Recovery and Reinvestment Act (P.L. 111-005). The projects would rehabilitate 75 miles of water main to extend the useful life of the system and reduce water main breaks. In addition, 9.5 miles of water main would be replaced to improve water quality, fire hydrant flow and reduce maintenance. Together, the projects would support 101 jobs.

PORT ANGELES, WA ★ Downtown Water Main Project

In 2008, the City of Port Angeles completed a project to replace the water mains and sidewalks in the downtown area. The replacement water mains bring the city's downtown area to a service level that meets current fire flow standards, reduces seismic risks and helps prevent water main failures due to age. The original water mains were installed in 1914. In conjunction with the water main replacement, many sidewalks were replaced with pavers that enhance the downtown appearance. Also, new conduit and wiring was installed for street and pedestrian lighting. *Photos courtesy of the City of Port Angeles.*





CONCLUSION

New solutions are needed for what amounts to nearly $1 trillion in critical drinking water and wastewater investments over the next two decades. Not meeting the investment needs of the next 20 years risks reversing public health, environmental, and economic gains of the past three decades.

Without a significantly enhanced federal role in providing assistance to drinking water infrastructure, critical investments will not occur. Possible solutions include grants, trust funds, loans and incentives for private investment. The question is not whether the federal government should take more responsibility for drinking water improvements but how it should take more responsibility.

The case for federal investment is compelling. Needs are large and unprecedented; in many locations, local sources cannot be expected to meet this challenge alone, and because waters are shared across local and state boundaries, the benefits of federal help will accrue to the entire nation. Clean and safe water is no less a national priority than are national defense, an adequate system of interstate highways, and a safe and efficient aviation system. These latter infrastructure programs enjoy sustainable, long-term federal grant programs; under current policy, water and wastewater infrastructure do not. ★

SOURCES

1 Congressional Research Service, *Safe Drinking Water Act: Selected Regulatory and Legislative Issues*, April 2008.

2 U.S. Environmental Protection Agency, *The Clean Water and Drinking Water Infrastructure Gap Analysis*, September 2002.

3 U.S. Congressional Budget Office, *Future Investment in Drinking Water and Wastewater Infrastructure*, May 2002.

4 G. Tracy Mehan, Testimony before the Subcommittee on Water Resources and Environment, U.S. House Transportation and Infrastructure Committee, February 2009. http://transportation.house.gov/hearings/hearing.aspx.

BEFORE THE TENNESSEE REGULATORY AUTHORITY

NASHVILLE, TENNESSEE
April 27, 2012

IN RE:	)	
	)	
PETITION OF TENNESSEE AMERICAN WATER	)	**DOCKET NO.**
COMPANY FOR A GENERAL RATE INCREASE	)	**10-00189**

CONCURRENCE AND DISSENT OF DIRECTOR ROBERSON

On April 4, 2011, the voting panel assigned to this docket convened to consider the *Petition* filed by Tennessee American Water Company ("TAWC" or the "Company"). At the conclusion of the deliberations, a majority[1] of the panel concluded that TAWC should be granted an annual revenue increase of $5,551,013, or an overall rate increase of 14.98%. For the reasons set forth below, I respectfully dissent.

Regulation must serve in the stead of competition and market forces. The Authority is, of course, obligated to set rates that are "just and reasonable"[2] and a fair rate of return on a company's investments while ensuring the safety and reliability of the service offered.[3] But I believe that it is incumbent upon us as regulators to reflect current market conditions and economic realities in making our decisions as to exactly what constitutes a "just and reasonable" rate or a "fair" rate of return.

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[1] Chairman Freeman presented her pre-filed motion, with which Director Kyle concurred.
[2] *See* Tenn. Code Ann. § 65-5-101(a) (Supp. 2010).
[3] *See Bluefield Water Works & Improvement Co. v. P.S.C. of West Virginia*, 262 U.S. 679 (1923) and *F.P.C. v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

The majority approved 110 employees for TAWC, an increase from the 109 employees approved in the 2008 rate case.[4] I do not agree with the majority that, in these tough economic times, the Company should be allowed to increase the number of employees. I do agree, however, with the Consumer Advocate that the maximum number of employees should be 107.[5] My conclusion is based upon the current 108 employee count[6] and the exclusion of the government affairs specialist, who is a registered lobbyist in the state.[7] Lobbying is not necessary for the provision of water service and, therefore, expenses relating to lobbying should not be funded by consumers of the Company and should be excluded for ratemaking purposes. In my opinion, the lobbyist is doing the bidding of the stockholders, and I cannot in good conscience conclude that any portion of this expense is appropriate for the ratepayers to bear.[8] My conclusion is also consistent with agency precedent to exclude those expenses. Therefore, I would reduce the revenue increase adopted by the majority by $163,944.

I believe that the finance manager recently hired by TAWC[9] duplicates a portion of American Water Works Service Company's function for finance services that are provided to TAWC. It was appropriate when there was no finance manager at the Company to pay the management fees to the Service Company to cover that service. However, now that a local finance manager has been hired at the Company, I believe there is a duplication of services by the Company and the Service Company. The

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[4] *See In re: Petition of Tennessee American Water Company to Change and Increase Certain Rates and Charges so as to Permit It to Earn a Fair and Adequate Rate of Return on Its Property Used and Useful in Furnishing Water Services to Its Employees,* Docket No. 08-00039, *Order*, pp. 12-13 (January 13, 2009). In adopting the then-current level of 109 employees, the Authority noted that "public utilities . . . must hold the line on expenses and employee growth during lean times." *Id.* at 13.

[5] *Consumer Advocate and Protection Division's Post-Hearing Brief*, p. 22 (March 21, 2011).

[6] Transcript of Proceedings (Public Record), v. I-B , p. 118 (February 28, 2011).

[7] Transcript of Proceedings, v. III-A, pp. 72-73 (March 2, 2011).

[8] The majority excluded 20% of the expenses for the lobbyist.

[9] Transcript of Proceedings, v. III-A, pp 54-56 (March 2, 2011).

Company failed to convince me that the newly hired finance manager would be doing different or new duties than what the Service Company had been doing. A prudency test would not allow the double paying for the same services. In the test year that the Authority selected, there is $573,170 allocated to the Finance services category that the Service Company provides to TAWC. I would eliminate from these management fees the cost for the finance manager of $120,333, including salary and benefits, so that customers would not have to bear the burden of paying for such duplication.

In TRA Docket No. 08-00039, TAWC provided a capital additions forecast that it intended to fund and implement during the attrition period. Funding for these additions was included by the Authority in forecasting the attrition period rate base on which rates in the 08-00039 case were established.[10] The Company, however, did not follow through on its commitment by failing to implement its scheduled capital projects, namely the Citico Treatment Plant project.[11] The net effect was that the Company was granted revenues for needed projects but diverted revenues to other purposes such as dividends and management fees to its service company. In this case, the Company again requests inclusion of the Citico project in its forecasted capital additions in calculating its attrition period rate base.

To assure that capital additions, specifically the Citico treatment plant project, will be implemented and in a timely manner, I would remove the capital additions for the Citico treatment plant project of $5,301,305 from rate base calculations. Based upon my

[10] The Authority adopted the Consumer Advocate's attrition year Construction Work in Progress amount of $5,284,789, which included Citico Phase I. *See In re: Petition of Tennessee American Water Company to Change and Increase Certain Rates and Charges so as to Permit It to Earn a Fair and Adequate Rate of Return on Its Property Used and Useful in Furnishing Water Services to Its Employees,* Docket No. 08-00039, *Order*, p. 38 (January 13, 2009)

[11] The Company states it has completed Phase "IA", but not Phase "IB" of the Citico project. *See* Transcript of Proceedings, v. I-B, pp. 122-124 (February 28, 2011).

calculations, this adjustment will reduce the overall revenue requirement by $753,736. This amount includes the reduced depreciation expense, accumulated depreciation, and the resulting tax effects, but does not include any adjustments to the accumulated deferred income taxes. I would, in essence, establish a tracker so that the company would be allowed rate recovery for this project as it is implemented. This action would assure that rates allowed by the Authority and funded by ratepayers for the needed improvements at the Citico plant would actually go for their intended purposes. Using the "trust but verify" standard, in order to receive recovery, I would require the Company to first submit documentation of its capital additions, not to exceed the projected cost of $5.3 million related to the Citico project, including all associated depreciation and tax effects to the Authority in this docket.

I further conclude that the return on equity should be set at 9.65%. This figure is slightly higher than the Consumer Advocate witness Dr. Klein's maximum recommendation of 9.6% but below the Company's requested 11.5% equity return.[12] This figure is similar to recent equity returns awarded by other state regulatory commissions, especially the 9.75% equity return recently awarded to Kentucky American Water Company by the Kentucky Public Service Commission.[13] Given these factors, I believe that a 9.65% equity return is just and reasonable and is sufficient for the Company to attract the necessary capital. Using the other elements of cost of capital adopted by the majority, this leads to a 7.68% overall rate of return which I also find to be just and reasonable during these economic times. The result of the adoption of this rate of return is to reduce the revenue increase approved by the majority by $282,961.

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[12] Transcript of Proceedings, v. VI-C, p. 252 (March 7, 2011); Michael A. Miller, Pre-filed Direct Testimony, p. 23 (September 23, 2010).
[13] Michael A. Miller, Pre-filed Rebuttal Testimony, Rebuttal Exhibit MAM 5 (February 8, 2011).

For the foregoing reasons, I respectfully dissent from the majority's decisions and find that TAWC should be granted a revenue increase of $4,242,134 or an increase of 11.28%.

I concur in the approval of the rate design for industrial customers as set forth in the *Summary of Settlement Between CRMA and TAWC* filed by the Chattanooga Regional Manufacturers Association ("CRMA") and the Company on March 28, 2011.[14]

I also concur in the recovery of $275,000 in rate case expenses from TRA Docket No. 08-00039, as ordered by the Court of Appeals, through a separate line-item charge on customers' bills that will discontinue once the full amount is recovered. The amount is to be recovered over a period of six months and from all customer classes.[15] I believe that it is important to note that the Court of Appeals in its Opinion did not prohibit the Authority in future cases from thoroughly reviewing rate case expenses and, using a prudency test, denying or cutting those expenses. Rather, the Court only concluded that we needed to explain the reasons for any denial or cuts more fully in the record or in our orders.[16]

Eddie Roberson 9-30-11

Eddie Roberson, Director Date

[14] At the regularly scheduled Authority Conference held on April 18, 2011, I concurred with Chairman Freeman's motion to approve the settlement agreement between CRMA and TAWC, while Director Kyle voted against the motion.

[15] At the regularly scheduled Authority Conference held on August 22, 2011, I concurred with Chairman Freeman's motion to recover the rate case expenses from Docket No. 08-00039, as mandated by the Court of Appeals, through a separate line-item charge on customers' bills, while Director Kyle voted against the motion.

[16] *See Tennessee American Water Company v. Tennessee Regulatory Authority, et al.,* No. M2009-00553-COA-R12-CV, 2011 WL 334678 (Tenn. Ct. App. at Nashville, Jan. 28, 2011), *perm. app. denied,* (Tenn. May 25, 2011).

PETITIONER'S EXHIBIT KAH
PAGE 1 OF 31
IURC CAUSE NO. 43187

DIRECT TESTIMONY
OF
KERRY A. HEID

I. INTRODUCTION AND OVERVIEW

1. Please state your name and business address.

A. My name is Kerry A. Heid. My address is 3212 Brookfield Drive, Newburgh, IN 47630.

2. What is your occupation?

A. I am an independent rate consultant. I have been engaged by Indiana-American Water Company ("Petitioner") to recommend and develop a fuel and purchased power cost recovery mechanism, hereinafter referred to as a Purchased Power Adjustment ("PPA"), in this proceeding.

3. What is your educational background?

A. In 1973 I graduated from Purdue University with a Bachelor of Science degree in Civil Engineering. In 1985 I graduated from Indiana University with a Master of Business Administration degree, majoring in Finance.

4. Do you hold any professional accreditations?

A. Yes. I have been a registered Professional Engineer in the State of Indiana since 1977.

5. Please describe your business experience.

A. My business experience and qualifications are set forth in Petitioner's Exhibit KAH-1. I was formerly Director of Rates for Vectren Corporation, a combination electric and gas electric utility. I would also note that I am a member of the American Water Works Association ("AWWA") Rates and Charges Committee, which is responsible for the AWWA Water Rates Manual M1, "Principles of Water Rates, Fees, and Charges." I am also on the AWWA Rates and Charges Subcommittee that is drafting the next edition of the AWWA Water Rates Manual. I was also formerly Principal Water and Sewer Engineer with the Indiana Utility Regulatory Commission (and its predecessor the Public Service Commission of Indiana), as well as a member of the NARUC (National Association of Regulatory Utility Commissioners) Water Subcommittee.

6. Have you previously testified before this Commission?

A. Yes. I have testified on numerous occasions before this Commission.

7. Please discuss how your testimony is organized.

A. My testimony is organized into the following sections:

I. Introduction and Overview

II. Nature of Fuel and Purchased Power Costs

III. Impact of Nature of Costs on Ratemaking Methodologies

IV. Purchased Power Adjustment Mechanism

8. What exhibits are you sponsoring in this proceeding?

A. I am sponsoring the following exhibits:

KAH-1	Business Experience and Qualifications of Kerry A. Heid.
KAH-2	Listing of Petitioner's Electric Suppliers and Tariffs
KAH-3	Listing of Electric Suppliers' Rate Adjustment Mechanisms
KAH-4	Hoosier Energy Wholesale Power Cost Tracker
KAH-5	Proposed PPA Tariff Sheets
KAH-6	Proposed PPA Schedules
KAH-7	PPA Filing and Reconciliation Time Line

9. What is the purpose of your testimony concerning Petitioner's proposed PPA?

A. The purpose of my testimony concerning the PPA is to discuss the proposed method for the recovery of fuel and purchased power costs, as well as the policy, ratemaking, financial and accounting aspects of Petitioner's request for authority to recover the purchased power costs through this mechanism.

My testimony presents Petitioner's proposal for the recovery of fuel and purchased power costs. That proposal is for the implementation of a PPA tracker mechanism utilizing actual fuel and purchased power costs for an historical twelve (12) month period. These amounts would be recovered over a subsequent 12-month period and would be subject to an annual

reconciliation of actual costs to recovered costs.

10. Please briefly summarize why Petitioner is proposing a PPA.

A. Fuel (primarily natural gas) and purchased power costs are the single largest operation and maintenance expense for Petitioner. The natural gas and electric utility industries have been in the midst of unprecedented change. The Commission is well aware of the volatility in the natural gas market and its impact on customers. Increasingly complex and costly federal environmental regulations and the increasing price of fuel are causing recurrent cost increases to purchased power. Moreover, costs from the electric utilities' participation, either directly or indirectly via their wholesale suppliers, in Regional Transmission Organizations (principally the Midwest Independent System Operator, or "MISO") are being passed through to customers through the Fuel Adjustment Clauses ("FAC") on a quarterly basis or through MISO trackers on a quarterly basis. The ever-changing nature of fuel (natural gas) and purchased power costs does not fit within the traditional test year ratemaking framework that requires pro forma rate case adjustments to be fixed, known and measurable and occurring within twelve (12) months following the end of the test year. The timely recovery of costs is reasonable from a ratemaking perspective, in that a basic tenet of regulation is that the utility should have a reasonable opportunity to recover its prudently-incurred costs of providing service.

II. NATURE OF FUEL AND PURCHASED POWER COSTS

11. Please discuss Petitioner's fuel costs.

A. Petitioner's fuel costs are primarily natural gas costs used for domestic service to its various district offices. As such, it is a relatively small percentage of the total fuel and purchased costs. However, as the Commission is only too well aware, the volatility of the natural gas marketplace and the ability of some gas utilities to change their Gas Cost Adjustments ("GCAs") as often as monthly places a burden on customers, including Petitioner who must incur these costs to provide service to its customers.

12. Please describe the Petitioner's purchased power costs.

A. Petitioner is served by 17 different electric utilities under 51 different electric rate schedules. These electric utilities and their associated tariff rate schedules are identified on Petitioner's Exhibit KAH-2. Petitioner is served by all five investor-owned utilities (IOU's) operating in Indiana, as well as four municipal utilities and eight electric distribution cooperatives. The Indiana Municipal Power Agency ("IMPA") sells power to all four of the municipal utilities. Of the four municipal utilities, three remain regulated by the Commission. All eight electric distribution cooperatives purchase power from either Hoosier Energy Rural Electric Cooperative ("Hoosier Energy") or Wabash Valley Power Association ("WVPA"). Of the eight electric distribution cooperatives, only two remain regulated by the Commission.

PSI Energy (PSI), Southern Indiana Gas & Electric Company (Vectren), Northern Indiana Public Service Company (NIPSCO) and Indianapolis Power & Light Company (IPL) are all members of MISO, as are IMPA, Hoosier Energy and WVPA.

13. Please describe the changes occurring in the electric utility industry that give rise to the electric price volatility that the proposed PPA addresses.

A. The electric utility industry has been in the midst of unprecedented change during the past few years, and the transition seems to be far from over. One only need review the Commission's annual Electric Reports to the Regulatory Flexibility Committee of the Indiana General Assembly ("Regulatory Flexibility Report") to obtain a sense of the changes. The Executive Summary of the 2006 Regulatory Flexibility Report summarizes the issues facing customers:

> Increasingly complex and costly federal environmental regulations and the increasing price of fuel are the primary factors causing increases in the cost of electricity. The recovery of costs associated with increased coal and natural gas prices as well as the costs associated with the installation of new pollution control equipment have resulted in recurrent cost recovery proceedings before the Commission. Customers will also realize some costs from their power supplier's participation in Regional Transmission Organizations ("RTOs"—the Midwest ISO in Carmel or the PJM Interconnection).

<u>Environmental</u>

14. The above quote references increasingly complex and costly environmental regulations as causing increases in the cost of electricity. Please explain.

A. Each electric generating utility must comply with applicable federal and state legal requirements, including environmental rules promulgated by both the United States Environmental Protection Agency ("USEPA") and by the Indiana Department of Environmental Management ("IDEM"). Such rules establish environmental compliance standards that govern emissions from electric generating units. Electric generating units have been subject to increasingly more stringent pollution reduction requirements since the 1990 amendments to the Clean Air Act.

15. Please describe some of the pollution reduction requirements currently facing the electric utilities.

A. Under the Clean Air Act, each state is required to adopt a State Implementation Plan ("SIP") to implement the attainment and maintenance of National Ambient Air Quality Standards ("NAAQS") for a number of pollutants. If the USEPA makes a finding that a SIP is substantially inadequate to achieve the attainment or maintenance of the NAAQS in a state, the USEPA may call upon the state to revise its SIP ("a SIP Call").

In 1998, the USEPA issued a NO_x SIP Call that required many states, including Indiana, to develop revised SIPs designed to reduce NO_x emissions to meet budgeted levels the USEPA had set for each state. Indiana was required to propose a SIP by October 2000 that would implement controls on emissions sufficient to meet the USEPA's NO_x budget

by May 2004. In order to meet the Indiana NO_x budget prescribed by the USEPA, Indiana's SIP Call required certain utility NO_x controls that would limit the acceptable level of emissions from electric generation.

In January 2004, the USEPA published two new significant proposed emission reduction requirements: (1) the Clean Air Interstate Rule ("CAIR"); and (2) the Clean Air Mercury Rule ("CAMR"). According to the USEPA, these two rules, which are separate but closely related, will trigger the largest investment in air quality improvement in the history of the United States. The new CAIR and CAMR rules will require Indiana's electric generating utilities to achieve reductions in SO_2, NO_x and mercury emissions that are in addition to the previous SO_2 and NO_x reductions.

16. What are the immediate implications of the required pollution reduction requirements?

A. Indiana electric utilities have begun to plan and prepare their systems for compliance with the environmental mandates. IPL, PSI, NIPSCO and Vectren have received approval from the Commission of their individual compliance plans. Moreover, each of these utilities has received approvals from the Commission to implement environmental cost adjustments that allow them to immediately pass through the capital and operating costs to customers as frequently as semi-annually.

17. Please elaborate.

A. These environmental compliance plans and associated cost recovery are addressed in various Indiana statutes: Indiana Code §§8-1-8.8 directs the Commission to encourage clean coal projects through the application of financial incentives and timely recovery of costs associated with such projects; and Indiana Code §§8-1-2-6.6 and 6.7 discuss ratemaking treatment for Clean Coal Technology ("CCT"). These statutes generally serve to encourage the use of Illinois Basin coal through the installation of CCT equipment by allowing the utilities to recover their operation and maintenance expenses, depreciation, taxes and capital costs through retail rate mechanisms.

Cost of Fuel

18. The Commission's 2006 Regulatory Flexibility Report also noted that the increasing price of fuel is another primary factor causing increases in the cost of electricity. Please explain.

A. The Commission's 2006 Regulatory Flexibility Report notes that the recovery of increased costs associated with coal and natural gas have also resulted in recurrent cost increases through the quarterly FAC Proceedings. The volatility and extreme price levels in the natural gas marketplace have been well documented, and the Commission is well aware of these impacts on customers.

The Indiana electric industry has long relied on coal as its major source for generating electric power in Indiana. Coal's local abundance and low cost have made it the local choice for most Indiana base load generation. However, the price of coal has recently experienced increases as well. For example, the Energy Information Administration ("EIA") Annual Coal Report issued in October 2006 noted:

> The majority of coal deliveries to the electric power sector are through long-term contracts, sometimes in conjunction with spot purchases to supplement demand. Average delivered coal prices at electric utilities (a subset of the electric power sector) increased for a fifth consecutive year to $31.22 per short ton, an increase of 14.4 percent.

In addition, it is not uncommon for coal contracts to have escalation clauses based on diesel fuel prices.

Finally, the additional fuel costs attributable to MISO operations are now being passed through to customers in the FACs. MISO now directs the dispatch of all of the MISO members' generating units on a regional economic dispatch basis considering the economics of the generation offers into the MISO market. This has created a number of new fuel-related charges or credits that can be incurred or received by the MISO members. In its Order in Cause No. 42685, dated June 1, 2005, the Commission determined that many of these charges and credits represented components of the cost of fuel and are thus subject to recovery through the fuel adjustment clause ("FAC"). This will be discussed in more detail in the next section of my testimony.

Midwest Independent System Operator

19. The Commission's 2006 Regulatory Flexibility Report also notes that customers will also realize some costs from their electric utility's participation in Regional Transmission organizations, e.g. MISO. Please explain.

A. Transmission policy in the United States has been in a constant state of change since the enactment of the Energy Policy Act of 1992, which initiated electric utility industry reform. In 1996, the Federal Energy Regulatory Commission ("FERC") implemented open access transmission through FERC's Orders 888 and 889, which provided for nondiscriminatory transmission access. Those two Orders marked the beginning of a dramatic change to the way in which electric transmission systems are used. To further FERC's open access initiative, FERC implemented Order 2000 in December 1999, which defined the requirements of Regional Transmission Organizations ("RTOs"), and strongly encouraged transmission owners to join an RTO. As a result of these industry initiatives, the cost structure of an electric utility's service function was fundamentally altered.

20. What RTOs have been formed in Indiana?

A. Two RTOs serve utilities in Indiana – MISO and PJM. Most Indiana electric utilities are members of MISO, including PSI, NIPSCO, IPL, Vectren, IMPA, WVPA and Hoosier Energy. Only Indiana & Michigan Power Company

("AEP") is a member of PJM. Consequently, the RTO having the greatest potential impact on Petitioner is MISO, and thus the subsequent discussions on RTOs will be focused on MISO.

21. Please describe the MISO-related costs incurred by the electric utilities.

A. Not only are there new administrative costs associated with managing MISO's transmission support operations and its energy market platform, but there are also newly required capital investments related to constructing new transmission capacity needed to support the increased power flows associated with the Midwest Energy Market. Electric utilities' MISO-related costs can be grouped into the following three categories: (1) non-fuel charges assessed by MISO pursuant to rate schedules that have been approved by the FERC; (2) fuel costs related to the participation in the Day 2 Energy Market; and (3) transmission costs included in MISO's FERC-approved Attachment O formula rate for the electric utilities. As further discussed below, the fuel costs will flow through the quarterly FAC. The remaining two types of non-fuel costs may be subject to recovery through dedicated trackers or subsequent base rate cases.

A. NON-FUEL CHARGES ASSESSED BY MISO

22. What are the non-fuel charges assessed by MISO?

A. MISO currently assesses the following non-fuel charges to electric utilities:

(1) **Schedule 10 and Schedule 10-FERC–ISO Cost Recovery Adder and FERC Annual Charges Recovery.** These schedules provide for the

recovery by MISO of the cost of building and operating MISO's control center, coordinated regional transmission planning, administering the MISO tariff, any deferred pre-operating costs and recovery of the annual assessments paid to the FERC by MISO.

(2) **Schedule 16–Financial Transmission Rights Administrative Service Cost Recovery Adder.** This schedule provides for the recovery of Day 2 Market costs related to bilateral trading coordination, FTR administration, FTR software tools, simultaneous feasibility analysis, revenue distribution, and FTR administration.

(3) **Schedule 17–Energy Market Support Cost Recovery Adder.** This schedule provides for the recovery of Day 2 Market costs related to market modeling and scheduling, market bidding, locational marginal pricing coordination, market settlements and billing, market monitoring functions, and the economic dispatch of generating resources to serve load in the MISO footprint while establishing a spot energy market.

(4) **Schedule 24–Control Area Operator Cost Recovery.** This schedule provides for the recovery of control area or "balancing authority" costs incurred by transmission owing members of MISO as a result of implementing the Day 2 Market.

23. Are there other non-fuel charges that the electric utilities will incur under the MISO tariff?

A. Yes. The Commission found some MISO charges to be non-fuel related in Cause No. 42685. In addition, electric utilities will be assessed charges by MISO for reliability upgrades to the MISO transmission system. At some later date, the electric utilities will also be assessed charges for economic upgrades to the MISO transmission system that are built by other transmission owning members of MISO. Finally, at some point in the future, the electric utilities could also be assessed charges for reactive power service provided by generators in the utilities' control areas.

B. FUEL COSTS ASSOCIATED WITH THE MISO DAY 2 ENERGY MARKET

24. Please describe the fuel costs related to the Day 2 Energy Market.

A. Under the Day 2 Energy Market platform, MISO directs the dispatch of all of the MISO members' generating units on a regional economic dispatch basis considering the economics of the generation offers into the MISO market. The following fuel-related charges or credits can be incurred or received by the MISO members: (a) financial transmission rights ("FTR") congestion costs; (b) FTR congestion credits; (c) FTR auction settlements; (d) Virtual Bids and Offers in the Day-Ahead Market used for hedging jurisdictional load; (e) Day-Ahead recovery of Unit Commitment Costs; (f) Excess Congestions Charge Fund Credits; (h) resource adequacy commitment ("RAC") Recovery of Unit Commitment Costs; (i) Marginal Losses Surplus Credit; (j) Inadvertent Energy Charges or Credits; and (k) Revenue from Uninstructed Deviation Penalties. In its Order in Cause No. 42685, dated June 1, 2005, the Commission determined that these items represented components of the cost of fuel and are thus subject to recovery through the FAC.

C. TRANSMISSION COSTS INCLUDED IN MISO'S ATTACHMENT O FORMULA RATE

25. Please describe MISO Attachment O.

A. MISO Attachment O is used to determine the transmission service rates under the MISO tariff for loads that sink in members' control areas.

Attachment O, which is updated annually, is used to determine the annual transmission revenue requirements for each transmission owner in MISO. For an investor owned utility, revenue requirements are determined based on plant and expense data from the utility's FERC Form 1 and include the following components: (a) operating expenses, including operation and maintenance expenses, taxes other than income tax, and depreciation expenses; (b) return on transmission net investment grossed up for income taxes; and less (c) transmission revenue credits.

26. Has the Commission allowed any utilities in Indiana to recover these costs through a MISO tracker?

A. Yes. First, as already discussed, the Commission has previously determined that a certain group of MISO-related costs are fuel costs and, as such, can be recovered through the quarterly FAC.

Second, in its Order in PSI's general rate case, Cause No. 42539 approved May 18, 2004, the Commission permitted PSI to quarterly track these non-fuel MISO charges through Standard Contract Rider No. 68-MISO Management Cost and Revenue Adjustment. In approving PSI's adjustment rider, the Commission stated:

> We find reasonable PSI's proposal to track Midwest ISO related costs and revenues, including costs that are: (1) the results of decisions by the FERC; (2) variable in amount from year to year; (3) variable as to timing; (4) substantial in individual and aggregate amounts; and (5) outside the control of PSI. PSI's proposal is balanced and designed to flow through to customers Midwest ISO-related transmission revenues received by PSI. Therefore, we find that PSI's proposal to track Midwest ISO related costs should be

approved. (Cause No. 42539, Order dated May 18, 2004, at p. 120).

27. Have other utilities proposed MISO trackers?

A. Yes. In its current electric rate case, Cause No. 43111, Vectren is proposing a MISO Cost and Revenue Adjustment ("MCRA") to recover incremental changes in the costs associated with its membership in MISO. Vectren's proposed MCRA would allow for the timely recovery of incremental MISO charges and incremental MISO transmission costs. Specifically, Vectren is proposing to recover, on a quarterly basis, incremental changes in the non-fuel related charges assessed by MISO and incremental charges in the key cost and revenue components of Vectren's transmission revenue requirements determined through the application of the FERC-approved Attachment O calculations.

28. Are the aforementioned environmental, fuel and MISO costs the only sources of purchased power cost volatility being experienced by Petitioner?

A. No. First, it should be noted that in addition to the aforementioned trackers, the electric utilities have a number of other trackers with which they flow through cost increases and decreases on a periodic basis. Petitioner's Exhibit KAH-3 lists the many rate adjustment mechanisms utilized by the Petitioner's electric suppliers to adjust electric rates as frequently as quarterly.

Second, Vectren has recently filed a general rate case in which it proposes

to increase rates by an average of over 18 percent. In its filing, it also indicates that over the next five years, it expects to invest at least an additional $775 million in capital investments. It also indicated that it is "on the brink of our next investment in baseload generation," a coal fired unit with the latest emissions control technology.

Moreover, it should be noted that of the 17 different power suppliers, seven are no longer regulated by this Commission and, as such, can raise their rates with only the adoption of an ordinance or resolution.

29. Please summarize your testimony to this point.

A. My preceding testimony has described the various environmental, fuel and structural (e.g. MISO) issues, as well as other trackers and general rate cases, that are causing the recurrent cost changes to fuel and purchased power costs for Petitioner.

In the case of generating utilities, the utilities are seeking FAC changes, environmental trackers and MISO trackers, and base rate increases. In the case of IOUs, those costs flow directly through to the retail customer on a real-time basis. In the case of IMPA, Hoosier and WVPA, these costs are passed through to their member companies, *i.e.* the municipal electric utilities and rural electric cooperatives who provide the electric service to Petitioner, who in turn, pass these cost increases immediately on to the end use customers like Petitioner through wholesale power cost trackers.

Petitioner's Exhibit KAH-4 is an excerpt from Hoosier Energy's webpage that

discusses the need for a wholesale power cost tracker to track unpredictable costs that a utility incurs in providing service to customers.

30. What is the impact on Petitioner of this ability of the utilities to track through these cost increases on a real-time basis?

A. The result is that Petitioner will receive frequent rate changes from its electric utility providers that it will not be able to reflect in its rates under traditional ratemaking. The traditional ratemaking approach in Indiana specifies that an historical test year is used, and that pro forma adjustments can be made to operating expenses if those adjustments are fixed, known and measurable and occurring within twelve (12) months following the end of the test year. With the number of different suppliers, Petitioner experiences natural gas and electric cost changes constantly. These cost changes are very real, but would not be considered fixed, known and measurable for traditional ratemaking treatment. Moreover, these costs may not yet be known at the time of the utility's filing of its case-in-chief. Therefore, most purchased power cost changes could not be reflected as pro forma adjustments in a rate case. Moreover, these pro forma adjustments are only allowed twelve (12) months beyond the end of the test year, so a utility filing rate cases even every two or three years has no opportunity to recover the majority of these costs. This violates a basic tenet of regulation in that the utility does not have a reasonable opportunity to recover these prudently-

incurred costs in providing service to its customers.

31. Are these fuel and purchased power costs material to Petitioner?

A. Yes. Fuel and purchased power costs are the single largest operation and maintenance expense to Petitioner. Moreover, fuel and purchased power are also the costs most likely to experience significant changes, as described herein. To illustrate, the following table illustrates the rapid changes in fuel and purchased power expense since 2003.

12 Months Ended	Fuel and Purchased Power
12/31/03	$4,255,028
12/31/04	$4,435,477
12/31/05	$4,852,743
6/30/06 (a)	$5,342,796

(a) Test Year.

It reflects a 25.6 percent increase in just two and one-half years, an annual rate of increase of 9.5 percent. Moreover, this rate of change is poised to only accelerate as a result of the factors previously described.

Fuel and purchased power costs are in excess of 60 percent of the Petitioner's cost of production of water. Moreover, fuel and purchased power costs comprise a material percentage of Indiana-American's net income, historically ranging from 22 percent to 31 percent of net income. Based on actual financial data through September 30, 2006, it is estimated

that fuel and purchased power will comprise 71 percent of net income during 2006. Therefore, accurate cost recovery of fuel and purchased power costs is vitally important to Petitioner.

III. IMPACT OF NATURE OF COSTS ON RATEMAKING METHODOLOGIES

32. Based on your experience with utility regulation and ratemaking, are you familiar with the traditional ratemaking methodologies that have been employed by the Commission as well as other regulatory commissions?

A. Yes.

33. What are those traditional ratemaking methodologies?

A. In general, two traditional ratemaking methodologies are common in Indiana and other regulatory jurisdictions. For the purpose of my testimony, I will refer to these methodologies as the "test year adjusted" base rate approach and the tracker approach.

Under the test year adjusted base rate approach, base rates are set prospectively and are based on an adjusted test year that is presumed to be representative of conditions when rates will be in effect. The test year adjusted base rate approach measures the total costs incurred in conducting

operations over a historical twelve (12) month period, and adjusts those costs for changes that are fixed, known and measurable and occurring within twelve (12) months following the end of the test year. The adjusted costs are intended to be representative of prospective conditions when rates will be in effect, and sets rates that will produce revenues to match costs of that prospective period.

Under the tracker approach, rates are adjusted through a reconciliation or "true-up," mechanism to ensure that an accurate recovery of costs occurs.

34. **What is your understanding of the difficulty in estimating expected fuel and purchased power costs for pro forma adjustment purposes in a rate case?**

A. As previously described, the recovery of costs associated with increased coal and natural gas prices as well as costs associated with the installation of new pollution control equipment and MISO-related costs have resulted in recurrent cost recovery proceedings before the Commission. Moreover, for those utilities not regulated by the Commission, they only need to pass an ordinance or resolution adopting new rates, without any regulatory proceeding. Therefore, unlike earlier years when electric prices were relatively stable, Petitioner is now confronted with ever changing fuel and purchased power costs.

35. In your opinion, for the purpose of accurately recovering purchased power costs, do such characteristics make the use of the test year adjusted ratemaking methodology less desirable than the tracker ratemaking methodology?

A. Yes. If the cost data used to set rates according to the test year adjusted ratemaking methodology does not include the impacts on fuel and purchased power costs from these various electric utility trackers and other increases, the rates approved in this case will not function as intended. Under-recoveries of costs will be the probable outcome.

The ever-changing nature of fuel and purchased power costs does not fit within the traditional test year ratemaking framework that requires pro forma adjustments to be fixed, know and measurable and occurring within twelve (12) months following the end of the test year. Moreover, the fact that the utility attempts to go at least a number of years between general rate cases exacerbates this problem and virtually ensures that Petitioner will under-recover its fuel and purchased power costs.

36. In your opinion, what factors should the Commission consider in evaluating which ratemaking methodology is most appropriate for the recovery of fuel and purchased power costs?

A. In my opinion the test year adjusted base rate approach is <u>not</u> the appropriate means for cost recovery when the following characteristics are present:

- Costs are certain to occur, but future levels are variable from year to year, and accurate projections or pro forma adjustments are not possible;
- Costs are to a great extent beyond the control of the utility;
- Costs are potentially large in relation to net income, making it important to recover them accurately and on a timely basis.
- Cost over-recovery or under-recovery is possible due to the above factors, creating the possibility of a significant detrimental impact on customers or shareholders.

When these characteristics are present, the most accurate, fair and efficient means of matching recoveries with costs is through the use of the tracker ratemaking methodology.

37. Are the above characteristics present with respect to the purchased power costs that are proposed to be subject to the PPA?

A. Yes. My previous testimony indicates that some level of fuel and purchased power changes are certain to occur, while substantial uncertainties exist with respect to the level of those costs. Moreover, fuel and purchased power costs are to a great extent beyond the control of the utility. Finally, purchased power costs are the single largest operation and maintenance expense for Petitioner and constitute a significant percentage of net income.

Given the wide variations in and the difficulties in making estimates of the level of fuel and purchased power costs, combined with the fact that they do not fit into the fixed, known and measurable ratemaking framework, the possibility and indeed the probability exists that the test year adjusted

ratemaking methodology will result in an over-recovery or an under-recovery of those costs. The tracker ratemaking methodology provides the most accurate, fair and efficient means of recovering fuel and purchased power costs. Therefore, Petitioner is proposing a Purchased Power Adjustment mechanism to ensure accurate cost recovery of its fuel and purchased power costs.

IV. PURCHASED POWER ADJUSTMENT MECHANISM

38. Please summarize Petitioner's proposed PPA mechanism.

A. The proposed PPA would have the following features:

(1) An appropriate pro forma test year amount of fuel and purchased power costs would be determined and included within base rates. The PPA, then, would reflect only the incremental increase or decrease in estimated purchased power costs from the amount included in base rates.

(2) The PPA would be based on actual historical fuel and purchased power costs incurred during a previous twelve month period. To provide for prior Commission scrutiny and approval of each PPA, Petitioner would make an annual filing with the Commission that would consist of testimony and other evidence establishing the appropriateness of the purchased power costs incurred, as well as the reconciliation of prior period over and under-recoveries.

(3) A volumetric charge would be determined by dividing the allocated fuel and purchased power costs to be recovered (including previous period over and under-recoveries) by estimated annual sales volumes. Consistent with the concept of single tariff pricing that the Commission has previously approved for Petitioner, a single PPA rate would be determined that would be applicable to all of Petitioner's water systems.

(4) The PPA would be subject to an annual reconciliation in a process similar to the current DSIC reconciliation process. Any resulting over or under-recovery of fuel and purchased power costs (purchased power variances) would be credited/recovered in subsequent PPAs.

39. How will the historical fuel and purchased power costs be determined that would be included in the PPA for recovery in the subsequent PPA recovery period?

A. Fuel and purchased power costs are segregated and recorded in Account 615. Therefore, the historical fuel and purchased power costs recorded in this account during the previous twelve (12) month period would be used.

40. How would Petitioner treat purchased power cost over or under-recoveries due to variations from the estimated volumes?

A. PPA variances will be determined annually in connection with Petitioner's annual PPA proceedings. These variances will be flowed back or recovered over a twelve (12) month period in subsequent PPAs.

41. Please summarize the PPA.

A. The PPA provides for the tracking of fuel and purchased power costs with an annual reconciliation, so that customers will neither underpay nor overpay. If these highly variable fuel and purchased power costs were included in base rates without reconciliation, the recovery would remain at a fixed level until the next rate case, and any variance from actual costs would not be subject to collection or refund. The PPA eliminates this problem.

42. Please describe the document that has been marked as Petitioner's Exhibit KAH-5.

A. Petitioner's Exhibit KAH-5 includes two proposed tariff sheets reflecting the proposed Purchased Power Adjustment. Petitioner's Exhibit KAH-5, Page 1 of 2, is the tariff sheet reflecting the proposed Purchased Power Adjustment rates. Petitioner's Exhibit KAH-5, Page 2 of 2, is the tariff sheet setting forth the Base Rate Fuel and Purchased Power Costs. This tariff sheet will provide the per Ccf (hundred cubic feet) and per Mgal (thousand gallons) fuel and purchased power costs included in base rates necessary for the PPA calculations and reconciliation. The calculation of the Base Rate Purchased Power Costs is included in Petitioner's Exhibit KAH-6, Schedule 2, which will be subsequently discussed.

PPA SCHEDULES

43. Please discuss the PPA ratemaking calculations that Petitioner proposes to submit to the Commission as part of each annual filing.

A. Petitioner's Exhibit KAH-6, consisting of Schedules 1 through 4, reflects the ratemaking calculations that Petitioner proposes to submit to the Commission as part of each annual filing. Hypothetical numbers are reflected on Petitioner's Exhibit KAH-6 since it is merely for illustrative purposes at this time.

44. Please describe Schedule 1 of Petitioner's Exhibit KAH-6.

A. Schedule 1 of Petitioner's Exhibit KAH-6 presents the derivation of the Purchased Power Adjustment rates for the twelve (12) month rate period. Lines 1 through 3 reflect the total fuel and purchased power costs to be recovered during the current PPA period. It is comprised of the historical fuel and purchased power costs (Line 1) and the over- or under-recovery variance from a prior period (Line 2).

Line 4 is the projected Ccf sales, which is divided by the total PPA costs (Line 3) to determine the total PPA unit cost (Line 5).

The Base Rate PPA Unit Cost (Line 6) is deducted from the total PPA Unit Cost (Line 5) to determine the PPA Rate prior to gross-up for Indiana Utility Receipts Tax ("IURT"), which is reflected on Line 7.

Line 8 shows the proposed PPA Rate in $/Ccf (hundred cubic feet), which is derived by dividing the PPA Rate (Line 7) by the IURT gross-up factor of 0.9847. Line 8a converts the proposed PPA Rate from Line 8 into $/Mgal (thousand gallons).

45. Please describe Schedule 2 of Petitioner's Exhibit KAH-6.

A. Schedule 2 of Petitioner's Exhibit KAH-6 presents the calculation of the Base Rate Cost of Fuel and Purchased Power. It is derived by simply dividing the total pro forma fuel and purchased power costs determined in this proceeding by the adjusted test year (pro forma) Ccf sales for the water districts determined in this proceeding.

46. Please describe Schedule 3 of Petitioner's Exhibit KAH-6.

A. Schedule 3 presents the reconciliation of projected costs to actual costs for an historical twelve (12) month period. The resulting over-recoveries or under-recoveries would be flowed back or recovered over the twelve (12) month rate period of that current PPA filing. This reconciliation process is similar to the familiar DSIC reconciliation process. Lines 1 through 3 calculate the "Fuel and Purchased Power Costs Recovered" by multiplying the total actual Ccf sales for the water districts times the billed PPA rate.

Line 4 reflects the "Fuel and Purchased Power Costs to be Recovered" based on the actual Fuel and Purchased Power Expenses incurred during the previous period, plus the over- and under-recovery variances that are to be recovered/flowed back during the period.

Line 5 reflects the calculation of the over- or under-recovery variance, which is calculated by subtracting the "Fuel and Purchased Power Costs Recovered" (Line 3) from the "Fuel and Purchased Power Costs to be Recovered" (Line 4).

TIMING OF PPA FILINGS

47. Please describe Petitioner's Exhibit KAH-7.

A. Petitioner's Exhibit KAH-7 reflects the estimated timeline for the first three PPA filings. The various dates reflected on this schedule are based on the

assumption that the Commission will issue its approval in time to file the first PPA ("PPA-1") by October 1, 2007. If the approval date changes from that assumed in this testimony for illustrative purposes, each date on the timeline would simply be adjusted accordingly.

48. Please describe the timing of the initial Purchased Power Adjustment filing, PPA-1.

A. The historical period for which costs would be recovered in PPA-1 would be the twelve (12) month period from August 2006 through July 2007. This is represented on Petitioner's Exhibit KAH-7 by the blue shaded, vertically striped area. The PPA-1 filing would be submitted on approximately October 1, 2007, with an estimated rate effective date of January 1, 2008. The PPA-1 rates would be in effect from January 2008 through December 2008, as represented by the blue shaded, horizontally striped area. Because this would be the initial filing of the Purchased Power Adjustment, there would be no historical period to reconcile.

49. Please describe the second Purchased Power Adjustment filing, PPA-2.

A. PPA-2 would recover fuel and purchased power costs for the subsequent historical period, i.e. the twelve (12) month period from August 2007 through July 2008. Please refer to the yellow shaded, vertically striped area on Petitioner's Exhibit KAH-7. The PPA-2 filing would be submitted on approximately October 1, 2008, with an estimated rate effective date of

January 1, 2009. The PPA-2 rates would be in effect from January 2009 through December 2009, as represented by the yellow shaded, horizontally striped area. At the time of filing of PPA-2, the PPA-1 rates would not yet have been in effect for a full twelve (12) month period. Therefore, PPA-2 will not reconcile a previous period.

50. Please describe the third Purchased Power Adjustment filing, PPA-3.

A. PPA-3 would recover fuel and purchased power costs for the subsequent historical period i.e. the twelve (12) month period from August 2008 through July 2009. Please refer to the green shaded, vertically striped area on Petitioner's Exhibit KAH-7. The PPA-3 filing would be submitted on approximately October 1, 2009, with an estimated rate effective date of January 1, 2010. The PPA-3 rates would be in effect from January 2010 through December 2010, as represented by the green shaded, horizontally striped area. An entire twelve (12) months of actual historical data from the PPA-1 rates covering January 2008 through December 2008 would now be available to reconcile, and it is represented on Petitioner's Exhibit KAH-7 by the blue shaded, horizontally striped area.

51. Would the subsequent Purchased Power Adjustment filings follow the same pattern as the third PPA filing?

A. Yes. Each projection and reconciliation period will simply roll forward by twelve (12) months.

52. Does this conclude your prepared direct testimony?

A. Yes.

A FINITE-HORIZON DYNAMIC PROGRAMMING APPROACH TO THE TELEPHONE CABLE LAYOUT PROBLEM

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Abstract

The well-known "capacity expansion" or "plant size" problem in capital theory involves an economic tradeoff between the economies of scale associated with a policy of large, infrequent capacity expansions and the interest savings associated with a policy at the opposite extreme. The problem of determining the optimal size, number and time-phasing of telephone feeder cables involves this same economic tradeoff. An additional complication, however, is the practical restriction that telephone cable comes in only a small number of sizes, i.e., telephone capacity cannot be varied continuously. The latter complication cannot be handled by currently existing algorithms for the "capacity expansion" problem. In this paper we solve the feeder cable expansion problem using a two-stage programming procedure which efficiently decomposes the original formulation into a simple inventory problem and a knapsack problem, both of which can be solved by dynamic programming.

Introduction

A sizeable portion of annual telephone company expenditures are associated with the purchase, installation and maintenance of telephone feeder cables. Since total annual costs are sensitive to the firm's choice regarding the size and time-phasing of cables, substantial savings can often be realized from a careful analysis of the economic tradeoffs characterizing these decisions. In this paper, we present a mathematical model of the Feeder Cable Expansion Problem which can be used to determine the optimal number and size of cables to install in each time period within the firm's planning horizon.[1]

The Feeder Cable Expansion Problem is a member of a well-known class of problems considered previously in the management science/operations research literature. Several examples of this class of problems are (i) determination of economic lot size, (ii) multicommodity warehousing decisions, (iii) labor force planning and (iv) optimal investment in plant capacity for one or more producing areas. (Veinott and Wagner [6] provide an excellent discussion of the mathematical equivalence of these applications. Other references in this interesting area are [2], [3], [4], [5] and [7].) Like the other members of this class of problems, the Feeder Cable Expansion Problem involves a fundamental economic tradeoff between the economies of scale associated with large, infrequent capacity expansions and the low investment opportunity costs (i.e., interest costs) associated with a policy of more frequent, but smaller expansions. Complicating the analysis of the latter problem, however, is the restriction that telephone feeder cable comes in only a small number of sizes. Because of this restriction, the problem is solved using a two-stage programming procedure, which efficiently decomposes the model into a simple inventory problem and a knapsack problem, both of which can be solved by dynamic programming.

Problem Formulation

Consider the Feeder Cable Expansion Problem confronting the telephone company along one segment of a particular cable feed area. Suppose that the company has already chosen the appropriate category and gauge type to employ in this segment, and that it now wants to determine the number of cables, x_{tr}, of size $r = 1,\ldots,R$ to install in each time period t within its planning horizon, $[0,T]$. Furthermore, assume that the company's objective is to minimize the present value of variable costs, $\sum_{t=1}^{T}\sum_{r=1}^{R} \frac{c_r}{(1+i)^t} \cdot x_{tr}$, plus the present value of fixed costs, $\sum_{t=1}^{T} \frac{b}{(1+i)^t} \cdot z_t$, associated with the cable installation plan and that the number of line pairs available in each period must be sufficient to satisfy the demand requirement, d_t, in that period. Each period's demand requirement can be satisfied from an inventory of excess line pairs, s_{t-1}, as well as from newly installed cables. With these assumptions, the telephone company's decision problem can be formulated mathematically as Problem I:

$$\text{Minimize TC} = \sum_{t=1}^{T}\sum_{r=1}^{R} \frac{c_r}{(1+i)^t} \cdot x_{tr} + \sum_{t=1}^{T} \frac{b}{(1+i)^t} \cdot z_t$$

with respect to x_{tr}, s_t, z_t

$$\text{subject to } \sum_{r=1}^{R} \ell_r \cdot x_{tr} + s_{t-1} - s_t = d_t \qquad t=1,\ldots,T$$

$$\sum_{r=1}^{R} x_{tr} \leq M z_t \qquad t=1,\ldots,T$$

$$x_{tr} = 0,1,2,\ldots \qquad t=1,\ldots,T;\ r=1,\ldots,R$$

$$z_t = 0 \text{ or } 1 \qquad t=1,\ldots,T$$

$$s_t \geq 0 \qquad t=1,\ldots,T$$

$$s_o \text{ given,}$$

where

x_{tr} ≡ the number of cables of size r to

be installed in period t,

c_r ≡ the variable cost per foot of installing one cable of size r, assumed for convenience to be independent of t,

i ≡ the discount factor, also assumed for convenience to be constant,

b ≡ the fixed cost of installing cables,

z_t ≡ 1 if any cables are installed in period t, 0 otherwise,

ℓ_r ≡ the number of line pairs in one cable of size r,

s_t ≡ the number of line pairs of excess cable capacity available in period t,

s_o ≡ inventory of excess line pairs above current demand at the start of the planning period,

d_t ≡ the number of lines required in period t,

M ≡ a very large number.

Thus, the Feeder Cable Expansion Problem is technically an integer programming problem containing RT + 2T integer variables. In practice, there may be as many as 13 cable sizes available and a time horizon of 10 or more years. This yields an integer programming problem with at least 150 integer variables. Since a problem of this size is near the computational limits of most commercial integer programming code, an alternative two-stage optimization algorithm is proposed in the next section. This algorithm efficiently finds the global optimal integer solution.

A Two-Stage Solution Procedure

The solution procedure proposed in this section is a two-stage dynamic programming approach. The method is based on the observation that if it were not for the rather complex cost structure of Problem I, the underlying decision problem would be a fairly simple inventory model. In order that this will be clear to the reader, we shall rewrite Problem I in a notationally simpler form. If we let

$$y_t \equiv \sum_{r=1}^{R} \ell_r \cdot x_{tr},$$

then y_t can be interpreted as the number of line pairs that are installed in period t when x_{tr} cables are laid. The present value of the minimum cost of installing these y_t line pairs can then be thought of as a function, $C_t(y_t)$. The determination of these cost functions $C_t(y_t)$ will comprise the first step of the solution procedure and will be described shortly. Assuming that the functions $C_t(y_t)$ have been determined, we can rewrite Problem I as

Problem II:

$$\text{Minimize TC} = \sum_{t=1}^{T} C_t(y_t)$$

$$\text{with respect to } y_1,\ldots,y_T$$

$$\text{subject to } y_t + s_{t-1} - s_t = d_t \quad t=1,\ldots,T$$

$$y_t \text{ and } s_t \text{ nonnegative and integer} \quad t=1,\ldots,T$$

$$s_o \text{ given.}$$

Problem II is equivalent to Problem I. Furthermore, Problem II can be identified as a simple inventory problem. (See for example [1], p. 261.) Like many inventory problems, Problem II can be solved efficiently by means of a dynamic programming recursion. Before discussing the solution of Problem II, it seems appropriate to indicate precisely how the cost functions $C_t(y_t)$ can be determined.

Since $C_t(y_t)$ represents the present value of the minimum cost of installing y_t line pairs in period t, it can be expressed mathematically as:

$$C_t(y_t) = \text{Minimum } \left(\sum_{r=1}^{R} \frac{c_r}{(1+i)^t} \cdot x_{tr} + \frac{b}{(1+i)^t} \right)$$

$$\text{with respect to: } x_{t1},\ldots,x_{tR}$$

$$\text{subject to } \sum_{r=1}^{R} \ell_r \cdot x_{tr} = y_t$$

$$x_{tr} = 0,1,2\ldots \quad \text{for } r=1,\ldots,R$$

where $y_t > 0$ is a parameter.

If one observes that the dependence of this problem on the specific time period t is only in the discount factor $(1+i)^t$, it is possible to write the problem independent of t as

Problem III:

$$C(y) = \text{Minimum } \left(\sum_{r=1}^{R} c_r \cdot x_r \right)$$

$$\text{with respect to: } x_1,\ldots,x_R$$

$$\text{subject to } \sum_{r=1}^{R} \ell_r \cdot x_r = y$$

$$x_r = 0,1,2,\ldots \quad \text{for } r=1,\ldots,R$$

where the solution to Problem III can be used to find $C_t(y_t)$ by the transformation:

$$C_t(y_t) \equiv \frac{C(y_t)}{(1+i)^t} + \frac{b}{(1+i)^t} \quad \text{for } y_t > 0 \qquad (1)$$

$C_t(0) \equiv 0$.

Since Problem III must be solved for a great many values of y, this is a parametric integer programming problem. Fortunately, this problem has the form of the familiar knapsack or distribution-of-effort problem (see [1], p. 332) and can be solved in this case by an efficient dynamic programming recursion. Other solutions techniques may also be appropriate. (see for instance [2].)

In an attempt to reduce the number of states in the dynamic programming formulation, we will find it convenient to introduce a scale factor e. We will assume that ℓ_r, for all cable sizes r; d_t, for all time periods t; and s_o are each exactly divisible by e. (Such a factor e always exists, just take e=1.) In order to limit the number of states, we shall choose e as large as possible.

Define

$f_r(y)$ = the cost of the optimal cable layout scheme when the demand equals y and only cable sizes 1,2,...,r are used to satisfy the demand,

$h_r(y)$ = the number of cables of size r used to realize the cost $f_r(y)$.

The dynamic programming recursion can then be written as

$$f_r(y) = \underset{x_r}{\text{minimum}} \{c_r \cdot x_r + f_{r-1}(y-\ell_r \cdot x_r)\} \quad (2)$$

$$f_o(0) = 0 \quad (3)$$

$$f_o(y) = M \quad \text{for } y > 0 \quad (4)$$

where $y = 0, 2e, \ldots, d_1+d_2+\ldots+d_T$, M is a very large number, and the minimization is over $x_r = 0, e, 2e, \ldots, [y/\ell_r]$.

It is important to emphasize again that by solving the dynamic programming formulation for $y=0,e,2e,\ldots,d_1+\ldots+d_T$ one does obtain the entire set of cost curves $C_t(y_t)$, since $C(y) = f_R(y)$ and relation (1) yields $C_t(y_t)$. Furthermore, one obtains all these cost curves by solving only one dynamic program with R stages and $(d_1+d_2+\ldots+d_T)/e$ states. On test data provided by General Telephone and Electronics of the Southeast, solutions were obtained to this problem in less than 15 seconds CPU time on an IBM 370/165 with R=10 and the number of states = 800. Having completed our calculation of the cost curves $C_t(y_t)$ we now consider the solution of Problem II itself.

As mentioned previously, Problem II is in the form of a simple inventory problem, and can be solved by means of a dynamic programming recursion. Define

$g_t(s)$ = the minimum policy cost when s lines of excess capacity are available from the preceding period and there are T - t periods to go.

$y_t(s)$ = the installation level yielding $g_t(s)$.

The dynamic programming recursion can then be written as

$$g_t(s) = \text{Minimum}_{t=1,\ldots,T} \{C_t(y) + g_{t+1}(s+y-d)\} \quad (5)$$

$$g_{T+1}(0) = 0 \quad (6)$$

$$g_{T+1}(s) = M \quad \text{for } s > 0 \quad (7)$$

where $s = 0, e, \ldots, d_1+d_2+\ldots+d_T$, M is a very large number, and the minimization is over only nonnegative values of y in the range $d_t - s \leq y \leq d_1+d_2+\ldots+d_T - s$. We have made the rather arbitrary assumption that excess capacity available at the end of the planning horizon is zero.

The dynamic programming formulation for Problem II possesses T stages and $(d_1+d_2+\ldots+d_T)/e$ states. For problems with less than 10 time periods and 1000 states, solution times of no more than 30 seconds CPU time on an IBM 370/165 would be expected. Thus, the total time to solve the Feeder Cable Expansion Problem would be under 1 minute; a very acceptable cost to solve a problem with such a high economic value.

One final step in the solution process is required. The solution to Problem II only indicates the number of line pairs required, not the actual cable selection. However, in solving Problem III we did compute what the cable selection must be for each possible level of installation. This information is stored in the vectors $h_R(y)$ for each possible value of y. Thus, we need only reference these vectors to find what the optimal cable selection must be.

In summary, the solution to the telephone Cable Layout Problem can be obtained as follows:

1) The cost function C(y) is obtained by solving the dynamic programming formulation (2) - (4).

2) The cost function $C_t(y_t)$ is found from (1).

3) The solution to Problem II is found by solving the dynamic programming formulation (5) - (7).

4) Using the values of y_t obtained from the solution of Problem II and the vectors of cable size selection $h_R(Y)$, one finds the optimal selection of cables x_{tr}.

Conclusion

In this paper we presented a dynamic model of a telephone Feeder Cable Expansion Problem. The optimal expansion policy for a particular segment of a cable feed area was shown to be obtainable from a sequence of easily solvable dynamic programming problems. Because of the independence of each of the segments, the optimal policies for the segments can be combined to form an optimal policy for an entire cable feed area.

Footnotes

[1]The authors have chosen to ignore in this paper the complexities introduced by consideration of possible conduit exhaustion and overgauging. A heuristic procedure for dealing with these important problems is presented in [1].

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A Decision-Support System for Managing

By Steven F. Maier, James H. Vander Weide

INTRODUCTION

When the cash manager arrives at his office in the morning, one of his first tasks is either to plan how to invest the firm's excess funds or to plan how to finance its shortfall. Given the shape of the yield curve and an interest rate forecast, complex questions such as the following must be addressed: Is the firm better off investing in a 90-day CD or 30-day commercial paper? If interest rates are expected to rise, is the firm better off floating longer-term commercial paper at existing rates or rolling over a sequence of short-term paper at increasing rates? If the cash manager invests long now and finances next period's cash requirements with short-term borrowing, how much will the firm stand to lose if interest rates rise? The cash manager's answers to these questions can have a significant effect on the firm's financial performance.

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OVERVIEW

This paper describes an interactive, short-term financial planning model that provides answers to the kinds of questions raised above. Although the model is based on a sophisticated linear programming algorithm, its day-to-day use is readily understandable to the nontechnical cash manager. The key to ease of use is reducing interaction with the model to conversational responses via a computer terminal. A series of questions is asked about expected cash flows, current and forecasted interest rates, and any financial policy constraints the firm may have. The model then evaluates the various alternatives, and reports on the financial strategy that maximizes the future value of the portfolio and simultaneously satisfies all the firm's financial policy and cash flow constraints. Since the answer is reported in a matter of seconds, the user can explore further the economic tradeoffs inherent in this decision process by changing some of the model's parameters and constraints.

The model that we describe here has been implemented at General Telephone Company of the Southeast (GTSE), headquartered in Durham, North Carolina[1]. With few exceptions, GTSE is a net borrower of short-term funds, with commercial paper and master notes currently being the least expensive sources. Quick and accurate comparisons of master notes and various maturities of commercial paper have typically been difficult tasks, due primarily to the uncertainty of future interest rates, and the number of financing alternatives available. Their Short-Run Financial Planning Model has allowed GTSE to quantitatively analyze their borrowing alternatives in a timely fashion, in ways that were previously impossible.

THE SHORT-RUN FINANCIAL PLANNING MODEL

The Short-Run Financial Planning Model is a user-oriented version of the type of models formulated in Robichek, Teichroew and Jones (6), Mao (3), Orgler (4), Pogue and Bussard (5), Srinivasan (7), Maier and Vander Weide (2) and Austin, Maier and Vander Weide (1). Three primary characteristics differentiate the model reported here and used at GTSE from these previous formulations:

1. An enhanced version of the model has also been implemented recently at the bank of Montreal. It is available to corporate customers under the product name CALCULINE™.

a Short-term Financial Instrument Portfolio

1. Interactive Efficient Data Entry. The Short-Run Financial Planning Model has been programmed in an interactive mode that greatly reduces the amount of work involved in inputting data and checking for errors. The user can input all necessary data and explore several economic scenarios in a session lasting no longer than 20-30 minutes. In fact, once the model has been run the first time, the user can evaluate a particular decision problem in as little as 10 minutes.

2. New Features. The Short-Run Financial Planning Model has the capacity for handling a number of practical problems such as variable maturities, instruments that mature beyond the planning horizon, borrowing and investment maturity mismatches, and the possibility of arbitrage that are ignored in the previous contributions.

3. Current Status. The model provides reports on the characteristics of the firm's current portfolio of investment/borrowing instruments and automatically incorporates these characteristics into its constraints. The ability to automatically incorporate the cashflows from maturing securities in the firm's current portfolio is especially useful when the size of the dollars to be invested (borrowed) are small compared to the size of the existing portfolio.

ACKNOWLEDGEMENT

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[illegible]

The Short-Run Financial Planning Model is user-oriented. All information is entered via computer terminal in a time-sharing conversation. Since data from previous runs is stored, the model is particularly easy to use, once the first case has run. Only data changes need be entered on subsequent runs.

The input is conveniently grouped into six types:

Period Duration and Cash Flow Projection

The cash manager must specify the starting date of each time period within the planning horizon. He is also asked to specify which cash flows will be expected at the beginning of each time period within the horizon. The current model specification allows for a maximum of 25 time periods, with no limitations on the length of these periods. Cash flows may be either positive or negative.

We have found that it is best to keep the first few periods in the time horizon relatively short. For example, it is frequently convenient to use daily periods for the first few days, followed by a three-day period corresponding to a weekend. Later periods can be longer, often a week or two. It is also helpful to have one final period of relatively long duration to incorporate the firm's long-run cash flow and interest rate projections.

Instrument Description

The second input section presents a description of the available investment/financing instruments. Each instrument is described by name, maturity length, yield, and interest rate projection.

The maturity may be specified as a constant (e.g., a 91-day Treasury Bill would be specified as 91 days.) Since some financial instruments may have the same yield over a range of possible maturities, the model also permits the user to specify a range. For example, commercial paper with a yield of 9.5 percent could be purchased with a maturity of between 15 and 37 days.

The yield on an instrument is always computed as if the interest will be paid upon maturity. If the instrument is sold or bought at a discount, the discount rate can be specified and the model will automatically convert the discount rate of interest to the interest yield, as if the interest had been paid at maturity.

Flexible maturities and user-selected lengths for the time periods within the planning horizon cause unique problems to the construction of a model. In particular, one must deal with instruments that mature in the middle of a planning period. (Note that in a linear programming formulation only investment and borrowing that takes place at the start of an investment period are under model control.) In order to bridge from a mid-period maturity, the model takes two actions. First, if the instrument can be rolled-over, the model will automatically do so until the start of the next planning period is reached. The second action depends on whether the maturing instrument is an investment or borrowing. If the funds are in a maturing instrument, the system automatically puts the money into an over-night repurchase agreement and rolls this over to the next decision point. If a borrowing instrument is maturing in the middle of a period, then as of the date of the just previous decision point, money is set aside in a repurchase agreement, which with compounding will just equal the amount of the required repayment. These actions preserve the unique characteristics of both flexible maturities and time period lengths without overly distorting the reality of how portfolio managers actually in-

vest their financial instrument portfolios.

Interest-Rate Projections

The cash manager can specify an interest rate projection as a single interest rate projection (and use it to modify the yields on a group of investment instruments), or he can specify an independent interest rate projection for each of his investment or borrowing instruments.

The interest-rate projections incorporate into the model the cash manager's forecast as to the movement of interest rates during the planning horizon. The model using this information can then help the cash manager select whether to invest/borrow long or short. This involves looking at economic tradeoffs such as whether paying a premium for longer term borrowings is justified if your expectation is that interest rates will increase.

Borrowing and Investing Limits

The model allows a cash manager to limit the amount of borrowing or investing associated with any instrument or group of instruments. This limit allows him to incorporate judgments about the risk of various instruments, or to include company policy restrictions, such as "do not invest more than $3,000,000 of our portfolio in commercial paper."

Average Maturity Constraints

Upper and lower limits may be placed on the average maturities of the borrowing and/or investing side of the portfolio. This type of constraint is useful in limiting the degree of interest rate risk to which the firm is exposed. Professional investment managers often refer to a portfolio with differing average maturities of the investment and borrowing instruments as a "mismatched book." These constraints allow limits to be placed on the level of mismatch the company is willing to expose itself to. In the absence of such constraints, and with a normal shaped yield curve, the model would tend to always invest long and borrow short, which at times can produce a severely mismatched book.

Ratio Mix Constraints

Ratio mix constraints are similar to borrowing and investing limits, except that the bounds are specified as percentages rather than dollars. These constraints enable the cash manager to further define personal or company policy restrictions. For example, a constraint can be included to keep the ratio of bank borrowing to commercial paper at 50-50. A constraint of this form can be used to determine the cost of maintaining good bank relationships, when commercial paper appears to be significantly cheaper.

OUTPUT REPORTS

The Short-Run Financial Planning Model provides several types of output reports.

Cost Summary

The cost summary gives four types of information for each period (Exhibit 1):

- *period length*
- *cash flow projection*
- *interest expense*
- *cumulative interest expense.*

The number of days in the period and the projected cash flows are user-specified. The interest expense takes into account all instruments purchased or sold during the period, and all instruments which were activated before the start of the period and will mature at some later date. (A negative interest expense indicates interest earned.) The cumulative interest expense is the interest expense for the current and all previous periods.

Action Summary

The action summary, (Exhibit 2) lists eight components for each instrument bought or sold:

- *date on which the action is initiated*
- *instrument name*
- *type of action (buy or sell)*
- *amount of capital involved with the original purchase/sale of the instrument*
- *maturity date*
- *maturity value of the instrument*
- *yield of the instrument*

An instrument is only listed in this report on the day the initial action is taken. (To obtain a list of both initial and concluding actions within a period, a separate detailed report is available, although not shown in this paper.)

The "action" column indicates, with a "B" or "S," whether the instrument was bought or sold. The action date is the first day of the period in which the instrument is activated and the maturity date is the day of maturity.

The instrument yield is set initially as part of the instrument's description and can be revised by the user-defined interest rate projection.

Interest Rate Summary

Exhibit 3 gives an example of the Interest Rate Summary Report, showing in matrix form the yield of each instrument at the start of each period. The instruments are listed across the top of the matrix; the first four characters in the instrument name are used as an identifier. The first column in the matrix lists the starting date of the period.

With this information, the cash manager can check how his interest rate projections have modified the yield on each instrument. If there was no projection for the instrument, the same yield will appear throughout the column.

EXHIBIT 1

THE OPTIMAL SHORT TERM FINANCIAL PLAN
COST SUMMARY

Period	Cash Flow	Interest Expense This Period	Cumulative Interest Expense
1/26 - 2/ 1	-$ 2,300,000.00	$ 8,191.79	$ 8,191.79
2/ 2 - 2/ 8	$ 2,100,000.00	$ 1,006.23	$ 9,198.02
2/ 9 - 2/15	-$ 1,300,000.00	$ 6,713.48	$ 15,911.50
2/16 - 3/ 1	-$ 4,360,000.00	$ 41,554.61	$ 57,466.11
3/ 2 - 3/15	$ 3,950,000.00	$ 14,227.11	$ 71,693.22
3/16 - 3/29	$ 2,500,000.00	-$ 3,056.85	$ 68,636.37
3/30 - 4/26	$ 3,100,000.00	-$ 50,046.91	$ 18,589.46
4/27 - 5/24	-$ 5,200,000.00	$ 21,454.00	$ 40,043.46
5/25 - 6/21	$ 4,600,000.00	-$ 42,858.93	-$ 2,815.47

EXHIBIT 2

THE OPTIMAL SHORT TERM FINANCIAL PLAN
ACTION SUMMARY

Date	Instrument	Act	Amount	Mature Date	Maturity Value	Yield
1/26	CREDIT LINE	S	$ 1,866,541.98	2/ 2	$ 1,873,136.94	18.171%
1/26	CM PAPER	5	$ 7,932.91	3/ 2	$ 539,270.01	18.016%
1/26	30-DAY CD	B	$	3/ 2	$ 8,041.89	14.130%
1/26	60-DAY CD	B	$ 52,916.69	3/30	$ 54,245.56	13.000%
1/26	DAILY REPO	B	$ 35,679.37	2/ 2	$ 35,769.70	13.000%
2/ 2	60-DAY CD	B	$ 50,211.20	3/30	$ 51,352.26	14.609%
2/ 2	DAILY REPO	S	$ 212,421.56	2/ 9	$ 212,959.85	13.013%
2/ 9	CM PAPER	S	$ 2,456,790.07	3/16	$ 2,500,000.00	18.090%
2/16	CREDIT LINE	S	$ 2,986,777.06	3/ 2	$ 3,007,958.65	18.200%
3/ 2	30-DAY CD	B	$ 410,813.23	3/30	$ 415,765.82	15.500%
3/30	30-DAY CD	B	$ 3,547,110.58	4/27	$ 3,596,110.40	17.761%
3/30	90-DAY CD	B	$ 74,253.05	6/23	$ 77,431.75	18.131%
4/27	CREDIT LINE	S	$ 854,540.72	5/25	$ 866,762.43	18.278%
4/27	CM PAPER	S	$ 854,540.72	6/ 6	$ 871,362.51	17.717%
4/27	30-DAY CD	B	$ 105,191.83	5/25	$ 106,687.69	18.283%
5/25	30-DAY CD	B	$ 2,972,363.16	6/22	$ 3,015,421.14	18.625%
5/25	REPO	B	$ 867,562.11	6/ 6	$ 871,362.51	13.119%

EXHIBIT 3

THE OPTIMAL SHORT TERM FINANCIAL PLAN
INTEREST RATE SUMMARY

Date	Cred.	CMP	30-0	60-0	90-0	Date
1/26	.18171	.18016	.14130	.14350	.14500	.13000
2/ 2	.18184	.18075	.14389	.14609	.14759	.13013
2/ 9	.18194	.18090	.14595	.14815	.14965	.13023
2/16	.18200	.18074	.14762	.14982	.15132	.13029
3/ 2	.18208	.18040	.15500	.15720	.15870	.13037
3/16	.18201	.18005	.17250	.17470	.17620	.13030
3/30	.18226	.18000	.17761	.17981	.18131	.13055
4/27	.18278	.17717	.18283	.18503	.18653	.13107
5/25	.18290	.17250	.18625	.18845	.18995	.13119

For instruments purchased at the start of a planning period, the yield can be found directly in this report. For instruments purchased in the middle of a planning period, such as would occur due to an automatic rollover, the yield is taken as a linear extrapolation of the yields given in this report.

Risk Summary

The risk summary (Exhibit 4) prints the average maturities of the portfolio for each period in the planning period. In addition to the starting date of the period, the following data is given:

- total dollars borrowed as of the start of the period
- average borrowing maturity as of the start of the period
- total dollars invested as of the start of the period
- average investment maturity as of the start of the period

This report is used to monitor the mismatch for the portfolio.

Input Summary

The input summary lists the data in a particular model file, giving users a consolidated look at all additions and deletions made during a computer session. It includes information in six major input categories: (1) period duration and cash flow projection; (2) borrowing and investing limits; (3) instrument description; (4) interest rate projections; (5) average maturity constraints; and (6) ratio mix constraints.

BENEFITS FROM USING THE MODEL

The Short-Run Financial Planning Model has provided GTSE with important ways to use its cash resources efficiently.

First, the model makes a cash manager sensitive to variables which affect his day-to-day borrowing decisions. This in turn leads to increased awareness of economic trade-offs associated with short-run financial decision making.

Second, the model provides a means of comparing alternative instruments on the basis of "effective" vs. "posted" interest rates. This is especially important for GTSE because of its heavy reliance on commercial paper, which is quoted on a discount basis.

Third, the model helps the cash manager to quickly and efficiently make comparisons of borrowing instruments which have variable maturities, providing a quantitative measure and the expected value of different financing stategies. This important feature allows a cash manager to analyze risk/return relationships.

Finally, the model's flexibility allows identification of the strengths and weaknesses of the present cash management system and forecasting methods, and offers ways to improve them.

GTSE EXPERIENCE

General Telephone of the Southeast has found the model to be a valuable teaching and budgeting aid. It provides a simple, effective way to budget short-term interest payments within a particular cash flow and interest rate scenario. The model will also quickly measure the impact of cash flow/interest rate variances on total interest expense. As a teaching tool, the model illustrates basic techniques and gives GTSE users an appreciation for the investment/borrowing instrument selection process.

SUMMARY

The Short-Run Financial Planning Model has allowed GTSE to qualitatively analyze a multitude of potential borrowing options in a timely fashion, in a way which was heretofore impossible. Although planning models are by their very nature complex, the use of a time-sharing com-

EXHIBIT 4

THE OPTIMAL SHORT TERM FINANCIAL PLAN
RISK SUMMARY

Date	Investments Total Dollars Outstanding	Investments Weighted Average Maturities	Borrowing Total Dollars Outstanding	Borrowing Weighted Average Maturities
1/26	$ 96,528.97	40.000	$ 2,396,528.97	13.192
2/ 2	$ 323,651.81	23.152	$ 531,843.60	28.000
2/ 9	$ 1,481,292.24	10.012	$ 2,990,490.27	32.501
2/16	$ 111,854.41	39.998	$ 5,987,765.92	19.764
3/ 2	$ 515,249.91	28.000	$ 2,482,716.03	14.000
3/16	$ 518,306.77	14.000	$ 0.00	0.0
3/20	$ 3,621,363.63	29.169	$ 0.00	0.0
4/27	$ 180,491.98	40.099	$ 1,709,081.43	34.000
5/25	$ 3,916,272.52	24.475	$ 866,315.97	12.000

puter model gives near instant answers to complex questions involving interest rate forecasts, cash flow requirements, and investment opportunities.

Experience to date has provided certain keys to when the Short-Run Financial Planning Model can prove useful, including:

Size. The larger the investment/borrowing portfolio, the more likely fine tuning by a planning model will make sense.

Yield Differences. On the investment side the model tends to cause a lengthening in portfolio maturity, while on the borrowing side, it tends to shorten portfolio maturity. This results from better synchronization between cash inflows and outflows, with a corresponding reduction in the overnight liquidity pool. If the investment environment is such that changing the portfolio maturity can improve yields, this can more than pay for the modeling effort.

Investment Restrictions. If the cash manager is laboring under severe restrictions relative to the investments or borrowings he can make (e.g., only invest in T-Bills or C.D.'s from the 50 largest banks), the model can be used to demonstrate the cost of such a restrictive policy.

Exposure Management. Lengthening a portfolio of investments or borrowings incurs greater risk because interest rates may move against you. If a firm is contemplating such a move in order to take advantage of current yields, the model can quantify the risk if it should guess wrong on the future course of interest rates.

In summary, the Short-Run Financial Planning Model can provide answers instead of guesses to complex and important investment problems.

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Entry auctions and strategic behavior under cross-market price constraints

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Abstract

We examine how universal service provisions and price restrictions across markets impact strategic entry and pricing. We develop a simple multi-market model with an oligopolistic (profitable) urban market and entry auctions for (unprofitable) rural service. Cross-market price restrictions induce a firm operating in both markets to become a 'softer' competitor, thus placing the firm at a strategic disadvantage. When we account for entry incentives and strategic bidding, the downstream strategic disadvantage becomes advantageous, leading to higher prices and profits. Price restrictions may also put outside firms, even relatively inefficient ones, at a strategic advantage. © 2002 Elsevier Science B.V. All rights reserved.

JEL classification: D4; L1; L5; L96

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1. Introduction

We observe many regulated market environments in which the variation of prices across markets and market segments is restricted. Typically, these price restrictions are associated with universal service goals and they arise when the

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price differentials expected to prevail in an unregulated setting are deemed unacceptable by policymakers. Familiar examples of industries with universal service requirements are postal delivery, railroad transport and telecommunications; related cross-market price constraints are also observed in a variety of other markets.[1] Liberalization in many regulatory environments, however, has exposed profitable markets to entry and competition. As discussed by Laffont and Tirole (2000) and others, liberalization has raised important questions regarding the coexistence of price constraints across markets, competition, and the goal of universal service, as many markets and segments are inherently unprofitable on a stand-alone basis.[2]

In a classic analysis, Leontief (1940) develops the theory of multi-market monopoly under cross-market price restrictions. Armstrong and Vickers (1993) introduce competition and examine the effects of price discrimination when an incumbent firm faces a (price-taking) entrant in a profitable market while the incumbent also serves customers in a separate market. A ban on price discrimination across the incumbent's markets, which is often part of a universal service requirement, causes the incumbent to be less aggressive in response to entry. The ban on price discrimination also has a significant impact on the scale of entry in equilibrium. We also examine the impact of cross-market price constraints (a ban on price discrimination) but introduce strategic interaction between competitors.

We focus on the issue of firm selection for a second, inherently unprofitable, 'rural' market and the strategic linkage to a profitable 'urban' market where there is oligopolistic competition. In particular, we examine the use of an auction to determine which firm will supply the unprofitable rural market. As discussed by Armstrong (2000) and Laffont and Tirole (2000), there is significant policy interest in the potential for awarding the right to serve markets via auctions in which bidders compete on requested subsidy levels.

We analyze the strategic implications of universal service requirements and related cross-market price restrictions with a simple model involving oligopoly competition and two markets. Oligopoly competition takes place in a profitable urban market and the resulting urban market price determines the ceiling (under

[1] Universal service provisions exist in several other markets (e.g., a Federal subsidy program was established following deregulation in the Airlines industry to support 'Essential Air Service' to rural, regional airports in the US). In general, cross-market price restrictions arise in a variety of contexts and, even when no formal entry auctions exist, strategic entry incentives may be affected: in international trade, anti-dumping provisions involve a comparison of prices across countries (Prusa, 1994); in pharmaceutical markets, countries often employ global reference pricing and link their domestic prices to those observed abroad (Lanjouw, 1997); and systems like Medicaid involve most-favored-customer rules (Scott Morton, 1997).

[2] According to Laffont and Tirole (2000), p. 218, ''Universal service is a knotty and explosive problem. It has been (or will be) a central issue in the political debate surrounding regulatory reform in all network industries and in most countries.''

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universal service) for the rural market price. The strategic element that matters for our analysis is that urban market firms can influence or manipulate the relevant prices via their strategic choices. A homogeneous good duopoly with quantity-setting (as in Cournot competition) has this property and, for simplicity, we adopt this as the mode for strategic choice in the urban market.[3]

The rural market is inherently unprofitable due to a large fixed cost. Thus, no firm would independently seek to enter this market. Supply in this market is determined by the outcome of bidding in an upstream auction in which one firm becomes the single supplier to the rural market. Bids take the form of subsidy requirements and the selected firm is the low bidder (smallest subsidy).

The model provides a simple equilibrium framework for assessing the strategic implications of universal service requirements. First, we examine the direct impact of cross-market price constraints under universal service on prices, quantities and profits in each of the urban and rural markets. Next, we employ these market outcomes to analyze the bidding incentives for the rural market auction. The advantage of this approach is that market structure and bidding outcomes are endogenously determined by the underlying demand and cost structure. Finally, we extend the analysis to examine bidding competition and market structure when 'outside' firms (i.e., not active in the urban market) also bid in the rural market auction.

Our main results are as follows. With regard to direct effects on the two markets, we find that universal service requirements create a strategic link between the urban and rural market. This link arises because a firm that supplies both markets would like to set a rural price in excess of the oligopolistically determined urban price and, as a result, the reaction function of this firm shifts in the direction that makes this firm a 'softer' competitor in the urban market. The shift, which is downwards under quantity-setting, leads to higher equilibrium prices in both markets relative to unconstrained oligopoly competition. The 'softer' firm benefits in the rural market but it suffers in the urban market as the competing firm expands and earns higher profits. Thus, a firm supplying both markets is at a strategic disadvantage relative to an urban market competitor.

Equilibrium bidding and the resulting subsidy in the rural market auction must reflect this strategic disadvantage. Since a firm would prefer to 'lose' the rural auction and gain the stronger position in the urban market, the equilibrium subsidy contains a premium to compensate for the strategic disadvantage. As a result, once the subsidy is included, both firms earn higher profits relative to those under pure oligopoly competition in the urban market. The key insight is that the higher price under universal service leads to greater joint profits for the competitors and the auction, via the subsidy, allows a share of these gains to accrue to the firm that

[3] We also discuss how our results extend to other settings, such as differentiated price-setting (Bertrand) competition and quality competition.

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supplies both markets. Thus, the strategic disadvantage created by universal service requirements is advantageous for urban market competitors once we account for the equilibrium incentives to bid for the rural market.

The presence of outside firms in the rural market auction affects bidding and the resulting market structure in several important ways. The critical feature is that an outside firm cannot directly affect the urban market price and, consequently, when an outside firm wins the auction, the strategic link between prices in the two markets disappears. This has an important implication for bidding incentives as the identity of the winning firm now matters to an incumbent urban market firm when it loses the rural auction. Among other results, we show when this leads to a less efficient outside firm winning the rural market auction.

Our analysis rests upon a price link across markets and is therefore closely related to the general issue of multimarket oligopoly. The idea that production in one market can affect strategic incentives in another market is emphasized by Bulow et al. (1985). The strategic link in our analysis, however, does not arise as a consequence of cost or demand interrelationships across markets. Indeed, we abstract away from any such interrelationship in order to focus exclusively on the strategic implications of the price restriction.

DeGraba (1987) also recognizes how cross-market price constraints can make firms softer competitors. The focus is different, however, as DeGraba shows that once firms become softer (price) competitors they may adjust their locations and, as a result, prices may decrease when a cross-market price constraint is present. In addition, he does not examine entry incentives, a primary consideration in our analysis.[4]

Our analysis involves an entry auction for determining the rural market supplier. Consequently, the issue of whether a multimarket oligopoly arises (an insider wins the auction) or not (an outsider wins) is determined endogenously. Further, the valuations of insiders and outsiders with respect to the rural market feature external effects: a losing bidder is affected by the identity of the winning bidder. Thus, our entry auction is related to recent work on auctions and, in particular, Jehiel and Moldovanu (1996, 2000) who examine bidding under external effects. In our case, the asymmetry of external effects is because an urban market insider prefers that a competing insider wins the auction rather than an outsider.

The basic model is described in Section 2 and analyzed in Section 3. In Section 4, we examine bidding when outside firms can participate. Section 5 discusses welfare effects. We consider extensions and conclude in Section 6.

[4] Our paper is also related to the problem of introducing competition into regulated markets (see Biglaiser and Ma, 1995; De Fraja, 1997; Laffont and Tirole, 1993; Wolinsky, 1997, who also provide additional references).

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2. The Model

There are two markets, U (urban) and R (rural) and two firms, A and B. Demand in the U market is $D^{U}(p) = 1 - p$ and in the R market $D^{R}(p) = b(1 - p)$, where p is the market price and $b > 0$. Thus, while both markets have a common price intercept of $p = 1$, the slope coefficient of b allows rural demand to be smaller or larger than urban demand. In many situations, we expect the rural market to be the smaller market.[5]

The fixed cost of any given firm is $F^{U} > 0$ in market U and $F^{R} > 0$ in market R. There is a constant marginal cost $c \geq 0$, and this is the same for both firms and both markets.[6] Naturally, we assume that $c < 1$ so that, ignoring fixed costs, it is always profitable (and efficient) to supply some amount to each market.

2.1. Benchmarks

Consider first the case where the two firms compete in a Cournot fashion in the U market. Standard arguments yield a unique equilibrium with quantities $q^{c} = (1 - c)/3$, price $p^{c} = (1 + 2c)/3$, and per-firm profit

$$\pi^{c} = (1 - c)^{2}/9 - F^{U}. \tag{1}$$

We assume that the fixed cost in the U market is sufficiently low to allow $\pi^{c} > 0$.

Consider now a monopolist operating only in market R. The monopolist would maximize $Q(1 - Q/b) - cQ$ by choosing output $b(1 - c)/2$ with price $(1 + c)/2$ and profit

$$\Pi^{M} = b(1 - c)^{2}/4 - F^{R}. \tag{2}$$

We assume that F^{R} is sufficiently large that $\Pi^{M} < 0$. This assumption implies the need for subsidies if the government wants consumers in this market to be served.

2.2. The game

We consider a simple complete information game with the following timing.

1. Firms A and B choose bids s^{A} and s^{B}. These bids represent lump-sum subsidies that the firms ask from the government in order to serve market R.

[5] The analysis, which extends readily to linear demands with different intercepts, is streamlined by specifying a common intercept since this eliminates cases in which the price constraint does not bind.

[6] We assume that marginal cost is the same in order to focus on the effects of differences in demand and fixed costs across markets. Such differences are often substantial in reality.

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2. The lowest bidder (smaller subsidy required) wins, receives a subsidy equal to the winning bid, incurs the fixed cost F^R and becomes a monopolist in the R market. 'Ties' among symmetric bidders are resolved by a coin toss and ties in other cases are resolved by awarding the rural market to the bidder with the highest payoff.[7] The price in the R market is determined as in 4 below.

3. Firms A and B choose quantities q_A and q_B for the U market. The price in the U market is then determined as $p^U = 1 - q_A - q_B$.

4. The monopolist in the R market can then choose a price that cannot exceed the price determined in the U market, that is, $p^R \leq p^U$.

5. Each firm's payoff is the sum of its profits in the two markets, including any subsidies.

We solve for a subgame perfect equilibrium of this game, focusing on pure strategy equilibria in the bidding stage.[8]

3. Analysis

We proceed from the end of the game-tree back towards the beginning.

3.1. Step 1: pricing in the R market

As we show below, the $p^R \leq p^U$ constraint is binding in equilibrium. In other words, the monopoly price in the R market is higher than the equilibrium price in the U market when one firm operates in both markets. Thus $p^R = p^U$.

[7] In a complete information setting, auction equilibria typically involve a tie either because bidders are symmetric or because the bidder with the strongest strategic position bids so that the next strongest bidder is indifferent between winning and losing. Our tie breaking rule follows the literature (see, e.g., Milgrom, 1987).

[8] Some remarks about the model are appropriate at this point. First, the adopted timing of events is the one that makes the cross-market constraint operate in a natural way. An alternative sequencing would be to have the firm that operates in both markets choose the quantities it supplies in each market at the same time that the other firm chooses its U market quantity. However, this would create the problem of how to impose the price constraint in the R market. Second, the multi-market firm should not be viewed as a price-taker in the R market. Given the cross-market price constraint, the firm is free to set any price in the R market up to the ceiling. More importantly, the ceiling is endogenous with respect to the firms' actions: the multi-market firm can and does adjust its U market choices to raise the ceiling price for the R market. Finally, the Cournot structure for the U market only serves to streamline the analysis and allows us to consider a homogeneous good for which the cross-market price constraint is unambiguous (R market buyers purchase the same good at the same price as U market buyers). As an alternative strategic mode, we could employ price setting (differentiated Bertrand). While, as noted below, this does not alter the basic strategic link between the U and R markets, it does introduce additional issues such as how to interpret the cross-market price constraint when products are differentiated.

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3.2. Step 2: quantities supplied in the U market

Denote by q_1 the quantity supplied in the U market by the firm that only operates in the U market and by q_2 the quantity supplied in the U market by the firm that operates in *both* markets. Given the quantities supplied in the U market, the prices are $p^R = p^U = 1 - q_1 - q_2$. Then, market profits gross of fixed costs and subsidies are: for the firm that operates in both markets $[(1 - q_1 - q_2)q_2 - cq_2] + [(1 - q_1 - q_2)b(q_1 + q_2) - cb(q_1 + q_2)]$ or, equivalently, $(1 - q_1 - q_2 - c)[q_2 + b(q_1 + q_2)]$, and for the firm that operates only in the U market $(1 - q_1 - q_2 - c)q_1$.

We can then derive the reaction functions

$$r^1(q_2) = \frac{1 - c - q_2}{2} \quad \text{and} \quad r^2(q_1) = \frac{1 - c - q_1}{2} - \frac{bq_1}{2(1 + b)}, \tag{3}$$

which yield the equilibrium quantities

$$q_1^* = (1 + b)\frac{1 - c}{3 + 2b}, \quad q_2^* = \frac{1 - c}{3 + 2b}, \tag{4}$$

and equilibrium price

$$p^* \equiv 1 - q_1^* - q_2^* = \frac{(1 + b)(1 + c) + c}{3 + 2b} = p^U = p^R. \tag{5}$$

It is now easy to check that the price constraint is indeed binding:

Remark 1. *p^* is lower than the monopoly price in the R market.*

This follows directly from a comparison of p^* with the monopoly price $(1 + c)/2$ upon noting that $c < 1$. We now summarize how the outcome in the urban and rural markets under the price constraint compares with the benchmark of Cournot outcomes in the urban market. A direct comparison of the appropriate terms shows that:

Proposition 1. *Relative to the Cournot outcome,* (*i*) *when one of the U market firms also operates in the R market, equilibrium in the U market involves a higher price and lower aggregate quantity*: $p^* > p^c$ *and* $q_1^* + q_2^* < 2q^c$, *and* (*ii*) *the firm that operates in both markets supplies a lower quantity in the U market while the firm that operates only in the U market supplies a higher quantity*: $q_2^* < q^c < q_1^*$.

Intuitively, the firm that operates in both markets would like to relax the R market price constraint and, as a result, it would like a higher price in the U market. To accomplish this, it is willing to supply a lower (than the Cournot level) quantity in the U market. In other words, the firm that operates in the U market is now ‘softer’ (relative to Cournot competition). This is evident from the fact that

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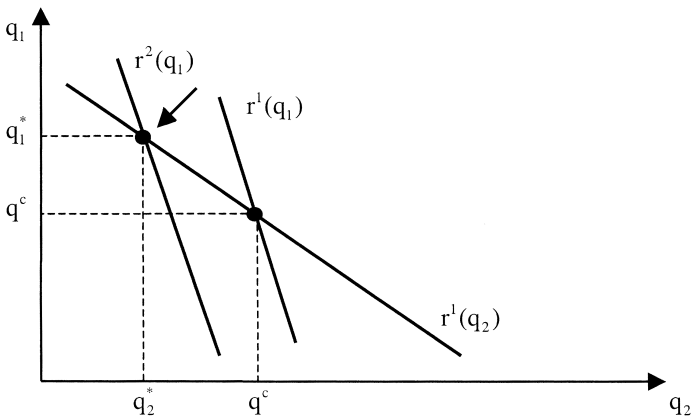

Fig. 1. Equilibrium quantities in the Urban market compared to the equilibrium with no cross-market constraints.

the reaction function r^2 lies below the reaction function under Cournot competition (see Fig. 1 and Eq. (3)). The U market competitor (firm 1) benefits from this effect and supplies a larger quantity.

Now, the equilibrium profit for the firm that operates only in the U market is

$$\pi_1^* = (p^* - c)q_1^* - F^{\mathrm{U}} = \frac{(1+b)^2}{(3+2b)^2}(1-c)^2 - F^{\mathrm{U}} \tag{6}$$

and profit for the firm that operates in both markets is

$$\begin{aligned}\pi_2^* &= (p^* - c)[q_2^* + b(1-p^*)] - F^{\mathrm{U}} - F^{\mathrm{R}} \\ &= \frac{(1+b)^3}{(3+2b)^2}(1-c)^2 - F^{\mathrm{U}} - F^{\mathrm{R}}.\end{aligned} \tag{7}$$

A direct comparison of (1), (6) and (7) yields the following result.

Lemma 1. *The profit of the firm that operates in both markets is lower than the per-firm U market Cournot profit and this, in turn, is lower than the profit of the firm that operates only in the U market*:

$$\pi_2^* < \pi^c < \pi_1^*. \tag{8}$$

The firm that operates in both markets has negative profit in the R market once we account for the fixed cost of F^{R}. Further, this firm supplies smaller quantity to the U market and has a lower profit there than its competitor. Thus $\pi_2^* < \pi_1^*$. $\pi^c < \pi_1^*$ follows from the fact that the firm that operates only in the U market increases both its price and its quantity when its competitor enters the R market.

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Now, $\pi_2^* < \pi^c$ is true for two reasons. First, firm 2 has a loss in the R market. In addition, firm 2's profit in the U market decreases when it enters the R market. Note that when 2 enters the R market the quantity it supplies to the U market decreases but the price increases. Direct calculations show that its U market profit drops from π^c to $(p^* - c)q_2^* - F^U = (1+b)(1-c)^2/(3+2b)^2 - F^U$. This follows by noting that $(p^* - c)q_2^* - F^U$ is equal to π^c for $b = 0$ and is decreasing in b.

3.3. Step 3: equilibrium bids

The total payoffs as functions of the bids s^A and s^B (and assuming equilibrium behavior in the continuation of play) are

$$v^i(s^i, s^j) = \begin{cases} \pi_1^* & \text{if} \quad s^i > s^j \\ \pi_2^* + s^i & \text{if} \quad s^i < s^j, \end{cases} \quad i, j = \text{A, B},$$

where π_1^*, π_2^* are calculated as above. Note that the bids represent required subsidies and an 'aggressive' bid (one that increases the chance of winning the auction) is a low bid.

Now we can determine the equilibrium bids:[9]

Proposition 2. *In equilibrium, each firm requires a subsidy equal to*

$$s^* \equiv \pi_1^* - \pi_2^* = F^R - b\left[\frac{(1+b)(1-c)}{(3+2b)}\right]^2 \Big/ 25 \tag{9}$$

and wins the auction with probability 1/2. *The total after-subsidy profit for each firm is* π_1^* (*which exceeds* π^c). *Further, the joint profit in the U market exceeds the Cournot level.*

A firm that operates only in the U market strictly prefers that its U market opponent also operates in the R market, because this makes the U market opponent a softer competitor in the U market. Consequently, the required subsidy in equilibrium is $\pi_1^* - \pi_2^*$, which is higher than $\pi^c - \pi_2^*$. In other words, the point of reference for the firm that loses the auction is not π^c but π_1^*. When a firm loses the auction then its competitor wins, and this is a desirable outcome for the firm. Thus, each firm is more 'demanding' with respect to the subsidy it requires.

[9] The proof is immediate. If it bids $s < s^*$, the firm wins the auction and receives total profit $s + \pi_2^* < s^* + \pi_2^* = \pi_1^*$. On the other hand, with a bid $s > s^*$ the firm loses the auction and has the same profit, π_1^*. Proposition 2 describes the unique pure-strategy outcome. A symmetric mixed strategy bidding equilibrium also exists, but it requires unbounded support for the bid distribution and so does not survive if there is a finite upper bound on the requested subsidy. For a related construction see Baye and Morgan (1999).

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The fact that equilibrium profit exceeds the Cournot level (if there were no link between the markets) represents a key effect in our analysis. The desire of the government to provide service to consumers in the rural market, in conjunction with the requirement that the rural price not exceed the urban price, can create a perverse incentive for each firm to lose the auction for the rural market in order to gain the more profitable position of serving only the urban market. Equilibrium bidding then leads to a subsidy that compensates for the strategic disadvantage associated with winning. As a result, both firms ultimately benefit and earn profit π_1^* which exceeds π^c (the profit level when no price constraint is imposed on the R market or, equivalently, the profit when U market firms are not allowed to enter the R market). Further, the urban market has higher prices and lower quantities relative to those of unconstrained oligopoly competition (Cournot) in the urban market.

The effects described above are valid for much more general settings than the simple model presented here. In particular, they hold for standard Cournot models with nonlinear demand and costs.[10] Further, the main effect is still present if there are more than two U market firms, as long as these have market power (of course, as the market power of each firm decreases, the incentive to manipulate the price becomes weaker). Finally, the effects of the price restriction are not dependent on the specifics of quantity-setting as the strategic mode. In a differentiated price-setting competitive interaction, the reaction function of the firm operating in both will also shift in the direction (up in the case of price-setting) associated with being a softer competitor.

4. Outsiders allowed to bid for the Rural market

Thus far we have focused on the interaction between the (two) firms that are active in the U market. We now introduce the possibility of entry into the R market by a firm that is not active in the U market, an 'outside' firm, for short. The critical difference is that an outside firm cannot directly affect or manipulate the price in the U market. In addition to being a useful benchmark for understanding the incentives of U market incumbent firms to relax the cross-market price constraint, the question of whether an insider or an outsider is expected to win the auction is an important strategic issue for firms in these markets as well as for policymakers. Our inquiry includes the question of whether an inside incumbent or an outsider is more likely to request a smaller subsidy and win the auction, as well as that of determining the strategic impact of an outsider on the bidding behavior of inside firms.

In order to focus on the implications of differences in strategic positions, we

[10] A sufficient condition is to have downward sloping reaction functions with a unique, stable equilibrium. We thank a referee for this suggestion.

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begin by abstracting away from any other differences between U market incumbent firms and outside firms; later, we discuss the impact of differences in technology. Thus, all firms face the same marginal cost of c and fixed cost of F^{R}. The game is as before with the only change being that outside firms can also submit bids at the same time as U market incumbents for the R market subsidy. We begin with the case of one outside firm and then proceed to the case of many outsiders (this corresponds to 'free entry' into the R market auction).

4.1. Comparing the profit differences

Consider first the subgame given that an outsider has won the bidding. In this case, neither of the duopolists in the U market has any cross-market incentive to manipulate the U market price. Thus, the price in the U market will be the Cournot price p^c, and each of these two firms will earn the Cournot profit, π^c. The price constraint binds on the outside firm and so p^c will also be the price in the R market.[11] The profit for the firm operating in the R market (before the subsidy) is then

$$(p^c - c)b(1 - p^c) - F^{\mathrm{R}} = \frac{2b}{9}(1 - c)^2 - F^{\mathrm{R}} \equiv -\tilde{\pi} < 0. \tag{10}$$

Thus, $\tilde{\pi}$ is the *loss* for the firm operating (only) in the R market. It follows that in order for the outsider to be willing to enter the R market, a subsidy of at least $\tilde{\pi}$ is necessary (the outsider's profit when not operating in the R market is normalized to zero).

In the subsequent analysis, we need to compare $\tilde{\pi}$ to $\pi_1^* - \pi_2^*$ (the bid subsidy demanded in equilibrium when only the U market incumbents can bid for the R market) and $\pi^c - \pi_2^*$ (the decrease in an insider's profit after entering the R market). From the previous analysis, a direct comparison of $\tilde{\pi}$ from (10), $\pi_1^* - \pi_2^*$ from (9), and $\pi^c - \pi_2^*$ from (1) and (7) yields:

Lemma 2. (*i*) $b \leq b_L \Leftrightarrow \tilde{\pi} \leq \pi^c - \pi_2^* < \pi_1^* - \pi_2^*$,(*ii*) $b_L < b \leq b_H \Leftrightarrow \pi^c - \pi_2^* < \tilde{\pi} \leq \pi_1^* - \pi_2^*$, *and* (*iii*) $b_H < b \Leftrightarrow \pi^c - \pi_2^* < \pi_1^* - \pi_2^* < \tilde{\pi}$, *where* $b_L \equiv (1 + \sqrt{13})/2 \simeq 2.3$ *and* $b_H \equiv 3(1 + \sqrt{2}) \simeq 7.24$.

Observe that in most applications we expect demand in the rural market to be less than demand in the urban market. Taking $b < 1$, the above result implies that an outsider will incur a smaller loss from supplying service to the rural market than will an urban market insider. Thus, assuming that production technologies and all other aspects of the firms are identical, outsiders are in a better strategic position to submit a more aggressive bid in the auction for the R market.

[11] Since $p^c < p^*$ and from Remark 1 the price constraint binds at p^*, it also binds at p^c.

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4.2. Equilibrium

We begin with the case of a single outsider who can bid for the R market. This allows us to isolate the effect of an outsider from that of competition among outsiders.[12]

Proposition 3. *Suppose that one outsider and the two firms active in the U market participate in the R market subsidy auction.*

(*i*) *If* $b \leq b_L$, *in equilibrium, all firms bid a subsidy of* $\pi^c - \pi_2^*$ *and the outsider wins. In equilibrium, the outsider has after subsidy profit* $\pi^c - \pi_2^* - \tilde{\pi} > 0$, *and each of the U market incumbents has profit* π^c.

(*ii*) *If* $b_L < b \leq b_H$, *in equilibrium, a U market incumbent wins with a bid of* $\tilde{\pi}$, *the outsider also bids* $\tilde{\pi}$, *and the other U market incumbent requires a subsidy higher than* $\tilde{\pi}$. *In equilibrium, the winning U market incumbent has after-subsidy profit* $\tilde{\pi} + \pi_2^*$, *the losing U market incumbent has profit* π_1^*, *and the outsider has zero profit.*[13]

(*iii*) *If* $b_H < b$, *in equilibrium, each of the U market incumbents bids* $\pi_1^* - \pi_2^*$ *and wins with probability* $1/2$ *while the outsider submits a higher bid.*

Proof. (i) In this case, Lemma 2 implies $\tilde{\pi} \leq \pi^c - \pi_2^* < \pi_1^* - \pi_2^*$. The outsider does not want to raise its bid because it would lose the auction and its profit would drop from $\pi^c - \pi_2^* - \tilde{\pi} > 0$ to zero. It also does not want to lower its bid since this would only decrease its subsidy. A U market insider does not want to lower its bid because it would then win the auction and its profit would decrease: a bid $s < \pi^c - \pi_2^*$ yields after-subsidy profit $\pi_2^* + s$, which is lower than π^c. Finally, raising the bid would not affect an insider's profit.

(ii) In this case, $\pi^c - \pi_2^* < \tilde{\pi} \leq \pi_1^* - \pi_2^*$. The outsider would still lose the auction if it asks for a higher subsidy and thus its profit would remain zero. Its profit would be negative if it bid less than $\tilde{\pi}$ and won the auction. By submitting a lower than $\tilde{\pi}$ bid, the losing insider wins and its after subsidy profit drops to below $\tilde{\pi} + \pi_2^*$ which is lower than the original profit of π_1^*, since for these parameter values $\tilde{\pi} \leq \pi_1^* - \pi_2^*$. Finally, if the winning insider asked for a lower subsidy, it would only decrease its profit by the amount of the subsidy reduction. If it asked for a higher subsidy, it would lose the auction and the outsider would win. This deviation leads to a profit of π^c which is lower than the original profit, $\tilde{\pi} + \pi_2^*$

[12] In practice, a large asymmetry could render other potential outsider firms irrelevant to the bidding competition, as when a prior R market incumbent has legal control of essential facilities (see Laffont and Tirole (1993, p. 260)).

[13] In this case, there is no pure-strategy equilibrium where the outsider wins or where an insider wins and both insiders have the same bid. There is, however, a symmetric mixed strategy equilibrium in which each insider mixes between $\tilde{\pi}$ and an arbitrary higher bid. Details are available from the authors upon request.

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because we have $\pi^c - \pi_2^* < \tilde{\pi}$. Thus, the proposed strategy profile is an equilibrium, with the losing insider making higher profit than the winning insider and the outsider disciplining the winning bid.

(iii) In this case, $\pi^c - \pi_2^* < \pi_1^* - \pi_2^* < \tilde{\pi}$. The outsider would make a large enough loss ($\tilde{\pi}$) if it entered the R market that its presence is irrelevant for the auction. The U market firms behave exactly as in Proposition 2. The outsider loses the auction and submits a high bid. If the outsider were to submit a bid lower than $\pi_1^* - \pi_2^*$, it would win the auction and its loss in the R market would be larger than the subsidy. □

Recall that we consider the case of small rural market demand to be the most likely scenario for most applications. Proposition 3(i) then implies that the strategic advantage of an outsider translates directly into the ability to win the R market auction at a subsidy level that involves a positive profit. Insiders then operate only in the U market. Note that it is the willingness of insiders to bid (and operate) in the R market that disciplines the bid subsidy and that, in equilibrium, the insiders are pushed to indifference.[14] In addition, a comparison of the profits for insiders indicates clearly that the insiders would prefer that outside firms be excluded from the rural market auction.

Suppose now that there are two or more outsiders. The only difference is that the presence of other outsiders disciplines the bid of each outsider and, therefore, in case (i) of the above Proposition, the winning bid cannot be higher than $\tilde{\pi}$.

Proposition 4. *Suppose that $n \geq 2$ outsiders and the two firms active in the U market participate in the R market subsidy auction. Then, if $b \leq b_L$, in equilibrium, all outsiders bid $\tilde{\pi}$ and each of the outsiders wins with probability $1/n$. Insiders can bid any number higher than $\tilde{\pi}$. In equilibrium, each outsider has after subsidy zero profit and each of the U market incumbents has profit π^c. If $b > b_L$ the equilibrium is as in Proposition 3.*

Propositions 3 and 4 suggest that, when firms are otherwise identical, an outsider is expected to win the auction when demand in the R market is not too large, whereas a firm active in the U market is expected to win if demand in the R market is high.

The key point here is that an outsider cannot manipulate the U market price, whereas a U market insider can. Therefore, an insider has an additional instrument at its disposal. We know that the price in the R market will be higher and the loss smaller if a U market insider operates there as compared to when an outsider does.

[14] In case (i) there is also a continuum of equilibria that differ from the one above in that the winning bid belongs to $[\tilde{\pi}, \pi^c - \pi_2^*)$. Similarly, in case (ii) there is also a continuum of equilibria with the winning bid in $[\pi^c - \pi_2^*, \tilde{\pi})$. Such equilibria are usually viewed in the literature as 'unreasonable' because they require the firm that submits the 'disciplining' bid to employ a weakly dominated strategy.

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Thus, if firms are otherwise identical, it appears that a U market insider always has an 'advantage' relative to an outsider. How can we then find that an outsider may win the auction? This is because, firstly, the intuition described above is not valid is a strategic framework. When an insider also operates in the R market, the U market price is not manipulated against a given choice of the other U market competitor in the U market. Rather, the equilibrium in the U market is shifted as both competitors alter their choices. The source of this shift is that the firm operating in both markets now behaves according to the reaction function r^2 rather than r^1. Thus, the value of being able to manipulate the U market price depends on the downstream incentives of the firm and the resulting interaction with the U market rival.[15] Secondly, an insider's point of reference in case it loses the auction is different from that of an outsider. An insider strictly prefers that its U market competitor also operates in the R market and therefore requires the larger subsidy of $\pi_1^* - \pi_2^*$ rather than $\pi^c - \pi_2^*$ in order to give up the opportunity to face a softer competitor. Thus, in the event that it loses the auction, an insider will still care about the identity of the winner. An outsider faces no such concerns.

4.3. Different costs

The above results imply that a firm can often submit a more aggressive bid purely because it has a more favorable strategic position than another firm (even if firms are otherwise identical). These results also imply that a less efficient firm may be able to win the auction:

Remark 2. *An outside firm may win the rural market auction simply because it has a stronger strategic position, despite having higher production costs than inside firms.*

For concreteness, suppose that b is not too high, so that an outsider has a strategic advantage ($b < b_L$). In addition, we now allow for different costs. Let $\bar{c}$ be the unit cost for an outsider (the analysis so far has assumed $\bar{c} = c$). Clearly, for $\bar{c} < c$ the previous analysis implies that an outsider will win the auction. Suppose now that $\bar{c} > c$, so that the insiders are more efficient.[16] Propositions 3(i) and 4 remain valid for a range of $\bar{c}$ above c and an outsider will still win the R market

[15] The loss for an outsider that enters the R market is $\tilde{\pi}$. The corresponding loss for a U market insider is $\pi^c - \pi_2^*$. As shown above, the loss in the U market for a firm operating in both markets may be greater than its gain in the R market and therefore we could have $\tilde{\pi} < \pi^c - \pi_2^*$. Note that if the incumbent could commit not to decrease its U market output, its total profit could never fall below $\pi^c - \tilde{\pi}$. But the fact that a firm's reaction curve shifts once it enters the R market makes it possible for π_2^* to be below $\pi^c - \tilde{\pi}$.

[16] Insiders may be more efficient due to economies of scope across multiple markets. Other factors, however, such as labor and capital structure inherited from prior regulatory policy, may disadvantage an insider.

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auction.[17] Thus, a (single) less efficient outsider is able to win the R market auction at a positive profit subsidy level whenever the advantage of a strong strategic position dominates the high cost disadvantage. Of course, with multiple outsiders, the bidding competition dissipates the profit from the subsidy, although an outsider still wins auction. Similar points apply for differences in fixed costs.

5. Welfare

It is useful to summarize here some basic welfare implications of our analysis. The discussion is based on our analysis of price and profit implications earlier in the paper. A first benchmark to which we can compare the policy of the cross-market price constraint and auction for the R market (and when only U markets insiders can bid for the R market) is an auction without any price constraint in the R market (then the winner of the auction charges the monopoly price in the R market — see Section 2.1). Compared to this benchmark, price falls to p^* from the monopoly level in the R market and it rises to p^* from the Cournot level in the U market (p^c). It is easy to verify that the increase in consumers' surplus in the R market is larger than the loss in the U market. The auction bid subsidy falls from Π^M (see (2)) to $\pi_1^* - \pi_2^*$, and both U market firms earn a higher profit level of π_1^*. Further, the sum of consumers surplus (over both markets) and profits (over the two firms) less the subsidy increases as the price constraint is introduced. Thus, for the familiar welfare measure consisting of a weighted average of these terms, introducing the price constraint will increase welfare as long as the weights on consumers surplus in the U compared to R market are not too far apart, a presumption which appears consistent with the goals of universal service.

Opening the auction to outsider bidding has direct welfare implications. Focus on the case of a 'small' R market. Then, outsider bidding causes the price to fall from p^* to p^c in both markets, directly benefiting consumers. Further, insider profits fall to π^c from π_1^* as does the auction subsidy. Clearly, allowing an outsider to bid for the R market in this setting breaks the strategic link with the U market. The outcome then is equivalent to a second benchmark for our analysis, that of a policy that fixes the R market price to p^c. Moving from one to multiple outsiders then disciplines the bidding of outside firms (and the resulting profit) without changing prices and consumers surplus or insider profits. Therefore (and although advice to policy makers cannot be precise if based only on a simple model like ours) it appears that, when there is a cross-market price constraint,

[17] This is because $\pi^c - \pi_2^*$ is independent while $\tilde{\pi}$ is decreasing in the outsider's marginal cost. At $\bar{c} = c$ we have $\tilde{\pi}$ less than $\pi^c - \pi_2^*$ by a finite amount. Thus, we must have $\tilde{\pi} \leq \pi^c - \pi_2^*$ for a range of $\bar{c}$ above c.

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opening the auction to outsiders may help neutralize the adverse effect of firms' strategic behavior on consumer surplus.[18]

6. Extensions and conclusion

Our analysis shows how, when a firm operates in both markets, the incentive to relax the cross-market restriction makes the firm a 'softer' competitor and places the firm at a strategic disadvantage relative to other urban market competitors. Entry incentives must account for this disadvantage and strategic bidding results in an equilibrium subsidy that contains a compensating premium. Consequently, the downstream strategic disadvantage becomes advantageous for insiders, leading to higher prices and profits. Further, the existence of a strategic disadvantage for a firm operating in both markets makes it important to distinguish between inside and outside firms. An entry auction in this setting involves external effects: a losing inside firm is affected by the identity of the winning firm since this determines whether the losing firm will face a weak or a strong competitor in the urban market. Importantly, we find that an inefficient outside firm may win the rural market auction.

An assumption of the model that can be easily relaxed is that firms have the same technology. For example, the analysis can be reproduced in a straightforward way when the incumbents have different marginal costs. In this case we find that, as expected, it is the more efficient of the two firms that requires a smaller subsidy and enters the R market.

Further, the number of firms in the U market can be endogenized. Suppose that two Cournot competitors make positive profit in the U market but three would have a loss. If one of these two firms entered the R market, it would decrease its U market output and, thus, increase the U market price and its R market profit. But with the higher price in the U market it is conceivable that further entry in the U market has become profitable. This further entry creates a force that would tend to decrease the price back towards its original level. The analysis can be modified to include this case, with the incumbent firms taking into consideration the possibility of further entry when they choose their output levels. While we do not explicitly model this possibility in the paper, it is important to keep in mind with respect to entry and policy issues that, if the price increase in the U market is very high, additional firms may find it profitable to enter.

[18] Concerning our discussion of cost differences above, note that it is not obvious that the government should necessarily award the R market to the lowest bidder versus employing some type of bidder handicap system. The reason is that, although the outsider may require a larger subsidy to operate in the R market (if its cost is sufficiently higher), the price (in both markets) is lower when the outsider operates in the R market than the price when one of the U market insiders operates in the R market. Another way to think about this is that when a U market insider operates in the R market, there are additional market distortions.

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Universal service provisions often also require that the quality of services in rural markets be comparable to that provided in urban markets. The logic of our model also applies to the case where quality is endogenous. This case is of interest since imposing a cross-market price constraint is less important if the quality levels are allowed to differ substantially, and is particularly important in markets with rapid technical change. The model could be modified as follows. Suppose that firms compete in both quantity and quality, and that the cross-market constraint dictates that the product has to be provided in the R market at a price not higher and a quality not lower than the U market levels.[19] Then, a firm operating in both markets may have an incentive to supply lower quality to the U market to increase profit in the R market.

Finally, we have not considered how the government finances the subsidy. In principle, of course, if welfare maximization is the goal, the government should choose some tax that minimizes the resulting distortions. Often, this subsidy can be financed by some tax on the firms operating in this industry, essentially creating a cross-subsidy from the profitable (U) to the unprofitable (R) segments of the market. For example, there may be a tax on the revenues of firms. The main idea is that firms contribute part of their revenues to this fund, and the collected revenue is used to finance the subsidy to firms serving the unprofitable segments of the market. Thus, it is of interest to discuss briefly how such a scheme might affect competition from the point of view of our model. In a formal treatment of the issue, the tax rate should be treated as endogenous (because the tax must produce sufficient revenue to cover the subsidy, that is, revenue should equal the winning bid in the R market auction). This has implications not only for bidding strategies, but also for the way competition takes place. Since the main goal of the paper is to examine how the cross-market price constraint affects the strategic behavior of firms rather than provide a detailed evaluation of different ways to finance the subsidy, we merely summarize here the main ways in which taxation may affect the firms' strategies.

Suppose that there is a revenue tax in the U market. First, concentrate on competition between the two insiders. Since U market profit (through revenues) is subject to taxation, for the firm that operates in both markets, it becomes more profitable at the margin to decrease supply in the U market. In other words, a revenue tax makes it more attractive for the firm to sacrifice its U market profit in order to decrease its loss in the R market and thus tends to further increase prices. Second, when firms determine their bids they realize that, at the margin, a higher bid implies that a higher tax rate will need to be imposed on the U market to finance the subsidy. Thus, the U market insiders have an incentive to submit a lower bid than otherwise. Furthermore, an outsider may want to submit a higher bid since increasing the tax rate only affects firms active in the U market. Thus,

[19] For a discussion of the effect of price regulation on a firm's quality offerings in oligopolistic markets, see Vander Weide and Zalkind (1981).

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the fact that the tax rate is determined so that it finances the required subsidy may make the insiders willing to bid for a lower subsidy than otherwise, and introduces an additional difference between the strategic positions of insiders and outsiders.

The ideas presented here and our analysis are relevant for a number of markets. Deregulation and privatization policies, which typically involve some form of bidding procedure for entry, have been enacted in a number of countries and allow firms to enter and compete in profitable segments of an increasing number of markets. These policies often coexist with a concern of governments that service and supply must also be provided to less profitable segments of these markets. In this paper we have identified how such an environment can alter the strategic positions of inside and outside firms and assessed the implications for market competition and entry.

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THE BOND SCHEDULING PROBLEM OF THE MULTI-SUBSIDIARY HOLDING COMPANY*

KENNETH R. BAKER† AND JAMES H. VANDER WEIDE‡

This paper presents a decision-theoretic model of the bond scheduling problem faced by a multi-subsidiary holding company such as AT&T or GTE. The objective is to minimize the total cost of bond flotations across all subsidiaries, where total cost is the sum of the yield paid to investors, the flotation expense associated with the preparation of each issue and the opportunity expense to each subsidiary of not meeting its request at the desired time. Our model suggests that the timing of bond issues is primarily a problem in trading off the diseconomies of issuing many bonds in one month with the penalty costs of delay. An efficient dynamic programming algorithm for solving the problem is also presented along with an example.
(CORPORATE FINANCE, FINANCE-MANAGEMENT)

1. Introduction

Multi-subsidiary holding companies annually acquire billions of dollars from the U. S. bond markets. During recent years American Telephone and Telegraph and General Telephone and Electronics have together accounted for about twelve to fifteen percent of the total funds raised in these markets. When the holding company's subsidiaries process their bond offerings through the headquarters and the total cost of obtaining funds depends on how many bonds are being processed jointly, a bond scheduling problem exists. In this paper we model this problem and solve it with the aid of a dynamic programming recursion.

That bond scheduling problems are similar to those appearing in the theoretical inventory literature was first noted by Bierman and McAdams [1] and Bierman [2]. Recently, Litzenberger and Rutenberg [7] extended the work of Bierman and McAdams to capture more of the stochastic, dynamic environment of this problem. These authors essentially drew on the analogy with single-product inventory models in order to structure the bond scheduling problem for a single firm. The model presented here is also based on inventory theoretic concepts, but it differs from previous work in that it accounts for the interdependencies introduced by the multi-firm character of many realistic bond scheduling problems.

The next section of the paper contains a brief justification for the underlying premise that the maturity structure of the firm's debt matters. §3 contains a verbal description of the multi-subsidiary holding company's bond scheduling problem. The problem is modelled as a mathematical programming problem in §4 and solved with the aid of a dynamic programming recursion. A discussion of possible extensions to the model is contained in §5.

2. Optimal Maturity Structure of the Firm's Debt

The bond scheduling model described in the later sections of this paper rests on the underlying premise that there exists an optimal maturity structure for the firm's debt. The finance literature offers two theoretical justifications for this premise. One justifi-

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cation stems from the work of Lintner [5] and [6] and Rubinstein [9] on the theory of segmented markets, another stems from the work of Jensen and Meckling [4] on the agency costs embodied in financial decisions. In this section, we discuss these important theories and suggest how they can be extended to consider the optimal maturity structure of the firm's debt.

It is well established (see Modigliani and Miller [8]) that the value of the firm is invariant to capital structure decisions when capital markets are perfect. To explain the observed cross-sectional regularity in capital structures, therefore, we must introduce imperfections such as transactions costs, information costs or bankruptcy costs into our analysis. Lintner and Rubinstein introduce these imperfections through the device of segmented markets, where by "segmented markets" they mean that some investors or firms are restrained from investing or borrowing in at least some markets.

Assume (following Rubinstein) that capital markets are partially segmented in the sense that the set of individuals who buy the firm's stock is disjoint from the set of individuals who buy the firm's bonds. Furthermore, assume that debt is risky, that the firm's future equity value is taxed at the rate τ and that all investors seek to maximize the expected value of the utility of end-of-period wealth, where either utility can be expressed as a quadratic function of wealth or end-of-period wealth is normally distributed.

Then, as shown in Rubinstein [9, p. 756], the present value of the firm is given by the expression:

$$V = V^* + B\left[\tau - \frac{(1-\tau)\mathrm{Cov}(\tilde{R}_f, \tilde{W}_m)}{\tilde{R}_f}(\gamma_2 - \gamma_1)\right]$$

where V^* is the present value of an all equity financed firm, B is the present value of the firm's risky debt securities, $\tilde{R}_f$ is one plus the rate of interest on the firm's debt, $\tilde{W}_m = \tilde{W}_{m1} = \tilde{W}_{m2}$ is the end-of-period market value of all other securities in the equity and debt markets and γ_1 and γ_2 are the market price of risk in the equity and debt markets, respectively. This function has an interior maximum with respect to the level of the firm's debt when $\tau > 0$, $\mathrm{Cov}(\tilde{R}_f \tilde{W}_m) > 0$ and $\gamma_2 > \gamma_1$. Other sets of assumptions for which the firm's value function has an interior maximum are discussed in Lintner [6].

To extend the segmented markets theory to the case where the firm can issue two kinds of debt, one "short" and one "long" perhaps, we need merely assume that the firm sells securities in three partially segmented markets rather than two. The expression for the firm's market value is more complex in this case, but it can be shown that under similar conditions to those stated above, the firm's value function has an interior maximum with respect to both kinds of debt instruments. Thus, under these conditions there exists an optimal maturity structure to the firm's debt.

Jensen and Meckling [4] provide an alternative explanation for the existence of an optimal capital structure. Suppose that the firm's stock is held exclusively by a single individual owner/manager and that the firm currently has some debt in its capital structure as well. Jensen and Meckling note that the individual owner/manager can expropriate the wealth of the current bondholders by either accepting projects of greater risk than the bondholders thought at the time they purchased the bonds or by issuing additional bonds and using the proceeds to retire some of the firm's stock. On the other hand, if the single owner/manager decides to issue additional stock to outsiders, he can also expropriate some of their wealth by spending money on perquisites for himself and sharing the cost with the other owners. The bondholders and new shareholders can protect themselves from raids on their wealth only by incurring monitoring, or agency, costs that increase with additions to debt and equity,

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respectively. Since agency costs are a net drain on the system, it will be in everyone's best interest for the firm to adopt a capital structure that minimizes these costs. Under Jensen and Meckling's assumptions, this will occur at some point where the firm has both debt and equity in its capital structure.

The Jensen-Meckling arguments can also be extended to the case where the firm issues both short- and long-term debt. Because of the relatively large transactions costs of issuing long-term debt (associated with SEC registration, preparation and printing of prospectuses, etc.), it is usually in the firm's best interests to finance short-term increases in receivables and inventories with short-term debt. (Securities with less than a nine-month maturity do not have to be registered with the SEC). Excessive use of short-term debt (i.e., short-term debt that is used to finance permanent cash requirements), however, can lead to a significant increase in the probability of bankruptcy, due mainly to the possibility that the firm will not be able to roll over its short-term securities when they mature. At the same time, the increase in the probability of bankruptcy makes the short-term debtholders particularly vulnerable to raids on their wealth of the type mentioned above. If they have to incur agency costs to prevent such raids, the firm can maximize its value by choosing a capital structure consisting of both short- and long-term debt in addition to equity.

3. Problem Description

The bond scheduling problem of the multi-subsidiary holding company can be described as follows. The company headquarters periodically receives from each subsidiary a cash flow forecast for the next 12 to 18 months. The forecast includes, among other things, a demand for one or more bond issues. When the headquarters decides to float the bonds, it can expect to incur costs of several kinds. One rather obvious cost is the yield which the firm must pay investors to induce them to lend their money. The yield cost may depend not only on when the bonds are issued, but also on how many are issued at one time. A second cost is the flotation expense associated with the preparation of each issue. Since some of the preparatory functions require specialized skills, these costs usually increase with the number of issues that are handled jointly. A final, and often overlooked, cost is the opportunity expense to the subsidiary of not meeting its request at the desired time. This cost is measured by the difference between the rate the firm pays for additional short-term borrowing and the yield which it pays on the bond. (We assume for convenience that a firm requests a new bond for the point in time when its short-term debt reaches its optimal level.) The rate on short-term borrowings should include both the cost of compensating balance requirements and the impact of operating and legal restrictions on the firm's liquidity that are imposed to avoid the agency costs mentioned in §2. It is these latter factors which cause the real short-term borrowing rate to exceed the long-term rate when the firm deviates significantly from the optimal maturity structure of its debt. In some cases there also may be limitations on the number of periods for which the subsidiary's request can be delayed. The holding company's problem then is to schedule the various subsidiary bond flotations so as to minimize the total cost to the company and at the same time satisfy all important financial constraints. To accomplish this minimization, the holding company must balance the diseconomies of bunching several issues in one period with the penalty costs of delay.

In order to formulate and solve the holding company's bond scheduling problem, each of the cost functions described above must be carefully specified. In addition, we find it convenient to make several simplifying assumptions. The implications of relaxing these assumptions will be discussed in §4.

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Cost Functions. Let $x_{it} = 1$ if a bond is issued for subsidiary i ($i = 1, \ldots, S$) in period t and $x_t = \sum_{i=1}^{S} x_{it}$ denote the total number of bonds issued in period t. Furthermore, let y_{it} denote the size of bond issued for subsidiary i in period t and $Y_t = \sum_{i=1}^{S} y_{it}$ the total number of dollars raised in t. The preparation cost in period t depends on both the number and total size of the issues and is written most generally as $f_1(X_t, Y_t) = g_1(X_t) + g_2(Y_t)$. The yield cost in period t depends on the total size of the issues and can be written $f_2(Y_t)$.

Although our solution algorithm does not depend on the shapes of these cost functions, it may be instructive to comment on the forms they would likely take. The component g_1 of preparation cost encompasses all fixed costs associated with a bond issue. We would expect that the fixed cost associated with a given bond would tend to increase with the number of bonds issued, due to the need for overtime work or the need to assign less experienced personnel to the task. The component g_2 of preparation cost encompasses all variable costs associated with a bond issue, including printing, commissions, and so on. Although some of these costs may depend on the bond size over certain intervals, they are generally not affected by the decisions open to the holding company. Thus the variable costs of preparation will not depend on the scheduling decision, and we shall therefore assume without loss of generality, the form of the preparation cost to be $f_1(X_t)$. The form of the yield cost function is more difficult to conjecture, but we would expect that yield costs begin to increase once a certain amount of funds are raised. Thus we expect that $f_2(Y_t)$ is likely to be convex.

The treasurer must recognize, when measuring $f_2(Y_t)$, that the firm's bonds will often mature in twenty-five, or more, years. The total cost of floating an excessive amount of money in one period is thus the present value, at the firm's opportunity cost of funds, of a twenty-five year incremental interest expense. This present value can be quite large, even though the incremental interest expense is relatively small.

When a subsidiary's bond issue is delayed, it must obtain funds temporarily from short-term sources. Let b_{it} denote the amount of short-term borrowings for subsidiary i in period t caused by any delay in its bond request and $B_t = \sum_{i=1}^{S} b_{it}$ the total such borrowing for all subsidiaries. The borrowing cost in period t depends on the total amount borrowed and is written $f_3(B_t)$. The form of f_3 is also difficult to conjecture, but we shall adopt a scenario in which the subsidiary requests a bond issue because it has made plans to invest substantially all of the funds raised in capital projects it has already approved. A delay in the bond issue forces the subsidiary to obtain these investment funds via short-term borrowing, and therefore we might represent the total borrowing cost as $f_3(B_t) = r\ B_t$, where r is the difference between the short-term and long-term borrowing rates.

We shall discuss in our concluding comments various ways of generalizing the basic model. The essential features of the cost structure, however, have been examined above. They are: (1) preparation costs that are increasingly expensive for a given bond as more bonds are scheduled in a given period, (2) yield costs that reflect increasing rates as the total amount of a period's bond issue increases, and (3) borrowing costs that penalize headquarters for scheduling a delay in meeting any individual subsidiary's request.

EXAMPLE. In order to help clarify the elements of the bond-scheduling problem, consider the simple example described in Table 1. In this example there are three subsidiaries requesting bond issues in the first month of a three-month horizon. There are actually 27 distinct feasible schedules for the three issues, assuming all requests must be satisfied by the end of the third month, and the table lists four of the possibilities.

The cost functions in the example are special cases of the general types discussed above. The preparation cost reflects an incremental fixed cost of $10,000 for the

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TABLE 1

	Month 1	Month 2	Month 3
Requests:	\$20 M from sub. 1 \$60 M from sub. 2 \$50 M from sub. 3	None	None

Cost Parameters:

Preparation Cost

Number of issues X	1	2	3
Cost $f_1(X)$	0	10K	25K

Long-term borrowing rate: 8% on total issues $\leq$ \$100M
8.1% on any excess over \$100M

Short-term borrowing rate: 10%

Possible Schedules:	Month 1	Month 2	Month 3
Schedule A	Sub. 2 (\$60M)	Sub. 3 (\$50M)	Sub. 1 (\$20M)
Schedule B	Subs. 2, 3 (\$110M)	Sub.1 (\$20M)	None
Schedule C	Subs. 1, 2 (\$80M)	Sub. 3 (\$50M)	None
Schedule D	Subs. 1, 2, 3 (\$130M)	None	None

second issue planned for a single month and \$15,000 for the third issue. The yield cost reflects a long-term borrowing rate of 8% for total issues in a month that do not exceed \$100 million, and an incremental yield penalty of 10 basis points on larger total issues. In other words, the incremental long-term rate is 8.1% on the excess issued over \$100 million. The short-term borrowing rate is 10%. For simplicity, we assume that these rates hold in each period of the planning horizon, and that the firm's cost of capital is stable at 8%. Also, we shall assume that all of the bonds will have 25-year maturities.

To focus on the essential elements in the trade off, note that there is no difference in the yield cost for any schedule unless there is a total issue above \$100 million somewhere in the schedule. Thus we can equivalently treat the incremental yield cost as zero if the total issue does not exceed \$100 million. Otherwise, the yield cost must reflect the premium on a large issue. For a total issue of Y, the incremental yield cost in our example applies to the amount $(Y - 100\text{M})$ and reflects the present value of annual interest payments of 0.1% over 25 years, discounted at the cost of capital. Thus

$$f_2(Y) = (0.001)\,(10.67)\,(Y - 100\text{M}) \quad \text{if } Y > 100\text{M},$$
$$= 0 \quad \text{otherwise}$$

where 10.67 represents the present value of a stream of annual \$1 payments over 25 years, discounted at 8%. Similarly, the incremental penalty cost for short-term borrowing is

$$f_3(B) = 0.02B$$

In Table 2 we show a cost breakdown by month for each of the four sample schedules. Schedule A represents a "spreading" strategy, in which the goal is to distribute the bond issues over time in order to avoid excess preparation cost and yield cost. Schedule D represents a "stacking" strategy in which the goal is to adhere to the timing requests of the subsidiaries and avoid all penalty cost due to delays. Schedules B and C represent intermediate combinations which allow for some spreading and some stacking. By focusing on the incremental costs in this problem, we see that there

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TABLE 2

	Month 1	Month 2	Month 3	Total Cost
Schedule A	\$60M	\$50M	\$20M	
Preparation	0	0	0	
Yield	0	0	0	150,000
Delay	116,667	33,333	0	
Schedule B	\$110M	\$20M	0	
Preparation	10,000	0	0	
Yield	106,700	0	0	140,033
Delay	33,333	0	0	
Schedule C	\$80M	\$50M	0	
Preparation	10,000	0	0	
Yield	0	0	0	93,333
Delay	83,333	0	0	
Schedule D	\$130M	0	0	
Preparation	25,000	0	0	
Yield	320,100	0	0	345,100
Delay	0	0	0	

are considerable differences among the various ways of making the spreading/stacking trade-off. In a larger problem, with many subsidiaries and a planning horizon of several months, the financial manager will not be well-equipped to make this trade-off optimally using an intuitive approach. A formal approach to the problem, on the other hand, can accommodate the complexities of the trade-off in large problems and still produce minimum-cost schedules.

3. Formulation and Solution Algorithm

Assumptions. In addition to the above specifications, we impose some further restrictions, partly as a means of simplifying the formulation, but largely to reflect policies currently followed in practice by firms facing this type of problem.

1. We require that no bond issue be delayed more than M months. In principle this assumption is equivalent to treating borrowing costs as if they become infinite after M months. In practice, however, such a constraint is often imposed in order to avoid the implicit cost due to "loss of good-will" associated with extended short-term borrowing. The solution method allows us to study, via sensitivity analysis, the impact of varying the delay limit M.

2. We assume that the minimum interval (in months) between requests from a given subsidiary exceeds $M + 1$. This assumption permits us to consider only schedules in which there is a separate issue for each request. This is not an unrealistic assumption, however, because firms do appear to be unwilling to "double-up" on the requests from a particular subsidiary.

3. We assume that bond issues will never be made for only a portion of a subsidiary's request. Here again, firms seem to find that the large fixed cost of preparation renders it undesirable to split a request into two issues.

As a result of these assumptions, we may conclude that the bond issue for subsidiary i (or the short-term borrowings induced by a delay) will always be equal to the size of the most recent request:

$$y_{it} = 0 \text{ or } d_{it} \text{ or } d_{i,t-1} \text{ or } \ldots \text{ or } d_{i,t-M}$$

$$b_{it} = 0 \text{ or } d_{it} \text{ or } d_{i,t-1} \text{ or } \ldots \text{ or } d_{i,t-M+1}.$$

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Formulation. Under the above assumptions, the holding company's bond scheduling problem can be described mathematically as follows

$$\text{Minimize } \sum_{t=1}^{T} \left[f_1(X_t) + f_2(Y_t) + f_3(B_t) \right]$$

$$\text{with respect to } x_{it}, y_{it}, b_{it}, \qquad 1 \leqslant i \leqslant S,\ 1 \leqslant t \leqslant T$$

$$\text{subject to } b_{it} - b_{i,t-1} + y_{it} = d_{it}, \qquad 1 \leqslant i \leqslant S,\ 1 \leqslant t \leqslant T,$$

$$d_{it} b_{i,t+M+1} = 0 \qquad 1 \leqslant i \leqslant S,\ 1 \leqslant t \leqslant T,$$

$$b_{it} \geqslant 0, y_{it} \geqslant 0, x_{it} = 0, 1,$$

where it may be assumed, without loss of generality, that $b_{i0} = b_{iT} = 0$.

Solution Algorithm. A straightforward attempt to build a dynamic programming recursion for our formulation could easily lead to the use of a state space with S dimensions. A major holding company may have around $S = 20$ subsidiaries and it may be interested in planning its bond issues over a horizon of up to $T = 18$ months. A multi-dimensional state space is definitely undesirable in this context, and we sought instead a one-dimensional state representation as a foundation for a more efficient recursion. Drawing on analogous work in multistate techniques for scheduling [3], we define the state variable as a set:

$J_t =$ the set of subsidiaries for which previous requests are still pending at the start of period t. Formally, this means $i \in J_t$ whenever $b_{i,t-1} > 0$.

Similarly, we define our decision variable as a set:

$I_t =$ the set of subsidiaries for which bonds are issued in period t. Formally, this means $i \in I_t$ whenever $y_{it} > 0$. Also, $b_{it} = 0$ if $i \in I_t$.

In addition we can utilize the information given in the problem to define:

$R_t =$ the set of subsidiaries requesting a bond issue in period t. Formally, this means $i \in R_t$ whenever $d_{it} > 0$.

With these definitions we may express the state transformation as:

$$J_{t+1} = J_t + R_t - I_t, \qquad 1 \leqslant t \leqslant T.$$

We can now develop a recursion for dynamic programming. Let

$G_t(J_t) =$ the minimum cost over periods $t, t+1, \ldots, T$, given that the subsidiaries in J_t have unfilled requests at the end of period $t-1$,

and

$C(I_t) =$ the costs incurred in period t as a result of issuing bonds in period t for the subsidiaries in I_t. The form of this function is $f_1(X_t) + f_2(Y_t) + f_3(B_t)$.

The recursion is:

$$G_t(J_t) = \min_{I_t} \{ C(I_t) + G_{t+1}(J_t + R_t - I_t) \} \tag{1}$$

where

(1) the problem is to determine $G_1(J_1)$, along with the associated schedule, for $J_1 = J_{T+1} = \emptyset$ and $G_{T+1}(\emptyset) = 0$.

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(2) $I_t \subseteq J_t \cup R_t$ and, in particular, $i \epsilon I_t$ if $i \epsilon J_t \cap R_{t-M}$

(3) $C(I_t)$ is defined as follows:

a) if $i \epsilon I_t$ then $x_{it} = 1$ and $X_t = \sum_{i=1}^{S} x_{it}$;

b) if $i \epsilon I_t$ then $y_{it} = \sum_{j=0}^{M} d_{i,t-j}$ and $Y_t = \sum_{i=1}^{S} y_{it}$;

c) if $i \epsilon J_t$ but $i \notin I_t$ then $b_{it} = \sum_{j=0}^{M-1} d_{i,t-j}$ and $B_t = \sum_{i=1}^{S} b_{it}$;

d) then $C(I_t) = f_1(X_t) + f_2(Y_t) + f_3(B_t)$.

As in the conventional dynamic programming approach [5], the calculations follow a backward recursion. First, calculations of $G_T(J)$ are made for all feasible subsets $J = J_T$. Then $G_{T-1}(J)$ are calculated, and so on, until finally $G_1(\emptyset)$ is determined. At each stage in the recursion it is necessary to record the subset I_t for which the minimum in (1) occurs, so that the optimal schedule can be reconstructed once the value of $G_1(\emptyset)$ has been computed.

The recursion requires that each feasible subset J_t be evaluated at each stage. Potentially, each subsidiary that has made a request in periods $t, t-1, \ldots, t-M$ could appear in this subset. If there are k such subsidiaries, then $G_t(J_t)$ must be evaluated for 2^k different subsets. An average value of k in large problems will be about $3M/2$, which means that it will often be necessary to evaluate several hundred subsets at a given stage, and several thousand in order to solve the problem.

To illustrate the dynamic programming calculations, we show in Table 3 the calculations necessary to determine an optimal schedule in the example problem of Table 1. Since there is no delay limit in this problem, the possible states J_t will be every possible subset in periods 2 and 3, while J_1 is empty. Thus there are 8 possible values of the state variable J_t for $t = 2$ and 3, and for each one the table lists the possible decisions $I_t \subseteq J_t + R_t = J_t$ and the "new" state J_{t+1} that results, one period later, from the state transformation. For each decision the resulting cost (in thousands) is represented as the sum of current preparation, yield, and delay costs plus optimal future cost. (The future cost has been omitted in stage $t = 3$ since $G_4(J) = 0$.) Following equation (1), the minimum of these sums is recorded as $G_t(J_t)$ and the corresponding decision starred. For period 1, we find the optimal decision to be $I_1 = \{1,2\}$ yielding $J_2 = \{3\}$. For period 2, when $J_2 = \{3\}$, we find the optimal decision to be $I_2 = \{3\}$ yielding $J_3 = \emptyset$. Thus the optimal schedule is to meet the requests of subsidiaries 1 and 2 in month 1 and the request of subsidiary 3 in month 2. The optimal total cost is $G_1(\emptyset) = 93.33$, corresponding to Schedule C evaluated in Table 2. The algorithm thus verifies that Schedule C is the optimal policy.

4. Discussion

In this section we describe variations of the formulation that are amenable to solution by the dynamic programming approach described earlier, along with more complicated extensions which remain topics for further research.

In the simplest versions of the model, all cost components (fixed costs, yields, and borrowing rates) are stationary. Perhaps the most useful generalization of this structure is to permit fluctuating yield costs and fluctuating interest rates on borrowed funds. Our model suggests that the timing of bond issues is primarily a problem in trading off the diseconomies of large issues with the penalty (borrowing) costs of delays. Nevertheless, in practice the problem is sometimes also viewed as one of exploiting favorable interest rate conditions in the funds market. Our model can capture such structure simply by allowing the cost component functions to be time-dependent, and replacing the composite cost function $C(I_t)$ in the recursion by $C_t(I_t)$. The dynamic programming calculations would not be significantly more difficult. Similarly, it is possible that subsidiaries have different credit arrangements and their borrowing rates might differ.

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TABLE 3

	State	Decision		
Stage $t = 3$	(J_3)	$(I_3 = J_3)$		Cost $= f_1 + f_2 + f_3 = G_3(J_3)$
	Ø	Ø		0 + 0 + 0 = 0
	{1}	{1}		0 + 0 + 0 = 0
	{2}	{2}		0 + 0 + 0 = 0
	{1, 2}	{1, 2}		10 + 0 + 0 = 10
	{3}	{3}		0 + 0 + 0 = 0
	{1, 3}	{1, 3}		10 + 0 + 0 = 10
	{2, 3}	{2, 3}		10 + 106.7 + 0 = 116.7
	{1, 2, 3}	{1, 2, 3}		25 + 320.1 + 0 = 345.1
	State	Decision	New State	
Stage $t = 2$	(J_2)	(I_2)	(J_3)	Cost $= f_1 + f_2 + f_3 + G_3(J_3) => G_2(J_2)$
	Ø	Ø*	Ø	0 + 0 + 0 + 0 = 0
	{1}	Ø	{1}	0 + 0 + 33.33 + 0
		{1}*	Ø	0 + 0 + 0 + 0 = 0
	{2}	Ø	{2}	0 + 0 + 100 + 0
		{2}*	Ø	0 + 0 + 0 + 0 = 0
	{1, 2}	Ø	{1, 2}	0 + 0 + 133.33 + 10
		{1}	{2}	0 + 0 + 100 + 0
		{2}	{1}	0 + 0 + 33.33 + 0
		{1, 2}*	Ø	10 + 0 + 0 + 0 = 10
	{3}	Ø	{3}	0 + 0 + 83.33 + 0
		{3}*	Ø	0 + 0 + 0 + 0 = 0
	{1, 3}	Ø	{1, 3}	0 + 0 + 166.67 + 10
		{1}	{3}	0 + 0 + 133.33 + 0
		{3}	{1}	0 + 0 + 33.33 + 0
		{1, 3}*	Ø	10 + 0 + 0 + 0 = 10
	{2, 3}	Ø	{2, 3}	0 + 0 + 183.33 + 116.7
		{2}*	{3}	0 + 0 + 83.33 + 0 = 83.33
		{3}	{2}	0 + 0 + 100 + 0
		{2, 3}	Ø	10 + 106.7 + 0 + 0
	{1, 2, 3}	Ø	{1, 2, 3}	0 + 0 + 216.67 + 345.1
		{1}	{2, 3}	0 + 0 + 183.33 + 116.7
		{2}	{1, 3}	0 + 0 + 166.67 + 10
		{1, 2}*	{3}	10 + 0 + 83.33 + 0 = 93.33
		{3}	{1, 2}	0 + 0 + 133.33 + 10
		{1, 3}	{2}	0 + 0 + 100 + 10
		{2, 3}	{1}	10 + 106.7 + 33.33 + 0
		{1, 2, 3}	Ø	25 + 320.1 + 0 + 0
	State	Decision	New State	
Stage $t = 1$	(J_1)	(I_1)	(J_2)	Cost $= f_1 + f_2 + f_3 + G_2(J_2) => G_1(J_1)$
	Ø	Ø	{1, 2, 3}	0 + 0 + 216.67 + 93.33
		{1}	{2, 3}	0 + 0 + 183.33 + 83.33
		{2}	{1, 3}	0 + 0 + 166.67 + 10
		{1, 2}*	{3}	10 + 0 + 83.33 + 0 = 93.33
		{3}	{1, 2}	0 + 0 + 133.33 + 10
		{1, 3}	{2}	0 + 0 + 100 + 0
		{2, 3}	{1}	10 + 106.7 + 33.33 + 0
		{1, 2, 3}	Ø	25 + 320.1 + 0 + 0

We can adapt the model to this case by defining the borrowing cost function as

$$f_3(b_1, b_2, \ldots, b_S) = \sum_{i=1}^{S} r_i b_{it}.$$

A related generalization would be to a scenario in which interest rates fluctuate

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randomly. If we can assume at least that the differences between borrowing and yield rates would remain unchanged, we might model the behavior of interest rates with the help of Markov chains as for example in [6]. In this case, the minimization of expected cost can be attacked by dynamic programming, but the computational task is an order of magnitude greater. Another difficulty associated with applying such a model is the problem of obtaining reliable estimates for the many probabilities involved.

The subsidiary may not plan to use all the funds raised virtually at once but may instead foresee a continuing need for funds over time. Because of the fixed cost associated with an issue, a subsidiary would in this situation request more funds than it needed immediately. The funds obtained would then represent a decreasing surplus for some interval, in the spirit of Bierman's model [2]. If such a request were delayed by a decision at headquarters, the cost associated with such a delay would not be a penalty cost on the full amount of the issue (as our scenario implied above) but rather a penalty cost only on that amount that would have to be borrowed during the delay. In addition this penalty would be reduced by the savings in holding cost that would have been incurred on the funds surplus, had the issue been scheduled as requested. The complications created by this scenario can still be accommodated in our model, but the information requirements are more severe. The holding company could examine each subsidiary's request and corresponding forecasts for its need for funds over time. Headquarters could then determine the *effective* penalty cost rate, which could be expected to vary with time. The necessary changes in the model would be made in the borrowing cost function, which would be expressed most generally as

$$f_{3t}(b_1, b_2, \ldots, b_S) = \sum_{i=1}^{S} r_{it} b_i.$$

We reiterate, however, that this version of the model is more demanding in terms of information exchanged within the organization. In this case, the holding company would need to know not only the subsidiary's requests but also its cash flows (or, equivalently, its effective penalty rate on the amount of the request) over the interval that a delay could be considered.

We have assumed until now that the headquarters is concerned only with the timing of its subsidiaries' bond issues, and not with their relative size. We concentrated on this aspect of the problem because our conversations with financial managers who make this decision revealed that proper timing was indeed their primary concern. An obvious extension to our model would be to allow the headquarters to determine not only the timing of a subsidiary's bond issue, but the size as well. This extension, however, like the preceding one, would require a great deal more information from each subsidiary. In addition, though the enlarged problem is easy to formulate, it would strain most computational algorithms now available. We thus leave this aspect of the problem for future research.

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RECENT DEVELOPMENTS IN MANAGEMENT SCIENCE IN BANKING*

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Banking has been a fertile area for management science applications, as is evident from the review provided in this paper. The relevant management science models are discussed in terms of the areas of bank management for which they were intended. Under dynamic balance sheet management (i.e., internal bank financial planning) we consider forecasting techniques, simulation models and optimization models. Other areas of banking included are bond portfolio management, bank operations, corporate services, bank marketing and management of the loan portfolio. The authors provide an evaluation of the applicability of management science models in practice, discuss the extent to which some have been implemented and consider the philosophy of using management science models in banking.
(FINANCE; FINANCIAL INSTITUTIONS—BANKS)

1. Introduction

Management science models have been formulated to help executives with their planning, decision and control problems in a variety of banking areas. We have divided these efforts into the areas of bank management they were intended to address: dynamic balance sheet management, bond portfolio management, bank operations, corporate services, bank marketing and management of the loan portfolio. For the most part, our research in preparing this paper concentrated on reading and interpreting several hundred of the most recently published (in some cases new or unpublished) materials in the literature of management science in banking. In addition to the references cited in this paper, the interested reader should examine three books which contain numerous papers dealing with management science in banking: Cohen and Hammer [35], Eilon and Fowkes [52], and Cohen and Gibson [34].

In order to limit the scope of this present review paper and to avoid overlap with a recent review paper on the investments area (Cohen *et al.* [39]), we have explicitly avoided any discussion of applications of management science techniques to the management of trust department portfolios, which frequently contain large amounts of common stock. Furthermore, there are undoubtedly many worthwhile contributions which we have failed to cite in this paper, and this omission should not be construed as a negative judgment on their quality. Finally, although we frequently discuss implementations of management science models in specific banks, we have not conducted a survey to determine the number of banks that are using various techniques. Such surveys are reported in NABAC [91], Fabozzi and Trovato [55], McClure and Miller [85], and LaForge and Wood [73].

§2 of this paper discusses models and techniques useful to internal bank financial planning (which we prefer to call dynamic balance sheet management). First, in §2.A we discuss various techniques for forecasting relevant variables and parameters re-

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quired for a bank to undertake its internal financial planning in a sound and orderly way. Then in §§2.B and 2.C we discuss both simulation and optimization models which have been used in dynamic balance sheet management. One specific aspect of dynamic balance sheet management which has received a considerable amount of modeling attention is bond portfolio management; this is discussed separately in §3. Various aspects of bank operations are considered in §4. Then in §5 we survey a variety of consulting services that banks provide for their customers, for which management science models have been formulated. §6 considers models and techniques which are helpful in the area of bank marketing, and §7 deals with models that have been applied to management of the bank's loan portfolio. This paper concludes in §8.

2. Dynamic Balance Sheet Management

Many different management science techniques have been used to help senior bank executives determine the size and composition of a bank's asset, liability and capital accounts over a multiperiod planning horizon. Sophisticated statistical techniques have been used to provide forecasts of deposits, loans and interest rates. Simulation and optimization models have been developed to help evaluate the economic trade-offs between important decision variables. In this section, we shall focus on some of the major thrusts that appear in the management science models for bank dynamic balance sheet management.

2.A. *Forecasting Models*

The choice of appropriate statistical techniques in bank forecasting models depends on the length of the forecast horizon. In the short run, it is reasonable to view the bank's loans and deposits as being determined primarily by environmental forces. If these forces act in a periodic fashion, then univariate time series models may provide excellent forecasts. In the long run, however, the bank may react to environmental disturbances by changing the desired composition of its balance sheet. Thus, it appears to be more appropriate in the long run to view variables such as loans and deposits as being determined simultaneously by both supply and demand factors. The financial sectors of large-scale econometric models are designed to capture these supply and demand forces, and hence they play a useful role in bank financial planning. In this section, we review several examples of both short- and long-run forecasting models.

Balzano [9] presents a good example of the application of univariate time series models to the forecasting of a daily variable—the bank's daily net clearing house liability. A good forecast of this variable allows the bank to maximize the return on excess balances at the Fed, or to minimize the cost of borrowing if it expects to be short of Federal Reserve balances. The Balzano paper provides a good discussion of problems that frequently occur in daily forecasting. These problems relate to the fact that while time series models are designed to discover data patterns that occur at equally spaced time intervals, economic variables such as check clearing patterns are often affected by factors such as holidays and day of the month that do not occur at fixed periodic intervals. Balzano describes how the time series model is adjusted to account for these irregularities.

Three papers by Cramer and Miller [44], [45], [46] discuss applications of univariate and multivariate time series models to forecasting weekly bank data. The first paper

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presents univariate time series models for the weekly average U.S. money supply (demand deposits plus currency), the weekly average demand deposits for a group of large New York City banks and the demand deposits at the end of each Wednesday of a small midwestern bank. The basic stages of time series model building are examined in detail in this paper, and the important relationships between forecasting and bank financial planning are explored. The univariate models provide good forecasts for each of these three data series. Although Cramer and Miller do not say whether or not their models have been used in practice, the potential value from their use is discussed.

The second and third Cramer-Miller papers explore the dynamic relationships between deposits, loans and interest rates, on the one hand, and bank balance sheet decision variables on the other. They demonstrate how the direction of causation flows from deposits and loans to interest rates, and finally to balance sheet decision variables such as bank investments. The multivariate time series models developed in these papers shed light on the appropriate dynamic specification of bank financial planning models.

Thomson [106] presents forecasting models for loans 30, 60 and 90 days ahead that are a useful link between the short-run models discussed above and the long-run econometric models discussed below. Although Thomson continues to treat loans as exogenously determined, he does allow for the influence of other exogenous variables such as the corporate need for short- and long-term funds and interest rates. Tests of Thomson's forecasting equations indicate that current loan levels, recent changes in loan levels, total lines of credit and firm commitments and the spread between prime and commercial paper rates are important determinants of future loans. The forecasting systems developed by Thomson have been used extensively in the planning process at Mellon Bank.

Long-run forecasting models recognize the fact that banks play a crucial role in the nation's financial system. A typical bank will often change the desired composition of its balance sheet in response to changes in Federal Reserve monetary policy. The bank's desired balance sheet composition interacts with the public's demand for bank balance sheet categories to determine the amounts actually in existence at any point in time. The financial sector of large-scale econometric models is designed to capture these interactions in the banking system. Although these models are aggregative in nature, they provide useful information, to be used along with information on economic factors affecting an individual bank, for the bank financial planner.

Boughton [15] contains a good discussion of the nature of econometric models and how they can be used in bank financial planning. His model contains 12 equations—a demand and supply equation for demand deposits, time deposits, currency, business loans and federal funds and demand equations for short- and long-term government securities. Boughton demonstrates how simulation experiments with the model can provide an appreciation for the effects of changes in monetary policy instruments. Many banks have developed similar econometric models for internal use, as well as for external consulting purposes.

2.B. *Simulation Models*

Computer simulation models seem to be the most widely implemented type of management science aid in bank dynamic balance sheet management. On the basis of personal communications, we believe that various types of simulation models are used in particular phases of dynamic balance sheet management at North Carolina Na-

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tional Bank, Northwest Bancorporation, Mellon Bank and Chase Manhattan Bank, and the published papers reviewed below report additional applications.

In their Annual Report [60], Great Western Financial Corporation briefly indicates that they have implemented a computer simulation model for their overall financial planning. They develop not only their best estimate forecasts for the coming month, quarter or year, but they also develop several plausible alternative scenarios. The simulation program provides them with a forecast of probable results for each different scenario. Since Great Western began updating these forecasts monthly, management has implemented its plans without major surprises.

Derwa [48] indicates how simulation-based financial planning models have been implemented at Societe Generale de Banque in Belgium, apparently with great success. The major simulation model is actually several submodels combined in one computer package. The relationships among key variables are diagrammed in this article to illustrate the extent of detail in the model. Derwa states that in his opinion psychological problems usually outweigh technical obstacles in applying any management science model, including simulation, to management problems.

Royer [100] has developed a simulation model which focuses on policy decisions of a bank and on forecasting net profit under various policy options. The model provides a scientific approach to evaluation of the consequences of policy decisions in a major Belgian bank, Banque de Bruxelles; it is being used in that bank's corporate planning department. Since Royer observes that there is resistance to change in a bank with deeply rooted traditions, he stresses that implementation of the model should proceed in a sound, orderly fashion, without undue impatience or haste.

One of the most extensive computerized simulation models developed for bank planning purposes is BANKMOD (see Robinson [99]). This has been developed at the Bank Administration Institute, but apparently it has experienced only limited use. Although this model has not been widely marketed, those banks which have used it have been reasonably pleased with it. BANKMOD is unique in that it addresses total bank financial planning. Its application could be relatively simple, since it has been made available to banks on a time sharing basis by the Bank Administration Institute.

2.C. *Mathematical Programming Models*

Although they are more difficult to formulate and more complicated for management to understand, mathematical programming models have distinct advantages over simulation models. Properly formulated mathematical programming models can determine the optimal size and composition of a bank's asset, liability and capital accounts over a multiperiod planning horizon, while simulation models only allow management to evaluate a small set of alternatives. Management inputs are primarily of two different types: (a) constraints on and policies concerning such variables as funds available for investment, acceptable risk levels, loan limits and regulatory requirements; and (b) forecasts of future interest rates, loan demand and deposit levels.

By far the most common type of mathematical programming model for dynamic balance sheet management involves (deterministic) intertemporal linear programming. The first reported application in dynamic balance sheet management was at Bankers Trust Co. from 1964 to 1969; see Cohen and Hammer [36], [37] and Cohen [33]. This LP model helps bank executives determine an optimal sequence of balance sheet positions for the bank over a multiperiod planning horizon which typically stretches several years into the future. This sequence of balance sheets is "optimal" in the sense

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that it results in the largest possible present value of the bank's net income, subject to a variety of constraints on the bank's risk, liquidity and other relevant considerations, and given the bank's initial balance sheet position and its economic forecast over the planning horizon. In practice at any point in time, such a model would not be run once with a single set of inputs to produce *the* optimal set of decisions. Rather, it would be used as part of a dialogue involving senior bank executives, technically trained management scientists, the LP model and a (partially computerized) data base; see Cohen [32].

Models of the general Cohen-Hammer type have been adapted for use in mutual savings banks and savings and loan associations by Serfaty [102] and for bank holding companies by Cohen and Lam [38]. A different approach to the use of deterministic linear programming over an extended time period is provided by Meyer zu Selhausen [88], whose model was developed in conjunction with a leading German bank. It consists of three interrelated and nested linear programming models, spanning time horizons of 90 days, one year and five years. Each of these three models include a full set of balance sheet variables, but the variables differ in their level of aggregation, being more detailed for the shorter horizon models. The objective function of the models is to maximize the contribution to bank profit from raising and investing funds, subject to constraints (which can also be considered as objectives of the bank) on the bank's liquidity, risk and other considerations. A rolling planning horizon is suggested, with the 90 day horizon submodel being updated at least monthly, the one year submodel being updated at least quarterly and the five year submodel being updated at least annually. Consistent with the approach suggested by Cohen [32], Meyer zu Selhausen says that his model should be used in a way that involves a computer dialogue between the planning system and the executives responsible for asset and liability management.

On the basis of personal contact, we know that both Mellon Bank and North Carolina National Bank are currently utilizing linear programming models as part of their dynamic balance sheet management process. Several savings banks in New York State and some savings and loan associations elsewhere have used an intertemporal linear programming model for their financial planning that was developed by Serfaty for the Savings Banks Association of New York State. Other LP models have been formulated by Chervany *et al.* [30] for the Northwestern National Bank of Minneapolis, Komar [70] for the Bank of New York, Robertson [98] for the Industrial National Bank of Rhode Island, Lifson and Blackmarr [78] and Fielitz and Loeffler [56] for unnamed banks, and Crane *et al.* [47] for the Federal Land Banks of the Farm Credit System.

There are two different approaches in the literature that explicitly incorporate multiple objectives into mathematical programming models for bank dynamic balance sheet management. One approach is goal programming, which recognizes the existence of multiple and possibly conflicting goals. Fortson and Dince [59] formulate a model concerned with four specific goals: profit, the ratio of loans to deposits, capital adequacy and liquidity. Their model is intertemporal, consisting of four quarters comprising a planning horizon of one year. This model apparently has been successfully implemented in a small national bank (less than $60 million in assets) located in north Georgia. The authors state that this country bank successfully used the model to investigate the cost of growth, and in the face of a liquidity crisis to develop alternative strategies while options were still available.

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A different approach to incorporating multiple goals into a mathematical programming model has been taken by Eatman and Sealey [51]. Their example model includes three specific objectives: maximization of net after-tax profit, minimization of the capital adequacy ratio (the ratio of required to actual capital) and minimization of the ratio of risk assets to capital. Using an algorithm developed by Zeleny [108] all nondominated extreme point solutions to the model are found (these are analogous to efficient frontier solutions). A nondominated solution is one where no objective function value can be improved upon without harming one or more of the other objective function values. Management is provided with a detailed report showing for each nondominated extreme point solution: (a) the objective function value for each of the multiple objectives, and (b) the detailed values of the corresponding decision variables. The executives must then consider the various possible solutions, to decide which solution best fits their multiple objective.

The most commonly suggested approach for incorporating uncertainty into mathematical programming models has been multistage stochastic programming with recourse (which is a generalization of two-stage programming under uncertainty); see Cohen and Thore [40], Booth [14] and Aghili *et al.* [1]. It is informative to consider in some detail the approach and results of Aghili *et al.*, who said that they introduced their two-stage model into the budgeting process of a small midwestern bank. Their model consists of two discrete time periods. The first period is relatively short, and it is assumed that relevant economic events can be accurately forecasted for this first period. The second period of the model corresponds to the more uncertain portion of the planning horizon, and the authors assume three alternative economic scenarios which provide specific forecasts of loan demand, deposit levels and interest rates under average conditions, easy money and tight money. The authors always include definitional, accounting, legal and financial constraints. They sometimes (but not always) include constraints which reflect management policy decisions concerning loan level and composition, deposit mix, capital adequacy and a minimum earnings (or maximum loss) level. The objective function is to maximize the expected value of stockholder equity. The authors applied the model to actual 1972 data for a small midwestern bank, and they found that when management policy constraints were included, the model produced results very similar to the bank's actual balance sheet, but that the model produced entirely unrealistic results when management policy constraints were not included. Therefore, they conclude that the most important constraints in their formulation of the bank management problem are the so-called policy constraints. These not only deal with management's attitude toward risk, but they also capture the essence of very complicated dynamic feedback mechanisms that would be difficult to formulate and would lead to computational difficulties. The authors indicate that the model was successfully used by the bank during 1973. In particular, the economic scenario for tight money depicted quite accurately the actual conditions which developed.

A somewhat different approach to the use of multistage stochastic programming with recourse is adopted in Lane [74]. This paper presents a multiperiod mathematical programming model formulated for dealing with short-term money management in a British commercial bank. The model explicitly incorporates some of the uncertainties faced by the bank in this problem area. In particular, Lane deals with what can be regarded as strategic uncertainty rather than tactical uncertainty. Strategic uncertainties are those major uncertainties that arise and have persistent effects over several

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time periods. An example of strategic uncertainty is government policy, which either could be unchanged or which could be changed to any one of several alternative policies. Once a government policy is adopted sometime during the planning horizon, however, it is assumed that the policy remains in effect for the rest of the horizon. Thus, a set of forecasts is necessary, each contingent upon the occurrence of a particular government policy. Lane shows how this type of strategic uncertainty can readily be incorporated into a multiperiod linear programming model. When there are a relatively small number of alternative scenarios possible, the stochastic linear programming model is transformed into an equivalent but larger deterministic linear programming model.

Another approach to explicit incorporation of uncertainty into mathematical programming models for bank dynamic balance sheet management is chance-constrained programming. This was initially suggested more than one decade ago by Charnes and Littlechild [28] and Charnes and Thore [29]. Unfortunately, there have not been more recent papers of which we are aware describing applications of this technique to bank dynamic balance sheet management.

The one relatively new approach to explicit incorporation of uncertainty in a multiperiod mathematical programming model for bank dynamic balance sheet management has been advocated by Brodt [21], [22]. This is essentially an adaptation of the Markowitz [83] efficient frontier version of portfolio theory. An efficient dynamic balance sheet management plan is one which maximizes expected profits for a given amount of risk, or which minimizes the amount of risk for a given amount of expected profits. Brodt uses essentially the same decision criterion as was used by Markowitz, but with two differences. Markowitz used a one-period planning horizon, while Brodt uses a multiperiod planning horizon. Markowitz measured "risk" by variance, whereas Brodt measures "risk" by either semiabsolute deviation [22] or by mean absolute deviation [21]. In both of the papers, Brodt formulates the multiperiod bank dynamic balance sheet management mathematical programming problem as minimizing the risk measure (which is a nonlinear objective function) subject to the expected profit equaling some particular value (which is parametrically varied to generate the efficient frontier) and sets of intratemporal and intertemporal constraints. The particular intratemporal and intertemporal constraints formulated are appropriate to an American commercial bank in [22] and to a Canadian chartered bank in [21]. By introducing some additional variables and making appropriate substitutions, Brodt is able to transform the nonlinear programming problem into an equivalent linear programming problem. One essential assumption that Brodt must make for this transformation technique to result in a computationally feasible linear programming problem is that there is a finite (and reasonably small) number of possible economic scenarios applicable to each decision. Brodt states that the size and structure of his model are such that it can easily and inexpensively be solved with existing LP packages. Personal correspondence with Brodt has revealed that he is in the process of implementing his [21] model in a large Canadian chartered bank.

3. Bond Portfolio Management

The bond (or investment) portfolio is one of the asset items considered under bank dynamic balance sheet management, discussed in the previous section. In terms of the broad aspects of dynamic balance sheet management, the bond portfolio is generally

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represented at a relatively high degree of aggregation. Overall dynamic balance sheet management models usually determine the total amount of funds contained in the investment portfolio, sometimes determine the composition of these funds in terms of broad categories of government securities, agency securities and municipal securities, and perhaps also determine the maturity structure of each of these categories of securities. In managing the investment portfolio, it is frequently desirable to deal with specific issues of securities. In order to do so, management science models specifically devoted to bond portfolio management have been formulated and sometimes implemented.

One type of management science model that is relevant to selecting specific bond issues utilizes multivariate statistical analysis to determine the quality of bonds. This can be helpful in deciding whether unrated municipal bonds are of suitable investment quality for banks. This is important to both banks and bank examiners, since the majority of municipal bond issues are not rated by the major rating services. Examples of such models are found in Carleton and Lerner [26] and Horton [65]. Carleton and Lerner use discriminant analysis in an attempt to predict Moody's municipal bond ratings. Their model is relatively successful in classifying bonds in rating categories above Ba, but it is less successful in correctly classifying those rated below Ba. Horton uses discriminant analysis to determine whether municipal bonds are or are not of investment quality. The equation recommended by Horton utilizes as independent variables the ratio of debt to assessed value, the log of the population, the tax collection rate, and an indication of whether the municipality belongs to a group of poorer or to a group of richer states. For both the original sample and the holdout sample, approximately 80% of all bonds were correctly classified.

Another relatively specialized type of management science model for bond portfolio management relates to the arbitrage activities of government bond dealers. Although the prices of all U.S. Government securities are affected by systematic movements of interest rates, each security is also subject to random price changes. When price differentials develop which appear to be abnormal or irrational, they may provide opportunities for profitable arbitrage. Kramer [71] formulates a management science framework for evaluating arbitrage opportunities. Generally, dealers have undertaken arbitrage transactions on the basis of intuition and past experience. Kramer's model offers a more systematic approach to the decisions involved in arbitrage. It has been successfully implemented in a large commercial bank that is a major dealer in U.S. Government securities. Kramer describes the benefits that this dealer-bank has obtained through the use of the arbitrage model.

McDavid and Bettes [86] describe a system for analyzing the term structure of the U.S. Government bond market that has been implemented at First National Bank of Chicago. Nonlinear regression analysis is used to fit a yield curve to data for a selected set of U.S. Government securities at any point in time. The computer model can also plot yield curves, analyze the residuals of the individual securities from the yield curve, and perform a breakeven analysis.

Carleton and Cooper [25] discuss a problem in estimating the term structure of interest rates that is largely ignored in previous studies, including that of McDavid and Bettes. They correctly note that bond yields are actually an artificial arithmetical construct that, like the internal rate of return concept in capital budgeting, may have no economic significance. Instead of yield to maturity, the bond portfolio manager should be interested in the set of reinvestment rates that the market is applying to cash

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flows realized at different points in time. Carleton and Cooper calculate these market reinvestment rates from the coefficients of a regression of bond price on coupon payments over time for a large set of U.S. Government and Federal Home Loan Bank Board securities. Their results indicate that market reinvestment rates often differ significantly from yields to maturity and that bond portfolio managers would be well advised to consider the advantages of market rates rather than yields.

Most of the management science literature relevant to investment portfolio management has discussed specific models intended either for determining which securities to buy and sell, or else for determining major policy decisions such as the optimal maturity mix of the investment portfolio. These are generally either simulation or mathematical programming models.

Bradley and Crane [18], [19] utilize Monte Carlo simulation techniques to investigate whether barbell portfolios (in which the portfolio consists of bonds concentrated in a few short-term and a few long-term maturities, with no bonds having medium-term maturities) or laddered portfolios (in which the bonds in the portfolio are evenly spaced from short term to some maximum maturity) are likely to perform better in practice. They carefully define several different barbell and laddered portfolio strategies; they use a Markov process to generate a sequence of yield curves; and they measure the performance of various portfolios in terms of mean portfolio return, which they also subdivide into its components of interest income and capital gains, and portfolio risk, which they measure both by the standard deviation of return and by the "maximum" loss position (defined so that the realized and unrealized losses on 98% of the trials were smaller than this "maximum" loss).

The results of the Bradley-Crane simulation are ambiguous. If a bank were to manage its investment portfolio in an absolutely mechanical way, then laddered portfolios appear to work relatively well, especially when the standard deviation of return is the risk measure. However, when the maximum capital loss is used as a measure of risk, then barbell portfolios seem to perform about as well as laddered portfolios. For banks that wish to manage their portfolios actively (rather than following mechanical trading rules), barbell portfolios offer significant advantages over laddered portfolios having about the same level of expected return; barbell portfolios provide more liquidity and flexibility, even though their total return may be more volatile.

Another simulation of portfolio management rules is presented by Pulliam [96]. He defines twelve different portfolio strategies and simulates their performance. Half of the portfolio strategies depend upon a risk adjustment factor that Pulliam defines as the percentage decrease in price that would result from adding the expected one month rise in yield (for the given maturity) to the current market yield of a particular bond. This is determined by what he believes is a stable historical relationship between changes in yield-to-maturity and time-to-maturity. He uses this relationship to quantify risk and order bonds according to their efficiency. The results of his simulation suggest that a strategy of ignoring overall portfolio structure, and instead buying efficient bonds or selling inefficient bonds (depending upon whether there is a net funds inflow to or a net funds outflow from the bond portfolio) seems to provide the possibility of superior long-run performance compared to more conventional portfolio management methods.

Computer simulation programs are also directly used as an aid in the ongoing management of bond portfolios. Marcial [82] describes the Bondsens analysis devel-

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oped by Gifford Fong Associates. Included among the fifty or more institutions which use Bondsens are such banks as Morgan Guaranty Trust Company, Citibank, Chase Manhattan Bank, Girard Bank, Marine Midland Bank and Indiana National Bank. In effect, Bondsens can be viewed as a user-oriented computerized sensitivity analysis. The user provides as inputs a listing of his current bond portfolio holdings, the current prices of each bond and one or more forecasts of future yield curves (which get translated into forecasts of future prices for each bond). The program then develops a variety of reports indicating the impact of each future yield curve on the portfolio's return and risk. The risk and return dimensions of future portfolio performance are decomposed into a number of relevant subsidiary factors. This information can be helpful to a bond portfolio manager in deciding which particular securities he should buy and sell. More specifically, he can determine for a given economic projection which securities provide the highest return, analyze the trade-off between coupon and maturity volatility, determine which securities have the greatest market risk, determine which securities will be most affected by call provisions under a changing set of future interest rates, determine whether a particular proposed bond swap really improves future return and analyze the extent to which changing quality spreads influence portfolio return.

Let us now consider some of the mathematical programming (optimization) models that have been developed for (bond) investment portfolio management. Hodges and Schaefer [64] formulate an intertemporal linear programming model in which the decision variables are the amounts of each bond purchased or sold. They assume that all bonds are free of default risk, not subject to call provisions, and pay their interest coupons and principal repayments at prespecified points in time. There are exogenously specified net cash flow constraints in each period of the planning horizon. The objective function is to find that bond portfolio which minimizes the cost of meeting all the constraints. The marginal tax rates of the investor are considered in this model, and the results of the model are likely to be most useful when the investor's marginal tax rate is different from the implied marginal tax rates that determine the equilibrium structure of bond market prices.

Another model utilizing intertemporal linear programming for bond portfolio management is Chiang [31]. The main novelty of this model is the choice of its objective function: to maximize the minimum amount of excess liquidity over the planning horizon (so that any potential illiquidity during one period is spread over the entire planning horizon). Decision variables are the amounts of each security purchased and sold in each period. Exogenous net cash flows to the portfolio are specified and used in defining cash balance constraints. Standard inventory balance constraints are imposed. There also is a constraint specifying that at least some minimum level of profitability be obtained. While this is a deterministic linear programming model, the author interprets it as being useful to find that portfolio management policy providing the largest possible safety stock to meet unexpected future demands. The author uses the structure of the model to derive conditions under which single maturity and barbell investment policies are optimal. He finds that the optimal solution to his model is relatively insensitive to future interest rates.

One approach to incorporating uncertainty into an investment portfolio model is the use of dynamic programming under uncertainty, as discussed in Bradley and Crane [17], [19]. Rather than use conventional dynamic programming solution techniques, however, they develop a new algorithm utilizing mathematical programming decompo-

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sition combined with an efficient technique for solving subproblems of the overall portfolio model. Uncertainty is explicitly introduced in terms of the net funds flow into (or out of) the portfolio in each future time period, as well as the yield curve that will prevail in each future time. The authors state that this approach enables them to develop optimal solutions to bond portfolio problems which are sufficiently large to utilize all the information that managers can reasonably provide. Bradley and Crane conduct numerous computational experiments by varying the input data defining their model and examining the nature of the optimal portfolios which result. For a wide range of input parameters, they find that optimal portfolios tend to be laddered for both short-term and long-term maturities, but do not contain any intermediate maturity securities. Thus, the optimal portfolio is a compromise between the laddered and dumbell portfolio strategies that are frequently discussed in the literature.

A different approach to incorporating uncertainty in a model for bond portfolio management is to utilize the efficient frontier concept. One way of doing so is presented by Brodt [20]. This is a multiperiod linear programming model under uncertainty in which the decision variables are the various bonds to buy, sell and hold during each period of a multiperiod planning horizon. Each alternative economic scenario consists of a sequence of possible future interest rates and net cash flows into (or out of) the bond portfolio during each time period of the planning horizon; the probability of each scenario must be specified. The objective of this (nonlinear) programming problem is to minimize the semiabsolute deviation of possible portfolio profits. The constraints of the model include a constraint setting expected profit equal to a specified level (which is parametrically varied to trace out the efficient frontier).

Another approach to the use of efficient frontier analysis for bond portfolio management is Lane [75]. This describes a model that was developed and successfully implemented in the International Bank for Reconstruction and Development (part of the World Bank). The model is used to help manage a portfolio consisting of Treasury securities whose maturities range from one day to five years. There are typically between two hundred and three hundred eligible securities to purchase at any point in time. The major decision to be made is which maturities the funds should be concentrated in, and how the securities should be diversified between short and long maturities. It is necessary for the bond manager to forecast future market values of securities, and to estimate the extent to which the fluctuation in returns on each security are correlated with the fluctuations in returns on all other securities.

Forecasts of future security values are derived from a forecasted yield curve. Six different maturities (Federal funds, three month T-bills, six month T-bills, twelve month T-bills, two year notes and five year notes) are used to determine a yield curve, using a piece-wise-linear approximation. Forecasts of future yield curves are used to determine forecasts of future security prices. Holding period returns are computed for each of the six specified maturities and each forecasted yield curve. Probabilities of various future yield curves are specified. It is then possible to determine the expected returns vector and the variance-covariance matrix of returns, for each of the six specified maturity instruments. This provides the major inputs for an efficient frontier mathematical programming formulation of minimizing variance subject to meeting some specified expected return level (which is parametrically varied to generate the entire efficient frontier), constraints that the entire portfolio is invested, policy limitations on the maximum amount invested in any security or group of securities and nonnegativity restrictions to eliminate short sales. The efficient frontier is then gener-

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ated. The bond portfolio manager then utilizes his assessment of the bank's risk-return preferences in order to determine the optimal portfolio on the efficient frontier. This portfolio is interpreted as determining the areas of the maturity spectrum in which the bank should concentrate its purchases and sales. While the exact maturity proportions recommended by the model may not be entirely implemented, the analysis is useful in helping the portfolio manager decide which specific issues he should buy and sell.

Several recent papers explore an approach to managing bond portfolio risk that bypasses the need for complex probability information on future bond returns. The approach relies on a concept called "duration" that is first discussed in Macaulay [79] and Hicks [63]. Samuelson [101] and Fisher and Weil [57] show that, under certain assumptions about how forward interest rates change, it is possible to "immunize" a bond portfolio from interest rate risk by matching the average duration of the portfolio to the average duration of the liabilities that support the portfolio. Fisher and Weil present evidence that the strategy works to reduce risk significantly in practice, even though the assumptions do not hold exactly. Recent papers by Bierwag [12], [13], Cox *et al.* [43], and Cooper [41] discuss how immunization strategies may be formulated under several different assumptions about the way forward rates change. This line of research appears to offer significant promise for bond portfolio managers.

4. Bank Operations

The management of bank operations is undergoing a transformation; from a position of relative neglect, it is being increasingly recognized as a major element in the overall management of commercial banks. In this section we will examine three areas that have received particular attention in the management science literature. These are check processing, manpower planning and branch banking.

The area of check processing may be thought of as having at least three distinct components. First, the processing bank must arrange to collect items from its various branches on a timely basis. Because the flow of checks into the branch system occurs continuously throughout the business day, the bank must arrange a schedule of pickups that considers both the cost of the messenger pickup service and its impact on the availability (use of funds) the bank is able to obtain.

Svestka [105] describes a multiple traveling salesman algorithm combined with a series of other procedures including dynamic programming and regression to optimally determine the messenger pickup schedules for Cleveland Trust Co. He cites cost savings for the bank of more than a million dollars over a 5 year period and a float reduction of 30 million dollars because of better availability for transit checks (items drawn on out-of-area banks). The heart of the model is its capability to examine not only the volume of work and when it is generated, but also the kind of work. In particular, the analysis determines where the bulk of the large dollar transit items are coming from. For branches with large transit item output, the model arranges for exceptionally swift and frequent check pickup from the messenger crew.

Haas and Zoltners [61] have also developed a computerized bank check collection vehicle routing system. The model minimizes a cost function that includes factors for transportation costs, production costs and costs associated with missing availability deadlines. The method employed for finding a solution is a heuristic. The model has been tested using data from a number of banks and the authors report that they are currently in the process of implementing their model at one bank.

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A recent application in this area was communicated to the authors by Bank of America. They attempted first to use the Svestka [105] model, but found it had computational difficulties related to the structure of their data. Moreover, their application was somewhat unique because each branch received only one pick-up per day and the branches were individually responsible for the encoding and proofing of all their own checks. Using a heuristic solution method, they were able to reduce the total miles their couriers had to travel by 10 percent. The bank reported that their results were sufficiently encouraging that they were going to extend the project from just the city of San Francisco to other cities in the state of California.

The second stage in the check processing cycle is the sorting of checks into groups by the bank on which they are drawn. This is accomplished by high speed reader/sorter equipment. In most cases, the number of groups into which checks must be sorted far exceeds the capacity, called sort pockets, of the sorting equipment. Therefore, it is necessary to assign priorities in the form of a tree structure in order to sort the checks into the required groups. A paper by Murphy and Stohr [90] describes a dynamic programming application to this check sorting problem. The objective of their model is to determine a sort tree which minimizes sorting costs. (Sort costs are generally related to the number of times an item must be handled; therefore, the objective can be thought of as minimizing the average number of times an item is handled.) The model considers the issue of availability time only as a post-optimality question. The model was developed in conjunction with a number of Chicago banks.

The third stage within check processing relates to the determination of the means by which the checks are ultimately cleared. In practice, a bank may simply pass its checks to a local Federal Reserve Bank or Regional Check Processing Center (RCPC) for check processing, or it may direct-send some of its checks to correspondent banks or other remote Federal Reserve Bank branches for clearing. Large money center and regional banks traditionally have a fairly extensive direct-send program in order to improve availability. For example, one of the large Chicago banks sends on a daily basis to approximately 125 different points besides the Chicago Federal Reserve Bank. The only paper that we know of that has appeared that discusses this area of transit check clearing is by Hess [62]. However, he was primarily concerned with the problem from the viewpoint of the Federal Reserve System and in particular the establishment of an RCPC within the Third Federal Reserve District. The model was very comprehensive and so successful that it caused the Philadelphia Federal Reserve to establish its own operations research group and induced three other Federal Reserve Banks to do likewise.

The authors are currently working with North Carolina National Bank and First National Bank of Chicago in designing and implementing a transit check clearing model. The model's purpose is to select an appropriate set of transportation routes and clearing banks so as to obtain the optimal trade-off between improved check availability and cost. The model is an integer programming application of immense size. (One of the two applications has nearly 1 million integer variables.) With the use of some simplifying heuristics, the problem is, however, solvable in a reasonable amount of computer time.

The high degree of variability in the number of checks processed from day to day causes a special problem in the area of check processing. It is not unusual to find daily volumes varying by a factor of two for adjacent days. In order not to forego the opportunity cost associated with lost availability, the bank must schedule sufficient

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personnel to handle the highly variable workload. Boyd and Mabert [16] describe a two stage forecasting model used to predict daily check processing volume at Chemical Bank. The first stage in the model employs multivariate regression analysis. This permits adjustments for different days of the week, holidays, months, etc. Since regression residuals from this first stage were serially correlated, a second stage was added to the model that employed exponential smoothing based on forecast errors from prior periods to give the model a learning capability. The resulting model gave residuals that were uncorrelated with errors mostly in the 5 to 7 percent range.

Work force scheduling is the second major topic within the operations area we shall discuss. One may view this as either being a short-term problem in which scheduling of current employees is the only consideration or one may take a long-term staffing view. Moondra [89] considers the short-term problem of staffing for the money transfer department of Chase Manhattan Bank. The problem is of interest because of the marked peak in work load that occurs at about 1 p.m. New York time in money transfer operations. The formulation developed by Moondra is a linear programming model. Although the model would be more appropriately posed as an integer program, the author claims that the fractional results obtained from the linear program were, when rounded to integers, a good approximation.

In the area of long-term manpower planning, Jones *et al.* [67] describe an application for the National Westminster Bank of England. They cite five major factors in their manpower projection model which were demand, retirement, wastage (dismissal, resignation, death, etc.), promotion and recruitment. The model developed was of the simulation type and has been implemented both by the bank and other institutions in the U.K. and across Europe.

The final topic in this section deals with forecasting new branch bank locations. The success of new branches depends upon such factors as the market potential of the area it serves, share of the potential market actually tapped by the bank, total amount of the bank's deposits and its mix between demand and time deposits, the earnings yield realized and the expense ratio incurred by these deposits, the deposit growth rates that will materialize and the size of the initially required investment. The paper by Kramer [72] deals with projecting the deposit growth rate of potential branches. The characteristics used to determine the growth rate curve were the type of neighborhood served by the potential branch, the age of surrounding branches and the size of the branch to be established. The model was found to be superior to projections made by branch managers and the bank's branch location group. A second paper by Carter and Cohen [27] describes the use of risk analysis and simulation in determining the trade-off between the expected rate of return for a potential new branch and the risk involved in achieving the expected rate of return. It is a good illustration of the use of portfolio theory concepts in management science.

5. Bank Consulting Services

The area of bank consulting services can best be described as undergoing dramatic growth. Besides the routine consultation that comes with the lending activity, banks have recently become involved in many automated business services that are tied to the management of the working capital components of the balance sheet. Many banks now offer automated payroll, accounts payable, accounts receivable and inventory services. For a comprehensive overview of the area, see Beehler [10].

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One good example of the entry by banks into automated business services is inventory management. Based upon the generation of new sales orders and information on the receipt of inventory items, a bank's automated inventory system can generate purchase orders to replenish stock, accounts receivable customer information, on-line computer stock reporting, forecasts of inventory demand and a historical data base on demand cycles. It seems clear that banks in entering the market for automated business services are building on their expertise in management information systems gained from their own automation of check processing.

One of the first areas in which banks provided consulting services is cash management. In fact, many bank's consulting groups are still part of the cash management area. First National Bank of Chicago and Chemical Bank are two that fit this mold. Consulting in cash management is designed to help a corporation get better control of its float, i.e., funds that are in the process of collection or payment. The best-known management science problem in cash management is the lock-box location problem.

At the heart of the lock-box problem is collection float. Collection float is directly related to the distance between the customer and the corporation's processing center. In order to minimize such float, banks have developed a service by which they open the corporation's incoming payable envelopes and deposit the checks. If the bank is located close to the corporation's customers, this can significantly reduce collection float. This is the concept behind a lock box. (The name "lock box" refers to the post-office box to which the corporation's customers remit payments.) Lock-box processing was initiated in 1947 by Bankers Trust of New York and First National Bank of Chicago. The corporation that stimulated the development of the service is the Radio Corporation of America.

The first academic paper that was published on the lock-box problem was by Levy [77] in 1966. The paper proposed an algorithm for selecting the most appropriate cities in which to locate lock-box sites. The algorithm was a heuristic and of the so-called "greedy" class. Since this first paper, the literature on the lock-box location problem has grown to be one of the most voluminous in management science and has been split along two different paths. The distinction between these two approaches is traceable to the cost elements of the problem. Maier and Vander Weide [80] indicate that the variable and fixed cost components thought to be required for finding a solution are generally not available for the lock-box problem. They therefore substitute for the missing cost elements an additional constraint that limits the number of lock-box sites that could be selected by an algorithm. That is, instead of having fixed costs limit the number of lock boxes, they substitute an explicit constraint.

The distinction that now arises is that the formulation that includes this additional constraint has been shown to be NP-complete; see Cornuejols *et al.* [42]. That is, it has been shown that a running time bound that is polynomial in the parameters of the problem exists if and only if virtually all combinatorial optimization problems, including the traveling salesman problem, can be solved in polynomial time. Thus, it is very unlikely that an efficient algorithm exists.

Without this additional capacity constraint, a number of individuals have proposed very efficient branch-and-bound algorithms to obtain solutions. Basically, this is because the problem is structurally almost identical to the simple or uncapacitated plant/warehouse location problem. For a complete bibliography, see Cornuejols *et al.* [42]. On the other hand, for the problem with the constraint most approaches have been of the heuristic variety, either utilizing a greedy-type algorithm or an interchange

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heuristic. The interchange heuristic is the most used algorithm in practice, with the anthors knowing of over twenty banks using this method, including Citibank, Crocker Bank, First National Bank of Chicago, First National Bank of St. Louis, Girard Bank, Marine Midland Bank and Wachovia Bank and Trust.

One paper by Mavrides [84] used Lagrangian relaxation to solve the lock-box problem with the capacity constraint. With the use of the Khumawala [69] branch-and-bound code, Mavrides obtained surprisingly good results with Lagrangian relaxation. The author reports that for the large number of problems solved by Morgan Guaranty Trust, only in one case has the relaxation failed. It is interesting to note the dichotomy here between theory and practice. The Lagrangian relaxation method appears to make possible very good solutions, although the problem is NP-complete.

In practice, most banks are not concerned with the distinction between an exact algorithm, be it represented by branch-and-bound or the Lagrangian relaxation with a branch-and-bound subroutine, or a heuristic. The reason is that the heuristics, and in particular the exchange heuristic, are extremely accurate. Most banks today utilize an advanced form of the exchange heuristic (see Baker *et al.* [8]). In discussions with more than twenty banks representing many hundreds of actual case studies, no bank that utilizes this method has ever found that the algorithm failed to obtain a solution at least as good as that found by any other method. One advantage often cited for the exchange heuristic is its dependability. The heuristic's speed is independent of data, very fast, and highly predictable. Given that the basic problem is NP-complete, these are important characteristics.

A problem closely related to the lock-box problem is called the "corporate payment problem" or else the "disbursement location problem." A description of this problem was first given by Shanker and Zoltners [103]. This problem is the opposite of the collection problem in which a corporation attempts to minimize float. In the corporate payment problem the corporation tries to extend the period from the time one of its vendors deposits a check until the funds are deducted from the corporation's account. A more complete statement of the problem may also take into account mailing time with the intent here to extend mail time float. (This would be based upon the conception that an account is considered paid when the payment is postmarked and not when it is received.) In practice, models do exist to examine both the corporate payment problem based on purely disbursement float and also to include the mail float component. The methodology used to solve this problem is identical to that for the lock-box problem.

The lock-box and corporate payment problems are components of a larger problem dealing with the design of the corporation's complete banking system. For a corporation the selection of the banks with which it deals can affect not just collection and disbursement times, but also credit and non-credit services. Probably the first attempt at formulating this unified model was by Calman [24]. This work was later extended in a paper by Pogue *et al.* [94]. The basic approach used by both these papers is linear programming. As such, the models were only designed to allocate banking activity within an existing set of bank relationships. These models also provide an insight into the bank practice called double counting of balances. This technique permits a corporation to utilize its demand account balances both as part of a contractual obligation associated with a line of credit and to compensate the bank for services performed including the lock-box collection service; its implications for the effective cost of bank loans are analyzed by Stone [104].

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Another variation on the Calman model was developed by Maier and Vander Weide [81]. This paper differs from earlier work in that it simultaneously locates new lock-box and disbursement activities, as opposed only to allocating activities within a firm's existing bank system. This model has been implemented by First National Bank of Chicago, Girard Bank and First National Bank of Maryland.

6. Bank Marketing

Management science techniques have been applied in bank marketing to the analysis of market segments, bank image, the effects of advertising on the demand for deposits and loans and the characteristics of users/nonusers of bank services. The following review of management science applications is not intended to be exhaustive; it merely attempts to capture the flavor of the many contributions of management science to bank marketing.

If significant motivational differences exist between customer groups, banks can increase their marketing effectiveness by designing messages that have special appeal to each group. Robertson and Bellenger [97] demonstrate how statistical analyses of responses to customer questionnaires can help to identify distinct bank market segments. The data for their study were obtained from a mail survey of residents from three areas in a Rocky Mountain state. Factor analysis was applied in the first step of their study to determine the principal factors the bank customers thought to be important in their banking relationship. Cluster analysis was used in the second step to identify respondents who held similar views on the important factors. A profile analysis of the members of each cluster revealed distinct profiles for at least two of the customer clusters. Cluster I represented a group of highly educated, high income professionals who tended to stress the importance of integrity, ego enhancement and expertise in their banking relationship. Cluster VI represented a group of older, blue-collar workers for whom bank location was the most important factor. Although Robertson and Bellenger do not state whether their results had a practical impact, it is certainly conceivable that the banks in this state could use the results of this study to improve their marketing strategies.

As part of their market research, banks have spent a considerable amount of money on attempts to measure their banks' customer image. Customers are typically questioned on their feelings about various attributes of a particular bank and the data are analyzed to see whether significant differences exist. (See Ford [58] and Brown *et al.* [23] for examples of this approach.) Durand *et al.* [50] have recently tested an improvement on the traditional method, the adequacy-importance model of Wilkie and Pessemier [107], that allows for the importance that a customer attaches to each attribute in the bank selection decision. They find that the adequacy-importance model provides a reasonably efficient prediction of a customer's bank preference.

Bank marketing specialists are also concerned with the effect of advertising on the bank's ability to attract deposits and loans. Hughes [66] employs regression analysis to identify the variables that serve as predictors of deposits and loans for three savings banks in Boston. Since the bank's objectives are unknown, he estimates regression models with the dependent variable expressed as dollar volume of deposits and loans, number of accounts and market share of each. The savings deposit and loan dependent variables are explained in terms of controllable variables such as dividend rates, loan rates and advertising, and uncontrollable variables such as effective buying

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income per household, common stock dividend rates and earnings rates. The advertising variable has a positive long-run effect for two of the banks, but not for the third. Advertising seems to have very little effect on deposits and loans in the short run.

A bank's ability to market and promote new products can often be enhanced by knowledge of the economic and demographic characteristics of the customer group that is most likely to use the product. The papers by Awh and Waters [7] and Pool [95] employ discriminant analysis to identify the characteristics of users and nonusers of bank charge cards and cash dispensing machines, respectively. Both find the user and nonuser groups to vary significantly in terms of economic and demographic characteristics. The users of both products tend to be young and well educated, and have a higher average income than nonusers. Whether or not these results can be generalized to other markets and products is not clear at this time.

7. Management of Bank Loans

Management science contributions to the management of bank loans fall into two broad categories. The first category consists of papers that examine the lender's optimal credit granting and collection decisions. When the lender grants credit to a new applicant, he improves his knowledge of the probability that future loans will be paid back. If this knowledge has sufficient value in terms of expected future revenues, the lender may be willing to grant some loans that have an expected loss in the first decision period. The dynamic nature of the credit-granting decision makes dynamic programming a useful technique for its analysis. The optimal collection policy decision involves a trade-off between the increased expected payments over time from a more aggressive collection policy and the added costs of this policy. Dynamic programming models have also been formulated for this aspect of loan policy. The papers by Bierman and Hausman [11], Dirickx and Wakeman [49] and Mehta [87] are good examples of contributions in this category.

The second category consists of papers that report results of attempts to discriminate between good and bad credit risks on the basis of certain objective characteristics of the applicant, usually with the use of discriminant analysis. The procedure for the application of discriminant analysis to this problem can be described as follows. The user gathers a sample of previous loan applicants that have proved to be good or bad credit risks. Discriminant analysis is applied to the economic profiles of these applicants to determine whether they can be correctly classified. The discriminating weights for the original sample are then applied to the economic profiles of a new applicant to form a credit score for this applicant. If the score is above a prespecified cut-off level, determined so as to minimize the expected costs of misclassification, the applicant is classified as a good credit risk. He is classified as a poor credit risk if the score falls below the cut-off level.

Recent applications of discriminant analysis to the loan classification problem are described in three papers by Altman and his colleagues [2], [4], [5], a paper by Apilado *et al.* [6], a paper by Lane [76] and two papers by Orgler [92], [93]. These applications differ primarily with respect to the type of loan they attempt to classify and the data base they analyze. Altman [2] and Altman *et al.* [4] study bankrupt and nonbankrupt U.S. corporations in the 1946–65 and 1969–75 periods, respectively; Altman *et al.* [5] study the loan repayment performance of firms in the cotton and wool textile sector of France between 1968 and 1971; Apilado *et al.* study repayment patterns of consumer credit accounts in a southwestern state for 1970–71; Lane studies personal bankrupt-

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cies in California in the 1964–66 period; and Orgler studies "good" and "bad" commercial loans taken from the files of bank examiners in several East Coast states. In addition, Altman [3] studies the loan recovery experiences of banks in an effort to measure the expected costs of misclassification. Some of the models described in these papers are currently used by banks as part of their loan granting decision process.

Recent legislation prohibiting discrimination in the granting of credit has made the careful use of credit-scoring models especially important. Two papers by Eisenbeis [53], [54] and a paper by Joy and Tollefson [68] point out that the data samples of previous studies frequently failed to satisfy the underlying assumptions of the discriminant model. The sensitivity of classification decisions to the discriminant model's assumptions has not been extensively analyzed at this time. The validity of credit-granting decisions based on the results of credit-scoring models must therefore be judged on a case-by-case basis.

8. Conclusion

This paper has reviewed management science applications in banking. The reader of this review should agree that banking has been a fruitful area for management science applications. Part of this success is due no doubt to the excellent training and educational background of many bank managers. However, a large share of the success of management science in banking is also due to the nature of the business itself. Banks deal in money, and money is a product that is not only easily quantified but is also easy to relate to a bank's objective, the maximization of returns to stockholders.

In looking toward the future of management science in banking, we see an environment that is both hospitable and ripe with opportunities. Banking as a business will be undergoing dramatic change in the next few years. For example, legislation is being discussed that would end interest rate ceilings on time deposits. (Interest-bearing demand deposit accounts have already been introduced.) Compensating balance agreements, the cornerstone of the bank-corporate relationship, are being replaced by fee arrangements. The increased internationalization of the world economy has caused an expansion in the services that banks offer in the international area. These changes have greatly increased the competitiveness of the industry, forcing banks to offer new services, improve technology and concentrate on the objective of profit maximization. These facts bode well for the future of management science in banking.[1]

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Expectations Data and the Predictive Value of Interim Reporting: A Comment

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1. *Introduction*

In a recent article in this *Journal*, Abdel-khalik and Espejo [1978], hereafter AE, presented a test of the predictive content of interim earnings reports in order to ascertain whether analysts "use these signals in revising the predicted portion of annual earnings" [1978, p. 3]. AE maintained that the results of their test "provided strong evidence of the predictive power contained in each of the first three interim reports" [1978, p. 11]. Unfortunately, the test conducted by AE was incapable of discriminating between two contradictory hypotheses:

H_0: Security analysts do not use the information contained in interim earnings reports to revise the predicted (remaining) portion of the annual earnings number.

H_1: Security analysts use the information contained in interim earnings reports to revise the predicted portion of the annual earnings number.

In their paper, AE introduced three scenarios: *RP1* was equivalent to H_0, the null hypothesis; *RP2* and *RP3* were two versions of the alternative hypothesis, H_1; *RP2* (*RP3*) was the hypothesis that the predicted portion

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of the annual earnings number is revised in the same (opposite) direction as the most recent forecast error.

The flaw in the AE analysis originated not from their original adaptive expectations models, but from the theorized values they assigned to the coefficients of their reduced form cross-sectional regressions under the null hypothesis.[1] Indeed, their original adaptive expectations models can provide an alternative set of tests which we shall show are more suitable for the hypothesis which AE wished to test.

Section 2 explains intuitively why the test conducted by AE cannot be used to discriminate between H_0 and H_1. Section 3 presents the results of a simulation and an analytical analysis. Section 4 considers an alternative, more powerful test based on the original adaptive expectations models developed by AE. Section 5 concludes the comment.

2. *Abdel-khalik and Espejo's Test of Predictive Content*

AE attempted to assess the predictive power of interim earnings reports by testing the significance of the coefficients in the following regression:[2]

$$PE_y = \lambda_1(D_y^1) + \lambda_2(D_y^2) + \lambda_3(D_y^3) + e_y \tag{1}$$

where:

PE_y = the annual prediction error as measured by the difference between the actual earnings per share at the end of year y and the analyst's forecasts at the beginning of year y

D_y^q = the difference between the actual earnings per share observed in quarter q and the analyst's most recent forecast for quarter q

λ_q = an adjustment coefficient which indicates the extent to which the analyst revises the annual earnings forecast after observing the error in his earnings forecast for quarter q.

Finding each of the estimated regression coefficients (except the intercept) to be significantly different from zero, AE rejected H_0 in favor of H_1. The finding that the coefficients are significantly different from zero cannot, however, be used to reject H_0. To see why, consider a simple scenario. Suppose that analysts make annual and quarterly forecasts at the beginning of the year. Then upon receiving interim reports, they do not revise their forecasts of the remaining portion of the annual earnings

[1] Even if AE had properly specified their test, however, they would have obtained biased and inefficient parameter estimates since they tested a reduced form model rather than their original adaptive expectations models. This is illustrated in Section 4.

[2] Equation (1) is, in essence, the reduced form model of the original adaptive expectations equations developed by AE, their equation (2).

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number, but instead they revise their forecasts of the total annual earnings number when their interim forecasts are in error by substituting into their annual forecasts the known interim numbers in place of their earlier predicted values.[3] Undoubtedly, some firms will report higher earnings than analysts had forecast and some, lower. This, of course, will be true for both the annual and quarterly periods. Accordingly, we anticipate finding a significant cross-sectional association between annual forecast errors and quarterly forecast errors even when no revision of the remaining portion of the annual earnings number takes place. Indeed, in this simplified case, it can be shown (see Section 3 and the Appendix A) that $\lambda_1 = \lambda_2 = \lambda_3 = 1$.

Once we allow for analyst forecast revision of the remaining portion of the annual earnings when quarterly results appear, our conclusions are not fundamentally altered in any way. In particular, the λ's will be greater (less) than one if analysts revise their forecasts of the remaining portion of the annual earnings number in the same (opposite) direction as the most recent quarterly error. Hence, one cannot discriminate between H_0 and H_1 upon finding that the regression estimates of the λ's are other than zero, since the λ's will be identically equal to one if H_0 is true and significantly greater (smaller) than one if the *RP2* (*RP3*) version of H_1 is valid. The estimated λ's will equal zero only in the unusual case when no revision of the total annual earnings number conditional upon quarterly reports takes place. In order for this to happen, the revision of the remainder of the annual earnings number must be equal in magnitude and opposite in sign to the summed interim errors to date. In effect, analysts would maintain intact their earlier forecasts of the annual earnings number, regardless of the signals in the interim reports. By testing the λ's against zero instead of one, AE tested the wrong hypothesis. The finding that the λ's are insignificantly different from zero is evidence in favor of the *RP3* form of H_1, not evidence in favor of H_0, as AE maintained. Note, also, that since unbiased forecasts are sufficient to ensure a zero intercept, one cannot rely on the intercept term being insignificantly different from zero to distinguish between H_0 and H_1.

Finally, the anticipated dependency of annual forecast errors on quarterly forecast errors does not rely upon collinearity of quarterly forecast errors. Quarterly forecast errors could be completely independent of each other and still be significantly associated with annual forecast errors. Although it is possible for quarterly forecast errors (with or without revision) to be dependent, AE implicitly assumed independence and

[3] This is a necessary feature of *The Value Line Investment Survey*, the data base used by AE. Value Line analysts make both quarterly and annual forecasts. When interim reports of the year being predicted are available, the Value Line annual forecast equals the sum of the known interim numbers plus the forecasts of the remaining quarters of the year.

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TABLE 1
Cross-sectional Regression on Simulation Data

	$\hat{\lambda}$'s	t-Statistic
Constant	.08	0.1
D_y^1	1.07	5.2
D_y^2	1.13	6.2
D_y^3	.92	4.5

$R^2 = .70$
$F_{3,41} = 32.6$

obtained very low partial correlation coefficient estimates.[4] We begin, then, by analyzing the independence case.

3. *Null Hypothesis of No Revision*

3.1 SIMULATION ANALYSIS

To support the claim that the AE findings are likely to arise when no forecast revisions of the remaining portion of the year are made, a simulation was performed. First, two sets of quarterly earnings-per-share numbers were randomly generated for each of forty-five hypothetical firms. One set was labeled actual and the other predicted.[5] Note that, by construction, all 360 numbers (forty-five firms, four quarters, two sets) have the same expected values. After the quarterly figures were summed to obtain annual amounts, a cross-sectional *OLS* regression was run with the annual difference between actual and forecasted earnings as the dependent variable, and the first three quarterly differences as the independent variables. The simulated numbers and the individual forecast errors are available upon request; the results of the *OLS* regression appear in table 1.

These results are similar to those reported by AE in that the estimated coefficients of all three forecast error variables are positive and significant (except for the intercept term), in spite of the fact that due to the nature of our simulation, we know in advance that no forecast revisions were made. The results are purely an artifact of the requirements that, under independence and no revision, the quarterly forecast errors must sum to the annual forecast error when the latter forecast is made prior to the receipt of any interim reports of the year being forecast. The result that the λ's are not identically equal to one is due to random error. Thus, any

[4] If analysts are rational, then they will take advantage of any ex-ante dependence in their forecast errors to improve their forecasts. Ex-ante dependence, therefore, assumes irrational forecasting (Box and Jenkins [1970, p. 129]), making the AE independence assumption quite palatable.

[5] Specifically, we employed three icosahedral dice to obtain values between 0.00 and 9.99 Each die has twice ten sides with pairs of sides marked from 0 through 9. The properties of such dice as random number generators are described by Gardner [1968].

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attempt to reject H_0 on the basis of the estimated parameter coefficients being nonzero is inappropriate.

It is evident what the results of the simulation should be. Analytically, the sampling rule can be expressed as:

$$PE_y = D_y^1 + D_y^2 + D_y^3 + D_y^4, \tag{2}$$

where D_y^q, $q = 1, 2, 3, 4$, are independently distributed random variables with zero expected values. This model differs from equation (1) in that D_y^4 has now been included and the model coefficients are no longer explicit. Since the quarterly forecast errors are independent by construction, it follows that the *OLS* regression estimates will be unbiased, or equivalently that the expected values of $\hat{\lambda}_q$, $q = 1, 2, 3$, will equal one and the expected value of the constant term will equal zero.[6]

3.2 FURTHER ANALYSIS

Additional insight into the defect in AE's test is gained by considering, in quarterly form, the adaptive expectations models (their equation (2)) which were used to derive our equation (1). Independence of the quarterly forecast errors is no longer assumed, and revision of quarterly forecasts is now allowable. We show that to discriminate between H_0 and H_1, the coefficients (λ's) must be tested against one when using equation (1).

AE's adaptive expectations equation (their equation (2)) may be written as:

$$\hat{A}_t \mid Q_{it} - \hat{A}_t \mid Q_{i-1,t} = \lambda_i (Q_{it} - \hat{Q}_{it} \mid Q_{i-1,t}) + e_{it}, \qquad i = 1, 2, 3 \tag{3}$$

where:

A_t = annual earnings per share of year t
$\hat{A}_t \mid \Phi_T$ = analysts' prediction of annual earnings per share of year t conditional upon information set Φ_T available at T
Q_{it} = reported earnings per share in quarter i of year t
$\hat{Q}_{it} \mid \Phi_T$ = analysts' prediction of earnings per share of quarter i of year t conditional upon information set Φ_T available at T
e_{it} = random disturbance in quarter i of year t.

In words, the annual earnings forecast revision in quarter i is a linear function of the (one-quarter-ahead) error made in forecasting quarter i's earnings. To clarify the potential hypothesis tests of λ_i, we express the

[6] See Johnston [1972, p. 169]. We also provide a simple, yet instructive, proof in Appendix A that should demonstrate the effect of the implicit additivity restriction on forecast errors under no revision.

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left-hand side of equation (3) in quarterly form:

$$(\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} - (\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{0t} = \lambda_1(Q_{1t} - \hat{Q}_{1t} \mid Q_{0t}) + e_{1t}, \tag{4}$$

$$(\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{2t} - (\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} = \lambda_2(Q_{2t} - \hat{Q}_{2t} \mid Q_{1t}) + e_{2t}, \tag{5}$$

$$(\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{3t} - (\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{2t} = \lambda_3(Q_{3t} - \hat{Q}_{3t} \mid Q_{2t}) + e_{3t}. \tag{6}$$

Revisions of the total annual earnings forecast are shown in equations (4) through (6). To test whether the annual forecasts are revised in response to quarterly errors, the appropriate tests are $\lambda_i = 0$, $i = 1, 2, 3$. Now, by making use of the fact that $\hat{Q}_{it} \mid Q_{it} = Q_{it}$ and rearranging, (4) through (6) can be written alternatively and equivalently as:

$$(\hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} - (\hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{0t} = (\lambda_1 - 1)(Q_{1t} - \hat{Q}_{1t} \mid Q_{0t}) + e_{1t}, \tag{4'}$$

$$(\hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{2t} - (\hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} = (\lambda_2 - 1)(Q_{2t} - \hat{Q}_{2t} \mid Q_{1t}) + e_{2t}, \tag{5'}$$

$$(\hat{Q}_{4t} \mid Q_{3t} - \hat{Q}_{4t} \mid Q_{2t}) = (\lambda_3 - 1)(Q_{3t} - \hat{Q}_{3t} \mid Q_{2t}) + e_{3t}. \tag{6'}$$

Revisions of the predicted (remaining) portion of the annual number are shown in (4′) through (6′). To test whether the predicted portions of annual earnings are revised in response to quarterly errors, the appropriate tests in (4′) through (6′) are $(\lambda_i = 1) = 0$, $i = 1, 2, 3$, or equivalently in (4) through (6), $\lambda_i = 1$, $i = 1, 2, 3$. Since AE combine (4) through (6) to obtain equation (1) above, then the coefficients in (1) should be tested against one, not zero, in order to achieve AE's repeated intent [1978, pp. 1–3, 7, 9] to determine "if analysts in fact use these quarterly deviations to revise the predicted portion of the annual number" [1978, p. 4].

3.3 COEFFICIENT VALUES AND REVISION BEHAVIOR

AE also attempt to use their regression results to make inferences about the nature of analysts' revisions. They distinguish three cases, labeled *RP1*, *RP2*, and *RP3*. In all three cases, analysts upon receipt of interim reports incorporate the realized quarterly number into their annual earnings forecast, and they observe the sign of the current quarter's forecast error, which is actual earnings minus expected earnings (see n. 3). Behavior differs in how analysts revise predictions of the remaining portion of annual earnings. Under *RP1*, no revision occurs. Under *RP2* (*RP3*), revision of the remainder of the year is in the same (opposite) direction as the sign of the forecast error.

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AE argue that under *RP1*, only λ_1 will be nonzero, and it will be positive. Since this is the no-revision case, the correct hypothesis would be that λ_1 equals one under *RP1*. Furthermore, *RP1* does not imply that future forecasting errors will not occur. Rather, when they do, no revision is made of remaining quarterly earnings of the year. Thus, λ_2 and λ_3 are also determinate under *RP1* with predicted values of one, so that under *RP1* and H_0, $\lambda_1 = \lambda_2 = \lambda_3 = 1$. Similarly, if the alternative hypothesis *RP2* (*RP3*) is valid, the appropriate null hypothesis is λ_i, $i = 1, 2, 3$, is greater (less) than one.

A test of equation (1) presents several econometric difficulties. As it stands, the equation represents a test of how the set of sequential quarterly forecast errors of analysts are related to their annual earnings forecast errors as of the start of the year. This regression, as can be seen in equations (4) through (6), contains spurious correlations.[7] A second drawback is that the fourth-quarter error is implicitly contained in the disturbance term.[8] This acts to bias estimates of the regression coefficients. Finally, although economic theory suggests that the quarterly forecast errors of analysts should be ex-ante independent, sampling variation will cause some ex-post dependence or collinearity. This sampling variation not only produces inefficient estimates but is a source of bias of unpredicted sign on the estimated coefficients.[9]

At this juncture, it is evident that equation (1) is seriously suspect as a vehicle for providing a meaningful test of analyst revision behavior. Whatever the merit of the theoretical analysis which precedes the reduced form model, it is likely that the model as a cross-sectional *OLS* regression will be defective for testing the revision behavior described by AE.

4. *Alternative Test of Forecast Revision*

AE's analysis provides another set of relations which are more useful for determining if analysts systematically revise their forecasts when interim earnings statements become available. Consider the regressions based on AE's equation (2), our equation (3):

$$FEPS_{q,y} - FEPS_{q-1,y} = \lambda_q(D_y{}^q) + u_{q,y} \qquad q = 1, 2, 3 \tag{7}$$

where:

$FEPS_{q,y}$ = the *forecasted* annual earnings per share made in quarter q for year y

[7] For example, in equation (4), $Q_{1t} - \hat{Q}_{1t} \mid Q_{0t}$ appears on both the left- and the right-hand sides.

[8] See Appendix A; what this would mean is that the term $E(x_4'x_4)$ would no longer equal zero. Other effects are that estimates will be imprecise, with large errors, and dependent on particular samples.

[9] The nature of the ex-post sample bias is shown analytically in Brown and Rozeff [1978*a*, pp. 3–4] and is demonstrated empirically in Section 4.

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TABLE 2
Cross-Sectional Regressions on Actual Data

	λ's	t-Statistics*	R^2
Panel A: (Regressions with equation (7))			
Constant	0.002	0.001	0.41
λ_1	2.12	21.2, 11.2	
Constant	0.01	0.003	0.08
λ_2	1.42	15.9, 4.7	
Constant	−0.07	−3.50	0.29
λ_3	1.57	26.2, 9.5	
Panel B: (Regressions with equation (1))			
Constant	−0.14	−2.3	
λ_1	3.17	10.3	0.70
λ_2	1.31	1.7	
λ_3	1.68	3.4	

* With respect to the null hypothesis that the λ_q, $q = 1, 2, 3$, all equal zero and one in that order in panel A and equal one in panel B.

$u_{q,y}$ = a random error term with mean zero and constant variance.

Note that when no revision of the total annual earnings number conditional upon interim reports takes place (i.e., $FEPS_{q,y} = FEPS_{0,y}$ for all q), the estimated coefficients of quarterly forecast errors would be insignificantly different from zero. Conversely, if any of the estimates are significantly different from zero, then this is evidence that forecasts are revised on the basis of quarterly forecast errors, but perhaps only in the sense of *RP1*. To discriminate against *RP1* further, we next test to see if the coefficients (i.e., λ's) are significantly different from one. If they are, it is evidence that analysts revise future forecasts conditional upon realized quarterly numbers.

The regressions from (7) enjoy three distinct advantages over (1): (*i*) they do not contain spurious correlations; (*ii*) the use of just the most recent forecast error as the independent variable eliminates problems of multicollinearity and bias; and (*iii*) unlike equation (1), (7) allows us to discriminate between *RP1*, the hypothesis of no revision of future quarters, and "*RP0*," the hypothesis of no revision of the (total) annual number. The potential importance of ex-post bias and testing power is reflected in the empirical analysis that follows.

Using a sample of fifty Value Line firms and five years of quarterly forecasts for each, the regressions given by (7) were run and the results shown in panel A of table 2 were obtained.[10] Observe that the estimated coefficients in panel A are all significantly greater than one (t-values of

[10] See Brown and Rozeff [1978*b*] for further details on the sample selected. Sample size equals 243 due to missing observations. The sample period was 1972–76.

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11.2, 4.7, and 9.5), a finding that is consistent with the hypothesis that in all three quarters analysts do revise their forecasts of the predicted portion of annual earnings in a fashion consistent with the *RP2* version of the alternative hypothesis.

To complete the comparison with AE, we also tested their model (i.e., equation (1) above) on the same data and obtained the results shown in panel *B*. In testing the hypotheses that the λ's differ from one (rather than zero, as AE reported for their sample), we observe that only the first- and third-quarter forecast errors have significant coefficients (with lower *t*-values than in panel *A*); the second quarter does not.[11] What we conclude from this result, when compared to panel *A*, is that the finding of an insignificant coefficient for the second quarter is more likely to be caused by the econometric problems inherent in equation (1) and is not a reliable indication that the *RP2* version of H_1 is invalid.

Although these tests do appear to be more powerful than AE's in detecting revisions, we do not claim, as they do, that such revisions constitute improvements over the forecasts previously made. To examine forecast improvement we would need to specify an appropriate loss function over forecast errors plus an error metric and analyze forecast errors. This is outside the scope of this comment and hence is not pursued here. We should note, though, that neither we nor AE investigated forecast accuracy, a sine qua non for an investigation of forecast improvement.

5. *Concluding Remark*

We do not claim that analysts fail to revise their forecasts on the basis of interim earnings reports, nor do we maintain that Abdel-khalik and Espejo's findings are inconsistent with H_1. Rather, we take the position that (*i*) AE's findings, as they interpreted them, did not allow rejection of H_0, the hypothesis of no revision of remaining earnings, and (*ii*) even if the correct interpretation is given to the results of the AE test, there exists a more powerful test available than the one they elected to employ. In a larger sense, these kinds of problems are as subtle as they are serious. It is not sufficient to find empirical results consistent with a hypothesis motivated by one's prior theory. One must also consider whether these results could conceivably be obtained when alternatives to that hypothesis are true and whether the test to be employed is the most powerful one available.

[11] These findings are similar to AE's when the null hypothesis is restated in terms of the λ's being equal to one (i.e., the first- and third-quarter coefficients are significant, while the second-quarter coefficient is not).

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APPENDIX A

Proof of Expected Values of Regression Coefficients

We define our sampling rule under the null hypothesis, H_0, as follows:

$$Y = X_1 + X_2 + X_3 + X_4 \tag{A1}$$

where:

$$X_q = D_y{}^q,\ q = 1, 2, 3, 4$$

$$Y = PE_y, \quad \text{and}$$

the X_q, $q = 1, 2, 3, 4$, are independently distributed random variables with zero means.

Consider the following *OLS* regression to estimate the implicit coefficients of X_q, $q = 1, 2, 3$:

$$Y_i = \lambda_0 + \lambda_1 X_{1i} + \lambda_2 X_{2i} + \lambda_3 X_{3i} + U_i,\ i = 1, 2, \ldots, n. \tag{A2}$$

In matrix notation, and using deviation form, we can write (A2) as:

$$\underset{(n\times 1)}{y} = \underset{(n\times 3)}{x}\ \underset{(3\times 1)}{\lambda} + \underset{(n\times 1)}{u}\ . \tag{A3}$$

The *OLS* regression estimate using (A3) is:

$$\hat{\lambda} = (x'x)^{-1}x'\,y.$$

Substituting, from (A1) in matrix form, we obtain:

$$\hat{\lambda} = (x'\,x)^{-1}x'(xe + x_4)$$

where e is the unit vector. Since, by construction $E(x'\,x_4) = 0$, then:

$$E(\hat{\lambda}) = E[E(\hat{\lambda}\,|\,x)] = E[(x'\,x)^{-1}x'(xe)] = e.$$

Also, since (in the original notation):

$$\hat{\lambda}_0 = \bar{Y} - \hat{\lambda}_1\bar{X}_1 - \hat{\lambda}_2\bar{X}_2 - \hat{\lambda}_3\bar{X}_3$$

and given the zero means of our sampling rule, then:

$$\begin{aligned} E(\hat{\lambda}_0) = E[E(\hat{\lambda}_0\,|\,X)] \quad &= E[E(\bar{Y} - \hat{\lambda}_1\bar{X}_1 - \lambda_2\bar{X}_2 - \lambda_3\bar{X}_3\,|\,X)] \\ &= E[\bar{X}_1 + \bar{X}_2 + \bar{X}_3 + E(X_4\,|\,X) \\ &\quad \lambda_1\bar{X}_1 - \lambda_2\bar{X}_2 - \lambda_3\bar{X}_3] \\ &= E[E(X_4\,|\,X)] = E(0) = 0. \\ &\quad \text{Q.E.D.} \end{aligned}$$

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Expectations Data and the Predictive Value of Interim Reporting: A Comment

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1. *Introduction*

In a recent article in this *Journal*, Abdel-khalik and Espejo [1978], hereafter AE, presented a test of the predictive content of interim earnings reports in order to ascertain whether analysts "use these signals in revising the predicted portion of annual earnings" [1978, p. 3]. AE maintained that the results of their test "provided strong evidence of the predictive power contained in each of the first three interim reports" [1978, p. 11]. Unfortunately, the test conducted by AE was incapable of discriminating between two contradictory hypotheses:

H_0: Security analysts do not use the information contained in interim earnings reports to revise the predicted (remaining) portion of the annual earnings number.

H_1: Security analysts use the information contained in interim earnings reports to revise the predicted portion of the annual earnings number.

In their paper, AE introduced three scenarios: *RP1* was equivalent to H_0, the null hypothesis; *RP2* and *RP3* were two versions of the alternative hypothesis, H_1; *RP2* (*RP3*) was the hypothesis that the predicted portion

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of the annual earnings number is revised in the same (opposite) direction as the most recent forecast error.

The flaw in the AE analysis originated not from their original adaptive expectations models, but from the theorized values they assigned to the coefficients of their reduced form cross-sectional regressions under the null hypothesis.[1] Indeed, their original adaptive expectations models can provide an alternative set of tests which we shall show are more suitable for the hypothesis which AE wished to test.

Section 2 explains intuitively why the test conducted by AE cannot be used to discriminate between H_0 and H_1. Section 3 presents the results of a simulation and an analytical analysis. Section 4 considers an alternative, more powerful test based on the original adaptive expectations models developed by AE. Section 5 concludes the comment.

2. *Abdel-khalik and Espejo's Test of Predictive Content*

AE attempted to assess the predictive power of interim earnings reports by testing the significance of the coefficients in the following regression:[2]

$$PE_y = \lambda_1(D_y^1) + \lambda_2(D_y^2) + \lambda_3(D_y^3) + e_y \tag{1}$$

where:

PE_y = the annual prediction error as measured by the difference between the actual earnings per share at the end of year y and the analyst's forecasts at the beginning of year y

D_y^q = the difference between the actual earnings per share observed in quarter q and the analyst's most recent forecast for quarter q

λ_q = an adjustment coefficient which indicates the extent to which the analyst revises the annual earnings forecast after observing the error in his earnings forecast for quarter q.

Finding each of the estimated regression coefficients (except the intercept) to be significantly different from zero, AE rejected H_0 in favor of H_1. The finding that the coefficients are significantly different from zero cannot, however, be used to reject H_0. To see why, consider a simple scenario. Suppose that analysts make annual and quarterly forecasts at the beginning of the year. Then upon receiving interim reports, they do not revise their forecasts of the remaining portion of the annual earnings

[1] Even if AE had properly specified their test, however, they would have obtained biased and inefficient parameter estimates since they tested a reduced form model rather than their original adaptive expectations models. This is illustrated in Section 4.

[2] Equation (1) is, in essence, the reduced form model of the original adaptive expectations equations developed by AE, their equation (2).

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number, but instead they revise their forecasts of the total annual earnings number when their interim forecasts are in error by substituting into their annual forecasts the known interim numbers in place of their earlier predicted values.[3] Undoubtedly, some firms will report higher earnings than analysts had forecast and some, lower. This, of course, will be true for both the annual and quarterly periods. Accordingly, we anticipate finding a significant cross-sectional association between annual forecast errors and quarterly forecast errors even when no revision of the remaining portion of the annual earnings number takes place. Indeed, in this simplified case, it can be shown (see Section 3 and the Appendix A) that $\lambda_1 = \lambda_2 = \lambda_3 = 1$.

Once we allow for analyst forecast revision of the remaining portion of the annual earnings when quarterly results appear, our conclusions are not fundamentally altered in any way. In particular, the λ's will be greater (less) than one if analysts revise their forecasts of the remaining portion of the annual earnings number in the same (opposite) direction as the most recent quarterly error. Hence, one cannot discriminate between H_0 and H_1 upon finding that the regression estimates of the λ's are other than zero, since the λ's will be identically equal to one if H_0 is true and significantly greater (smaller) than one if the *RP2* (*RP3*) version of H_1 is valid. The estimated λ's will equal zero only in the unusual case when no revision of the total annual earnings number conditional upon quarterly reports takes place. In order for this to happen, the revision of the remainder of the annual earnings number must be equal in magnitude and opposite in sign to the summed interim errors to date. In effect, analysts would maintain intact their earlier forecasts of the annual earnings number, regardless of the signals in the interim reports. By testing the λ's against zero instead of one, AE tested the wrong hypothesis. The finding that the λ's are insignificantly different from zero is evidence in favor of the *RP3* form of H_1, not evidence in favor of H_0, as AE maintained. Note, also, that since unbiased forecasts are sufficient to ensure a zero intercept, one cannot rely on the intercept term being insignificantly different from zero to distinguish between H_0 and H_1.

Finally, the anticipated dependency of annual forecast errors on quarterly forecast errors does not rely upon collinearity of quarterly forecast errors. Quarterly forecast errors could be completely independent of each other and still be significantly associated with annual forecast errors. Although it is possible for quarterly forecast errors (with or without revision) to be dependent, AE implicitly assumed independence and

[3] This is a necessary feature of *The Value Line Investment Survey*, the data base used by AE. Value Line analysts make both quarterly and annual forecasts. When interim reports of the year being predicted are available, the Value Line annual forecast equals the sum of the known interim numbers plus the forecasts of the remaining quarters of the year.

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TABLE 1
Cross-sectional Regression on Simulation Data

	$\hat{\lambda}$'s	t-Statistic
Constant	.08	0.1
D_y^1	1.07	5.2
D_y^2	1.13	6.2
D_y^3	.92	4.5

$R^2 = .70$
$F_{3,41} = 32.6$

obtained very low partial correlation coefficient estimates.[4] We begin, then, by analyzing the independence case.

3. *Null Hypothesis of No Revision*

3.1 SIMULATION ANALYSIS

To support the claim that the AE findings are likely to arise when no forecast revisions of the remaining portion of the year are made, a simulation was performed. First, two sets of quarterly earnings-per-share numbers were randomly generated for each of forty-five hypothetical firms. One set was labeled actual and the other predicted.[5] Note that, by construction, all 360 numbers (forty-five firms, four quarters, two sets) have the same expected values. After the quarterly figures were summed to obtain annual amounts, a cross-sectional *OLS* regression was run with the annual difference between actual and forecasted earnings as the dependent variable, and the first three quarterly differences as the independent variables. The simulated numbers and the individual forecast errors are available upon request; the results of the *OLS* regression appear in table 1.

These results are similar to those reported by AE in that the estimated coefficients of all three forecast error variables are positive and significant (except for the intercept term), in spite of the fact that due to the nature of our simulation, we know in advance that no forecast revisions were made. The results are purely an artifact of the requirements that, under independence and no revision, the quarterly forecast errors must sum to the annual forecast error when the latter forecast is made prior to the receipt of any interim reports of the year being forecast. The result that the λ's are not identically equal to one is due to random error. Thus, any

[4] If analysts are rational, then they will take advantage of any ex-ante dependence in their forecast errors to improve their forecasts. Ex-ante dependence, therefore, assumes irrational forecasting (Box and Jenkins [1970, p. 129]), making the AE independence assumption quite palatable.

[5] Specifically, we employed three icosahedral dice to obtain values between 0.00 and 9.99 Each die has twice ten sides with pairs of sides marked from 0 through 9. The properties of such dice as random number generators are described by Gardner [1968].

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attempt to reject H_0 on the basis of the estimated parameter coefficients being nonzero is inappropriate.

It is evident what the results of the simulation should be. Analytically, the sampling rule can be expressed as:

$$PE_y = D_y^1 + D_y^2 + D_y^3 + D_y^4, \tag{2}$$

where D_y^q, $q = 1, 2, 3, 4$, are independently distributed random variables with zero expected values. This model differs from equation (1) in that D_y^4 has now been included and the model coefficients are no longer explicit. Since the quarterly forecast errors are independent by construction, it follows that the *OLS* regression estimates will be unbiased, or equivalently that the expected values of $\hat{\lambda}_q$, $q = 1, 2, 3$, will equal one and the expected value of the constant term will equal zero.[6]

3.2 FURTHER ANALYSIS

Additional insight into the defect in AE's test is gained by considering, in quarterly form, the adaptive expectations models (their equation (2)) which were used to derive our equation (1). Independence of the quarterly forecast errors is no longer assumed, and revision of quarterly forecasts is now allowable. We show that to discriminate between H_0 and H_1, the coefficients (λ's) must be tested against one when using equation (1).

AE's adaptive expectations equation (their equation (2)) may be written as:

$$\hat{A}_t \mid Q_{it} - \hat{A}_t \mid Q_{i-1,t} = \lambda_i(Q_{it} - \hat{Q}_{it} \mid Q_{i-1,t}) + e_{it}, \qquad i = 1, 2, 3 \tag{3}$$

where:

A_t = annual earnings per share of year t
$\hat{A}_t \mid \Phi_T$ = analysts' prediction of annual earnings per share of year t conditional upon information set Φ_T available at T
Q_{it} = reported earnings per share in quarter i of year t
$\hat{Q}_{it} \mid \Phi_T$ = analysts' prediction of earnings per share of quarter i of year t conditional upon information set Φ_T available at T
e_{it} = random disturbance in quarter i of year t.

In words, the annual earnings forecast revision in quarter i is a linear function of the (one-quarter-ahead) error made in forecasting quarter i's earnings. To clarify the potential hypothesis tests of λ_i, we express the

[6] See Johnston [1972, p. 169]. We also provide a simple, yet instructive, proof in Appendix A that should demonstrate the effect of the implicit additivity restriction on forecast errors under no revision.

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left-hand side of equation (3) in quarterly form:

$$(\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} - (\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{0t} = \lambda_1(Q_{1t} - \hat{Q}_{1t} \mid Q_{0t}) + e_{1t}, \tag{4}$$

$$(\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{2t} - (\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} = \lambda_2(Q_{2t} - \hat{Q}_{2t} \mid Q_{1t}) + e_{2t}, \tag{5}$$

$$(\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{3t} - (\hat{Q}_{1t} + \hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{2t} = \lambda_3(Q_{3t} - \hat{Q}_{3t} \mid Q_{2t}) + e_{3t}. \tag{6}$$

Revisions of the total annual earnings forecast are shown in equations (4) through (6). To test whether the annual forecasts are revised in response to quarterly errors, the appropriate tests are $\lambda_i = 0$, $i = 1, 2, 3$. Now, by making use of the fact that $\hat{Q}_{it} \mid Q_{it} = Q_{it}$ and rearranging, (4) through (6) can be written alternatively and equivalently as:

$$(\hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} - (\hat{Q}_{2t} + \hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{0t} = (\lambda_1 - 1)(Q_{1t} - \hat{Q}_{1t} \mid Q_{0t}) + e_{1t}, \tag{4'}$$

$$(\hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{2t} - (\hat{Q}_{3t} + \hat{Q}_{4t}) \mid Q_{1t} = (\lambda_2 - 1)(Q_{2t} - \hat{Q}_{2t} \mid Q_{1t}) + e_{2t}, \tag{5'}$$

$$(\hat{Q}_{4t} \mid Q_{3t} - \hat{Q}_{4t} \mid Q_{2t}) = (\lambda_3 - 1)(Q_{3t} - \hat{Q}_{3t} \mid Q_{2t}) + e_{3t}. \tag{6'}$$

Revisions of the predicted (remaining) portion of the annual number are shown in (4′) through (6′). To test whether the predicted portions of annual earnings are revised in response to quarterly errors, the appropriate tests in (4′) through (6′) are $(\lambda_i = 1) = 0$, $i = 1, 2, 3$, or equivalently in (4) through (6), $\lambda_i = 1$, $i = 1, 2, 3$. Since AE combine (4) through (6) to obtain equation (1) above, then the coefficients in (1) should be tested against one, not zero, in order to achieve AE's repeated intent [1978, pp. 1–3, 7, 9] to determine "if analysts in fact use these quarterly deviations to revise the predicted portion of the annual number" [1978, p. 4].

3.3 COEFFICIENT VALUES AND REVISION BEHAVIOR

AE also attempt to use their regression results to make inferences about the nature of analysts' revisions. They distinguish three cases, labeled *RP1*, *RP2*, and *RP3*. In all three cases, analysts upon receipt of interim reports incorporate the realized quarterly number into their annual earnings forecast, and they observe the sign of the current quarter's forecast error, which is actual earnings minus expected earnings (see n. 3). Behavior differs in how analysts revise predictions of the remaining portion of annual earnings. Under *RP1*, no revision occurs. Under *RP2* (*RP3*), revision of the remainder of the year is in the same (opposite) direction as the sign of the forecast error.

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AE argue that under *RP1*, only λ_1 will be nonzero, and it will be positive. Since this is the no-revision case, the correct hypothesis would be that λ_1 equals one under *RP1*. Furthermore, *RP1* does not imply that future forecasting errors will not occur. Rather, when they do, no revision is made of remaining quarterly earnings of the year. Thus, λ_2 and λ_3 are also determinate under *RP1* with predicted values of one, so that under *RP1* and H_0, $\lambda_1 = \lambda_2 = \lambda_3 = 1$. Similarly, if the alternative hypothesis *RP2* (*RP3*) is valid, the appropriate null hypothesis is λ_i, $i = 1, 2, 3$, is greater (less) than one.

A test of equation (1) presents several econometric difficulties. As it stands, the equation represents a test of how the set of sequential quarterly forecast errors of analysts are related to their annual earnings forecast errors as of the start of the year. This regression, as can be seen in equations (4) through (6), contains spurious correlations.[7] A second drawback is that the fourth-quarter error is implicitly contained in the disturbance term.[8] This acts to bias estimates of the regression coefficients. Finally, although economic theory suggests that the quarterly forecast errors of analysts should be ex-ante independent, sampling variation will cause some ex-post dependence or collinearity. This sampling variation not only produces inefficient estimates but is a source of bias of unpredicted sign on the estimated coefficients.[9]

At this juncture, it is evident that equation (1) is seriously suspect as a vehicle for providing a meaningful test of analyst revision behavior. Whatever the merit of the theoretical analysis which precedes the reduced form model, it is likely that the model as a cross-sectional *OLS* regression will be defective for testing the revision behavior described by AE.

4. *Alternative Test of Forecast Revision*

AE's analysis provides another set of relations which are more useful for determining if analysts systematically revise their forecasts when interim earnings statements become available. Consider the regressions based on AE's equation (2), our equation (3):

$$FEPS_{q,y} - FEPS_{q-1,y} = \lambda_q(D_y{}^q) + u_{q,y} \qquad q = 1, 2, 3 \tag{7}$$

where:

$FEPS_{q,y}$ = the *forecasted* annual earnings per share made in quarter q for year y

[7] For example, in equation (4), $Q_{1t} - \hat{Q}_{1t} \mid Q_{0t}$ appears on both the left- and the right-hand sides.

[8] See Appendix A; what this would mean is that the term $E(x_4'x_4)$ would no longer equal zero. Other effects are that estimates will be imprecise, with large errors, and dependent on particular samples.

[9] The nature of the ex-post sample bias is shown analytically in Brown and Rozeff [1978*a*, pp. 3–4] and is demonstrated empirically in Section 4.

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TABLE 2
Cross-Sectional Regressions on Actual Data

	λ's	t-Statistics*	R^2
Panel A: (Regressions with equation (7))			
Constant	0.002	0.001	0.41
λ_1	2.12	21.2, 11.2	
Constant	0.01	0.003	0.08
λ_2	1.42	15.9, 4.7	
Constant	−0.07	−3.50	0.29
λ_3	1.57	26.2, 9.5	
Panel B: (Regressions with equation (1))			
Constant	−0.14	−2.3	
λ_1	3.17	10.3	0.70
λ_2	1.31	1.7	
λ_3	1.68	3.4	

* With respect to the null hypothesis that the λ_q, $q = 1, 2, 3$, all equal zero and one in that order in panel A and equal one in panel B.

$u_{q,y}$ = a random error term with mean zero and constant variance.

Note that when no revision of the total annual earnings number conditional upon interim reports takes place (i.e., $FEPS_{q,y} = FEPS_{0,y}$ for all q), the estimated coefficients of quarterly forecast errors would be insignificantly different from zero. Conversely, if any of the estimates are significantly different from zero, then this is evidence that forecasts are revised on the basis of quarterly forecast errors, but perhaps only in the sense of *RP1*. To discriminate against *RP1* further, we next test to see if the coefficients (i.e., λ's) are significantly different from one. If they are, it is evidence that analysts revise future forecasts conditional upon realized quarterly numbers.

The regressions from (7) enjoy three distinct advantages over (1): (*i*) they do not contain spurious correlations; (*ii*) the use of just the most recent forecast error as the independent variable eliminates problems of multicollinearity and bias; and (*iii*) unlike equation (1), (7) allows us to discriminate between *RP1*, the hypothesis of no revision of future quarters, and "*RP0*," the hypothesis of no revision of the (total) annual number. The potential importance of ex-post bias and testing power is reflected in the empirical analysis that follows.

Using a sample of fifty Value Line firms and five years of quarterly forecasts for each, the regressions given by (7) were run and the results shown in panel A of table 2 were obtained.[10] Observe that the estimated coefficients in panel A are all significantly greater than one (t-values of

[10] See Brown and Rozeff [1978*b*] for further details on the sample selected. Sample size equals 243 due to missing observations. The sample period was 1972–76.

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11.2, 4.7, and 9.5), a finding that is consistent with the hypothesis that in all three quarters analysts do revise their forecasts of the predicted portion of annual earnings in a fashion consistent with the *RP2* version of the alternative hypothesis.

To complete the comparison with AE, we also tested their model (i.e., equation (1) above) on the same data and obtained the results shown in panel *B*. In testing the hypotheses that the λ's differ from one (rather than zero, as AE reported for their sample), we observe that only the first- and third-quarter forecast errors have significant coefficients (with lower *t*-values than in panel *A*); the second quarter does not.[11] What we conclude from this result, when compared to panel *A*, is that the finding of an insignificant coefficient for the second quarter is more likely to be caused by the econometric problems inherent in equation (1) and is not a reliable indication that the *RP2* version of H_1 is invalid.

Although these tests do appear to be more powerful than AE's in detecting revisions, we do not claim, as they do, that such revisions constitute improvements over the forecasts previously made. To examine forecast improvement we would need to specify an appropriate loss function over forecast errors plus an error metric and analyze forecast errors. This is outside the scope of this comment and hence is not pursued here. We should note, though, that neither we nor AE investigated forecast accuracy, a sine qua non for an investigation of forecast improvement.

5. *Concluding Remark*

We do not claim that analysts fail to revise their forecasts on the basis of interim earnings reports, nor do we maintain that Abdel-khalik and Espejo's findings are inconsistent with H_1. Rather, we take the position that (*i*) AE's findings, as they interpreted them, did not allow rejection of H_0, the hypothesis of no revision of remaining earnings, and (*ii*) even if the correct interpretation is given to the results of the AE test, there exists a more powerful test available than the one they elected to employ. In a larger sense, these kinds of problems are as subtle as they are serious. It is not sufficient to find empirical results consistent with a hypothesis motivated by one's prior theory. One must also consider whether these results could conceivably be obtained when alternatives to that hypothesis are true and whether the test to be employed is the most powerful one available.

[11] These findings are similar to AE's when the null hypothesis is restated in terms of the λ's being equal to one (i.e., the first- and third-quarter coefficients are significant, while the second-quarter coefficient is not).

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APPENDIX A

Proof of Expected Values of Regression Coefficients

We define our sampling rule under the null hypothesis, H_0, as follows:

$$Y = X_1 + X_2 + X_3 + X_4 \tag{A1}$$

where:

$$X_q = D_y{}^q,\ q = 1, 2, 3, 4$$

$$Y = PE_y, \quad \text{and}$$

the X_q, $q = 1, 2, 3, 4$, are independently distributed random variables with zero means.

Consider the following *OLS* regression to estimate the implicit coefficients of X_q, $q = 1, 2, 3$:

$$Y_i = \lambda_0 + \lambda_1 X_{1i} + \lambda_2 X_{2i} + \lambda_3 X_{3i} + U_i,\ i = 1, 2, \ldots, n. \tag{A2}$$

In matrix notation, and using deviation form, we can write (A2) as:

$$\underset{(n\times 1)}{y} = \underset{(n\times 3)}{x}\ \underset{(3\times 1)}{\lambda} + \underset{(n\times 1)}{u}\ . \tag{A3}$$

The *OLS* regression estimate using (A3) is:

$$\hat{\lambda} = (x'x)^{-1}x'\,y.$$

Substituting, from (A1) in matrix form, we obtain:

$$\hat{\lambda} = (x'\,x)^{-1}x'(xe + x_4)$$

where e is the unit vector. Since, by construction $E(x'\,x_4) = 0$, then:

$$E(\hat{\lambda}) = E[E(\hat{\lambda}\,|\,x)] = E[(x'\,x)^{-1}x'(xe)] = e.$$

Also, since (in the original notation):

$$\hat{\lambda}_0 = \bar{Y} - \hat{\lambda}_1\bar{X}_1 - \hat{\lambda}_2\bar{X}_2 - \hat{\lambda}_3\bar{X}_3$$

and given the zero means of our sampling rule, then:

$$\begin{aligned} E(\hat{\lambda}_0) = E[E(\hat{\lambda}_0\,|\,X)] \quad &= E[E(\bar{Y} - \hat{\lambda}_1\bar{X}_1 - \lambda_2\bar{X}_2 - \lambda_3\bar{X}_3\,|\,X)] \\ &= E[\bar{X}_1 + \bar{X}_2 + \bar{X}_3 + E(X_4\,|\,X) \\ &\quad \lambda_1\bar{X}_1 - \lambda_2\bar{X}_2 - \lambda_3\bar{X}_3] \\ &= E[E(X_4\,|\,X)] = E(0) = 0. \\ &\quad \text{Q.E.D.} \end{aligned}$$

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CAPITAL BUDGETING IN THE DECENTRALIZED FIRM*

STEVEN F. MAIER† AND JAMES H. VANDER WEIDE†

In this paper we analyze the capital budgeting problem of an organization which contains a central headquarters and K divisions. The headquarters serves as the planner-coordinator of the capital budgeting process and is the only member of the organization which has access to the external capital markets. The K divisions make decisions regarding the set of capital projects each wants to accept. The capital budgeting problem of this decentralized organization is solved and analyzed with the aid of an algorithm based on mathematical decomposition. It is shown that (i) the decomposition algorithm does indeed converge to an optimal corporate solution, (ii) under reasonable assumptions, the marginal rate of return on the last dollar spent is the same for each division and is equal to the corporate headquarters' "cost of capital," (iii) in some circumstances, the decomposition model will only select integral projects, and (iv) the optimal choice of projects for the firm is made independently by the divisions, each acting in its own self-interest. This last feature of the capital budgeting model suggests that the firm may be able to achieve the informational economies usually associated with a decentralized organization structure.

Most contributions to the literature on the capital budgeting problem under certainty have focused on either (1) the problem of choosing whether to accept or reject a single project or (2) the problem of choosing from among a set of interrelated projects when total expenditures in each period are constrained by a capital budget. Although these contributions certainly enhance our understanding of many realistic capital budgeting situations, they do not provide a foundation for understanding the role that capital budgets themselves play in the planning process. The central theme of this paper is the development of a mathematical model that demonstrates the usefulness of capital budgets as both planning and control devices.

The capital budgeting problem in the multi-division firm is analyzed here with the aid of an algorithm based on mathematical decomposition [5], [6], and [8]. It is found that (i) the decomposition algorithm converges to an optimal corporate solution, (ii) under reasonable assumptions, the rate of return on the last dollar spent is the same for each division and is equal to the corporate headquarters' "marginal cost of capital," (iii) in some circumstances, the decomposition model will only select integral projects, and (iv) the optimal choice of projects for the firm is made independently by the divisions, each acting in its own self-interest. This last feature of the capital budgeting model suggests that the firm may be able to achieve the informational economies usually associated with a decentralized organization structure.

1. The Capital Budgeting Problem in the Single Division Firm

It is helpful to begin the analysis with a brief review of the capital budgeting problem facing the single-division firm. We assume in this model that (1) the firm's opportunity set includes single period borrowing and lending opportunities in addition to physical capital projects, (2) the firm chooses those physical and financial opportunities in its opportunity set which maximize the firm's horizon value, and (3) the firm's current choices are constrained in each time period by the cash flows associated with opportunities accepted before the start of this planning process. The

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reader will recognize that these are the assumptions which describe Weingartner's Basic Horizon Model [11].

Let

x_j = the fraction of project j accepted,

P = the set of available projects for the single division,

v_t = the dollar amount of lendings in period t,

w_t = the dollar amount of borrowings in period t,

a_{tj} = the net cash flow associated with one unit of project j in period t (a positive sign is used to represent a cash inflow; a negative sign, a cash outflow),

$\hat{a}_j$ = the horizon value of post-horizon cash flows associated with one unit of project j,

r_t = the lending rate in period t,

r'_t = the borrowing rate in period t,

D_t = the dollar amount of cash flows in period t associated with projects accepted prior to the start of the planning process,

T = the horizon period.

Then the capital budgeting problem for this single-division firm can be formulated mathematically as:[1]

$$\text{Maximize} \sum_{j \in P} \hat{a}_j x_j + v_T - w_T \quad \text{with respect to } x_j, v_t, w_t,$$

$$\text{subject to} \quad -\sum_{j \in P} a_{1j} x_j + v_1 - w_1 \leqslant D_1,$$

$$-\sum_{j \in P} a_{tj} x_j - (1 + r_{t-1}) v_{t-1} + v_t + (1 + r'_{t-1}) w_{t-1} - w_t \leqslant D_t \qquad (t = 2, \ldots, T)$$

$$0 \leqslant x_j \leqslant 1, \qquad j \in P,$$

$$v_t, w_t \geqslant 0, \qquad t = 1, 2, \ldots, T.$$

2. The Capital Budgeting Process in the Multi-Division Firm

The multi-division firm whose capital budgeting process we wish to analyze consists of a single corporate financial headquarters and K divisions. We assume that each of the K divisions has a set P_k of projects which it can consider for adoption, but that only the corporate headquarters has access to the external financial markets. In addition, we assume that the multi-division firm's objective is to maximize its horizon value, and that its decisions are constrained by the cash flows associated with its previously accepted projects. If we let μ_{tk} denote the cash flows generated by division k's accepted projects in period t, then the capital budgeting problem of our multi-division firm can be formulated mathematically as:

$$\text{Maximize} \sum_{j \in P} \hat{a}_j x_j + v_T - w_T \quad \text{with respect to } x_j, v_t, w_t, \tag{1}$$

$$\text{subject to} \quad -\sum_{k=1}^{K} \mu_{1k} + v_1 - w_1 \leqslant D_1, \tag{2}$$

$$-\sum_{k=1}^{K} \mu_{tk} - (1 + r_{t-1}) v_{t-1} + v_t + (1 + r'_{t-1}) w_{t-1} - w_t \leqslant D_t, \qquad t = 2, \ldots, T, \tag{3}$$

$$\mu_{tk} - \sum_{j \in P_k} a_{tj} x_j = 0, \qquad k = 1, \ldots, K;\ t = 1, \ldots, T, \tag{4}$$

$$0 \leqslant x_j \leqslant 1, \qquad j \in P; \quad v_t \geqslant 0,\ w_t \geqslant 0,\ \mu_{tk} \text{ unrestricted}$$

where $P = P_1 \cup P_2 \cup \cdots \cup P_K$.

The introduction into the model of the cash flow variables μ_{tk} gives the above

[1] One difficulty that can arise in the formulation of this model is in the computation of $\hat{a}_j$. Since the borrowing and lending rates can differ, the discount rate used to compute $\hat{a}_j$ is not always well defined. One possible solution to this problem would be to solve the problem parametrically for a series of post-horizon discount rates.

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formulation of the capital budgeting problem in the multi-division firm the special block-angular structure usually associated with models which are amenable to solution by mathematical decomposition. Because of this structure, the capital budgeting problem can be solved in the following steps:

1. The corporate headquarters sends to each division a set (one for each period) of initial capital budgets and horizon transformation factors.

2. Each division solves its own capital budgeting problem using the transformation factors, but not the capital budgets received from the corporate headquarters. In this step, each division accepts all projects with a positive horizon (or present) value and submits a proposal of total cash flow needs for each period that is the summation of the cash flows of all its accepted projects.

2. Each division then resolves its own capital budgeting problem by choosing those projects which maximize the horizon value of all project cash flows and also satisfy the initial budget constraints in every period. It then submits to the corporate headquarters the total cash flows for each period generated by its accepted projects.

3. The corporate headquarters uses the cash flow information it receives from the divisions and determines a new set of divisional budgets and transformation factors, as well as the amounts it should borrow or lend in each time period. The new budgets and transformation factors are then sent to the divisions.

4. This iterative process returns to step 2 until either (i) no division can submit a new proposal with a higher present value than any one it has submitted previously or (ii) the headquarters terminates the process at a suboptimal solution because the potential solution improvement is not worth the cost of the budgeting procedure.

5. When the iterative process is completed, the corporate headquarters sets the final capital budgets and transformation factors and sends them to the divisions. The divisions then independently select the set of projects which maximize their present value, evaluated by the final transformation factors, subject to the final capital budgeting constraints.[2]

In summary, the capital budgeting problem described above may be solved by decomposing it into $K + 1$ interrelated subproblems. The first K of these subproblems are called the division programs, and the remaining subproblem is called the executive program. We formulate each of these problems in the following sections of this paper and discuss the economic implications of the solution.

3. The Executive Program

The executive program is designed to provide the corporate headquarters with the budgets and transformation factors which it sends to the divisions at the beginning of each iteration in the solution procedure. In addition, it provides the optimal values of the corporate decision variables, v_t and w_t, for all values of t.

The executive primal can be formulated mathematically as:

$$\text{Maximize} \quad Z_E = \sum_{k=1}^{K} \sum_{q \in S_k} c_k^q \lambda_k^q + v_T - w_T \quad \text{with respect to } \lambda_k^q, v_t, w_t, \tag{6}$$

$$\text{subject to} \quad -\sum_{k=1}^{K} \sum_{q \in S_k} \mu_{1k}^q \lambda_k^q + v_1 - w_1 \leqslant D_1, \tag{7}$$

$$-\sum_{k=1}^{K} \sum_{q \in S_k} \mu_{tk}^q \lambda_k^q - (1 + r_{t-1}) v_{t-1} + v_t + (1 + r'_{t-1}) w_{t-1} - w_t \leqslant D_t, \qquad t = 2, \ldots, T, \tag{8}$$

$$\sum_{q \in S_k} \lambda_k^q = 1, \qquad k = 1, \ldots, K; \quad \lambda_k^q \geqslant 0, v_t \geqslant 0, w_t \geqslant 0, \tag{9}$$

[2] In order to avoid nonuniqueness of the division problem solutions at the final iteration, the values of the $\hat{a}_j$ should be altered by adding a small positive constant to each of them. This perturbation of the $\hat{a}_j$ will guarantee that the divisions utilize all of their final budgets, even if some of the funds are invested in marginal projects. (This observation is due to Børge Obel.)

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where μ_{tk}^q are the cash flows for division k's qth proposal, $c_k^q = \sum_{j \in P_k} \hat{a}_j x_j^q$ is the horizon value of all post-horizon cash flows included in division k's qth proposal, and S_k is the set of all proposals that have so far been submitted by division k.

The executive primal is similar to Weingartner's Basic Horizon Model. The major difference occurs in constraints (9). Instead of the division project constraints, we now have a constraint on the proposal weights. This difference is highly significant, since it indicates that the executive primal does not require detailed information on each individual project.

Given an optimal solution to the executive primal, the division budgets are given by

$$b_{tk} = -\sum_{q \in S_k} \mu_{tk}^q \lambda_k^q, \qquad t = 1, \ldots, T, \tag{10}$$

where λ_k^q are the optimal proposal weights found in (6)–(9).

The executive dual can be formulated as:

$$\text{Minimize} \quad \sum_t \rho_t D_t + \sum_k \sigma_k \quad \text{with respect to } \rho_t, \sigma_k, \tag{11}$$

$$\text{subject to} \quad -\sum_t \rho_t \mu_{tk}^q + \sigma_k \geqslant c_k^q \qquad q \in S_k, k = 1, \ldots, K, \tag{12}$$

$$\rho_T \geqslant 1, \tag{13}$$

$$-\rho_T \geqslant -1, \tag{14}$$

$$\rho_{t-1} - (1 + r_{t-1})\rho_t \geqslant 0, \qquad t = 2, \ldots, T, \tag{15}$$

$$-\rho_{t-1} + (1 + r'_{t-1})\rho_t \geqslant 0, \qquad t = 2, \ldots, T; \quad \rho_t \geqslant 0; \ \sigma_k \text{ unrestricted.} \tag{16}$$

The variables ρ_t in the executive dual are associated with the corporate constraints (7)–(8) in the executive primal. Since the objective function in the executive primal is formulated in terms of horizon values, ρ_t measures the horizon value of an additional dollar in period t, assuming such an addition would not change the basis. Combining (13) and (14) we see that

$$\rho_T = 1. \tag{17}$$

Likewise, combining (15) and (16), we have

$$(1 + r_{t-1}) \leqslant \rho_{t-1}/\rho_t \leqslant (1 + r'_{t-1}), \qquad t = 2, \ldots, T. \tag{18}$$

Thus, the internal intertemporal transformation rate between period $t-1$ and t must lie between the borrowing and lending transformation rates. We see below that the ρ_t are sent at the beginning of each solution iteration to the divisions and used in the division programs to value funds in each period in terms of the horizon.

To interpret the remaining dual variables, σ_k, we must take a closer look at (12). Since ρ_k is unrestricted in sign and its sum is minimized in the dual objective, we have

$$\sigma_k = \max_{q \in S_k} \left\{ c_k^q + \sum_t \rho_t \mu_{tk}^q \right\}, \qquad k = 1, \ldots, K. \tag{19}$$

The term in brackets is the horizon value of all projects in the qth proposal, where ρ_t is used to transform the prehorizon cash flows to horizon values. Therefore, σ_k is the horizon value of the best proposal received so far from division k.

4. The Division Programs

After the divisions have received the budgets and transformation factors from the corporate headquarters, they must choose that set of projects in their opportunity set

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which maximizes the division objective subject to the budget constraints. The division program can be formulated mathematically as:

$$\text{Maximize} \quad Z_k = \sum_{j \in P_k} \hat{a}_j x_j + \sum_t \rho_t \mu_{tk} - \sigma_k \quad \text{with respect to } x_j \in P_k,\ \mu_{tk}, \tag{20}$$

$$\text{subject to} \quad -\mu_{tk} + \sum_{j \in P_k} a_{tj} x_j = 0, \quad t = 1, \ldots, T, \tag{21}$$

$$-\mu_{tk} \leqslant b_{tk}, \qquad t = 1, \ldots, T, \tag{22}$$

$$0 \leqslant x_j \leqslant 1, \qquad j \in P_k; \quad \mu_{tk} \text{ unrestricted in sign.} \tag{23}$$

The division program will be solved twice in our solution procedure. The first time the problem is solved, the division completely disregards the budgetary constraints (22) and selects those projects with a positive net horizon value. The test of whether an acceptable proposal can be generated is to compare the computed horizon value of all accepted projects with the value of the best previous proposal the division has submitted (measured, recall, by σ_k). This process may be carried out mechanically by solving the division program with constraints (22) deleted. If the objective function value at the solution is positive, then a proposal will be submitted to the headquarters, consisting of the values μ_{tk}, $t = 1, \ldots, T$, and the value c_k computed as:

$$c_k = \sum_{j \in P_k} \hat{a}_j x_j. \tag{24}$$

The second time the division problem is solved, the budget constraints (22) will be included in the formulation and a second proposal will be generated. (It turns out that if the proposal with all budgets deleted fails to pass the test for submission, then all proposals with budget constraints will also fail the test, and therefore, this part of the procedure can be skipped.) This second proposal consists again of the net cash flows, μ_{tk}, and the value of post horizon flows computed by (24).

In some instances, the division or the corporate headquarters may feel that these two proposals do not completely satisfy the needs of the firm. For example, the headquarters may feel that some of its budgets are extremely rigid, while others are considerably more flexible. The solution to this nonequivalence of various portions of the budget is to permit the divisions to relax selectively some of the budget constraints and submit additional proposals. It has been shown that the use of multiple proposals can significantly speed the convergence of decomposition type algorithms (see Glassey[6]).

5. Stopping Rules

The decomposition algorithm has two possible termination mechanisms. The first criterion is signaled when no division can submit a new proposal and indicates that the global optimal solution has been reached (see Dantzig [4, p. 452] for a proof of this result). Unfortunately, much of the computational experience with decomposition indicates that this termination may require a great many iterations. If either the cost or the time required to perform an iteration is large, then termination at less than the absolute best solution may be required.

The second termination mechanism is based on the calculation of an upper bound on the optimal objective function value. The bound, which follows from Lasdon [8, p. 163], on the executive program's objective value is:

$$Z_E^B \equiv \operatorname*{MIN}_l \left\{ Z_E^l + \sum_{k=1}^{K} Z_k^l \right\} \tag{24A}$$

where l is an index for the iteration number, Z_E^l is the value of the executive program's objective function on the lth iteration, and Z_k^l is the value of the uncon-

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strained division program k's objective function on the lth iteration. The minimum is taken over all bounds that have been generated, one on each iteration. (One must be careful that the division programs are solved using the transformation factors ρ_t corresponding to Z_E^l when the Z_k^l values are generated.) The stopping rule is then defined by:

$$\text{IF } Z_E^B - Z_E^C \leqslant \epsilon, \text{ then terminate the algorithm,}$$

where Z_E^C is the current value of the executive program's objective function. Epsilon (ϵ) represents the maximum potential improvement if the iterative process were to continue.

6. Properties of an Optimal Solution

Having described the decomposition procedure in some detail, we now examine two interesting properties of an optimal solution to the capital budgeting problem. The first pertains to the relationship between the transformation rates ρ_t used by the divisions to evaluate cash flows in terms of horizon values and the dual variables Π_{tk} associated with the divisions' budgets. The transformation rates, recall, measure the change in the horizon value of the firm which would occur if an additional dollar were available in period t. Division k's dual variables, on the other hand, measure the change in the horizon value of division k's cash flows which would occur if it had an additional dollar in its period t budget. It is intuitive that if the current solution to the capital budgeting problem is optimal, then the value of the period t transformation rate should equal the value of the period t dual variable for each division. That this is in fact correct is shown in Theorem 1 below.

The second property of an optimal solution concerns the possibility of accepting fractional projects. Many practitioners view this possibility as a major criticism of programming approaches to the capital budgeting problem (see, for example, Hughes and Lewellen [7]). Theorem 4 states a sufficient condition for all projects to be integral.

The presentation of the proofs to Theorems 1 through 4 can be simplified if we rewrite the division program (20)–(23) in a different form. This new form is obtained from the original by introducing slack variables g_{tk} in constraints (22) and then eliminating μ_{tk} from constraints (20) and (21). The reformulated division program is then given by:

$$\text{Maximize } Z_k = \left[\sum_{j \in P_k} \hat{a}_j x_j + \sum_t \rho_t g_{tk}\right] - \left[\sigma_k + \sum_t \rho_t b_{tk}\right] \text{with respect to } x_j \in P_k \text{ and } g_{tk} \tag{26}$$

$$\text{subject to } -\sum_{j \in P_k} a_{tj} x_j + g_{tk} = b_{tk}, \qquad t = 1, \ldots, T, \tag{27}$$

$$0 \leqslant x_j \leqslant 1, \qquad j \in P_k, \tag{28}$$

$$g_{tk} \geqslant 0, \qquad t = 1, \ldots, T.$$

The reader may find this formulation of division k's capital budgeting problem familiar. In fact, if one disregards the constant term in the objective function (given by the second set of square brackets), associates the transformation factors ρ_t with utility and assumes zero post-horizon cash flows, then the model is identical to the

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Baumol-Quandt reformulation of the original Lorie-Savage-Weingartner capital budgeting model (see [2]).

It is also useful to have available the dual to division k's capital budgeting problem. The dual of (26)–(28) is given by:

$$\text{Minimize} \quad \left[\sum_t b_{tk}\Pi_{tk} + \sum_{j\in P_k}\delta_j\right] - \left[\sigma_k + \sum_t \rho_t b_{tk}\right] \quad \text{with respect to } \Pi_{tk} \text{ and } \delta_j, \tag{29}$$

$$\text{subject to} \quad -\sum_t a_{tj}\Pi_{tk} + \delta_j \geqslant \hat{a}_j, \qquad j \in P_k, \tag{30}$$

$$\Pi_{tk} \geqslant \rho_t, \qquad t = 1, \ldots, T, \tag{31}$$

$$\Pi_{tk} \text{ unrestricted}, \quad \delta_j \geqslant 0.$$

To establish the first property of an optimal solution, we must guarantee that the optimal ρ_t transformation factors can be given their usual interpretation as evaluators of a marginal increase in the cash flows D_t; namely, that for each time period t, there exists a small positive constant (ϵ_t), such that increasing (decreasing) D_t by ϵ_t will increase (decrease) the value of the executive program's objective function (7) by $\epsilon_t\rho_t$. In order to guarantee this interpretation for ρ_t, we require the following nondegeneracy assumption:

NONDEGENERACY ASSUMPTION. *The final solution of the executive program* (7)–(10) *is nondegenerate.*

Before we proceed with the proof of the first property of an optimal solution to the capital budgeting problem of the multi-division firm, we will find it convenient to establish the following lemma.

LEMMA 1. *If the nondegeneracy assumption is satisfied, then for any* $j \in P_k$ *in the final solution for division program* k *the following is true*:

$0 < x_j < 1$ *implies* $\hat{a}_j + \sum_t a_{tj}\rho_t = 0$,

$x_j = 0$ *implies* $\hat{a}_j + \sum_t a_{tj}\rho_t \leqslant 0$,

$x_j = 1$ *implies* $\hat{a}_j + \sum_t a_{tj}\rho_t \geqslant 0$.

This lemma states that any fractionally accepted projects must have a zero net horizon (or equivalently present) value, any accepted projects must have nonnegative net horizon value, and any rejected projects must have nonpositive net horizon value. Although this may appear to be an intuitive result, it requires careful proof, since the x_j's are found from the solution of the division program (26)–(28), with the budget constraints active, while the ρ_t's are found from the solution of the executive program (6)–(9), which never considers the projects individually. We will construct a proof by contradiction.

PROOF. Suppose there exists a j that satisfies $0 < x_{\bar{j}} < 1$ in the optimal division program solution and $\hat{a}_{\bar{j}} + \sum_t a_{t\bar{j}}\rho_t > 0$. We shall show that a small change ΔD_t in each of the D_t variables results in an increase of greater than $\sum_t \rho_t \Delta D_t$ in the executive program's objective function value, thus contradicting the optimality of the solution.

Select an $\epsilon > 0$, such that

(i) $x_{\bar{j}} + \epsilon < 1$ and

(ii) a simultaneous change of $-\epsilon \cdot a_{t\bar{j}}$ for each D_t does not cause a basis change in (6)–(9).

Such an ϵ must exist by virtue of our nondegeneracy assumption.

A simultaneous change of $\Delta D_t = -\epsilon \cdot a_{t\bar{j}}$ in each D_t should cause an increase in the value of the objective function (6) of:

$$\sum_t \rho_t \Delta D_t. \tag{32}$$

Now suppose that the change in D_t's is assigned entirely to the division budget, b_{tk}, corresponding to the division k that contains project $\bar{j}$. How will the value of the

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objective function for this division be affected? We see immediately that if project $\bar{j}$ is increased by ϵ, then (27) shows that the budget change can be completely absorbed by this project, and that the total change in the objective function (26) for this division becomes $\epsilon\hat{a}_{\bar{j}} - \sum_t \rho_t \Delta D_t = \epsilon(\hat{a}_{\bar{j}} + \sum_t \rho_t a_{t\bar{j}})$. But this must be strictly greater than zero by our initial assumption for project $\bar{j}$. Thus, the division program objective function now indicates that a new proposal can be submitted to the executive program. By (12), this new proposal will increase the value of σ_k, and therefore (11) shows that the value of the executive program will increase by $\sum_t \rho_t \Delta D_t$ plus this increase in σ_k. This increase is more than we expected in (32), so we conclude that the original assumption of a positive present value for project $\bar{j}$ leads to a contradiction.

A similar proof can be constructed for the case where $\hat{a}_{\bar{j}} + \sum_t a_{t\bar{j}} \rho_t < 0$ by considering a small change of $\epsilon \cdot a_{t\bar{j}}$ in the D_t's.

The proof for the second and third cases is similar to the proof given above for the first case. However, it must be kept in mind that only an increase in x_j is feasible for the second case and a decrease in x_j for the third case.

We now state and prove Theorem 1.

THEOREM 1. *If the nondegeneracy assumption is satisfied, then the dual variables, ρ_t, corresponding to the optimal corporate problem will satisfy the condition: $\rho_t = \Pi_{t1} = \Pi_{t2} = \cdots = \Pi_{tK}$ for $t = 1, \ldots, T$, where Π_{tk} stands for an optimal dual solution to the division k program.*

PROOF. It is sufficient to show that corresponding to the optimal division program solution, (x_j, g_{tk}), can be constructed a dual solution, (Π_{tk}, δ_j) such that substituting ρ_t for Π_{tk} will satisfy dual feasibility and complementary slackness.

The complementary slackness condition for the division program (26)–(28) is:

$$\delta_j(x_j - 1) = 0 \quad \text{for } j \in P_k, \tag{33}$$

$$\left(\hat{a}_j + \sum_t a_{tj}\Pi_{tk} - \delta_j\right)x_j = 0 \quad \text{for } j \in P_k, \tag{34}$$

$$(\Pi_{tk} - \rho_t)g_{tk} = 0 \quad \text{for } t = 1, \ldots, T. \tag{35}$$

Substituting ρ_t for Π_{tk} in (31) and (35) results in these conditions holding trivially. It remains to be shown that (30), (33) and (34) hold. We consider three cases. For $0 < x_j < 1$, $\delta_j = 0$ satisfies (33). Conditions (30) and (34) then follow from the results of Lemma 1. For $x_j = 1$, (33) is satisfied for any $\delta_j \geqslant 0$. Select a value for δ_j so that (34) is satisfied. Such a value must exist by Lemma 1. This selection of δ_j will also satisfy (30). For $x_j = 0$, (34) is always satisfied, (33) is satisfied with $\delta_j = 0$, and (30) is satisfied by the results of Lemma 1.

We have thus shown that by the proper selection of values for δ_j, ρ_t can be made to satisfy both dual feasibility and complementary slackness. The proof is complete.

Before concluding this discussion of transformation factors, it is important to consider the impact of possible degeneracy on the division program. Degeneracy in (26)–(28) is an extremely likely event, since many of the g_{tk} variables could be basic at zero level. For example, if a division were required to accept only one project partially, all other projects being fully accepted or rejected, then all but one of the g_{tk} variables would be basic. Since a positive g_{tk} represents an unutilized resource, we would expect all g_{tk} variables to be zero in the optimal solution. Therefore, we have basic g_{tk} variables at zero level in the optimal solution, i.e., degeneracy.

If degeneracy does occur in a division program, then the possibility exists for many optimal dual solutions (Π_{tk}, δ_j). We have shown in Theorem 1 that one of these

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satisfies $\rho_t = \Pi_{tk}$. We will now show that at least for increases in the budgets b_{tk}, ρ_t is the appropriate shadow price.

THEOREM 2. *If the nondegeneracy assumption is satisfied and if the optimal solution to division program k experiences an increase Δb_{tk} in its period t budget, then the value of division k's objective function will increase by $\Delta b_{tk} \cdot \rho_t$.*

PROOF. The proof is in two steps. First, we will show that $\rho_t \Delta b_{tk}$ is an upper bound on the increase in the objective function value. Second, we will show that this bound can always be attained.

Since any feasible solution to the dual program (29)–(31) gives a bound on the division program's objective (26), and since a change in b_{tk} does not affect dual feasibility, we have

$$Z_k' \leqslant Z_k + \Delta b_{tk} \cdot \Pi_{tk}, \tag{36}$$

or substituting the specific dual solution $\rho_t = \Pi_{tk}$ we obtain $\Delta Z_k \leqslant \Delta b_{tk} \cdot \rho_t$.

Next, we observe that any increase in b_{tk} can always be absorbed by a corresponding increase in g_{tk}. Such an increase in g_{tk} will by (26) increase Z_k by $\Delta g_{tk} \cdot \rho_t$. Substituting Δb_{tk} for Δg_{tk} completes the proof.

The result in Theorem 2 begs the question: What happens if a budget b_{tk} is decreased? The answer is embodied in Theorem 3.

THEOREM 3. *If the optimal solution to division program k experiences a decrease, Δb_{tk}, in its period t budget, then the decrease in the value of the objective function must be at least* Maximum $_{\Pi_{tk}} \Pi_{tk} \cdot |\Delta b_{tk}|$ *where the maximum is taken over all optimal solutions to the dual problem* (29)–(30). *Furthermore, for a small enough change Δb_{tk}, the bound can always be attained.*

PROOF. Since both Δb_{tk} and ΔZ_k are nonpositive, (36) can be written as $|\Delta Z_K| \geqslant \Pi_{tk} \cdot |\Delta b_{tk}|$. However, this result must hold for all optimal solutions to the dual, thus proving the first part of the theorem. The second part of the theorem follows from the fact that at least one of the optimal dual solutions must be valid for measuring the change in the division program objective function value for small enough changes in the right-hand side.

As a partial answer to the potential criticism that programming models lead to nonintegral solutions, we can show the following result for our decomposition approach:

THEOREM 4. *If the optimal solution to the original capital budgeting problem* (1)–(4) *is unique, and if we borrow or lend in every time period, then the optimal solution to the decomposition model will only select integral projects* (*i.e., either $x_j = 0$ or $x_j = 1$, for all $j \in P$*).

PROOF. The proof follows along the same lines as that constructed by Weingartner [11, p. 153] for the original basic horizon model.

The major assumption of this theorem, that the firm be in a net lending or borrowing position in each time period, would appear to be realistic in many practical situations. However, even if a few time periods should violate this condition, the number of nonintegral projects should be very small.

7. Discussion

The use of prices to direct the search for an optimal solution in a primal decomposition procedure has been recognized since the first published papers on the method. The distinguishing feature of the decomposition algorithm proposed here is that it is both price and budget directed. We will now discuss why the incorporation

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of budgets in the decomposition procedure is justified both as a device for control and as a mechanism for planning.

The incorporation of budgets in the division programs has the effect of reducing the size of the feasible set of available capital projects. In fact, it can be shown that when the final budgets are computed, the optimal solution for the company as a whole will always occur at an extreme point of this restricted set of feasible projects. Therefore, when the prices are correctly determined, as they will be in this algorithm, the division itself can actually select the projects to be undertaken, namely, it simply solves (20)–(23) one last time using the final budgets and discount factors. This contrasts sharply with other primal decomposition models that are only price directed. In these methods, the final project selection has to be made by the corporate headquarters. Therefore, the budgets are needed as a control device if we are to provide this final step in the decentralized decision-making process.

If prices alone are passed to the divisions, only one plan for capital expenditure will be submitted by the division to the corporate headquarters at each iteration of the algorithm. Although this is sufficient to guarantee convergence of the procedure to the optimal solution, it is usually a very slow and expensive process. By incorporating budgets into the iterative stage of the algorithm, each division can now submit multiple plans for capital expenditure on any given iteration. It has been shown (see [6], for example) that the more proposals that are generated, the smaller will be the required number of iterations to achieve a near optimal solution. Thus, budgets are very useful as planning mechanisms, since they can eliminate potentially expensive (both in time and effort) iterations.

Finally, it is the possibility of simultaneously adjusting budgets and discount factors in the division program that leads to the result given in Theorem 1. We have thus shown that in a programming model of the Weingartner type, it is possible to achieve consistency between the marginal internal rates of return, Π_{tk}, and a market determined cost of capital ρ_t. In fact, the algorithm provides a mechanism for adjusting the budgets and market rates so as to maximize the horizon value of the firm while simultaneously achieving this consistency.

8. Conclusion

The capital budgeting problem under certainty for the multi-division firm is modeled in this paper and solved with the aid of an algorithm based on the theory of mathematical decomposition. This model has several desirable features absent in previous programming approaches to the problem. In addition, the organizational and computational efficiencies achieved with the aid of the decomposition algorithm seem to make this approach implementable for many decentralized firms. Finally, it is easy to show that extensions of the model to more realistic settings such as a rising supply curve for funds, multiple lending and borrowing opportunities, and chance-constraints on the firm's liquidity position can all be incorporated into the executive program's formulation without affecting either the basic algorithmic procedure or the equilibrium results.[3]

[3] The authors gratefully acknowledge the assistance of Professors Kalman J. Cohen, David W. Peterson, and Julie H. Zalkind on earlier drafts of this paper. They also wish to acknowledge two anonymous referees, whose comments enabled them to clarify the proofs of several of the theorems.

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A DECISION ANALYSIS APPROACH TO THE COMPUTER LEASE-PURCHASE DECISION

STEVEN F. MAIER* and JAMES H. VANDER WEIDE†

Scope and purpose—The manager of computer services must periodically decide whether to lease or purchase a new computer. Computer leases usually involve a higher expected cost than a purchase decision, but they also reduce risk by providing insurance against the financial losses which often occur when a new computer technology is announced. In this paper the authors present a decision theoretic model of the computer lease-purchase decision which can be used by the manager of computer services to improve his decision making ability in this important area.

Abstract—The lease-purchase decision is analyzed with the use of decision analysis. The formulation proposed captures both the stochastic and sequential nature of this decision, and should provide a substantial improvement over a simple present value approach.

INTRODUCTION

In his seminal article on lease analysis, Vancil[9], distinguishes between two, entirely different types of lease. The financial lease, according to Vancil, is a long-term non-cancellable lease whose term is usually approximately equal to the expected economic life of the leased property. Since the lessor does not expect to re-lease the property after the lease term has expired, the total contractual lease payments must be sufficient to cover both the original cost of the property and the interest on the lessor's investment. The cash flows associated with the financial lease are thus known with a high degree of certainty. Furthermore, only one decision regarding a particular financial lease is likely to be made within the decision maker's horizon. Vancil, as well as those analysts who followed (e.g.,[1], [3], [5], and [8]), found a fairly straightforward present value analysis appropriate for the financial lease decision.

The operating lease, on the other hand, is a short-term, cancellable lease whose expected term is much less than the expected economic life of the leased property. Since the contractual lease payments are not sufficient to cover the original cost of the property plus interest, the lessor must attempt to re-lease the property after the term of the lease has expired. Once the term has expired, the lessee must also make another decision. The decision is whether to renew the lease or to obtain the services of the property in a different way. From an analytical viewpoint, there are two distinguishing features of the operating lease: (1) the total lease payments are not known with certainty and (2) both the lessor and the lessee must make a sequence of lease decisions within their investment horizons. In this paper we present a model of the lease-purchase decision, from the lessee's point of view, which is most appropriate in situations where these two features are dominant. Although the model presented in this paper was applied specifically to the computer lease-purchase decision, it should be apparent that the model is applicable to other operating lease-purchase decision problems as well.

EXAMPLE

The salient features of the computer lease-purchase decision can be exposed clearly with the aid of a simple example designed to illustrate the nature of the economic tradeoff between

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(i) the lower periodic payments, and hence increased profits, associated with the purchase decision and (ii) the insurance against future losses from technological obsolescence provided by the lease decision. For the purposes of this example we assume

(1) The firm's current decision is whether to lease or purchase a Model 100 computer.

(2) If the firm purchases the Model 100, it does not have to make another decision at the beginning of period 2 because a purchase decision is considered permanent during the planning horizon.

(3) If the firm leases the Model 100, the set of decisions available in the second period depends on whether an announcement occurred during the first. If an announcement did occur during the first period, then the firm can lease the 100, purchase the 100, lease the new Model 200, or purchase the 200. If an announcement did not occur, then the firm must decide again whether to lease or purchase the Model 100.

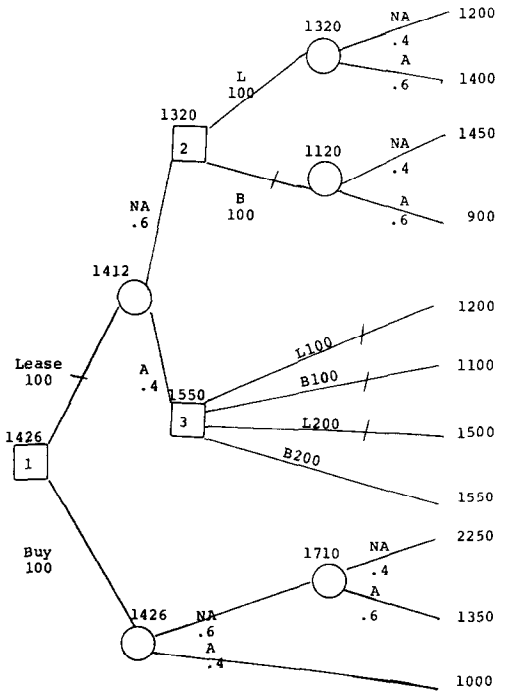
(4) The total profits over the horizon period associated with each initial decision depend on whether or not and when a Model 200 is announced.

(5) The probability that an announcement will occur during the first period is 0.4. If an announcement does not occur during the first period, then the probability of an announcement in the second period increases to 0.6. If an announcement does occur during the first period, however, then the probability of another announcement in the second period is zero.

(6) The firm's objective is to maximize the expected value of its profits.

A decision tree diagram of the just described decision problem is displayed in Exhibit 1. The total profits associated with each decision-chance event sequence are displayed at the right of the tree. The numbers next to each circular node in the tree represent the expected monetary values of the chance events. The numbers next to the square nodes, on the other hand, are the expected monetary values of the "best" decision emanating from that node. Since the buy decision has a higher expected monetary value, the assumed decision maker should buy the Model 100 at the first decision period.

The above analysis indicates that the buy decision is recommended for a decision maker who wants to maximize the expected monetary value of the outcomes. Daniel Bernoulli[2] recognized already in the 18th century, however, that the expected monetary value criterion



Note:

A = announcement
NA = no announcement
L = lease
B = buy

Exhibit 1. Decision tree—expected monetary value.

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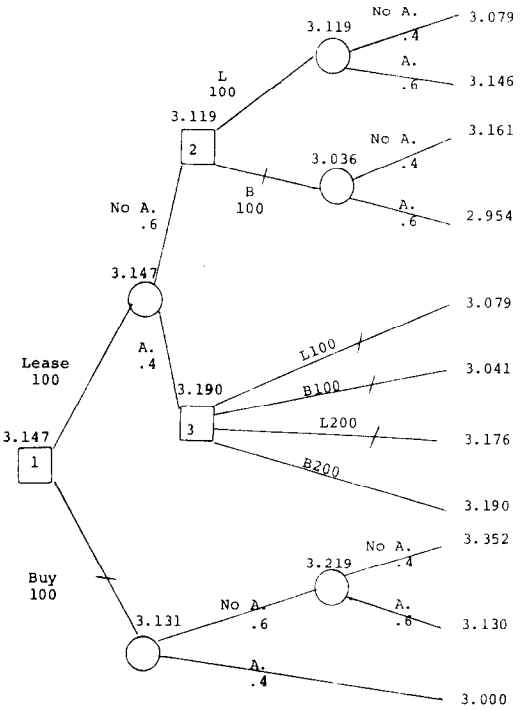
may not be appropriate in decision situations characterized by risk. Instead, Bernoulli suggested that the decision maker should maximize the expected utility of the dollar outcomes. Almost two centuries later (see von Neumann and Morgenstern[10]), the maximum expected utility criterion was shown under weak assumptions to lead to a correct ordering of the decision maker's preferences. A decision tree diagram of the above computer lease-purchase decision problem for a decision maker with a logarithmic utility function is shown in Exhibit 2. We see that this decision maker would choose to lease, rather than buy, the Model 100 at the first decision period.



Note:

A = announcement
NA = no announcement
L = lease
B = buy

Exhibit 2. Decision tree—expected utility.

GENERAL FORMULATION

Though the computer lease-purchase problem is not usually as simple in practice as the above example would indicate, the basic economic tradeoffs remain the same. We thus can describe the problem in terms of (i) the set of decisions available to the decision maker at each decision point during the planning horizon, (ii) the conditional probability distributions associated with the chance event or events, (iii) the cash flows associated with each decision-chance event sequence and (iv) the decision maker's utility function. We shall consider these one at a time.

The decision set. The decision maker in the above example was assumed to have only two choices available at the initial period—to lease or purchase the Model 100 computer. In practice, it is usually feasible to use not only the most recent computer model but models from previous generations as well. In general terms we assume that the decision maker must choose a decision, d_t, at the beginning of period t, from among an available set of decisions, D_t. Furthermore, D_t depends on both his current status, or mode of operation, and whether or not a new computer generation has been announced. If we let the state variable, S_t,* denote the decision maker's current status and the state variable, X_t, denote the number of periods since the last major announcement, then we can write the decision set as all $d_t \in D_t(S_t, X_t)$.

*The state variable, S_t, should tell us not only whether the decision maker currently owns or leases a particular computer model, but when a purchase was made as well. There are various ways to accomplish this, some more efficient than others. If handled properly, however, this variable should present no unusual computational requirements.

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The conditional probability distributions. The uncertainty introduced by the possibility of technological change is captured in our model by the state variable, X_t, which measures the number of periods since the last major new model announcement, as of the beginning of period t. The probability that $X_{t+1} = x$ depends on the value of the state variable in the previous period, X_t, and is given by $P_t(X_{t+1} = x|X_t)$. A value of $X_{t+1} = 0$ indicates that an announcement occurred in the interval between t and $t+1$, and a value of $X_{t+1} = X_t + 1$ indicates no new announcement occurred.

In many practical situations, it is reasonable to assume that in addition to previous announcements, only one major announcement will occur during the planning period. This assumption can be modeled by permitting both positive and negative values of X_t, where $|X_t|$ is equal to the number of periods since the major announcement and the sign of X_t indicates whether the new major announcement has occurred. This construction implies that $P_t(X_{t+1} = x - 1|X_t = x) = 1$ for all $x = 0, -1, -2, \ldots$. In other words, the variable X_t is no longer a random variable once the announcement has occurred.*

The cash flows. If the decision maker purchases the property, his cash flows usually consist of an initial outlay, a stream of net profits resulting from use of the property, tax savings from depreciation and interest allowances, and cash received or spent when the property is resold or salvaged. The stream of net profits and the resale value of the property are quite sensitive to the announcement of a major improvement in computer technology. The tax savings from depreciation allowances depend mainly on existing tax laws and when the property was purchased. If the decision maker leases the property, his cash flows consist only of the lease payments, the net profits from use of the property and the tax savings from the allowance for lease payments.

The above considerations suggest that the cash returns, r_t, received by the decision maker in period t depend on S_t, the current status of the decision maker at the beginning of period t, X_{t+1}, the result of the random event determining the time of the major announcement, and d_t, the decision actually made at the beginning of period t. We denote this functional dependence by $r_t(S_t, X_{t+1}, d_t)$.

The utility function. With regard to the decision maker's objective, we assume that he behaves in accordance with the von Neumann–Morgenstern axioms. That is to say, we assume that he chooses that decision which maximizes his expected utility for money. Since we are considering a multiperiod framework, it is appropriate to discount the utility received in later periods by the decision maker's time preference factor, α, raised to the correct power.

Solution methodology. Having formulated the basic elements of the lease–purchase decision problem, it is time to discuss how optimal solutions to this problem can be obtained. Obviously, the suggestion to graph the problem decision tree and fold it back, as we did in the above simple example, would in most realistic cases be impractical. Instead, we present a dynamic programming recursion which, though based on much the same principle as folding back a decision tree, is capable of solving fairly large scale versions of the lease–purchase problem.

Let

$f_t(S_t, X_t)$ = the maximum discounted expected utility from cash flows occurring in period t and all subsequent periods,

$U[r_t(S_t, X_{t+1}, d_t)]$ = the utility from cash flows occurring in period t,

$U[r_{T+1}(S_{T+1}, X_{T+1})]$ = the utility from cash flows occurring in all periods after the horizon.

Then a dynamic programming recursion which solves the problem described above is given by

$$f_t(S_t, X_t) = \text{Max} \sum_x P_t(X_{t+1} = x|X_t)\{U[r_t(S_t, x, d_t)] + \alpha f_{t+1}(d_t, x)\} \tag{1}$$

$$\text{w.r.t.} \quad d_t \in D_t(S_t, X_t)$$

$$f_{T+1}(S_{T+1}, X_{T+1}) = U[r_{T+1}(S_{T+1}, X_{T+1})]. \tag{2}$$

*The use of both positive and negative values for the state variable X_t is primarily a computational simplification. An alternative mechanism that accomplishes the same goal is to have a third state variable which can take on only two values, the first indicating no new announcement has occurred, while the second indicates that the announcement has occurred.

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This recursion must be used to find the optimal d_t for $t = 1, \ldots, T$, starting with T. The optimal first period decision is given by finding the value $f_1(S_1, X_1)$. Since the number of states for each state variable, in this case 2, is relatively small, the amount of computer time required to obtain a solution even for large T is not significant.

DISCUSSION

In this paper we formulate and solve one version of the lease–purchase decision problem under uncertainty. The formulation which we propose captures both the stochastic and sequential nature of this problem. The algorithm which solves this formulation is easily programmable and is capable of solving realistically sized examples. On the negative side, however, the model does require at least three types of informational inputs which may be difficult to supply in some practical situations. These are (i) estimates of the conditional probability that a new computer generation will be announced in any period given the time of the previous announcement, (ii) estimates of the cash flows resulting from each decision-chance event sequence and (iii) estimates of the utility that the decision maker associates with each cash flow. It seems that several comments about these information requirements are in order.

First, although the decision maker is unlikely to have precise knowledge of either the probability of an announcement in any period or the effect of that announcement on each period's cash flows, he is likely to have formulated some beliefs about these variables from past history, articles in current periodicals, conversations with other computer specialists, etc. The authors firmly believe that the decision maker should take full advantage of this information even though some of it is subjective. For the alternatives are either to make a completely arbitrary decision or to avoid the decision problem altogether.

Second, although the model explicitly treats the uncertainty of a new announcement, nothing has been said about the uncertainty that is implicit in making a cash flow projection. Fortunately, the utility function approach is sufficiently robust to incorporate this uncertainty as well. All the user must do is to determine a distribution of possible cash flow outcomes that can be associated with a given state (S_t, X_{t+1}) and possible decision d_t. Thus we have $\tilde{r}_t(S_t, X_{t+1}, d_t)$ treated as a random variable. However, the utility of this cash flow random variable can be found by the usual methods of decision theory, see for example Raiffe[7], leaving the dynamic programming recursion given by equations (1) and (2) essentially unchanged.

Third, assigning utilities to dollar outcomes is not as difficult as one may at first think. In fact there are at least two legitimate approaches to this task. The first approach requires answers from the decision maker regarding his preferences between a series of uncertain events. If the decision maker is consistent in his performance, his utility function can be deduced easily from his answers. A complete description of this approach is contained in Raiffa[7]. The second approach is to deduce the decision maker's utility function from a small set of general properties which he would agree his utility function should have. If, for instance, the decision maker asserts that he is risk averse and that his relative aversion to risk remains constant as his wealth increases, then his utility function can only take one of the following forms (see Pratt[6]):

$$u(W) = \frac{1}{\gamma} W^{\gamma}, \qquad 0 < \gamma < 1$$

$$u(W) = \frac{1}{\gamma} W^{\gamma}, \qquad \gamma < 0$$

$$u(W) = \log W.$$

The authors successfully used the second approach in the application which generated this study.

It is important to realize that the use of a utility function greatly simplifies the analysis, while still capturing the uncertainties that make this problem unique. An alternative to the use of a utility function would be the method of stochastic decision trees described by Hespos and Strassmann[4]. Unfortunately, our experience indicates that this methodology is unworkable for a realistic application, since it is computationally sensitive to the number of decision points that are embedded in the model.

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Finally, it should be recognized that every decision model is in some sense a simplification of reality. When choosing between models, however, the decision maker should ascertain whether or not the model at least captures the essential features of the problem structure. In the authors' opinion, present value or internal rate of return models omit too many of the essential features of the computer lease–purchase decision problem to be useful. The above described model is offered as a simple and practical alternative which does capture the essential economic tradeoffs characterizing this problem.

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A Practical Approach to Short-Run Financial Planning

Steven F. Maier and James H. Vander Weide

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Introduction

Efficient management of the short-run investment/financing portfolio can often generate a significant improvement in a firm's return on investment.[1] Commercial banks, public accounting firms, and cash management consulting firms now offer a variety of computer aids designed to improve short-run financial decision-making, such as information on bank cash balance reports, current interest and foreign exchange rates, lock-box collections, and bank disbursements. The model described here improves the entire planning process by integrating cash forecasting and optimization models with the newly available reporting systems.

The financial manager's short-run portfolio problem was first modeled as a linear program by Robichek, Teichroew, and Jones [6] in 1965. The linear programming model was later expanded by Mao [2], Orgler [4], and Pogue and Bussard [5] to include the possibility of unequal time periods, additional deterministic constraints, and chance constraints. Recently, Srinivasan [7] and Zionts [8] have investigated the use of more efficient solution techniques based on the special structure of one version of the model.

Although linear programming models expand the ability of the cash manager to evaluate alternative short-run financial strategies, they are often extremely cumbersome to use. According to Orgler [3], a linear programming model of the firm's short-run portfolio problem will typically include 300 to 500 constraints and 2,000 to 4,000 variables. Such large models are not only expensive in computer time, but they also require a large amount of data input. Furthermore, the cash manager may often find it difficult to use and interpret models of this complexity. This would appear to make current linear programming models inappropriate for the rapid analysis required of financial decision-makers.

This paper describes a linear programming model of the short-run financial/investment decision that we

[1] A good discussion of the potential benefits from aggressive portfolio management is contained in "Cash Management" [1].

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feel overcomes these difficulties. Our short-run financial planning model is designed for non-technical users; it is readily available on a world-wide time sharing computer network.[2] The model is designed to provide: rapid input of all necessary user-supplied data, maximum interaction between the user and the model, and output reports that the financial manager can easily interpret. With the aid of this model, the financial officer can plan and execute short-run financial decisions in a matter of minutes.

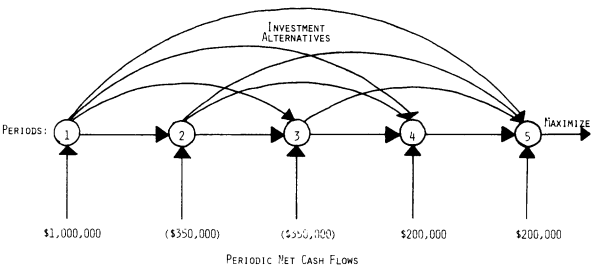
The Nature of the Planning Problem

The nature of the short-run financial planning problem can be illuminated by the schematic diagram shown in Exhibit 1. The circles in the diagram represent the time periods in the firm's planning horizon. Time periods may be measured in days, weeks, months, or any combination of them. It would not be unreasonable, for instance, to have a planning horizon consisting of five daily time periods, three weekly periods, and then five monthly periods.

The arrows at the bottom of the diagram represent the firm's projected cash flows. In this example, the firm expects a net cash inflow of $1,000,000 in Period 1, net outflows of $350,000 in Periods 2 and 3, and net inflows of $200,000 in Periods 4 and 5. Because sources and uses of funds must be equal in every period, the net cash flows indicated by these arrows constrain the firm's short-run financial activities. The firm can invest no more than $1,000,000 in Period 1, must plan to have $350,000 available in cash in Periods 2 and 3, and so on. (Although the diagram has been drawn to depict investment of funds, the model allows both investment and financing opportunities.)

While the arrows at the bottom of the diagram represent externally-generated cash flows, the arrows in the body of the diagram represent all the possible ways the financial manager can choose to invest funds over time. The horizontal arrows, for instance, represent the conservative policy of always investing in a single-period instrument, such as a repurchase agreement. Although this policy assures that the firm will meet its second and third period financial requirements, it very likely will not maximize the rate of return on investment. The uppermost arrow, connecting Periods 1 and 5, represents investment in an instrument with a four-period maturity. If the firm invests $1,000,000 in this instrument at Period 1, it will

Exhibit 1. The Short-Run Financial Planning Problem



be forced to borrow to meet the financial requirements of the intervening Periods 2 and 3.

Which investment policy should the firm follow? The answer depends on the magnitude of both current and projected interest rates. Given these rates, the firm could evaluate the total investment return associated with each feasible plan, choosing the one with the highest return. This will be a difficult task in most realistic situations, simply because there are very many possible plans. A primary virtue of a computerized short-run financial planning model is that it can search the set of possible alternatives very quickly to determine the optimal plan.

Modeling the Short-Run Financial Planning Problem

Our primary goal is to develop a user-oriented tool for the cash manager. Any model that satisfies this goal should be easily accessible (*i.e.*, no waiting for the computer staff to get to our job), allow rapid input of all necessary data, provide easily interpretable reports, and capture the essence of the short-run financial planning problem described above.

Mathematical Formulation

To meet the stipulation that the input data requirements be modest, it is desirable to use a relatively simple model formulation. One possibility is a network model of the type proposed by Srinivasan [7] and Zionts [8]. Network models, however, are inflexible with respect to the kinds of financial constraints they allow. We therefore elected to use a standard linear programming model along with a sophisticated matrix generator to conserve valuable computer storage. One virtue of a matrix generator is its ability to translate the data input from a very user-oriented form to the equations required by the linear program. A similar report generator handles the translation from the

[2]The program is available as part of Chemical Bank's CHEMLINK cash management Product System.

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linear programming output to the user reports.

The formulation we chose seeks to maximize the horizon value of the short-term portfolio, subject to a sources equal uses requirement and a limited number of user-specified linear constraints on the dollar amounts invested in various combinations of financial instruments.

In symbols, the formulation is:

Maximize $Z =$

$$\sum_{j=1}^{J} \sum_{i=1}^{T-1} a_{iT}^{j} \cdot X_{iT}^{j} - \sum_{k=1}^{K} \sum_{i=1}^{T-1} b_{iT}^{k} \cdot Y_{iT}^{k}$$

subject to

$$\sum_{j=1}^{J} \sum_{i=1}^{t-1} a_{it}^{j} \cdot X_{it}^{j} - \sum_{j=1}^{J} \sum_{i=t+1}^{T} X_{ti}^{j} + \sum_{k=1}^{K} \sum_{i=t+1}^{T} Y_{ti}^{k} - \sum_{k=1}^{K} \sum_{i=1}^{t-1} b_{it}^{k} \cdot Y_{it}^{k} = e_t \quad t = 1,2, \ldots, T$$

$$\sum_{i=1}^{T} \sum_{t=1}^{T} \left(\sum_{j=1}^{J} c_{it}^{jl} X_{it}^{j} + \sum_{k=1}^{K} d_{it}^{kl} Y_{it}^{k} \right) = f_l \text{ for } l = 1, \ldots, L.$$

where

- X_{it}^{j} = total dollars invested in security j at decision point i and maturing in period t;
- Y_{it}^{k} = total dollars borrowed from source k at decision point i that must be repaid in period t;
- a_{it}^{j} = principal plus interest received in period t on a dollar invested in security j in period i;
- b_{it}^{k} = principal plus interest due in period t on a dollar borrowed from source k in period i;
- e_i = cash requirement in period i. A negative number implies a cash inflow. (Note: this would be net of any compensating balance requirements needed to support lines of credit.);
- c_{it}^{jl}, d_{it}^{kl}, f_l = user-specified constants.

Discrete Time Periods

The model user must specify both the length and number of the time periods in his planning horizon. Once these are set, the model assumes that all decisions occur at the beginning of a period. Unfortunately, financial instruments come in a wide variety of maturities, and it is not always possible to choose periods in such a way that all instrument maturity dates coincide with decision points.

To allow for this possibility, we have incorporated two additional assumptions in the model. On the investment side, we assume that any dollars received between decision points from maturing securities are reinvested at the daily repurchase agreement rate, until the next decision is made. On the borrowing side, we require that funds be available on, or before, the due date. Thus, the dollars necessary for repayment of loans are added to the requirement of the preceding decision point and then are invested at a daily rate until they are actually needed. Although the above assumptions are somewhat arbitrary, they are necessary in order to provide flexibility in the length of the time periods and the types of investment instruments.

Finite Horizon

In a world of upward sloping yield curves, there are only two reasons why the linear programming model will ever select short-term investments. First, the cash manager may predict that interest rates will soon rise, allowing a higher total return to be earned with an initial short-maturity investment and reinvestment at the higher rates. Second, the cash manager may have a net requirement for funds in the near future. Since neither of these factors is relevant for post-horizon time periods, the model will often leave the financial officer with an illiquid portfolio by selecting long maturity investment instruments for decision periods at or near the horizon. If the horizon is relatively distant and the manager intends to implement only the first period recommendation before again solving the model, the "finite horizon" problem can be safely ignored. Where this is not the case, the user can handle the horizon problem by assessing an interest penalty that is proportional to the length of time that a security is held beyond the horizon point. Thus, the interest penalty is most severe for long-term investments, which the model would otherwise have selected.

User Orientation

The short-run financial planning model was especially designed to be user-oriented. The five principal data requirements are 1) number and duration of investment periods, 2) cash flow projection, 3) borrowing limitations, 4) instrument descriptions, and 5) interest rate projection. Since data from previous runs can be stored, the model is especially easy to use once the first case is run, because only data *changes* need be entered on subsequent runs. The optimal short-run plan is reported through a series of financial

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statements showing the amounts of each instrument bought, sold, and currently held during each period. Because data are easy to enter and solutions are reported rapidly, the user is encouraged to test the implications of various future economic decisions through a series of "what if" questions.

Model Specifications

The short-term financial planning model has the following characteristics: 1) The model accepts up to 25 planning periods. The user can specify the length of each period; 2) The model permits the user to specify a borrowing limitation, which can vary from period to period, on his or her line of credit; 3) The model will accommodate up to 15 investment or financing instruments, each of which can have a unique maturity and yield; 4) The yields on investment instruments can be modified over time via separately specified interest rate projections; and 5) A special feature controls investments that may extend beyond the planning horizon. The user may either entirely disallow such investments, or permit them but extract an interest penalty.

The output from the model gives three sets of information for each time period: maturing securities, new security purchases, and current security holdings. Each of these information sets is given as of the beginning of each investment period. The user has the option to delete any portion of the output not required.

The output also contains a marginal short-term investment rate analysis. This incremental analysis indicates the value of any additional funds the firm can make available for investment in period t, or, when the firm is projecting a net cash outflow in a period, the value of reducing this cash outflow. Such information can help the firm decide whether it should expedite some cash inflows or postpone the payment of specific payable items.

Potential Users

The short-run financial planning model is a potentially useful tool for either the net borrower or the net investor of short-term funds. For a firm that is a net borrower, the model is most useful for analyzing the economic tradeoffs in borrowing long vs. short, as well as the sensitivity of this maturity decision to interest rate fluctuations. For a firm that is a net investor, the model will quantify the added return from investments with greater risk, such as Eurodollar C.D.s, and examine the benefits of longer term investments, such as 180-day C.D.s, compared to a simple policy of rolling over short-term repurchase agreements.

Two conditions determine whether the model will add sufficient additional precision to financial decision-making to justify its cost. The first is rather obvious: the firm must have a large enough short-term investment/borrowing portfolio so that a savings of 5 to 10% will be significant. The second is more subtle: since the model depends on a firm's ability to project its cash flows, a firm that cannot forecast cash flows with reasonable accuracy will not find the model useful. In practice, this consideration depends on both the industry in which the firm operates and the quality of the accounting and information systems available to the treasurer.

The authors have worked with several medium-sized utilities that satisfy both conditions. Over the course of a year, the firms are net short-term borrowers of about $60 to $90 million. They rely strongly on the commercial paper market to satisfy their borrowing needs, but they are never sure what maturity paper it is best to float. In this case, the model is used to evaluate the risk-return tradeoff associated with various maturity strategies.

Example

The example shown in Exhibit 2 demonstrates some of the capabilities of the short-term financial planning model. The example contains two 7-day time periods, followed by two 14-day time periods, and finally three 28-day time periods. At the beginning of each period, the firm is allowed to borrow up to $2,000,000 from its line of credit or to sell 30-day maturity commercial paper. With its excess cash, the firm can invest in a 30-, 60-, or 90-day C.D. or in an over-night repurchase agreement. During the first two periods the firm expects cash inflows totaling $3,400,00, with a net cash outflow of $5,200,000 in the third period. Interest rates over the planning period are anticipated to fall slightly.

We will focus our attention on the decisions made during the first three periods. In the first two periods, the basic problem is to choose the appropriate investment instruments to maximize profits by minimizing borrowing costs. The case is not clear. On the one hand, interest rates are expected to fall, and longer-term C.D. investments yield more than the repurchase agreement. By buying a C.D., the firm could "lock in" the high current C.D. rate. On the other hand, a large cash outflow is expected in the third period, and the repurchase agreement might allow the firm to minimize the cost of financing this outflow. The com-

Exhibit 2. Short-Term Financial Planning Model

INPUT DESCRIPTION

1 PERIOD DURATION AND CASH FLOW PROJECTION

PERIOD	DURATION	CASH FLOW
1	7	$ 2,100,000.00
2	7	$ 1,300,000.00
3	14	($ 5,200,000.00)
4	14	$ 2,100,000.00
5	28	$ 2,500,000.00
6	28	($ 3,100,000.00)
7	28	$ 2,100,000.00

2 BORROWING LIMIT ON CREDIT LINE:

PERIOD	LIMIT
1	$ 2,000,000.00
2	$ 2,000,000.00
3	$ 2,000,000.00
4	$ 2,000,000.00
5	$ 2,000,000.00
6	$ 2,000,000.00
7	$ 2,000,000.00

3 INSTRUMENT DESCRIPTION:

# IDENTIFIER	MATURITY	ANNUAL YIELD	INTEREST RATE PROJECTION USED	POST HORIZON INTEREST PENALTY
BORROWING INSTRUMENTS				
1 CREDIT LINE	1	7.25%	1	1.00%
2 CM PAPER 30D	30	6.50%	1	1.00%
INVESTMENT INSTRUMENTS				
3 CERT DEP 30D	30	5.13%	1	1.00%
4 CERT DEP 60D	60	5.35%	1	1.00%
5 CERT DEP 90D	90	5.50%	1	1.00%
6 DAILY REPO	1	4.50%	1	1.00%

4 INTEREST RATE PROJECTION:

PROJECTION NO. 1

PROJECTION DATE	ANNUAL YIELD
1	5.13%
30	5.10%
60	5.08%
90	5.05%
120	5.00%

OUTPUT DESCRIPTION

PERIOD NO. 1
DATE 1

MARGINAL RATE OF RETURN: 4.50%
CASH FLOW FROM EXTERNAL SOURCE: $2,100,000.00

INSTRUMENT	ACTION	ACTION DATE	MATURE DATE	AMOUNT	MATURITY VALUE	ANNUAL YIELD
NEW PURCHASES AND SALES:						
DAILY REPO	BOUGHT	1	8	$2,100,000.00	$2,101,813.00	4.50%
HOLDINGS AS OF 1						
DAILY REPO	BOUGHT	1	8	$2,100,000.00	$2,101,813.00	4.50%

PERIOD NO. 2
DATE 8

MARGINAL RATE OF RETURN: 4.50%
CASH FLOW FROM EXTERNAL SOURCE: $1,300,000.00

INSTRUMENT	ACTION	ACTION DATE	MATURE DATE	AMOUNT	MATURITY VALUE	ANNUAL YIELD
MATURING SECURITIES:						
DAILY REPO	BOUGHT	1	8	$2,100,000.00	$2,101,813.00	4.50%
NEW PURCHASES AND SALES:						
DAILY REPO	BOUGHT	8	15	$3,401,813.00	$3,404,745.96	4.49%
HOLDINGS AS OF 8						
DAILY REPO	BOUGHT	8	15	$3,401,813.00	$3,404,745.96	4.49%

PERIOD NO. 3
DATE 15

MARGINAL RATE OF RETURN: 7.25%
CASH FLOW FROM EXTERNAL SOURCE: ($5,200,000.00)

INSTRUMENT	ACTION	ACTION DATE	MATURE DATE	AMOUNT	MATURITY VALUE	ANNUAL YIELD
MATURING SECURITIES:						
DAILY REPO	BOUGHT	8	15	$3,401,813.00	$3,404,745.96	4.49%
NEW PURCHASES AND SALES:						
CREDIT LINE	SOLD	15	29	$1,795,254.04	$1,800,244.44	7.24%
HOLDINGS AS OF 15						
CREDIT LINE	SOLD	15	29	$1,795,254.04	$1,800,244.44	7.24%

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puter model has selected the repurchase agreement (see lines 1 and 2 of Output Description).

In the third period, the firm must finance part of its large anticipated cash outflow. Here the tradeoff is between the use of lower cost but less flexible commercial paper and the very flexible but higher cost line of credit. The computer model, taking into account the cash inflows that will occur in periods 4 and 5, chooses to use the higher cost line of credit (see line 3 of Output Description). The logic is simply that it will prove less expensive to borrow for only 14 days on the line of credit than to pay the lower cost commercial paper rate for 30 days.

In examining the data presented in Exhibit 2, the reader should keep in mind that, in practice, a user will probably want to examine the sensitivity of the solution to the interest rate projection and cash flow estimate. It is possible to formulate and test a variety of economic possibilities.

Conclusion

The model described in this article provides a tool for corporate financial officers to examine a wide range of possible short-term investment/financing strategies. The power of the model lies in its ability to make such comparisons almost instantaneously, at nominal cost to the user. In a world in which financial decisions must be made quickly, we believe that the computerized short-run financial planning model will prove to be an important new development in the field of cash management.

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What Lockbox and Disbursement Models Really Do

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What Lockbox and Disbursement Models Really Do

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I. Introduction

MANAGEMENT of the firm's cash collection and disbursement systems is an important responsibility of the firm's treasurer. In fulfilling this responsibility, the treasurer's primary goal is to increase the amount of funds available for investment. On the cash collection side, this is frequently accomplished through the location of regional collection points known as lockboxes. Lockboxes increase the amount of funds available for investment by reducing the delay between the time the customer mails the check and the time funds are credited to the firm's account. On the disbursement side, the goal of increasing the amount of funds available for investment is achieved by disbursing funds from either "remote" or "control" locations. This serves to extend the delay between the time the firm mails the check and the time it is presented to the firm's bank for payment.

The fixed and variable costs of using bank provided lockbox and disbursement services are such that it is rarely profitable for a firm to have a lockbox or disbursement site in every city. Instead, the firm will work with a bank that does cash management studies to determine a smaller set of lockbox and disbursement locations that maximize the difference between total system benefits and costs.

A lockbox study consists of two parts. First, the study bank samples the firm's current remittances to determine the location of the firm's customers and the mail and availability times associated with the firm's current collection system. Second, the study bank designs an optimal lockbox system. If the float and cost savings of the new system are substantial, the firm will change its current system as recommended by the bank.

The problem of choosing the best set of lockbox sites is called the Lockbox Location Problem. This problem has been extensively studied by management scientists working in both academic and banking environments. Their work has produced a set of solution procedures used by most banks doing lockbox studies. Over the past seven years, the authors have been involved in the implementation of such solution procedures in over three dozen banks nationwide.

Disbursement studies are performed very much like lockbox studies. From a sample of the firm's checks, the bank estimates the average clearing times for the firm's current disbursing system. Using a database of nationwide clearing times and special optimization algorithms, the bank then determines the best set of disbursing banks as well as the assignment of vendors to these banks.

The problem of finding the best set of disbursing banks is called the

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Disbursement Bank Location Problem. Like the Lockbox Location Problem, this problem has been extensively studied in the literature. One of the formulations developed in this literature has been successfully implemented by the authors at a dozen banks.

This paper reviews the state of the art of lockbox and disbursement studies that banks perform for their corporate clients. In contrast to most academic papers on these subjects, we spend little time discussing optimization algorithms. Instead, we concentrate our attention on the issues involved in the practical implementation of lockbox and disbursement systems. In our opinion, banks who focus on these implementation issues offer far better cash management services to corporate clients than do those banks who worry about minor differences in algorithms.

II. The Lockbox Location Problem

The Lockbox Location Problem can be described mathematically as follows:

$$\text{Minimize } \sum_{i=1}^{m}\sum_{j=1}^{n} A_{ij}X_{ij} + \sum_{j=1}^{n} F_jZ_j + \sum_{i=1}^{m}\sum_{j=1}^{n} C_{ij}X_{ij} \tag{1}$$

$$\text{subject to } \sum_{j=1}^{n} X_{ij} = 1 \quad \text{for} \quad i = 1, \cdots, m \tag{2}$$

$$X_{ij} \leqslant Z_j \quad \text{for} \quad i = 1, \cdots, m; \qquad j = 1, \cdots, n \tag{3}$$

$$\sum_{j=1}^{n} Z_j \leqslant k \tag{4}$$

$$X_{ij} \geqslant 0 \quad \text{for } i = 1, \cdots, m; \qquad j = 1, \cdots, n \tag{5}$$

$$Z_j = 0 \text{ or } 1 \quad \text{for } j = 1, \cdots, n \tag{6}$$

where

A_{ij} = $\alpha T_{ij} D_i$ the opportunity cost of \$-float arising when customer group i's checks are sent to lockbox j,
α = the firm's annual opportunity cost of capital,
k = the maximum number of lockboxes that can be selected,
T_{ij} = average mail time in days from group i to lockbox j + average availability time in days from lockbox j to group i's bank,
D_i = average daily incoming funds from group i,
C_{ij} = variable cost of sending group i's checks to bank j,
X_{ij} = one if group i's checks are sent to lockbox j, zero otherwise,
F_j = the fixed charge per period for maintaining lockbox j,
Z_j = one if lockbox j is used, zero otherwise.

In this formulation, the objective is to minimize the opportunity cost of dollar float plus the fixed and variable costs of the lockbox system. Constraint set (2) insures that all checks are assigned to a lockbox, while constraint set (3), along with (6), insures that no check is sent to a "closed" lockbox. Constraint (4) is often used when the fixed charges F_j are not easily obtainable.

Research on the Lockbox Location Problem falls into two categories: (1)

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formulation and economic analysis and (2) mathematical optimization techniques. The papers by Kramer [15], Stancill [27], McAdams [19], Kraus, Jansen and McAdams [17], Shanker and Zoltners [26] and Maier and Vander Weide [20] fall in the first category. The papers by Baker, Maier and Vander Weide [1], Bulfin and Unger [3], Ciochetto, Swanson, Lee and Woolsey [5], Corneujols, Fisher and Nemhauser [7], Fielitz and White [11], Levy [18], Mavrides [22], Nauss and Markland [23] and Stone [31] fall in the second.

III. Data Requirements and Issues

To solve the Lockbox Location Problem, the analyst needs to divide the firm's customers into "homogeneous" groups, obtain data on the fixed and variable costs of maintaining a lockbox system, the mail times from group i to lockbox j, the availability times from lockbox j to group i's drawee bank, the mail and availability times for the firm's current system and the average daily incoming funds from group i, and find an efficient algorithm for evaluating the set of possible lockbox sites. At each stage the analyst must make important decisions that can have a significant effect on the value the firm receives from the lockbox system. As we consider each of these stages, we shall discuss the issues facing the analyst at that stage.

3.1 *Homogeneous Customer Groups*

Since the mathematical formulation does not address the issue of how to form homogeneous customer groups, the analyst must employ his judgment to design groups that are relatively homogeneous relative to mail and availability times, and, at the same time, are not so refined or complex to substantially increase the cost of analysis.

At one extreme the analyst can simply group customers by states or, possibly, 2-digit zip code areas. Simple groupings such as these significantly reduce the cost of collecting mail times and availability times, and by keeping the number of customer groups to a minimum, are both easy to analyze and implement.

The primary disadvantage of grouping customers by states or 2-digit zip codes is that it ignores the sometimes substantial differences between customers within the group. Such differences are especially pronounced when some of the firm's customers use controlled disbursing. Controlled disbursing gives the customer the ability to maximize disbursement float and to obtain timely information on check presentments. To work effectively, however, controlled disbursing often requires the customer to write checks on banks located in other regions of the country. Whereas a lockbox located in Los Angeles would no doubt best serve the customer who both mails and draws his checks from this city, a Chicago lockbox could very well be superior for a customer who draws checks on a North Carolina bank. Differences caused by the use of controlled disbursing cannot be ignored since one survey done by the authors has shown that more than 70% of the Fortune 500 firms use this practice.

At the other extreme, the analyst can treat each individual customer as a separate customer group. Although this has some merit in theory, it is prohibi-

tively expensive because it requires extensive data collection and complex implementation instructions for the firm's accounts receivable department.

A middle ground is to treat some of the firm's largest customers as single-member customer groups and to group all the remaining customers by 2- or 3-digit zip code areas. This alternative recognizes some of the more significant differences between customers in a state or zip code area, and yet is relatively easy to implement.

The analyst's choice of homogeneous customer groups can also have a significant effect in the design of lockbox systems for firms with many divisions. For such firms, it is both economically and administratively expensive to have each division instruct its customers to send remittances to, say, 10 lockbox sites. Accordingly, multi-division firms often instruct all customers of smaller divisions to remit to only one of the sites selected. By assigning all customers of this division to a separate customer group, it is possible to consider this practice within the framework of the overall optimization process.

3.2 *Fixed and Variable Costs*

The mathematical formulation requires the analyst to obtain information on the fixed and variable costs associated with each lockbox site. Since there are about 50 relevant lockbox cities with perhaps two or three banks in each city offering lockbox services, the analyst must obtain cost information from more than 100 banks. In gathering these costs, the analyst must recognize that bank charges for "good" customers may be significantly less than charges quoted to the general public; in addition, the charges may change frequently in response to market pressures.

Given the high cost of obtaining data on fixed and variable lockbox charges, the analyst must decide whether to obtain this information or not. Most analysts have decided not, partly based on their experience that float benefits between cities are frequently greater than cost differences between banks. These analysts approach the Lockbox Location Problem as follows:

1. Determine the dollar value of float benefits required to justify an additional lockbox site, for example a float reduction of $50,000 might be needed to expand the system by one additional bank.
2. Starting with one lockbox open, then two, etc. determine the optimal location of lockbox cities using city average float values. Stop this sequential analysis when the addition of one more city fails to meet the test in step 1.
3. Select candidate banks in each city determined by step 2 based on credit relationships, service quality, interface capabilities, size of the lockbox operation, and other sometimes intangible factors.
4. Reoptimize to determine specific banks and the assignment of customers to banks.

Special consideration is also given to existing lockbox bank relationships. At an early stage in the lockbox study, the firm's customers are reassigned within the existing system of lockbox banks. This so called "current system optimal" is much less costly to implement than the addition of new lockbox banks. Accordingly, improvements determined by the above four-step process are measured

against this current system optimal base instead of the float levels found in the system as currently operated.

3.3 *Mail and Availability Times*

Mail and availability times play a key role in the analysis of lockbox systems. With regard to these times the analyst faces several important issues.

1. In comparing the firm's current collection system to the "optimal" lockbox system, the analyst needs to decide whether to use Phoenix-Hecht Surveyed Mail Times or a sample of actual mail times to measure the mail float in the current system. (There is universal agreement that the mail times surveyed by Phoenix-Hecht, Inc., a Chicago-based consulting firm, are the best and most comprehensive times to use in finding the optimal system.) If the analyst chooses to use actual mail times, he must recognize that there are a great many measurement errors caused by the unscientific nature of the sampling process, e.g. the date may have been incorrectly stamped on the envelope, the date may have been stamped on the envelope at a late stage in the mail process, etc. If he chooses to use Phoenix-Hecht mail times, the analyst must recognize that these were collected under certain ideal circumstances that may not characterize the firm's actual experience. Phoenix-Hecht mail times, for instance, are measured from a central location within each customer region, whereas his customers may not remit from that central location.
2. With regard to availability times, the analyst must first decide whether to use availability times at all. Early implementations of the lockbox model ignored availability times on the grounds that availability differences from city to city were small, since the Federal Reserve guarantees a maximum of two day availability no matter where a check is deposited. If the analyst decides he wants to include availability times in the analysis, he must choose whether to measure them by quoted Federal Reserve availabilities, city average bank availabilities or individual bank availabilities. Since 1979 most analysts have relied on individual bank availabilities, a transition which caused significant changes in the solutions found (see the paper by Ferguson and Maier [8]). Individual bank availabilities tend to reduce the optimal number of lockboxes and to change their locations.
3. If the analyst decides to use both mail and availability times, he must also decide how to combine these times into a total collection time. A problem arises because of differences in the units by which mail and availability times are measured. For an insightful discussion of this issue the reader is referred to the paper by Nauss & Markland [24].

3.4 *Amount of Incoming Funds from Region i*

To estimate the amount of incoming funds from customer region i the analyst typically collects a sample of the firm's incoming checks covering a one month period. For the purposes of analysis, the analyst wants to make sure that the sample is representative of the firm's long run collection experience. Since most

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firms experience considerable seasonality and frequent changes in customer collection patterns, this is no simple matter.

One approach to this problem, developed by the First National Bank of Chicago and called Dynamic Lockbox Analysis, forecasts shifts in corporate remittance patterns as well as trends in mail and availability times during the initial design stage of the lockbox system.

3.5 *Summary*

The decisions the analyst makes regarding the design of the data collection process can have a significant impact on the quality of the solutions obtained. Early lockbox analyses relied on crude customer groupings, small unrepresentative samples of the firm's checks and unquestioning use of mail times to represent differences in city mail plus availability times. Recent improvements in data collection and a better understanding of the consequences of alternative data choices have greatly improved the quality of lockbox system design. We estimate these improvements to be approximately 10–15% of the total float savings in value.

IV. Optimization and Heuristic Algorithms

Once the analyst has formed appropriate customer groups and gathered the requisite data, he must employ an algorithm to evaluate the float savings associated with each combination of lockbox sites.

In their award winning paper [7], Cornuejols, Fisher and Nemhauser analyze various exact and approximate algorithms to the Lockbox Location Problem. Their results may be summarized as follows:

1. It is difficult to find an algorithm that always produces an optimal solution to the Lockbox Location Problem in a reasonable amount of computer time. In fact, since the Lockbox Location Problem is NP-complete, there is no known algorithm to the problem with an upper bound on running time that is polynomial in the problem parameters.
2. A theoretical analysis of the worst possible case indicates that heuristic algorithms are capable of producing poor solutions.
3. However, experience with some reasonably realistic data sets indicates that heuristic algorithms produce very close-to-optimal solutions in practice. For instance, a simple 1-for-1 interchange heuristic achieves the optimal solution in 2/3 of the sample problems and is never more than 3% away from the optimal solution in the remaining sample problems.

The Corneujols, Fisher and Nemhauser conclusions on the value of heuristic procedures versus optimization algorithms are further supported by test results obtained by Baker, Maier and Vander Weide [1]. These authors test a sequential heuristic procedure that obtains an initial solution from a dynamic programming algorithm and improves this initial solution with 1-for-1 and 2-for-2 interchanges of lockboxes not in the solution with those currently in the solution. In no case did this heuristic procedure fail to obtain the optimal solution.

As noted above, the authors have implemented solution procedures for the

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lockbox and disbursement location problems at over three dozen banks nationwide. We have generally recommended the use of the 1-for-1 and 2-for-2 interchange heuristics because they provide valuable information on both optimal and close-to-optimal solutions. However, we have also employed a Lagrangian Relaxation/Branch-and-Bound [22] procedure as a check on the heuristics. In the hundreds of studies we have done over the last seven years, we have never found a single instance in which the more elaborate optimization techniques found a superior solution to the heuristics.

The above results and experiences indicate that the literature's concern with algorithms has been misplaced. Given the errors in data noted earlier in this paper, minor differences in algorithms are insignificant, especially when experience has shown that fairly simple heuristics work just as well as the most sophisticated optimization techniques.

V. The Disbursement Bank Location Problem

The mathematical description of the Disbursement Location Problem is similar to that of the Lockbox Location Problem (See Maier and Vander Weide [21]). The major difference is that optimization occurs over both mail points and drawee bank locations. Despite this difference, the solution algorithms for the Disbursement Location Problem are not significantly more complex than those for the Lockbox Location Problem.

The published research on the Disbursement Location Problem is concerned primarily with model formulation. The original formulation appears in a paper by Shanker and Zoltners [25]. The Maier and Vander Weide [21], Gitman, Forrester and Forrester [12] and Ferguson and Maier [9] paper contain modifications of this original formulation.

VI. Data Requirements and Issues

To solve the Disbursement Location Problem, the analyst needs to divide the firm's vendors into homogenous groups; obtain data on the fixed and variable costs of maintaining a disbursement system, the mail times from regional offices to vendor groups, the presentation times from vendor groups to drawee banks, the mail and presentation times for the firm's current system and the average daily payments to vendor groups j; and find an efficient algorithm for evaluating the set of possible mail and drawee bank sites. Again the analyst must make important decisions at each stage of the analysis. In addition there are several problems with implementing solutions to the Disbursement Location Problem that are unlike any faced in implementing solutions to the Lockbox Location Problem.

6.1 *Maximizing Mail Times*

The original formulation [25] includes the possibility of maximizing mail times. This makes sense only if the recipient of a check uses the mail date to determine when an item is paid. This is by no means universal practice. A recent survey

(see Hill, et al. [13]) indicates that recipient firms use mail date less than 28% of the time. In addition, most firms are unwilling to incur the risk of vendor ill-will caused by mail time extension.

6.2 *Quality of Data*

Many of the same data issues that arise in the Lockbox Location Problem arise in the Disbursement Location Problem as well. First, the fixed and variable costs of setting up disbursement systems are hard to measure and the value of control and float extension far overshadows small cost differences that exist between banks. Moreover, as long as the payment system remains primarily paper based, the firm must write its checks on at least one bank. The elective feature of a lockbox is not a consideration when setting up a disbursement system.

Second, clearing time surveys are not nearly as accurate as the mail and availability time surveys used in the Lockbox Location Problem. This basic fuzziness of the database has discouraged analysis and made much of the existing analysis suspect. The major banks that do disbursing analysis report two to four times as many lockbox studies performed as disbursement studies. This fact is surprising when one considers that the disbursement problem is even more universally applicable than is the lockbox problem.

Finally, it should be noted that the same problems in defining homogeneous vendor groups exist here as they did the lockbox problem. Consequently, studies are performed in which vendors are grouped by states, zip codes and individually isolated. In addition, there is greater sophistication in handling individual vendors than in handling individual customers; some of the more advanced disbursement control systems assign individual vendors on a check-by-check basis.

6.3 *Federal Reserve Policies*

The solutions to the original formulation of the Disbursement Location Problem frequently produce an increase in "clearing system slippage." Clearing system slippage is defined as the difference between the clearing time experienced by the check writer and the availability time granted to the check depositor. The greater is this number, the greater the difficulty the clearing agent, principally the Federal Reserve, is having in moving checks through the system. It is argued that the Federal Reserve will concentrate on the points that have large slippage in its efforts to discourage remote disbursing and to reduce its own Federal Reserve float. Its activity in reducing Federal Reserve float has been very well publicized. In 1979 Fed float stood at 6.7 billion dollars on an average daily basis while in 1982 it has averaged less than 2 billion dollars per day.

An attempt to include in the analysis the risk that the Federal Reserve will further reduce clearing system slippage is described in Ferguson and Maier [10]. This paper suggests that the concept of the Efficient Frontier from Portfolio Theory can be applied to measure the risk/return trade-off faced by the corporate cash manager as he designs his disbursement system. Nine of the nation's leading cash management banks have adopted this technology as their consulting approach.

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6.4 *Vendor Ill Will*

Attempts to implement the solutions to the Disbursement Location Problem may lead to deteriorating relationships with the firm's vendors or creditors. More than one firm has found that its vendors refuse to grant a discount for prompt payment when it uses a remote disbursement location. In one celebrated case, Merrill Lynch was sued by customers who were unable to get prompt refunds from security transactions. (Merrill Lynch had a practice of paying East Coast customers with checks drawn on West Coast banks and West Coast customers with checks drawn on East Coast banks. *Wall Street Journal* December 18, 1978, p. 14).

6.5 *Credit Problems*

Remote cities such as Helena, Montana; Reno, Nevada; and Midland, Texas frequently appear in the solution to the Disbursement Location Problem. Unfortunately, these cities are not always well suited as banking locations. For example, a firm will normally want its disbursing bank to be part of its credit group. This is because if for any reason there is a failure to fund the disbursing account, the disbursement bank can use its already preauthorized credit lines to extent credit to the firm and not have to return the items marked "insufficient funds", a situation most companies would consider unacceptable. However, banks are restricted by the Federal Reserve to lend no more than 10% of their equity capital to any one customer. Since banks in cities such as Helena and Reno have a small equity base, they cannot extend sufficient credit to fund the disbursements of large firms.

VII. Conclusions

If there is a lesson to be learned from our experiences with lockbox and disbursement models, it is that the existing academic literature has been very misleading as to the true state of the art in this area. Perhaps the two most significant issues we have addressed in this paper are the importance of data and the over simplicity of the mathematical formulations.

The most important change in the lockbox design area over the past five years is the improvement in the precision of supporting databases. In particular, the evolution from mail time only to mail and bank availability analysis has had very major ramifications in the industry. The sensitivity of the problem to how customers are grouped and even the quality of the receivable sample cannot be overemphasized.

The simple model of the lockbox problem as originally proposed by Levy falls far short of the practical requirements of designing lockbox systems. What does one do in a multidivision environment? What happens if your customer base significantly uses remote disbursing? How do you incorporate seasonality? What happens if your collections are dominated by a few large items received on only a sporadic basis? These are some of the questions that must be and are addressed in practice.

The academic literature on the disbursement location problem has failed to

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fully recognize the complexity of this problem. True, float is important. But so is control. Moreover, the environment today is so unpredictable that neither float nor control can be obtained without significant system risk in the form of instability.

In summary, the lockbox and disbursement problems remain two of the most widely applied management science models in the finance area. Unfortunately, the existing literature on these problems has been misleading on the issues that are really important to the practitioners who actually implement solutions.

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ON THE DECENTRALIZED CAPITAL BUDGETING PROBLEM UNDER UNCERTAINTY*

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This paper deals with decentralized capital budgeting problems when decision objectives are not necessarily identical with those of corporate headquarters.

This paper extends previous analysis of this problem to the case where (i) the cash flows resulting from managerial actions are uncertain, (ii) division managers have nonlinear utility functions which differ from those of top management with respect to risk aversion and (iii) resource constraints may be nonlinear. Several realistic considerations arise in this context which were absent in previous analyses. First, because the division managers' utility functions reflect differing attitudes toward risk, top management has the opportunity to share some business risk with the division managers. We recommend a transfer pricing scheme that accounts for this possibility. Second, if the transfer prices for capital resources are state-dependent and the division managers make their investment decisions before the state of nature is revealed, the division managers will want to hedge against the additional uncertainty caused by this aspect of the problem. Despite the static nature of the analysis this paper raises the interesting problem of information flow within the firm and suggests ways to motivate division managers to act in the best interest of the firm. The transfer pricing algorithm has additional interesting applications.

(FINANCE–CAPITAL BUDGETING; FINANCE–MANAGEMENT)

1. Introduction

It is common practice in corporate finance theory to assume that all corporate decision makers seek to maximize the market value of the firm's equity, and hence that they all have identical objectives. When this assumption is combined with a perfect capital markets assumption, optimal capital budgeting rules in both the centralized and decentralized firm take an especially simple form. Each decision maker should be instructed to accept all capital projects with a positive present value at the market rate of interest.[1]

Carleton, Kendall and Tandon [2] and Maier and Vander Weide [11] have recently proposed formulations of the decentralized capital budgeting problem which are more consistent with the common corporate practice of using both budgets and discount factors to allocate resources to the firm's divisions. A fundamental assumption of these analyses is that capital markets are imperfect in the sense that the supply price of capital depends on the amount of capital used. Additional assumptions are that all cash flows are known with certainty and the division managers have the same linear utility functions as top management. Since many practical problems in decentralized capital budgeting occur only under conditions of uncertainty and non-identical utility functions, it is important to examine whether the results of [2] and [11] can be extended to more realistic environments.

The Carleton, Kendall and Tandon paper describes capital budgeting in the decentralized firm as a two-step process. Top management uses a "macro" model in

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[1]Those finance theorists who utilize the capital asset pricing model (see e.g. [16]) would probably recommend that the discount rate be determined by the capital market line rather than by the company's cost of capital. This advice too, however, is at variance with the usual corporate practice of using both budgets and discount factors to allocate funds within the firm. One purpose of this paper is to shed light on the circumstances under which current practice is acceptable, at least in spirit.

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the first step to determine optimal levels for such corporate variables as dividends, debt and equity financing, investment in working capital and total capital expenditures. Once the firm's "macro" variables are determined, top management allocates a fixed capital budget among the corporate divisions, where decisions are made regarding the particular projects to be accepted. Because the division demands for capital are interrelated through the financial constraints of the "macro" model, it is important in the second step that the headquarters determine the appropriate transfer price for capital resources. The Carleton, Kendall and Tandon paper suggests a mechanism, the Dantzig-Wolfe decomposition algorithm, by which correct transfer prices can be found.

Maier and Vander Weide have modeled the capital budgeting problem in the decentralized firm as a single step process in which optimal budgets and transfer prices are determined simultaneously. When both budgets and transfer prices are used as coordination devices in the Dantzig-Wolfe algorithm, Maier and Vander Weide show that "(i) the decomposition algorithm does indeed converge to an optimal corporate solution, (ii) under reasonable assumptions, the marginal rate of return on the last dollar spent is the same for each division and is equal to the corporate headquarters' 'marginal cost of capital', (iii) in some circumstances the decomposition model will only select integral projects, and (iv) the optimal choice of projects for the firm is made independently by the divisions, each acting in its own self-interest."[2] The Maier–Vander Weide paper thus offers a further justification for current corporate budgeting practice.

In this paper, we extend the analysis of the decentralized capital budgeting problem to the case where (i) the cash flows resulting from managerial actions are not known with certainty, (ii) division managers may have nonlinear utility functions which differ from those of top management with respect to risk aversion and (iii) resource constraints may be nonlinear. Several realistic considerations arise in this context which were absent in the previous analyses. First, because the division managers' utility functions may reflect differing attitudes toward risk, top management may have the opportunity to share some business risk with the division managers. An optimal transfer pricing scheme should account for this possibility. Second, it now becomes important to specify exactly the flow of information between top management and the division managers. If the transfer prices for capital resources are state-dependent and the division managers make their investment decisions before the state of nature is revealed, the division managers may want to hedge against the additional uncertainty caused by this aspect of the problem. We see below that this is indeed true.

Because the formulation of the decentralized capital budgeting problem under uncertainty is sensitive to assumptions regarding the decision environment, we present several formulations of the problem. The first formulation is contained in §2, where we assume that (i) the headquarters wishes to maximize a convex combination of the division utility functions, (ii) all decision variables are state-independent, i.e., decisions are made before the state of nature is known and (iii) the prices for internal capital resources are state-independent, and are known with certainty before division capital investment decisions are made. The implications of relaxing these assumptions are discussed in §3. The fourth section contains a discussion of alternative coordination mechanisms which the headquarters might employ to induce the division managers to act in the best interests of the firm.

Although we have chosen to interpret the results of this paper as a generalization of the decentralized capital budgeting problem under certainty, some readers may be interested to know that other interpretations are also possible. If the headquarters in

[2]Steven F. Maier and James H. Vander Weide, "Capital Budgeting in the Decentralized Firm," *Management Sci.*, Vol. 23, No. 4 (December 1976), p. 443.

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the models to follow is identified with the auctioneer in a perfectly competitive capital market and the divisions are identified with individual financial institutions, then our results can be interpreted as being a generalization of the linear capital market network models studied by Boyer, Storoy and Thore [1]. The results may be similarly related to other problems of decentralized decision making, such as the agency problem of Ross [13], the performance evaluation problem considered by Kriebel and Lave [10] and Demski [4], the divisionalized transfer pricing problem studied by Hirshleifer [5] and Ronen and McKinney [12], the resource allocation models of Jennergren [7], and the interesting models of Wilson [17] on the formation of syndicates. To the best of our knowledge, our paper is unique in that it creates an iterative transfer pricing scheme for several of the above problems which applies to situations of uncertainty, nonlinear utility functions, goal conflicts and nonlinear constraints.

2. Problem Formulation and Solution

For clarity of presentation, we shall discuss our decentralized capital budgeting problem using the model of a firm allocating a fixed capital budget, a, to n sets of investment projects, labelled $j = 1, \ldots, n$.[3] The amount which the firm invests in the projects of set j is given by the elements of a vector x_j. Let $G_j^s(x_j)$ be the amount of capital used by the projects of set j in state of nature $s \in S$ and let $g_j^s(x_j) \leqslant 0$ represent additional constraints on the firm's investment choices. The additional constraints might represent physical limitations on the firm's productive resources. If we assume that the firm's utility function for all of the projects is the sum of the utilities for each set j, then the firm's capital budgeting problem can be formulated as the following mathematical program:[4,5]

Problem I

$$\text{Maximize} \sum_{j=1}^{n} \int_S U_j^s(x_j)\, dP(s)$$

with respect to $x_1, \ldots, x_n$; $a_1, \ldots, a_n$

$$\text{subject to} \quad \sum_{j=1}^{n} a_j \leqslant a,$$

$$G_j^s(x_j) \leqslant a_j \qquad \forall s \in S; j = 1, \ldots, n,$$

$$g_j^s(x_j) \leqslant 0 \qquad \forall s \in S; j = 1, \ldots, n,$$

where a_j is the amount of capital allocated to investment set j, $U_j^s(x_j)$ is the utility which the firm derives from the investments j in state s and $P(s)$ is the probability distribution function over $s \in S$. The $\int_S U_j^s(x_j)\, dP(s)$ is thus the expected utility from the projects in set j.

[3] Our model would have been more realistic if we had allowed the headquarters to borrow and lend in the external capital markets at different rates, r_B and $r_L < r_B$, and allowed decisions to be made at more than one point in time. The addition of these realistic elements to the problem would complicate our notation substantially, while offering little extra insight. For this reason, we felt the decision to delete these elements would meet the approval of the reader.

[4] We assume that Problem I is a concave/convex problem, and that it has an optimal solution. We furthermore assume that the feasible set for each division is bounded. Neither of these assumptions is restrictive for the conclusions made in the paper.

[5] In this formulation we have assumed that the utility function is separable. This is not a restriction on the use of the Dantzig-Wolfe decomposition algorithm, but in the nonseparable case the information flow is a little more complex. (See Holloway [6] for details.)

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We assumed in our formulation of Problem I that the firm had identified n sets of investment projects, each physically independent of the others. In reality, these sets of projects might be located in different geographical regions of the country, or they might be associated with the firm's various product lines. When attempting to solve Problem I, the firm will likely recognize the high cost of obtaining adequate information about the investments in each set j. The firm can reduce its information costs substantially by delegating decision making authority regarding each x_j to n division managers. The decentralization of decision making authority, however, will also raise some problems for top management.

One problem arises because the division managers are not likely to have goals which coincide with those of the corporate headquarters. To solve this problem top management must find some coordination mechanism which will induce unanimity among division managers and the headquarters regarding the optimal solution to the capital budgeting problem. An equally serious problem arises because of the presence of common capital constraints, which make the division managers' decisions interdependent. The coordination mechanism must therefore also induce the division managers to consider the corporate effects of their decisions.

In our discussion of the decentralized capital budgeting problem, it is helpful to decompose Problem I into a master problem and a division problem:

Master Problem I

$$\text{Maximize} \sum_{j=1}^{n} W_j(a_j)$$

with respect to $a_1, \ldots, a_n$

$$\text{subject to} \sum_{j=1}^{n} a_j = a$$

where $W_j(a_j)$ is the value of the optimal solution to division j's capital budgeting problem.

Division Problem I[6]

$$\text{Maximize} \int_S U_j^s(x_j)\,dP(s)$$

with respect to x_j

$$\text{subject to} \quad G_j^s(x_j) \leqslant a_j \quad \forall s \in S, \tag{1}$$

$$g_j^s(x_j) \leqslant 0 \quad \forall s \in S. \tag{2}$$

In the above formulation of the Division Problem, the division managers do not consider the effect of their decisions on the available supply of corporate funds. One way to induce division managers to account for this effect is for top management to charge a transfer price for the use of limited corporate resources. In the linear formulation of the decentralized capital budgeting problem under certainty, the correct transfer prices are determined with the aid of the Dantzig-Wolfe algorithm [3]. Recently, Holloway [6] extended the Dantzig-Wolfe method to a very general class of concave/convex models. We verify in the Appendix that Problem I is in that general

[6]We assume throughout our discussion of the division problem that all participants have identical probability distributions over states of nature. The analysis in the more general case of non-identical probability distributions is essentially the same as that described below, except that a subscript j is attached to $P(s)$ wherever it appears.

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class. We can therefore use Holloway's approach to solve the transfer pricing problem.[7]

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If transfer prices are charged for the use of coporate funds, Division Problem I becomes Division Problem II:

Division Problem II

$$\text{Maximize} \int_S (U_j^s(x_j) - \pi a_j)\, dP(s)$$

with respect to x_j, a_j

$$\text{subject to} \quad G_j^s(x_j) \leqslant a_j \quad \forall s \in S,$$
$$g_j^s(x_j) \leqslant 0 \quad \forall s \in S,$$

where π is the transfer price which the headquarters charges for each dollar used of corporate funds.

Because the presence of common corporate constraints causes the division actions to be interdependent, it is important that top management sets transfer prices which will induce division managers to consider the corporate effects of their decisions. The headquarters coordinates the activities of the various divisions and determines the appropriate transfer prices at iteration t from the solution to the following Master Problem:

Master Problem II

$$\text{Maximize} \sum_{j=1}^{n} \sum_{i=1}^{t} \lambda_j^i \cdot \int_S U_j^s(x_j^i)\, dP(s)$$

with respect to $\lambda_1^1, \ldots, \lambda_j^i, \ldots, \lambda_n^t$

$$\text{subject to} \quad \sum_{j=1}^{n} \sum_{i=1}^{t} \lambda_j^i a_j^i \leqslant a,$$
$$\sum_{i=1}^{t} \lambda_j^i = 1, \qquad j = 1, \ldots, n, \tag{3}$$
$$\lambda_j^i \geqslant 0, \qquad j = 1, \ldots, n; i = 1, \ldots, t,$$

where λ_j^i is a weight applied to the ith proposed solution to division j's capital budgeting problem.

The capital budgeting process proceeds in the following fashion. The headquarters announces the transfer price π on corporate funds a. Each division is then asked how much of the capital resources it wants to use, given that it must pay π for the use of each dollar. It is worth emphasizing that each division's need for capital resources in the ith iteration of the capital budgeting process, a_j^i, is state independent. This means that, given the choice of projects, a_j^i is the minimal amount of capital resources such that the capital requirements will exceed a_j^i in no state of nature. The resources that each division requests are determined by solving Division Problem II. After solving Division Problem II each division submits to the corporate headquarters (i) the state independent need for capital resources, a_j^i, and (ii) the average utility obtained, $\int_S U_j^s(x_j^i)\, dP(s)$, where x_j^i is an optimal solution to Division Problem II during the ith

[7] A linear version of the Dantzig-Wolfe decomposition algorithm under uncertainty was presented in Jennergren [7]. Our transfer pricing scheme is thus a generalization of Jennergren's.

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iteration of the capital budgeting process. Using this information, the headquarters solves Master Problem II and obtains transfer prices as the dual value to constraint (3) in that problem. The procedure continues in this fashion until the prices do not change.

3. Alternative Formulations

The decentralized capital budgeting problem was analyzed above under the assumptions (i) the headquarters wishes to maximize a convex combination of the division utility functions, (ii) division decisions are made before the state of nature is known and (iii) transfer prices are state independent. We now see how the capital budgeting process changes when these assumptions are relaxed.

A. Goal Conflicts

It is common in finance theory to assume that all decision-makers wish to maximize the market value of the firm, and hence that they all have a common objective. The literature of organization theory indicates that this assumption may be unrealistic, especially in the multi-division firm. We now assume that the division manager uses a utility function $R_j^s(\cdot) \neq U_j^s(\cdot)$.[8] Such behavior on the part of the division manager may lead to a nonoptimal allocation of capital resources from the headquarter's point of view.

In the deterministic case, Kriebel and Lave [10] have shown that profit sharing together with a transfer-price system will induce the division managers to act in the best interests of the firm (assuming that the optimal transfer price can be found). But, because division utility functions now reflect attitudes toward risk, and the transfer price is determined in an iterative fashion,[9] this result does not carry over to the case where uncertainty is present. The question that arises then is this: can the transfer-price system be altered in such a way that the profit sharing rule[10] will give the optimal allocations of the capital resources, even if there is a difference in the division utility functions? We show that the answer to this question is "yes".

For the case where transfer prices are state independent, headquarters wants to find a price $\tilde{\pi}$ such that

$$\int_S \left[U_j^s(x_j) - \pi \cdot a_j \right] dP(s) = \int_S \left[R_j^s(x_j) - \tilde{\pi}_j \cdot a_j \right] dP(s)$$

or

$$\int_S \tilde{\pi}_j \cdot a_j \, dP(s) = \int_S \left[R_j^s(x_j) - U_j^s(x_j) + \pi \cdot a_j \right] dP(s).$$

But these two integrals will be equal if

$$\tilde{\pi}_j = \pi + \left\{ \int_S \left[R_j^s(x_j) - U_j^s(x_j) \right] dP(s) \right\} (a_j^{-1}). \tag{4}$$

The transfer price given by (4) provides top management with an opportunity to share some of the uncertainty in the return from risky projects with division man-

[8] We continue to assume, however, that top management acts in the best interests of the firm's stockholders. Thus, $U_j^s(\cdot)$ is the utility function of both the firm's top management and its stockholders.

[9] In an iterative scheme, the division managers have the opportunity to send incorrect information to the corporate headquarters. The incorrect information may decrease the transfer prices and hence increase the division's profits (See Jennergren and Müller [8]).

[10] Profit sharing is a reward system which offers division managers a constant percent of company profits in addition to their base salary. When profit sharing is used and there is no uncertainty, the division manager's utility function is linear in company profits. Thus, decisions which maximize his utility also maximize corporate utility.

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agers. Suppose that division manager j is highly averse to risk. Then for a given set of risky investments, $\int_S [R_j^s(x_j) \cdot U_j^s(x_j)]\, dP(s)$

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is very likely negative and a_j^{-1} is positive. To induce the division manager to accept the risky set of projects, x_j, top management must clearly increase the expected value of the division manager's reward from x_j. Under the assumptions of our model, the expected value of the division manager's reward can be increased simply by charging a lower transfer price for the capital used in x_j. Equation (4) tells top management exactly how much the transfer price should be reduced. Since the new transfer price depends on both the corporate allocation of capital to the division and the division allocation to projects, the transfer price is now a price function.

To determine the transfer price $\tilde{\pi}_j$, the headquarters must have information about the $R_j^s(\cdot)$ functions. Although the algorithm requires exact knowledge of these functions for optimal decisions, the transfer price expression (4) provides useful qualitative information if headquarters merely wants to improve its current transfer pricing scheme. If it is known, for instance, that division manager j always applies a "conservative" utility function to project selection decisions, then expression (4) indicates that top management should reduce the transfer price to this division manager for capital invested in risky projects. It can be shown that small adjustments of this nature to the transfer price π will improve the solution to the firm's capital budgeting problem.

B. State Dependent Division Decisions

It is conceivable that in many situations the capital allocations of the divisions could depend on which state of nature occurred. This situation is not very interesting in our model, since we have assumed for notational convenience a single period horizon. Under this assumption, making decisions after the state of nature is known amounts to decision making under certainty. Nonetheless, state dependent decisions can be easily accommodated in Problem I by treating the amounts allocated to projects by division j in state of nature s, x_j^s, as the basic decision variable. With this change in mind, the rest of the analysis remains as we have described it.

C. State Dependent Transfer Prices

Let us now change the assumption that transfer prices are known before the state of nature is revealed and allow them to depend on which state occurs.[11] The division and master problems change in the following way:

Division Problem IIa

$$\text{Maximize} \int_S [\, U_j^s(x_j) - \pi^s \cdot a_j]\, dP(s)$$

with respect to x_j, a_j

$$\text{subject to} \quad G_j^s(x_j) \leqslant a_j \qquad \forall s \in S,$$
$$g_j^s(x_j) \leqslant 0 \qquad \forall s \in S.$$

[11] Situations like this may arise in multi-national firms if the transfer price is fixed in terms of the headquarter's home currency. During the planning process, the division manager would not know the transfer price, in terms of his currency, which he actually will pay the headquarters.

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Master Problem IIa

$$\text{Maximize} \sum_{j=1}^{n} \sum_{i=1}^{t} \lambda_j^i \int_S U_j^s(x_j^i)\, dP(s)$$

with respect to $\lambda_1^1, \ldots, \lambda_j^i, \ldots, \lambda_n^t$

$$\text{subject to} \quad \sum_{j=1}^{n} \sum_{i=1}^{t} \lambda_j^i G_j^s(x_j^i) \leq a \qquad \forall s \in S,$$

$$\sum_{i=1}^{t} \lambda_j^i = 1; \qquad j = 1, \ldots, n,$$

$$\lambda_j^i \geq 0, \qquad j = 1, \ldots, n;\ i = 1, \ldots, t.$$

It is evident from these changes that the information flow from the headquarters becomes state-dependent prices on the capital resources. The information from the divisions becomes a state dependent need for capital resources, $G_j^s(x_j^i)$, and average utility $\int_S U_j^s(x_j^i)\, dP(s)$.

Because the state dependent transfer price interpretation of the decentralized capital budgeting problem, like the state independent transfer price interpretation, originates in Problem I, and Holloway's extension of the Dantzig-Wolfe algorithm continues to apply, we have the following obvious proposition:

PROPOSITION I. *The optimal solutions in both interpretations of the decentralized capital budgeting problem are identical and generate optimal solutions for Problem* I. *Moreover,* $\pi = \int_S \pi^s\, dP(s)$ *is an optimal dual value for the capital constraints in Problem* I.

It follows from Proposition I that different assumptions about the state dependence of the transfer price do not influence the amount of resources that the divisions want. The amounts which the divisions allocate to individual projects, however, are dependent on whether the transfer price is determined before or after the state of nature is known.

4. Alternative Coordination Mechanisms

Instead of applying the Dantzig-Wolfe strategy for solving Problem I, a direct allocation strategy, such as the Kornai-Liptak method [9], the Ten Kate method [15] or the Silverman method [14], can be applied. When using one of these methods the headquarters, instead of determining prices of the capital resources, announces how much each division is allowed to use. The information submitted to the headquarters from the divisions is information derived from the dual variable of constraint (1) in Division Problem I. The actual information is dependent on the specific method used.

Again as in the price-directive approach the information may be state-dependent or not according to the interpretation of the dual variables of constraint (1) in the division problems as being prices which have to be paid before or after the state of nature is known.

5. Conclusion

Theoretical inquiry is most useful when it clearly establishes the extent and limitations of our knowledge. In this paper, we sought to extend the analysis of the decentralized capital budgeting problem to situations where investment cash flows are uncertain and division objectives are not necessarily identical with those of corporate headquarters. We found that an optimal transfer pricing scheme could be constructed

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in these situations, provided that the corporate headquarters had explicit knowledge of the division utility functions and probability assessments.

In addition, we suggest that the model provides important qualitative information even in situations where top management does not possess such explicit knowledge. If top management can determine whether manager j's utility function is either more conservative or more risky than its own, then the model indicates the direction in which current transfer prices should be changed. Small changes in this direction will lead to an improved solution to the corporate capital budgeting problem.

Appendix

In this appendix we show explicitly the steps of the Generalized Dantzig-Wolfe Approach (Holloway [6]) applied to our capital budgeting problem (Problem I). Additionally we show that the algorithm determines an optimal solution to Problem I.

Assume that $U_j^s(\cdot)$ is a concave function for all s and j, $G_j^s(\cdot)$ is a convex function for all s and j, and $(x_j \mid\mid g_j^s(x_j) \leq 0)$ is a compact and convex set for all s and j. Then, $\int_S U_j^s(x_j)\, dP(s)$ is a concave function and Problem I is a special case of the Canonical Problem in Holloway [6]. Therefore, all the results in Holloway's extension of the Dantzig-Wolfe approach can be applied directly to Problem I. Additionally, it is easily verified that, under the above assumptions, Master Problem I is a special case of Holloway's Canonical Problem as well, and the results of his paper can be applied to Master Problem I, too.

Therefore, the following algorithm leads to an optimal solution to Master Problem I, and hence to Problem I. (We assume that Problem I has a feasible solution).

Algorithm

Step 0. Determine for $j = 1, \ldots, n$ an a_j^1 such that

$$\{x_j \mid G_j^s(x_j) \leq a_j^1 \forall s \in S \text{ and } g_j^s(x_j) \leq 0 \ \forall s \in S\}$$

is nonempty. Set $t = 1$ and go to Step 1.

Step 1. Solve Master Problem II. Set V^t equal to the optimal solution value, and π^t equal to an optimal dual variable to constraint (3).

If $t > 1$ go to Step 2, otherwise go to Step 3.

Step 2. If $\pi^{t-1} = \pi^t$ then terminate. Otherwise go to Step 3.

Step 3. For $j = 1, \ldots, n$ solve Division Problem II with π equal to π^t. Let (x_j^{t+1}, a_j^{t+1}) be an optimal solution to this problem. Set $t = t + 1$ and go to Step 1.

This algorithm is well defined in the sense that, under the above assumptions, all the problems stated in the algorithm exist and have a finite optimal solution.

LEMMA *I*. *The algorithm converges monotonically.*

PROOF. In each iteration we add n columns to Master Problem II. This implies that $V^{t-1} \leq V^t \ \forall t$. Furthermore $V^t \leq \sum_{j=1}^n W_j(a_j^*) \ \forall t$ where $(a_1^*, \ldots, a_n^*)$ is an optimal solution to Master Problem I. This shows the lemma.

LEMMA *II*. *If* $\pi^{t-1} = \pi^t$, *then Master Problem* II *determines an optimal solution to Master Problem* I.

PROOF. Let $(\lambda_1^1, \ldots, \lambda_j^i, \ldots, \lambda_n^t)$ be an optimal solution to Master Problem II at iteration t. Since $\pi^{t-1} = \pi^t$, $\sum_{i=1}^t \lambda_j^i a_j^i$ is a part of an optimal solution to Division Problem II with π equal to π^t. Assume that

$$\left(\sum_{i=1}^t \lambda_1^i a_1^i, \ldots, \sum_{i=1}^t \lambda_n^i a_n^i\right)$$

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is *not* an optimal solution to Master Problem I. Let $(x_1^*, \ldots, x_n^*, a_1^*, \ldots, a_n^*)$ be an optimal solution to Problem I. Then $(a_1^*, \ldots, a_n^*)$ is an optimal solution to Master Problem I.

$$\pi^t \in -\partial V^t\left(\sum_{j=1}^{n}\sum_{i=1}^{t}\lambda_j^i a_j^i\right)$$

(subgradient). This implies that

$$V^t\left(\sum_{j=1}^{n} a_j^*\right) < V^t\left(\sum_{j=1}^{n}\sum_{i=1}^{t}\lambda_j^i a_j^i\right) - \pi^t\left(\sum_{j=1}^{n}\sum_{i=1}^{n}\lambda_j^i a_j^i - \sum_{j=1}^{n} a_j^*\right)$$

(the subgradient inequality). The assumption that

$$\left(\sum_{i=1}^{t}\lambda_1^i a_1^i, \ldots, \sum_{i=1}^{t}\lambda_n^i a_n^i\right)$$

is not an optimal solution to Master Problem I and the above inequality implies that

$$\pi^t \sum_{j=1}^{n} a_j^* < \pi^t \sum_{j=1}^{n}\sum_{i=1}^{t}\lambda_j^i a_j^i.$$

This establishes that

$$\sum_{j=1}^{n} W_j(a_j^*) - \pi^t \sum_{j=1}^{n} a_j^* > \sum_{j=1}^{n} W_j\left(\sum_{i=1}^{t}\lambda_j^i a_j^i\right) - \pi^t \sum_{i=1}^{t}\lambda_j^i a_j^i$$

which implies that there exists a j^* so that

$$W_j^*(a_{j^*}^*) - \pi^t a_{j^*}^* > W_j^*\left(\sum_{i=1}^{t}\lambda_{j^*}^i a_{j^*}^i\right) - \pi^t \sum_{i=1}^{t}\lambda_{j^*}^i a_{j^*}^i.$$

This contradicts the assumption that $\sum_{i=1}^{t}\lambda_{j^*}^i a_{j^*}^i$ is a part of an optimal solution to Division Problem II, and the lemma is proven.[12]

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A Note on the Optimal Investment Policy of the Regulated Firm

DAVID W. PETERSON AND JAMES H. VANDER WEIDE*

A fundamental issue in the field of regulatory economics is whether or not rate-of-return regulation induces the profit-maximizing regulated firm to overinvest in capital equipment. Although there has been much academic analysis of this issue, most of it has occurred within the confines of static economic models [2, 3, 16]. In this note, we examine the optimal investment policy of the regulated firm in a dynamic context characterized by the presence of adjustment costs for capital inputs. Models of this type have been considered by Eisner and Strotz [4], Lucas [8], Gould [6], and Treadway [14], in the study of the investment policies of an unregulated firm.

The major conclusion of our analysis is that the regulated firm may in some circumstances invest at a rate which is less at each instant of time than the investment rate chosen by a similarly situated unregulated firm. This conclusion is contrary to the commonly held belief that rate-of-return regulated firms always overinvest [1,[1] 7, 13, 15].

The optimal investment policy of the profit-maximizing unregulated firm is reviewed in Section I of this note. Section II contains a discussion of the effect of rate-of-return regulation on the optimal investment policy of the regulated firm. An example of a situation where the regulated firm always invests at a rate less than the unregulated firm is presented in Section III. The last section contains concluding comments.

I. The Optimal Investment Policy of the Unregulated Firm

We choose for our discussion of the unregulated firm's optimal investment policy a simple dynamic economic setting. With regard to the firm's production and revenue possibilities, we assume that the unregulated firm produces a single homogenous output (in the amount Q) in accordance with a production function $Q(K, L)$ which is continuous and nonnegative for nonnegative values of physical capital (K) and labor (L). We assume further that for positive K and L, Q is differentiable and that $Q(0, L) = 0 = Q(K, 0)$. The price P which the firm receives for its output is assumed to vary with the quantity Q produced as $P(Q)$, a nonnegative monotone decreasing differentiable function defined for $Q > 0$. The firm's revenues are then determined by the function

$$G(K, L) = P(Q)Q(K, L) .$$

We further assume that G is concave for $K, L \geqslant 0$, that $G(K, 0) = 0 = G(0, L)$, and that for positive K and L, G is strictly concave in L.

An essential distinction between the inputs labor and capital is captured by the assumptions regarding their acquisition costs. Labor is assumed to be a perfectly variable input which can be purchased in a competitive market at a constant price w. The total cost of labor per unit time is thus wL. Capital, on the other hand, is imperfectly variable in the sense that there are internal costs associated with new purchases. Alternatively, or in addition, capital is assumed to be purchased in an imperfectly competitive input market. In either case, the total cost of physical capital depends on the rate I of investment, and is given by the function

$$C = C(I)$$

with

$$C(I) > 0, C'(I) > 0, C''(I) > 0 \text{ for } I > 0$$

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[1] For discussions of this paper see also [5] and [12].

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and $C(0) = 0 = C'(0)$.[2]

Under these assumptions the unregulated profit-maximizing firm's input choice problem can be stated mathematically as

Problem I:

Maximize $\int_0^\infty [G(K, L) - wL - C(I)]\, e^{-\delta t} dt$
with respect to I, L
subject to $\dot{K} = I - \alpha K$,
$K(0)$ given
$I \geqq 0, L \geqq 0$,

where $\delta > 0$ is the discount rate and $\alpha > 0$ is the rate of depreciation of the firm's capital stock. The Pontryagin [11] necessary conditions (which in the cases considered in this note are also sufficient) yield directly[3]

$$\lambda(t) = C'(I), \tag{1}$$

$$\dot{\lambda}(t) = -G_K + (\delta + \alpha)\lambda(t), \quad \lim_{t\to\infty} \lambda(t) e^{-\delta t} = 0, \tag{2}$$

$$\dot{K} = I - \alpha K, K(0) \text{ given}, \tag{3}$$

$$G_L = w, \tag{4}$$

where $\lambda(t)$ is the auxiliary function associated with the Hamiltonian.

An interesting economic interpretation of the firm's optimal investment policy can be obtained by solving the first-order differential equation (2) for λ:

$$\lambda^u(t) = \int_t^\infty G_K e^{-(\delta + \alpha)(\tau - t)} d\tau . \tag{5}$$

(The superscript u indicates the association with the unregulated firm). The expression on the right of (5) is the present value of the future marginal revenue products resulting from the firm's investment expenditures. Substituting this expression for λ into equation (1), we see that the optimal value of investment expenditures is found by equating this present value to the marginal acquisition cost of capital:

$$\int_t^\infty G_K e^{-(\delta + \alpha)(\tau - t)} d\tau = C'(I^u) . \tag{6}$$

Note that the assumption $C''(I) > 0$ ensures a unique solution, I^u.

II. The Optimal Investment Policy of the Regulated Firm

The dynamic behavior of the profit-maximizing regulated firm can be compared meaningfully to that of the unregulated firm if the two firms operate in economic environments which are similar except for the presence of the regulatory constraint. Thus, we retain the assumptions of the previous section concerning the production function $Q(K, L)$, the revenue function $G(K, L)$, the labor cost w, and the adjustment costs for capital additions $C(I)$.

It is now assumed that the firm is subject to regulation of a form which requires the firm's rate-of-return on its capital base to be less than or equal to a prescribed value s' at all times, i.e., it is required that

[2] The assumption that $C'(0) = 0$ is not necessary for the most important of our conclusions, but it simplifies our argument in several places. It is not essential that L represent only labor costs and K only capital costs. Any of several variable inputs might be identified with L, one example being the fuel utilized by an electric power company. Similarly, if much of the effort of the labor force is devoted to the development of physical capital, as with telephone installers, such labor is better identified with a portion of I.

[3] More precisely, these conditions characterize the functions I and L defined as follows. Let T be a large positive number, and $I_T(t)$ and $L_T(t)$ be the functions which maximize the integral in Problem I taken over the interval $[0, T]$. If $I(t)$ and $L(t)$ are the limiting functions for $I_T(t)$ and $L_T(t)$ as $T \to \infty$, the functions I and L are characterized by conditions (1) – (4). Being limits of functions optimal over a finite but long time period, I and L may differ in certain pathological cases from their counterparts in the infinite horizon problem. We maintain, however, that of more interest to the economist than the infinite horizon problem is that in which the horizon is taken to be finite, albeit distant: We have taken it to be sufficiently distant that its exact numerical value exerts no influence on the solution. Our analysis of Problem II should be interpreted similarly; we seek the limit of the solutions to a sequence of versions of Problem II in which the horizon is finite but increasing beyond bound.

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$$\frac{G(K, L) - wL - \alpha\gamma K}{\gamma K} \leqslant s'$$

where

γ = a factor approved by the regulatory authority which transforms physical units into dollar units,[4] and

s' = the rate-of-return allowed by the authority.

For the purposes of the ensuing discussion, it is useful to rewrite the constraint as

$$G(K, L) - wL - sK \leqslant 0\,, \qquad (7)$$

where $s = \gamma(\alpha + s')$.

Under these assumptions, the regulated firm's input selection problem can be formulated mathematically as:

Problem II:

Maximize $\int_0^\infty [G(K, L) - wL - C(I)]\, e^{-\delta t} dt$

with respect to I, L

subject to $\dot{K} = I - \alpha K$,
$G(K, L) - wL - sK \leqslant 0$,
$K(0)$ given,
$I \geqslant 0, L \geqslant 0$.

Since G is a continuous concave function, the set S of (K, L) for which

$$G(K, L) - wL - sK \geqslant 0$$

is a nonempty, closed, convex set. Denote by $\bar{K}$ the largest value of K present in the elements of S, setting $\bar{K} = \infty$ if necessary. We assume $\bar{K} > 0$. If $\bar{K}$ is finite, $G(\bar{K}, L)$ is strictly concave in L and so there is a unique $\bar{L}$ such that $(\bar{K}, \bar{L}) \in S$. Furthermore, $(\bar{K}, \bar{L})$ is on the boundary of S and hence satisfies the regulatory constraint. If $\bar{K} = \infty$, we set $\bar{L} = \infty$. We call $(\bar{K}, \bar{L})$ the Averch-Johnson (A-J) point.

If at some instant t, $K(t) \leqslant \bar{K}$, the best value $L(t)$ of L to accompany $K(t)$ is one for which (7) is satisfied with equality. This is evident from the fact that L can be adjusted instantaneously and costlessly to any level and from the equation

$$\text{integrand}\,(K(t), L(t)) = [G(K(t), L(t)) - wL(t) - C(I)]\, e^{-\delta t} \geqslant [G(K(t), L) - wL - C(I)]\, e^{-\delta t} = \text{integrand}\,(K(t), L)\,,$$

which holds for all L satisfying (7). Hence, for $K \leqslant \bar{K}$, we may assume (7) to hold with equality. For each $K \in (0, \bar{K})$ there are two distinct values of L which satisfy (7) with equality, both of them optimal; the firm may choose one of them arbitrarily. If at some instant t, $K(t) > \bar{K}$, (7) is a strict inequality no matter what value of L is chosen.

The Pontryagin conditions for Problem II are[5]

$$\lambda = C'(I)\,, \qquad (8)$$

$$\dot{\lambda} = -G_K - \mu(t)(s - G_K) + (\delta + \alpha)\lambda, \qquad (9)$$

$$\lim_{t\to\infty} \lambda(t) e^{-\delta t} = 0\,,$$

$$\dot{K} = I - \alpha K,\ K(0) \text{ given}, \qquad (10)$$

$$(1 - \mu)(G_L - w) = 0\,, \qquad (11)$$

$$G(K, L) - wL - sK \leqslant 0, \mu \geqslant 0$$
$$\mu[G - wL - sK] = 0\,, \qquad (12)$$

where $\mu(t)$ is a multiplier associated with the rate-of-return constraint.

[4] There are several procedures for valuing the rate-base that can be characterized by the model rate-base-value = γK. The fair value method is consistent with this model if one assumes that the ratio between the fair value and the capital stock remains constant through time. The replacement cost method is also consistent with this model if one assumes that the *rate* of replacement is to be constant and independent of the amount of capital replaced. The historical cost method depends on the rate at which capital was acquired, as well as on the amount. According to Phillips [10, p. 241], "... twenty-six states use 'original cost'; two, 'prudent investment'; nineteen, 'fair value,' 'reasonable value,' or 'all elements considered'; one 'average net investment'; one, 'reproduction cost'; and one has not determined a method."

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Under mild assumptions, it can be shown that the regulated firm approaches some positive, finite asymptotic size $(\bar{K}^r, \bar{L}^r)$. Equations (8) – (12) indicate that $\bar{K}^r$ and $\bar{L}^r$ must satisfy

$$0 = -G_K - \mu(s - G_K) + (\delta + \alpha)C'(\alpha K)\,, \quad (13)$$

$$0 = (1 - \mu)(G_L - w)\,, \quad (14)$$
$$G \leqslant wL + sK,\ \mu \geqslant 0,\ \mu[G - wL - sK] = 0\,.$$

These are just the conditions necessary and sufficient for the solution of the problem

$$\text{Maximize} \quad G(K, L) - wL - \frac{(\delta + \alpha)C(\alpha K)}{\alpha} \quad (15)$$

with respect to $K, L \geqslant 0$

$$\text{subject to} \quad G \leqslant wL + sK\,. \quad (16)$$

Should it happen that $sK - (\delta + \alpha)C(\alpha K)/\alpha$ is maximized for some $\hat{K} \leqslant \bar{K}$, then $\bar{K}^r$ is just this maximizing value of K; otherwise $\bar{K}^r, \bar{L}^r$ maximizes (15) without regard to (16), and $\bar{K}^r > \bar{K}$. In case $K(0) \leqslant \bar{K}$, the solution to (9) is given by

$$\lambda^r = \int_t^\infty s e^{-(\delta + \alpha)(\tau - t)} d\tau$$

and the optimal investment policy is determined by the equation

$$\int_t^\infty s e^{-(\delta + \alpha)(\tau - t)} d\tau = C'(I^r)\,, \quad (17)$$

the superscript r denoting association with the regulated firm.

To interpret this equation, we recall that $s = \gamma(\alpha + s')$ is the steady stream of dollars per physical unit of capital which the firm is allowed to earn under the regulatory constraint. Thus, equation (17) requires that the firm equate the present value of the stream of dollar earnings resulting from its investment policy to the marginal acquisition cost of capital.

It is interesting to contrast for this case the investment policies of the regulated and unregulated firms. Comparing equation (17) with equation (6), and noting that $C'(I)$ is strictly monotonically increasing in I, we have

$$I^r \gtrless I^u \text{ as } \int_t^\infty s e^{-(\delta + \alpha)(\tau - t)} d\tau \gtrless \int_t^\infty G_K e^{-(\delta + \alpha)(\tau - t)} d\tau\,.$$

Since there is nothing in our model which constrains the values of the function G_K to be smaller than s, as was the case for the static models of Averch-Johnson and Takayama,[6] it is not surprising to find, as we do in Section III, that for some revenue functions the regulated firm will actually invest less than the unregulated firm.

An analysis of other properties of this model, including sensitivities to various parameter changes, is presented in [9].

III. An Example

Let

$$G(K, L) = (KL)^{1/2},\ C(I) = I^2\,.$$

The firm's optimal investment policy I^u is given by equation (6) which for this case is

$$\frac{1}{4w} \int_t^\infty e^{-(\delta + \alpha)(\tau - t)} d\tau = 2I^u(t)\,. \quad (18)$$

Consider the investment problem of the regulated firm whose revenue and cost functions are identical to those previously given, but which is constrained by the relation

$$K^{1/2}L^{1/2} - wL - sK \leqslant 0\,. \quad (19)$$

The reader can verify that the existence of a positive solution to the regulatory constraint (19) requires $4ws \leqslant 1$, which we now assume. It happens that $\bar{K}$, the largest value of K for which (19) is satisfied, is infinite. In accordance with the discussion in Section II, we may therefore assume that (19) holds with equality. The optimal investment policy for the regulated firm is determined by (17), which becomes

$$s\int_t^\infty e^{-(\delta + \alpha)(\tau - t)} d\tau = 2I^r(t)\,. \quad (20)$$

Hence, from (18) and (20),

[5] See footnote 3, supra.

[6] In these models $G_K = r$, the constant price of capital, and it is assumed at the outset that $r < s$.

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$$I^r = 4wsI^u \leqslant I^u .$$

Thus if s is chosen so that $4ws < 1$, the regulated firm invests at a rate below that of the unregulated firm, at every instant in time.

IV. Conclusions

We have demonstrated that, contrary to the spirit of much of the thinking based on the work of Averch and Johnson, it need not be true that rate-of-return regulation entices a firm to overinvest in productive capital. For a simple dynamic model featuring an imperfect capital market, we find that it may be optimal for the regulated firm to invest at every instant of time at a rate less than its unregulated counterpart. Our findings demonstrate once again the strong dependence on model specifications of the conclusions one draws in the study of regulatory problems.

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A Strategy Which Maximizes the Geometric Mean Return on Portfolio Investments

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A STRATEGY WHICH MAXIMIZES THE GEOMETRIC MEAN RETURN ON PORTFOLIO INVESTMENTS*

JAMES H. VANDER WEIDE†, DAVID W. PETERSON† AND STEVEN F. MAIER†

A common formulation of the portfolio selection problem leads to the prescription of a strategy which maximizes the geometric mean return on investments. In this paper we examine conditions under which solutions exist for the case where the returns distribution is discrete. We establish necessary and sufficient conditions for a solution to exist and give a computationally convenient and exact method for finding a solution in circumstances where (i) a solution exists and (ii) the number of securities equals or exceeds the number of values in the returns distribution.

1. Introduction

The geometric mean investment strategy, introduced into the finance and economics literature by Henry Latané [6] in 1959, has recently received some attention in scholarly circles after a decade of near neglect. Most of this work has been devoted to the investigation of various properties of the geometric mean strategy. Among the properties of optimal geometric-mean portfolios recently discovered are (i) they maximize the probability of exceeding a given wealth level in a fixed amount of time, (ii) they minimize the long-run probability of ruin, and (iii) they maximize the expected growth rate of wealth.[1] Relatively little attention has been given, on the other hand, to either the computational problem of finding the optimal geometric-mean portfolio[2] or the question of the existence of such a portfolio.[3] In this paper, we analyze both of these latter problems under various assumptions about the investor's opportunity set and the form of his subjective probability distribution of holding period returns. We reach two major conclusions. First, optimal geometric-mean portfolios do not exist for some rather obvious formulations of the investor's decision problem.[4] Second, optimal geometric-mean portfolios are in some circumstances more easily computed than was previously recognized.[5]

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[1] For discussion and derivations of these properties see [2], [5], [6], [10], and [15].

[2] We know of only three or four papers which purport to discuss the computation of optimal geometric mean portfolios. The first, by Elton and Gruber [4], assumes that total portfolio returns are lognormally distributed. But the analytical circumstances under which this would occur seem rather limited, since lognormal security returns do not imply lognormal portfolio returns. The second, by Ziemba [17], discusses the problem and proposes nonlinear programming as a solution means. The third, by Ziemba, Parkan and Brooks-Hill [18], pertains to the problem in which returns are normally distributed. A possible fourth paper is Ziemba's [16], which discusses general approaches to solving optimization problems with stochastic objective functions.

[3] Cass and Stiglitz [3] give conditions for an optimal solution to exist for the case where the returns distribution is finite and the number of securities exactly equals the number of states in the returns distribution. Their result is a special case of our Theorem 1. Leland [7] gives a sufficient condition for a solution to exist, but assumes that there is no direction of recession which offers a nonnegative return for all states of nature. Bertsekas [1] strengthens Leland's result by extending it to a more general class of utility functions and shows that for this class it can be made both necessary and sufficient. Though Bertsekas' approach is applicable to the geometric mean problem, his theorems require some modification to account for the fact that the logarithmic utility function is defined only for positive values of its argument.

[4] Richard Roll [13] unwittingly formulates a version of the geometric-mean problem for which a solution is unlikely to exist.

[5] Mossin [10], for instance, says "The main disadvantage—at least at present—of the growth optimal policy as compared e.g., with the selection of an E, S efficient policy, is the formidable computational problem."

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2. The Existence of Optimal Geometric-Mean Portfolios

Consider an investor faced with the repetitive problem of investing his wealth in some combination of m alternative investment opportunities. Suppose that the investor's objective is to maximize the geometric mean return on his wealth. If x_i denotes the fraction of his wealth the investor invests in opportunity i and $r_i \geqslant 0$ denotes the periodic payout, including return of principal, provided by opportunity i, then we may identify the task of finding the optimal allocation of wealth for the coming time period as that of solving the following mathematical programming problem:

$$\underset{x}{\text{Maximize}}\, E\{\log x^T r\} \quad \text{subject to} \quad x^T e = 1, \tag{1}$$

where $x = (x_1, \ldots, x_m)^T$, $r = (r_1, \ldots, r_m)^T$, $e = (1, \ldots, 1)^T$ and E is the expectation operator.

As with any mathematical programming problem, there is in connection with (1) not only the question of finding the best value for x, but also the question of whether a best value exists. A solution x^* is a finite m-vector which imparts maximal value to the objective function. We discuss the question of whether a solution exists for two particular cases of the geometric mean problem.

The General Case

The general case of the geometric mean problem is one which imposes no restrictions on the investor's subjective probability distribution of holding period returns. The existence of a solution to a general geometric mean problem can be assured by suitably bounding the set of wealth allocations considered feasible. For example, if to the general problem (1) there are appended the restrictions $x_i \geqslant b_i$, $i = 1, \ldots, m$, where the b_i are known, finite constants summing to 1 or less, there results the problem we call the Constrained General Problem (CGP). The CGP always has a solution, for it consists of the maximization of a continuous function over a nonempty compact set.

We refer to the case where the feasible set is unrestricted as the Unconstrained General Problem (UGP). The UGP has a solution in many circumstances, an important one being that in which the returns r_i are jointly distributed in accordance with a probability density function which is positive for all r_i combinations near zero; that is $P(r) > 0$ for all positive r satisfying $0 < r^T e < \delta$, where δ is a sufficiently small positive number.[6] One example of such a situation is that in which the logarithm of the return for the ith security is $\alpha_i + \beta_i I + \epsilon_i$, where α_i and β_i are constants particular to that security, I is a market index, and ϵ_i is an independent normal random variable. In such circumstances, if one or more of the x_i is negative, there is a positive probability that $x^T r < 0$. Hence any portfolio for which all $x_i \geqslant 0$ is at least as desirable, and one may as well append these constraints. But now a CGP results, and as noted previously, such problems have solutions.

The Discrete Case

In the event the r_i are discrete random variables which can assume a finite number n of combinations of values, the Unconstrained General Problem may be stated

[6] Suppose that for some $\delta > 0$, the probability measure P governing r assigns positive probability to all open subsets of $T = \{r > 0 \mid r^T e < \delta\}$. Then T is open and nonempty. If some component of x is negative, then the set $S = \{r > 0 \mid r^T x > 0\}$ is open and nonempty, and the intersection $S \cap T$ is open and nonempty. Evidently $P(S) \geqq P(S \cap T) > 0$, so such an x cannot be strictly preferred to any one with components all of which are nonnegative.

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equivalently as the following Unconstrained Discrete Problem (UDP):

$$\underset{x}{\text{Maximize}} \sum_{j=1}^{n} \left[P_j \log\left((x^T R)_j\right) \right], \quad \text{subject to} \quad x^T e = 1. \tag{2}$$

Nature, in this formulation, is capable of assuming any of the states $j = 1, \ldots, n$, and the probability she will assume the jth is denoted P_j. The values of the r_i, when Nature assumes the jth state, are denoted r_{ij}. The $m \times n$ matrix of r_{ij} values is denoted R and assumed known. One may consider the UDP as an original formulation of the myopic portfolio selection problem, as did Latané [6], or as an approximation to an Unconstrained General Problem such as (1) permitting other than discrete returns r_i. This latter view is taken in [8].

If there exists a finite and feasible vector x^* which imparts a maximal value to the objective function, then we say x^* is a solution to the UDP. The assertion that a solution exists precludes the possibility that the objective function can be made arbitrarily large, but does not preclude its being negatively infinite for all feasible vectors x, as would occur if one or more columns of R were all-zero. To avoid the latter possibility, we now assume that no column of R contains only zeroes.

The following theorem gives necessary and sufficient conditions that a solution to the UDP exists.

THEOREM 1. *The UDP has a solution if and only if there exists an $n \times 1$ vector y, all of whose components are positive, such that $Ry = e$, where e is the $m \times 1$ vector of ones.*

PROOF. Suppose there exists $y > 0$ such that $Ry = e$, and suppose x satisfies $x^T R \geqq 0$, $x^T e = 1$. Let $y_{\min}$ denote the component of y which is minimal, and note that $y_{\min} > 0$. Then $0 \leqq (x^T R)_j \leqq x^T R e \leqq x^T R y / y_{\min} = 1/y_{\min}$, hence the feasible region of $((x^T R)_1, \ldots, (x^T R)_n)$ values is bounded. Since the region is also closed, it is compact, and the objective function, being continuous on this set, assumes a finite maximum.

If there exists no $y > 0$ such that $Ry = e$, then there exists by Tucker's Theorem of the Alternative [9, p. 34] an x such that $x^T R \geqslant 0$, $x^T e = 0$.[7] Then $\alpha x + e/m$ is feasible and imparts to the objective function a value which can be made larger than any preassigned number by taking α sufficiently large. Hence, in such a situation, no solution to the UDP exists.

The condition $Ry = e, y > 0$, ensures the objective function assumes a maximal value for some choice of finite x_i's, though the set of x_i's imparting maximal value to the objective need not be bounded. If the condition fails to hold, then the feasible region is unbounded in such a way that one can make the objective function arbitrarily large by selling short one or more securities and buying others. A test of the condition can be implemented by using a linear programming code to find a feasible solution to $Ry = e, y \geqq \epsilon e$, for some small positive ϵ. A geometrical interpretation of the condition $Ry = e, y > 0$, is that e lies in the interior of the positive cone spanned by the columns of R.

The condition of Theorem 1 can be restated in equivalent form:

THEOREM 1′. *There exists no solution to the UDP if and only if there exists some x such that $x^T R \geqslant 0$ and $x^T e = 0$. (We use "$\geqslant$" to mean "$\geqq$ but not $=$".)*

[7] Tucker's Theorem of the Alternative, as given in [9, Table 2.4.1] yields the stated result if we set $B' = R$, $C = 0$, $D = e^T$, $x = x$, and $y_2 = y$, where the entities on the left of the equal signs appear in [9], and those on the right are our own symbols.

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PROOF.[8] Tucker's theorem of the alternative [9].
If x satisfies the condition of Theorem 1′, it has positive components summing to, say, $d > 0$, and negative components summing to $-d$. Denote by x^+ (x^-) the vector obtained by setting to zero the negative (positive) components of x. Then x^+/d and $x^-/(-d)$ are each nonnegative vectors whose components sum to 1, and may each be considered a portfolio specification. Furthermore, $(x^+ + x^-)^T R \geqslant 0$, so $(x^+/d)^T R \geqslant -(x^-/d)^T R$. Hence Theorem 1′ may be restated as, "*An infinite solution to the UDP exists if and only if some convex combination of securities dominates some other (disjoint) convex combination of securities for every state of nature.*" If an x satisfying the condition of Theorem 1′ is available, one can do arbitrarily well by letting the portfolio proportions be $\alpha x + e/m$, and making α a large number.

3. The Likelihood of the Existence of a Solution to the Unconstrained Discrete Problem

Having established exact circumstances under which the UDP has a solution, we examine next the likelihood with which these circumstances occur. In this regard, it is helpful to consider a special form of the returns distribution in which one security dominates all other securities for each state of nature. In addition, we will assume that for each state of nature all securities besides the dominant one have equal returns. Let a radial vector be defined as any m-component vector r which has nonnegative components, all of which are equal, save one which is greater than the rest. Let the n columns of R be radial vectors selected probabilistically in such a way that the probability the ith component exceeds the other components of the jth column vectors is $1/m$, $1 \leqq j \leqq n$, $1 \leqq i \leqq m$. For R to be such that there exists a $y > 0$ satisfying $Ry = e$, the columns of R must include at least one radial vector for which the first component is largest, one radial vector for which the second is largest, and so forth. This leads at once to the conclusion that *if the n columns of R are radial vectors (no matter how they are chosen) and if $n < m$, then there is no $y > 0$ such that $Ry = e$, and hence no solution to the UDP exists.* If $n \geqq m$ and the columns of R are chosen as described above, then there is some positive probability that a solution to the UDP exists, and that probability increases with increasing n. For $n = m$, it happens that the probability of a solution is $m!/m^m$, which equals $\frac{1}{2}$ for $m = 2$ and decreases rapidly with increasing m. For $n \geqq m$, the probability of a solution is

$$1 - \binom{m}{1}\left(\frac{m-1}{m}\right)^n + \binom{m}{2}\left(\frac{m-2}{m}\right)^n - \binom{m}{3}\left(\frac{m-3}{m}\right)^n + \cdots \pm \binom{m}{m-1}\left(\frac{1}{m}\right)^n,$$

which for m fixed increases toward 1 as n gets larger.

Using Monte-Carlo methods, we have shown in an unpublished study that even for more general types of R matrices, the likelihood of the existence of a solution to the UDP increases as the number n of states of nature increases.

4. Solution of the UDP

A solution to the Unconstrained Discrete Problem (2) can often be obtained with the aid of an efficient nonlinear programming algorithm. The authors report their experiences in solving geometric-mean portfolio problems with one particularly efficient nonlinear programming code in [8]. As we show below, however, if n does not exceed the number m of securities, it is often possible to obtain optimal allo-

[8] Theorem 1′ may also be obtained as a consequence of Rockafellar's Theorem 27.3 [12, p. 267] which asserts the nonexistence of a solution to be equivalent to the existence of a common direction of recession for the objective function and the feasible set.

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cations even more efficiently through the solution of a certain set of simultaneous linear equations. Throughout the discussion of these equations, we assume that (i) a solution to the UDP exists and (ii) the payout matrix R has rank n.

THEOREM 2. *If H is an $m \times n$ matrix such that $H^T R = I_n$, then x constitutes a solution to the UDP if and only if*

$$(x^T R)_j = P_j/(H^T e)_j, \qquad j = 1, \ldots, n. \tag{3}$$

PROOF. (Follows [14, pp. 77–78], with some modifications and extensions).

Necessity. By hypothesis, a solution $x^* = (x_1^*, \ldots, x_m^*)$ exists. Since $\operatorname{rank}(R) = n$, no column of R is 0, and so x^* imparts a finite (as opposed to negatively infinite) value to the objective function. Hence $x^{*T} R > 0$. Define the Lagrangian function

$$L(x) = \sum_{j=1}^{n} \left[P_j \log\left((x^T R)_j\right) \right] - \lambda e^T x.$$

It is necessary then that x^* satisfy

$$\nabla L(x^*) = Ry^* - \lambda e = 0, \tag{4}$$

$$x^{*T} e_m = 1, \tag{5}$$

where $y^* = (y_1^*, \ldots, y_n^*)^T$,

$$y_j^* = P_j/(x^{*T} R)_j, \qquad j = 1, \ldots, n, \tag{6}$$

and λ is a scalar constant.

Premultiplying (4) by x^{*T} and noting (5) and (6), we observe that $\lambda = 1$. By hypothesis, $\operatorname{rank}(R) = n$ so there exists (see Penrose [11]) an $m \times n$ matrix H such that $H^T R = I$. From (4), $y^* = H^T e$. Using this in (6) yields $(x^{*T} R)_j = P_j/(H^T e)_j$, and necessity has been established.

Sufficiency. Retrace the above steps, bearing in mind that a solution is presumed to exist, that $L(x)$ is concave, and that a saddle point sufficiency condition is applicable.

This theorem raises the exciting prospect that the UDP often can be solved through the solution of (3). The latter can be accomplished for fairly large R matrices using a standard linear programming computer code. Even more straightforward is the situation in which R is square and of full rank, for then Theorem 2 becomes:

COROLLARY. *If $\operatorname{rank}(R) = n = m$, let $H^T = R^{-1}$. Then the x that constitutes the unique solution to* (1) *is given by $x = R^{-1}\bar{P}$, where $\bar{P}_j = P_j/(R^{-1} e)_j$, $j = 1, \ldots, n$.*

The applicability of Theorem 2 is limited, unfortunately, by two elements of its hypothesis. The first of these is that the matrix R have rank n. Since R is of dimension $m \times n$, this restriction requires $m \geqslant n$, or equivalently that the number of securities exceed or equal the number of states of nature.

The second limiting element in the hypothesis of Theorem 2 is the assumption that a solution to the UDP exists. As is explained in the previous section, this is unlikely except in cases where n exceeds m or where the x_i are further constrained. With the imposition of additional constraints (such as nonnegativity), the development of a theorem analogous to Theorem 2 does not seem possible, and one is apparently forced to retreat to nonlinear programming codes to obtain numerical solutions.

EXAMPLE. The following example illustrates a situation where the results of the Corollary to Theorem 2 apply. Suppose that the returns on ten securities in each of ten states of nature are given by the following return matrix:

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$R =$

States of Nature 1	2	3	4	5	6	7	8	9	10	
1.09	0.96	0.95	1.06	1.09	1.54	1.16	1.01	0.82	1.04	Security 1
1.14	1.02	1.04	1.07	1.02	0.93	1.09	0.85	1.47	1.21	·
1.01	1.35	0.95	0.81	1.05	0.85	1.02	0.88	1.00	1.05	·
1.10	0.96	1.13	1.95	1.06	0.81	1.02	1.12	0.95	0.97	·
1.12	0.90	1.00	1.08	1.10	1.07	1.70	0.94	0.97	0.93	Security 5
1.64	1.01	1.25	0.97	0.93	1.03	0.81	1.13	1.02	0.91	·
0.85	0.95	0.98	0.99	1.10	1.02	1.04	1.67	0.96	0.96	·
1.15	0.97	1.54	0.95	1.09	1.14	1.08	0.90	0.91	0.82	·
1.13	0.95	1.10	1.03	1.89	1.20	0.97	1.04	1.04	1.00	·
0.93	1.08	0.84	0.97	0.95	0.80	0.95	0.98	1.29	1.46	Security 10

In addition, suppose that the probability that each state of nature occurs is given by:

$$P_1 = 0.3, \quad P_2 = 0.15, \quad P_3 = 0.1, \quad P_4 = 0.1, \quad P_5 = 0.06,$$
$$P_6 = 0.06, \quad P_7 = 0.06, \quad P_8 = 0.06, \quad P_9 = 0.06, \quad P_{10} = 0.05.$$

Then, since $\text{rank}(R) = 10 = n = m$, the optimal amount to invest in each security is given by the Corollary to Theorem 2. Using this corollary, we have

$$x_1 = -0.857, \quad x_2 = 14.952, \quad x_3 = -0.244, \quad x_4 = 0.048, \quad x_5 = -1.284$$
$$x_6 = 3.666, \quad x_7 = 0.398, \quad x_8 = -6.759, \quad x_9 = 1.446, \quad x_{10} = -10.364.$$

With this highly unbalanced portfolio we would get an annual return of 66.2%.

5. Conclusion

Though much has been written about the desirable properties of growth-optimal portfolios, relatively little attention has been given to the problem of computing the wealth allocation necessary to achieve such a portfolio. This latter problem, with which the present paper is concerned, has two major aspects, one dealing with the existence of a solution, and the other with the numerical determination of a solution in those instances where a solution exists.

For a wealth allocation model called the Unconstrained General Problem (UGP) we show that there are circumstances under which a solution does not exist, and provide conditions sufficient to ensure that a solution does exist. For this general problem, in cases where a solution exists, it is suggested that recourse to a nonlinear programming code may be necessary to obtain a numerical solution.

A special case of the UGP is the Unconstrained Discrete Problem (UDP). For this problem too it is found that a solution need not exist, and that it probably does not exist in the case where the number of securities exceeds the number of possible states of nature. It is, unfortunately, just such a relationship between the numbers of securities and states of nature which permits a solution, if it exists, to be found readily as a solution to a set of simultaneous linear equations. In case the number of states of nature exceeds the number of securities, it is likely that a solution exists. In this case, though, it seems that a nonlinear programming code must be used to compute the solution, a task with which our experience is reported elsewhere [8].[9]

[9] The authors wish to acknowledge Professor Henry Latané's helpful insights, particularly in regard to the dominance characteristic associated with infinite solutions.

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A MONTE CARLO INVESTIGATION OF CHARACTERISTICS OF OPTIMAL GEOMETRIC MEAN PORTFOLIOS

*Steven F. Maier, David W. Peterson, and James H. Vander Weide**

I. Introduction

The geometric mean investment strategy, introduced into the finance and economics literature by Henry Latane [7] in 1959, has recently received some attention in scholarly circles after a decade of near neglect. Perhaps the primary reason for the renewed interest in the "growth optimum" strategy was the discovery by Hakansson [5] and others [1], [6], [12] of several desirable properties of this strategy vis-a-vis other portfolio strategies, including the mean-variance efficient strategy. Among the properties of optimal geometric mean portfolios discovered by these investigators are (i) they maximize the probability of exceeding a given wealth level in a fixed amount of time; (ii) they minimize the long-run probability of ruin; (iii) they maximize the expected growth rate of wealth; (iv) they imply that myopic behavior is optimal; and, (v) they imply decreasing absolute risk aversion in wealth.

Despite these recent successes, many questions regarding the optimal geometric mean strategy remain unanswered. Among these are:

1. How many risky securities are contained in an optimal geometric mean portfolio under various assumptions about market conditions?
2. How does the availability of borrowing and lending opportunities affect the composition of the optimal geometric mean portfolio?
3. How well do heuristic portfolio building rules perform when compared to the optimal geometric mean portfolio?
4. What are the individual characteristics of securities contained in optimal geometric mean portfolios?

To answer these questions, we examined the solutions to a relatively large number of simulated geometric mean portfolio problems obtained with the aid of a numerically efficient nonlinear programming code imbedded within a partitioning

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algorithm. Since the simulated portfolio problems contained many securities and the solutions were obtained in a reasonable amount of time,[1] we partially demonstrate as a by-product of our analysis the computational feasibility of the geometric mean approach to portfolio building.

Section II of this paper contains a formulation of the geometric mean portfolio problem, a discussion of both the solution methodology and the process from which we generated our ex-ante return data, and a description of several heuristic portfolio building rules used in our experiment. Discussions of the results of our experiments in both the case where borrowing is not permitted and the case where borrowing is permitted are contained in Sections III and IV, respectively. A summary of our major findings and some conclusions are contained in Section V.

II. Formulation and Methodology

Formulation. The i^{th} security or investment opportunity is postulated to have a holding period return h_i. This return is the ratio of the end-of-period selling price, plus accumulated interest and dividends, to the purchase price of a unit of the i^{th} security, and hence is a nonnegative number often in the vicinity of 1. The problem repeatedly solved in obtaining the conclusions reported herein is to find the optimal proportion x_i of given investment capital to invest in the i^{th} security, when one is faced with an array of one hundred possible securities, each of whose holding period return behavior is characterized by a probability density function which is assumed known. Stated mathematically, this problem is to

$$\text{Maximize } E[\log \sum_{i=1}^{100} x_i h_i]$$

$$\text{with respect to } x_1,\ldots,x_{100}$$

$$\text{subject to } x_i \geq 0,\ i=1,\ldots,100,$$

$$\sum_{i=1}^{100} x_i = 1.$$

For the case in which the h_i are lognormally distributed in a manner described

[1] A geometric mean portfolio problem with 100 securities and 50 states of nature was solved on average in 5 to 9 seconds CPU time on an IBM 370/165.

below, this is called the Formal Problem.

The Formal Problem was solved using a discrete probabilistic approximation technique which converts it to a Nonlinear Program of a form that is convenient for computer solution. Experimentally varying the degree of approximation, we chose a level that was efficient for computation yet faithful in reflecting the properties of the solution to the Formal Problem.

Solution Methodology. The Nonlinear Program was solved using a computer code developed by Gill and Murray [4]. This code was chosen both for its numerically stable characteristics and for its efficiency in solving concave programming problems having only linear constraints. A partitioning scheme was incorporated into the solution procedure to permit solution of portfolio problems with large numbers of securities, and to increase the efficiency of the algorithm. The first step in the solution procedure was to rank the securities by their individual geometric mean returns. Next, the Gill and Murray code was used to choose the best portfolio from among the highest-ranking securities; that is, all but the top 25 securities were forced to be in the solution to the Nonlinear Program at the zero level. Then the optimality of this solution was tested by computing the Kuhn-Tucker multipliers for the full set of securities, and checking whether the Kuhn-Tucker conditions for optimality were satisfied. (See [13] for the appropriate formulas.) If the solution satisfied the Kuhn-Tucker conditions, the program terminated, since this indicated the optimal solution to the Nonlinear Program for the full set of securities had been found. On the other hand, if the conditions were not satisfied, a new partition was constructed that consisted of all securities assigned positive proportions in the preceding iteration, all securities not in the partition which passed the Kuhn-Tucker test for inclusion, and as many additional securities as were permitted by the 25-security size constraint of the partition. The Gill-Murray code was then used to obtain a solution to this new partition and the Kuhn-Tucker multipliers were again used to test for optimality. In the over one hundred problems that were solved by this procedure, only in eight cases was it necessary to repartition the securities. In no case did this repartition fail to pass the subsequent optimality test.

Data Generation. The distribution of the holding period return h_i is assumed related to a market index I defined as the expected value over all securities of the logarithm of the holding period return. The return h_i of the i^{th} security is associated with I through the equation

$$\log h_i = \alpha_i + \beta_i I + \varepsilon_i, \tag{1}$$

where α_i and β_i are constants particular to the i^{th} security, ε_i is a normal random variable with mean zero and variance σ_i^2, and α_i, β_i and σ_i^2 are assumed known exactly. The index I is an indicator of the general market performance in the period to come, and is considered a normal random variable whose parameters are chosen subjectively by the investor.

Though one could use ex-post estimates for the one hundred $(\alpha_i, \beta_i, \sigma_i^2)$ triples and choose two parameters to reflect his beliefs about I, such a procedure for producing tables like those which follow (we have verified) could be very misleading. Our experience indicates, for example, that the number of securities in an optimal portfolio depends strongly on how similar the one hundred securities are, and that considerable care must therefore be taken to insure that the one hundred securities are typical of the market to which our conclusions are intended to pertain. To ensure that the values of the $(\alpha_i, \beta_i, \sigma_i^2)$ are chosen so they are a plausible representation of ex-ante beliefs about investment opportunities to be found on the major security exchanges, we have analyzed extensively a record of holding period returns for 381 securities over the nine-year period, 1963 to 1971.[2] This analysis leads us to the conclusion that picking a security at random from those listed on the New York Stock Exchange is analogous to picking an $(\alpha,\beta\ \sigma^2)$ triple under the governance of a trivariate normal distribution with the following parameters:[3]

$E(\alpha) = 0.0$ $\quad$ $Var(\alpha) = 1.225 \times 10^{-4}$

$E(\beta) = 1.000$ $\quad$ $Var(\beta) = 1.388 \times 10^{-1}$

$E(\sigma^2) = 1.339 \times 10^{-2}$ $\quad$ $Var(\sigma^2) = 6.644 \times 10^{-5}$

$cov(\alpha,\beta) = -3.195 \times 10^{-3}$ $\quad$ $cov(\alpha,\sigma^2) = -6.594 \times 10^{-5}$

$cov(\beta,\sigma^2) = 2.431 \times 10^{-3}$

The correlation matrix among these variables can be determined from the above data to be

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[2]Data on these securities were made available to us by Henry Latane.

[3]The trivariate normal model is flawed for this purpose because it does not ascribe zero probability to events for which $\sigma^2 < 0$. This could be remedied by assuming that (α, β, σ) is trivariate normally distributed, but we chose (rather arbitrarily) not to do this.

(2)

	α	β	σ^2
α	1	-.775	-.731
β	-.775	1	+.801
σ^2	-.731	+.801	1

which is useful in rendering plausible some of the results that follow.[4]

To carry out our investigation, we drew one hundred independent samples from the above trivariate normal distribution and let these represent a like number of securities from which portfolios were to be constructed. These triples may be obtained from the authors. Values for the mean and variance of the market index I were selected subjectively, and the Nonlinear Program approximation to the Formal Problem was generated in the following manner: A sample from the distribution governing I was drawn, as were sample values for the ε_i associated with each security i. These values were combined in the formula (1) to produce sample values of the h_i, denoted $r_{11},\ldots,r_{100,1}$. This process was repeated 50 times, resulting in a matrix R having 100 rows, 50 columns, and elements r_{ij}. The Nonlinear Program is thus to

$$\text{Maximize} \quad \sum_{j=1}^{50} \log \left(\sum_{i=1}^{100} x_i r_{ij} \right)$$

with respect to $x_1,\ldots,x_{100}$

subject to $x_i \geq 0$, i=1,...,100,

$$\sum_{i=1}^{100} x_i = 1.$$

The more columns the R matrix has, the more closely it approximates the Formal Problem. Through experimentation, we have determined that 50 columns provide an approximation adequate to support our conclusions.

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[4] For an informative discussion of the difficulties associated with defining I, α, β, σ^2, and ε in a consistent manner, see Fama [3]. Our procedure is similar to the one he suggests, though he deals with normally distributed returns while ours are assumed lognormal. While many authors, notably Sharpe [10], have worked primarily with normally distributed returns, there is a tendency of late to use the logarithmic model we have chosen. The works of Elton and Gruber [2], and Rosenberg and McKibben [9] are noteworthy in this respect. We found that the lognormal model better fit our data than did the normal model.

Assuming that the investor was not permitted to borrow money or sell securities short, we investigated the characteristics of optimal portfolios under each of six assumptions concerning the market index I in the coming investment period. For each of two assumed values of the standard deviation σ_I of the subjective lognormal distribution governing e^I, the three values .96, 1.00, and 1.04 for the mean μ_I were assumed in succession. As a three-month investment period was envisioned, these means correspond (approximately) to annual market changes of -16%, 0%, and 16%. These values were selected because they were characteristic of quite different market experiences, yet consistent with market behavior in recent years. The two standard deviations investigated were .0907 and .0453, the former being the sample residual standard deviation from the regression against time of the average holding period returns of the 381 securities in the 36-quarter data base.

Subsequently, we permitted the investor to augment his investment capital by borrowing money. To make this possibility attractive, however, it is necessary to alter the Formal Problem, as we do in Section IV.

Under each of the experimental conditions cited above, we determined how many securities comprise an optimal portfolio and whether the particular securities in that portfolio would have been selected for inclusion by any of several portfolio-building heuristics. These heuristic portfolio-building rules are described below.

Portfolio-Building Rules. Since few investors have at their disposal the sophisticated type of nonlinear programming code required to find the optimal geometric mean portfolio, we think it useful to investigate the performance characteristics of several heuristic portfolio-building rules. All but the last of the rules we examine follow the same principle: rank each security on the basis of some criterion and then allocate equal dollar amounts to several of the top-ranked securities. The last portfolio-building rule is a random-selection rule used as a benchmark for the previous rules. It stipulates that several securities be selected at random and equal dollar amounts be invested in each. The four security-ranking criteria chosen for this experiment are described below. The reader should note that the forms of some criteria depend on whether or not borrowing is permitted.

The G criterion: The geometric mean for each security is defined by the formula

$$G = e^{E(\log h_i)} = e^{[\alpha_i + \beta_i E(I)]}$$

where E is the expectation operator and e is Napier's constant. When borrowing is permitted, securities are ranked by G*, a number calculated by finding the optimal leverage to associate with each security.[5]

R/V criterion: The reward to variability ratio was first used by Sharpe [11] to evaluate the performance of mutual fund managers. We use the ratio here as a criterion for ranking individual securities. When no borrowing is permitted, the reward to variability ratio is given by

$$\frac{R}{V}_i = \frac{E(e^{\alpha_i + \beta_i I + \varepsilon_i})}{[VAR(e^{\alpha_i + \beta_i I + \varepsilon_i})]^{1/2}}$$

for security i, where E is the expectation operator and VAR is the variance.

When borrowing is permitted this ratio becomes

$$\frac{R}{V}_i = \frac{E(e^{\alpha_i + \beta_i I + \varepsilon_i}) - r}{[VAR(e^{\alpha_i + \beta_i I + \varepsilon_i})]^{1/2}}$$

for security i, where r is the borrowing rate. A ranking rule employing one or the other of these criteria is called the R/V rule.

The R/NV Criterion: The pure risk yield for each security is obtained by excluding the diversifiable risk component, ε_i, from the numerator and denominator of the reward to variability ratio. It is thus measured by

$$\frac{R}{NV}_i = \frac{E(e^{\alpha_i + \beta_i I})}{[VAR(e^{\alpha_i + \beta_i I})]^{1/2}}$$

for security i in the case where borrowing is not permitted, and by

$$\frac{R}{NV}_i = \frac{E(e^{\alpha_i + \beta_i I}) - r}{[VAR(e^{\alpha_i + \beta_i I})]^{1/2}}$$

when borrowing is permitted. The pure risk yield plays an important role in the portfolio-building rules used by Latane and Tuttle [8]. A ranking rule employing one or the other of these criteria is called the R/NV Rule.

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[5] More precisely, G* is given by the following:

$$G^* = \underset{\lambda \geq 0}{\text{Max}} \; {}_e E\{\log[\lambda e^{\alpha_i} e^{\beta_i I} e^{\varepsilon_i} + (1 - \lambda) h_{101}]\}$$

where h_{101} is the principle-plus-interest due at the end of the investment period per dollar borrowed.

The Kuhn-Tucker Multiplier: With each solution to a Nonlinear Program is associated a collection of constants (called KT multipliers), one for each security in the pool of 100. Each multiplier indicates the impact that inclusion in the portfolio of more of its associated security would have on the geometric mean of that portfolio. Hence, the multiplier is a measure of the desirability of that security, in the context of the others which are available. Assuming that this context is likely to be fairly stable from one investment situation to the next, we sought to predict each security's multiplier as a simple linear function of its α, β, and σ^2 values. The results are remarkably good.

Shown in Table 1 are averages of the coefficients of the regression of α, β, and σ^2 on the KT-multipliers. To obtain the numbers in the compartment corresponding to $\sigma_I = .0907$ and $\mu_I = 1.04$, the regression of KT multipliers on α, β, and σ^2 for each of five optimal portfolios was computed. These portfolios were each built from a pool of one hundred securities drawn independently from the trivariate normal distribution and used only for that one portfolio; hence these five pools were independent of each other and of the pool previously mentioned. The averages of these five sets of regression coefficients, t-statistics and r^2 values are presented in the $\sigma_I = .0907$, $\mu_I = 1.04$ compartment of Table 1. In addition, the standard deviations (in parentheses) of the coefficients suggest that within a set of 100 securities drawn from the trivariate normal distribution, it is possible to predict with fairly good accuracy the KT multiplier associated with that security in a solution to the Formal Problem.

Having in hand a method for predicting Kuhn-Tucker multipliers, we define the KT-rule to be that in which all of the securities are ranked in accordance with their predicted multiplier values, and the top several selected for the portfolio, with equal dollar amounts invested in each.

III. Experimental Results: No Borrowing Permitted

For each of six different assumptions concerning the values of the parameters μ_I, σ_I governing e^I, the optimal solution to the Nonlinear Program was obtained. Each such solution is a recommendation as to the particular securities that should appear in the optimal portfolio, and the proportion of the budget each such security should absorb. This entire process was replicated five times, each time using a different approximation to the Formal Problem, generated by sampling different values of the distributions governing I and the ε_i. The approximations were chosen to be of equal validity, so no one should

Table 1. Average Regression Coefficients and t-Statistics for Kuhn-Tucker Multipliers as a Function of α, β, and σ

	$\mu_I = .96$				$\mu_I = 1.00$				$\mu_I = 1.04$			
	k_0	k_α	k_β	k_σ	k_0	k_α	k_β	k_σ	k_0	k_α	k_β	k_σ
	-.02169	.92830	-.03481	.09471	-.02910	.94918	.00141	.09241	-.05422	.93846	.02902	.09271
	(.004)	(.037)	(.001)	(.004)	(.002)	(.027)	(.002)	(.004)	(.002)	(.023)	(.002)	(.008)
$\sigma_I = .0907$	t-statistics:				t-statistics:				t-statistics:			
		26.05	31.24	8.76		31.68	1.30	10.15		32.69	33.30	10.61
		(2.58)	(3.43)	(1.35)		(3.44)	(1.59)	(1.56)		(4.90)	(9.80)	(2.09)
	Average R^2: .986				Average R^2: .946				Average R^2: .942			
	-.01937	.93528	-.03730	.09425	-.02823	.95746	.00092	.09156	-.06319	.93862	.03491	.09329
	(.005)	(.023)	(.001)	(.005)	(.002)	(.013)	(.001)	(.007)	(.002)	(.015)	(.001)	(.006)
$\sigma_I = .0453$	t-statistics:				t-statistics:				t-statistics:			
		39.64	50.24	13.07		43.92	1.28	13.72		38.99	47.16	12.70
		(4.89)	(4.25)	(1.72)		(5.75)	(.98)	(1.86)		(8.17)	(12.92)	(2.79)
	Average R^2: .994				Average R^2: .972				Average R^2: .968			

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be accorded more or less credibility than another.

The results of these experiments are summarized in Table 2. Observe that both for the assumption of large (σ_I = .0907) and small (σ_I = .0453) uncertainty about the performance of the market indicator I, data are presented for a rising market (μ_I = 1.04), a neutral market (μ_I = 1.00), and a falling market (μ_I = .96). These parameter values are intended to reflect possible investor expectations about I at the end of the coming three-month period. The entry in brackets at the upper right of Table 2 is interpreted as follows:

> For the first Nonlinear Program for which σ_I = .0907 and μ_I = 1.04, it is optimal to invest .03 of the investment capital in Security #4, .04 of it in Security #24, and so forth. The geometric mean return gained thereby is 6.274 percent.

The other entries in Table 2 have analogous interpretations.

It is strikingly apparent from Table 2 that an investor adhering to the geometric mean criterion should diversify or not diversify, depending on whether he thinks the market will rise or fall. It is apparent that if the investor believes the market will fall, he should invest in just one security (assuming that he must invest), while in an even market, it appears best to invest in two. For a market expected to rise, the appropriate number of securities appears to be in the range of 4 to 7.[6] This latter variation is due to the differing approximations of each replication to the Formal Problem.

Table 2 also contains a summary of the security characteristics of the 30 optimal portfolios. Within each portfolio, the (α, β, σ) values for each security have been multiplied by the proportion of the capital invested in that security, yielding a ($\bar{\alpha}$, $\bar{\beta}$, $\bar{\sigma}$) representation for each portfolio. The five portfolio representations were then averaged to obtain ($\bar{\bar{\alpha}}$, $\bar{\bar{\beta}}$, $\bar{\bar{\sigma}}$). A standard deviation (in parentheses) is computed over the five portfolio samples.

It appears from Table 2 that if a rising market is anticipated, then it is desirable to invest in securities for which β_i and σ_i are large, and for which α_i is small. If the market is expected to decline, then stocks with high α_i and low β_i and σ_i values should be sought. Examination of the individual (α, β, σ) triples (as available from the authors) appearing in the various portfolios sustains the suggestion.

[6] These numbers of securities are obtained under the assumption that the investor has 100 securities from which to choose. If he has 1000 such securities, the optimal number to hold may tend to increase somewhat. Similarly, if the market indicator I is expected to increase (decrease) more (less) than 4 percent, a somewhat larger (smaller) number of securities should be held.

Table 2. Optimal Portfolios for Six Different Market Assumptions, Five Replications; Averages (Standard Deviations) over Five Replications of the Portfolio Characteristics

	$\mu_I = .96$	$\mu_I = 1.00$	$\mu_I = 1.04$
$\sigma_I = .0907$	45 1.00 — 2.652%	41 45 .20 .80 — 2.845%	4 24 36 43 59 67 70 .03 .04 .02 .04 .31 .11 .45 — 6.274%
	45 1.00 — 2.652%	41 45 .12 .88 — 2.833%	4 19 36 43 59 67 70 .02 .01 .02 .09 .30 .14 .41 — 6.326%
	45 1.00 — 2.652%	41 45 .13 .87 — 2.833%	4 59 67 70 .11 .25 .18 .46 — 6.361%
	45 1.00 — 2.652%	41 45 .11 .89 — 2.832%	4 19 59 67 70 .01 .03 .28 .21 .47 — 6.343%
	45 1.00 — 2.652%	41 45 .07 .93 — 2.829%	4 24 43 59 67 70 .07 .03 .00 .31 .14 .46 — 6.341%
	$\bar{\alpha} = .028$ (.000)	$\bar{\alpha} = .028$ (.000)	$\bar{\alpha} = .004$ (.001)
	$\bar{\beta} = .042$ (.000)	$\bar{\beta} = .101$ (.022)	$\bar{\beta} = 1.441$ (.021)
	$\bar{\sigma} = .024$ (.000)	$\bar{\sigma} = .029$ (.002)	$\bar{\sigma} = .129$ (.002)
$\sigma_I = .0453$	45 1.00 — 2.666%	41 45 .32 .68 — 2.874%	4 24 36 43 59 67 70 .08 .03 .03 .06 .29 .01 .50 — 6.695%
	45 1.00 — 2.666%	41 45 .28 .72 — 2.861%	4 36 43 59 66 67 70 .00 .05 .12 .28 .03 .02 .49 — 6.725%
	45 1.00 — 2.666%	41 45 .29 .71 — 2.864%	4 36 59 67 70 .15 .03 .23 .09 .51 — 6.761%
	45 1.00 — 2.666%	41 45 .29 .71 — 2.863%	4 19 59 67 70 .06 .02 .26 .14 .51 — 6.750%
	45 1.00 — 2.666%	41 45 .27 .73 — 2.859%	4 24 43 59 67 70 .07 .05 .02 .30 .06 .50 — 6.752%
	$\bar{\alpha} = .026$ (.000)	$\bar{\alpha} = .028$ (.000)	$\bar{\alpha} = .001$ (.001)
	$\bar{\beta} = .042$ (.000)	$\bar{\beta} = .178$ (.009)	$\bar{\beta} = 1.502$ (.032)
	$\bar{\sigma} = .024$ (.000)	$\bar{\sigma} = .036$ (.001)	$\bar{\sigma} = .132$ (.003)

The interplay of effects resulting in the above conclusion may be as follows. First, the correlation matrix (2) for the (α, β, σ^2) values occurring in market securities indicates that large α values are associated with small β and σ^2 values, and conversely. That is, stocks with small β values tend to show both little systematic and nonsystematic risk, while stocks with large values tend to have small (perhaps negative) α and large σ^2 values. If a declining market is anticipated, the investor seeks stocks for which α is large and can generally find one for which β and σ^2 are small, perhaps a utility with a high current dividend income. If the market is expected to rise, he seeks securities with large β values, but is generally then forced to consider stocks with high σ^2 values. To counter this high degree of uncertainty, he diversifies among several such securities, and thereby reduces his vulnerability to nonsystematic risk in holding period returns.

The results of our experiments using the portfolio-building rules are summarized in Table 3. For each building rule, we assumed that the investor chooses the number of securities he wishes to hold equal to the number found in the optimal portfolio. The investor decides which market behavior best represents his beliefs, and this in turn determines the number of securities he should hold. The particular securities he chooses depend upon which criterion he employs.

Several features of the data in Table 3 are especially interesting. First, in a falling market, all of the portfolio-building rules work optimally, save the random rule. In an even market, the G-Rule triumphed in the market with $\sigma_I = .0907$, while it was tied by the KT-Rule in the case where $\sigma_I = .0453$. In the rising market, the KT-Rule and the G-Rule again vied for superiority, with the KT-Rule showing a slight advantage. It is a curious circumstance that the R/V and R/NV Rules were, in this case, inferior to the Random Rule. This situation changes considerably when borrowing is permitted, as we describe next.

IV. The Case in Which Borrowing Is Permitted

The Formal Problem. The possibility of borrowing can be incorporated in the Formal Problem by introducing a new security, the one-hundred-first, whose coefficient x_{101} is required to be nonpositive. The "holding period return" h_{101} is the principle-plus-interest due at the period's end per dollar borrowed. Note that because the probability density function governing each h_i is positive for positive values of h_i, there is a nonzero probability that the terminal value $\sum_{i=1}^{100} x_i h_i$ of the portfolio will be less than the amount $-x_{101}h_{101}$

Table 3. Quarterly Geometric Rates of Return for Selected Portfolio Construction Rules Under Various Market Index Assumptions; Averages (Standard Deviations) over Five Replications

		$\mu_I = .96$	$\mu_I = 1.00$	$\mu_I = 1.04$
$\sigma_I = .0907$	G-Rule	2.652% (.000)	2.785% (.011)	6.113% (.062)
	R/V Rule	2.652% (.000)	2.275% (.003)	3.424% (.128)
	R/NV Rule	2.652% (.000)	2.275% (.003)	3.353% (.152)
	KT-Rule	2.652% (.000)	2.235% (.021)	6.145% (.038)
	Random	-4.348% (.085)	-0.053% (.048)	4.206% (.058)
	Optimal	2.652% (.000)	2.834% (.005)	6.329% (.030)
$\sigma_I = .0453$	G-Rule	2.666% (.000)	2.852% (.006)	6.480% (.065)
	R/V Rule	2.666% (.000)	2.078% (.001)	3.627% (.160)
	R/NV Rule	2.666% (.000)	2.315% (.002)	3.453% (.139)
	KT-Rule	2.666% (.000)	2.852% (.006)	6.549% (.021)
	Random	-4.042% (.081)	0.231% (.043)	4.467% (.043)
	Optimal	2.666% (.000)	2.864% (.005)	6.737% (.024)

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due in repayment of the loan (unless $x_{101} = 0$; that is, unless no money was borrowed). In this circumstance we may define the investor's end-of-period wealth to be zero, a condition which is associated with infinitely negative utility. Inviting such a bankruptcy condition with positive probability renders the Formal Problem objective function negatively infinite, a situation inferior to any in which $x_{101} = 0$. Hence, borrowing is never an optimal policy for the Formal Problem. This is a rather surprising result in view of the common practice of borrowing money to invest, and it suggests that there may be some inadequacies in the Formal Problem.

One modification of the Formal Problem which is consistent with an optimal multiperiod program for portfolio management, and in which borrowing is a viable option is obtained by introducing a new security, the zeroth, in which a fixed proportion x_0 of wealth must be invested. This restriction might reflect the desires of the investor to hold the proportion x_0 of his wealth in some form such as art or real estate, and to liquidate it only in an extreme situation. This Modified Formal Problem is stated as follows:

$$\text{Maximize} \quad E\{\log \left(\sum_{i=0}^{101} x_i h_i \right)\}$$

$$\text{with respect to} \quad x_0, \ldots, x_{101}$$

$$\text{subject to}$$

$$\sum_{i=0}^{101} x_i = 1,$$

$$x_o = \tau, \text{ a known constant,}$$

$$x_i \geq 0, \quad 1 \leq i \leq 100,$$

$$-b \leq x_{101} \leq 0.$$

The constant b is a limit on the proportion of wealth that can be borrowed; it is analogous to a margin requirement. As one avoids borrowing in the Formal Problem, so too does one avoid over-borrowing in the Modified Formal Problem. It is easily shown that one should never permit $x_0 h_0 + x_{101} h_{101}$ to go negative, so that an immediate limit on borrowing is $0 \geq x_{101} \geq -(\tau h_0)/h_{101}$.

In obtaining numerically the characteristics of solutions to the Modified Formal Problem, we approximated the latter with stochastically drawn Nonlinear Programs, as was done with the Formal Problem. The parameter values we used were $h_0 = 1$, and $x_0 = \tau = .506$. These parameters imply that $b = .494$, which is equivalent to limiting the borrowing capacity by a 50 percent margin requirement.

In Table 4 are shown solutions to five Nonlinear Programming problems approximating the Modified Formal Problem in which $b = 0$; that is, in which borrowing is not permitted. In comparing this to Table 2, we observe that the effect of requiring $x_0 = .506$ is to decrease the geometric mean return on total wealth and to decrease the number of securities bought. However, the arithmetic mean return on the securities portion of the portfolio has increased, which is consistent with decreasing risk aversion of the investor. Comparison of Tables 2 and 4 also shows that a further effect is to cause the investor to choose stocks with higher β and σ values.

Permitting borrowing to the limit $b = .494$ at an interest rate of 2.5 percent per quarter led to the exact same portfolios found in the analysis of the original Formal Problem and exhibited in Table 2, though the geometric mean returns were somewhat lower because full advantage was taken of the option to borrow, and so some capital was expended on interest payments.

In Table 5 are shown the characteristics of portfolios built using various rules, in case borrowing is permitted and $\mu = 1.04$, $\sigma_I = .0907$. We deem this the most interesting market situation, in light of the relatively drab policies suggested in Table 2 for other circumstances. If for each rule one selects a portfolio containing the same number of securities as found in the optimal portfolio, then the KT- and G-Rules outperform the other rules and yield portfolios which are nearly optimal. It is heartening to note also that the Random Rule is least attractive under these circumstances, in contrast to the situation depicted in Table 3.

V. Summary and Conclusions

We began this paper by posing four questions about the characteristics of optimal geometric mean portfolios. Tentative answers to these questions were obtained from an examination of the solutions to a relatively large number of geometric mean portfolio problems generated from a Monte Carlo simulation of ex-ante security return data. The results of this examination can be summarized as follows. First, the number of risky securities contained in an optimal geometric mean portfolio depends on one's expectations concerning future market

Table 4. Optimal Portfolios for the Case $x_0 = .506$, $b = 0$, Five Replications; Averages (Standard Deviations) over Five Replications of the Portfolio Characteristics

$\mu_I = 1.04$

$\sigma_I = .0907$

4	43 59 70	3.4339%
.04	.04 .10 .82	
4	19 43 70	3.5368%
.15	.05 .03 .77	
4	70	3.5603%
.19	.81	
19	59 70	3.4302%
.20	.05 .75	
4	59 70	3.4655%
.21	.07 .72	

$\bar{\bar{\alpha}} = -.005 \quad (.003)$

$\bar{\bar{\beta}} = 1.681 \quad (.035)$

$\bar{\bar{\sigma}} = .142 \quad (.003)$

Table 5. Quarterly Geometric Rates of Return for Selected Portfolio Construction Rules; Averages (Standard Deviations) over Five Replications

$\sigma_I = .0907$

	$\mu_I = 1.04$
G-Rule	4.802% (.061)
G*-Rule	4.313% (.177)
R/V Rule	4.287% (.169)
R/NV Rule	3.718% (.172)
KT-Rule	4.834% (.037)
Random	2.919% (.057)
Optimal	5.016% (.029)

Assumptions:

Borrowing Limit b = .494

Withheld Capital x_0 = .506

Interest Rate = 2.5% per quarter

conditions and on the conditions under which borrowing is permitted. If all capital must be invested, the investor who believes the market will fall should invest in just one security, he who believes the market will remain unchanged should diversify among two securities, while he who believes the market will rise should diversify among four to seven securities.[7] In the event that some capital must be withheld from investment, the investor who believes the market will rise and who can borrow on reasonable terms will again diversify among four to seven securities, choosing the same securities in the same relative proportions as in the preceding situation. Should the investor be permitted neither to borrow nor to invest all his capital, his best portfolio consists of two to four securities, assuming he expects the market to rise.

Second, the individual characteristics of securities contained in optimal geometric mean portfolios also depend on one's assumptions about market conditions and the availability of borrowing. It appears that if a rising market is anticipated, then it is desirable to invest in securities for which β_i and σ_i are large, and for which α_i is small. If the market is expected to decline, then stocks with high α_i and low β_i and σ_i should be sought. The effect of not permitting an investor to borrow and requiring him to withhold capital from investment is to make him seek stocks with especially large values of β and σ^2 in the event he expects the market to rise.

Third, the returns obtained from optimal geometric mean portfolios can sometimes be approximated with the use of heuristic portfolio-building rules. Among the rules which we investigated, the KT- and G-Rules offer the most nearly optimal returns in all market conditions.

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[7] See footnote 6.

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Principles for Lifetime Portfolio Selection: Lessons from Portfolio Theory*

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Abstract

Portfolio theory is concerned with developing general principles and practical models for making sound lifetime portfolio decisions. Much of the current research on portfolio theory emanates from the path-breaking mean-variance portfolio model of Nobel Laureate Harry Markowitz. Although the mean-variance model continues to be the most widely used portfolio model in financial practice, economists have devoted considerable effort to research on two additional models of portfolio behavior, the geometric mean model and the lifetime consumption-investment model. These models are also useful to investors because they offer significant additional insights into optimal portfolio behavior. The purpose of this paper is to review the major findings of the research literature on the mean-variance model, the geometric mean model, and the lifetime consumption-investment model, and, on the basis of this review, to develop a set of practical guidelines for making lifetime portfolio decisions.

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I. Introduction

1. An individual's savings and investment choices at various stages of life are among the most important decisions he or she can make. A person entering the workforce in 2008 can expect to work for approximately 40 to 45 years and to live in retirement for an additional 20 to 25 years. During his working life, an individual must accumulate sufficient assets not only to live comfortably in both good and bad economic times, but also to live comfortably in retirement. To achieve the goal of maximizing economic welfare over his expected lifetime, an individual consumer/investor should have a sound understanding of the basic economic principles of lifetime portfolio selection.

2. The lifetime consumption/investment decision problem is complex. Suppose an individual consumer/investor divides her expected remaining lifetime into N equal periods. At the beginning of period 1, she must allocate her wealth W_0 to consumption C_0 and investment W_0-C_0. Her wealth at the beginning of the next period, W_1, will depend on both the amount she chooses to invest at the beginning of period 1 and the return she earns on her investment. The consumer/investor recognizes that she will continue to make consumption/investment decisions at the beginning of each period of her life. Her goal is to maximize her expected utility from lifetime consumption. Since expected utility from lifetime consumption depends on consumption/investment decisions in every period of her life, and the opportunities in later periods depend on the results of decisions in earlier periods, the individual consumer/investor must potentially solve a complex N period optimization problem simply to make the correct consumption/investment decision at the beginning of period 1.

3. Portfolio theory is concerned with developing general principles and practical models for making sound lifetime portfolio decisions. Much of the current research on portfolio theory emanates from the path-breaking mean-variance portfolio model of Nobel Laureate Harry

Markowitz. Markowitz (1952, 1959) recommends that in making investment decisions, investors should explicitly recognize investment risk as measured by variance of return, as well as expected return. He describes how the variance of return on a portfolio of securities depends on the amount invested in each security, the variance of return on each security, and the correlation between the returns on each pair of securities. He also suggests that investors limit their choices to an efficient set of portfolios that provide the highest mean return for any level of variance and the lowest variance of return for any level of mean. By providing an intuitively appealing measure of portfolio risk and a framework for analyzing the basic risk/return tradeoff of portfolio decisions, Markowitz revolutionized both the theory and practice of portfolio management. For that reason, Markowitz is properly called the father of Modern Portfolio Theory.[1]

4. The beauty of the Markowitz mean-variance model lies in its blend of elegance and simplicity. Markowitz achieves elegance by providing investors a sophisticated tool for: (i) understanding how portfolio mix decisions affect portfolio risk; and (ii) determining those portfolios that provide an efficient combination of risk and return. He achieves simplicity by focusing solely on the economic trade-off between portfolio risk and return in a single-period world.[2]

5. Although the mean-variance model continues to be the most widely used portfolio model in financial practice, economists have devoted considerable effort to research on two additional models of portfolio behavior, the geometric mean model and the lifetime consumption-investment model. These models offer significant additional insights into optimal

[1] This paper is dedicated to Dr. Markowitz in celebration of his 80th birthday.
[2] Markowitz discusses many of the dynamic economic forces that affect lifetime consumption and investment decisions in the later chapters of Markowitz (1959). However, the economic forces described in this discussion are not incorporated directly in his single-period mean-variance model.

portfolio behavior. The purpose of this paper is to review the major findings of the research literature on the mean-variance model, the geometric mean model, and the lifetime consumption-investment model, and, on the basis of this review, to develop a set of practical guidelines for making lifetime portfolio decisions.

II. The Markowitz Mean-variance Model

6. Investors make portfolio decisions by selecting the securities to include in the portfolio and the amount to invest in each security. In making risky portfolio choices, the Markowitz mean-variance approach assumes that investors: (1) consider only the mean and variance of the probability distribution of portfolio and security returns; (2) for a given level of mean return, prefer a portfolio with a lower variance of return; and (3) for a given level of variance of return, prefer a portfolio with a higher mean return.

7. As Markowitz demonstrates, the above assumptions suggest that an investor's portfolio decision problem can be solved in three steps. First, an investor can estimate the mean and variance of return on each security and the correlation of returns on each pair of securities. Second, an investor can calculate the mean and variance of return on each feasible portfolio and determine an "efficient frontier" of portfolios that offer the lowest variance of return for any level of mean return and the highest mean return for any level of variance of return. Third, an investor can choose a portfolio on the efficient frontier. This paper will focus primarily on steps two and three.

A. Estimating the Mean and Variance of Portfolio Returns

8. Assume that there are N securities and that an investor allocates the proportion X_i of his wealth to security i. Let R_i denote the return on security i and R_p the return on the portfolio of N securities. Then:

$$R_p = R_1 X_1 + R_2 X_2 + \cdots + R_n X_n, \quad \textbf{(1)}$$

where R_p and $R_1 \ldots R_n$ are random variables.

9. According to Equation (1), the portfolio return, R_p, is a weighted average of the returns on the securities in the portfolio. Formulas for calculating the mean and variance of a weighted sum of random variables are presented in most introductory probability texts. Using these formulas, the mean of the portfolio return, E_p, is given by:

$$E_p = E_1 X_1 + E_2 X_2 + \cdots + E_n X_n, \quad \textbf{(2)}$$

where $E_1, \ldots, E_n$, are the mean, or expected, returns on the individual securities; and the variance of the portfolio return is given by:

$$V_p = \sum_i V_i X_i^2 + \sum_i \sum_{j>i} 2 C_{ij} X_i X_j, \quad \textbf{(3)}$$

where V_i is the variance of return on security i, and C_{ij} is the covariance of returns on security *i* and security *j*.

10. In the Markowitz mean-variance model, investment risk is measured by either the variance of the portfolio return or its equivalent, the standard deviation of portfolio return.[3] The formula for portfolio variance, Equation (3), can be used to provide insight on how investors can reduce the risk of their portfolio investment. Recall that the covariance of returns on security i and security j can be written as the product of the standard deviation of return on security i, SD_i, the standard deviation of the return on security j, SD_j, and the correlation of returns on securities i and j, ρ_{ij}:

$$C_{ij} = SD_i \times SD_j \times \rho_{ij}. \quad \textbf{(4)}$$

[3] Variance and standard deviation of return are considered to be equivalent measures of risk because the standard deviation is the positive square root of the variance, and the positive square root is an order-preserving transformation. Thus, portfolios that minimize the variance of return for any level of mean return will also minimize the standard deviation of return for any level of mean return.

To simplify the analysis, assume that: (i) the variances on all securities are equal to the average security variance, $\bar{V}$; (ii) the correlation of returns on all securities i and j are equal to the average correlation of return, $\bar{\rho}$, on securities; and (iii) the investor allocates 1/N of his wealth to all securities.

11. Under these assumptions, the variance of return on the portfolio, V_p, can be written as:

$$V_p = \bar{V}(\frac{1}{N}) + \frac{N(N-1)}{N^2}\bar{V}\bar{\rho}. \quad (5)$$

The effect of variations in $\bar{V}$, $\bar{\rho}$, and N on portfolio variance, V_p, can be determined by calculating the partial derivative of V_p, with respect to each of these variables:

$$\frac{\partial V_p}{\partial \bar{V}} = \frac{1}{N} + \frac{N(N-1)}{N^2}\bar{\rho} > 0 \quad \text{if} \quad \bar{\rho} \geq 0$$
$$\frac{\partial V_p}{\partial \bar{\rho}} = \frac{N(N-1)}{N^2}\bar{V} > 0 \quad (6)$$
$$\frac{\partial V_p}{\partial N} = -\bar{V}(\frac{1}{N^2}) + \bar{V}\bar{\rho}(\frac{1}{N^2}) = \bar{V}(\bar{\rho}-1)(\frac{1}{N^2}) \leq 0.$$

These equations indicate that the portfolio variance of return can be reduced in three ways: (i) increasing the number of securities in the portfolio; (ii) choosing securities having returns that are less correlated with returns on other securities; and (iii) if $\bar{\rho}$ is greater than or equal to zero, choosing securities with low variance or standard deviation of returns.

12. The formulas for portfolio mean and variance, given by Equation (2) and Equation (3), require estimates of the mean, E_i, and variance, V_i, of return on each security, as well as the covariance, C_{ij}, of returns on each pair of securities. If there are N securities under

consideration, Equation (2) and Equation (3) require N mean estimates, N variance estimates, and N (N – 1)/2 distinct covariance estimates, for a total of 2N + N x (N-1)/2 estimates. To illustrate, assume that an analyst is considering 200 securities for possible inclusion in a portfolio. Then the analyst must estimate 200 mean values, 200 variance values, and 19,900 covariance values to implement the Markowitz mean-variance model. Without simplification, it is unlikely that the analyst could estimate these inputs cost effectively.

13. One way to reduce the large number of estimates required to implement the Markowitz mean-variance model is to apply the model to asset classes rather than to individual securities. For example, if the universe of securities is divided into large U.S. stocks, small U.S. stocks, global stocks, emerging market stocks, corporate bonds, long-term U.S. government bonds and Treasury bills, the number of input estimates would be reduced from 20,300 to 35. Given the importance of the asset mix decision and the significant reductions in required estimates obtainable by considering asset categories rather than individual securities, it is not surprising that the Markowitz model is frequently applied to asset categories rather than to individual securities.

14. Another way to reduce the input requirements of the Markowitz mean-variance model is to make one or more simplifying assumptions about the covariance structure of security returns. For example, if one assumes that: (i) the return on an individual security i is related to the return on a market index via the equation:

$$R_i = \alpha_i + \beta_i R_m + e_i \quad \text{for } i = 1,2,\cdots,N \tag{7}$$

where R_i is the return on security i, R_m is the return on the market index, and e_i is a random error term; (ii) $E[e_i(R_m - \overline{R_m})] = 0$; and (iii) $E(e_i \times e_j) = 0$; then the means, variances, and covariances of securities' returns are given by:

$$E_i = \alpha_i + \beta_i E_m \quad \textbf{(8)}$$

$$V_i = \beta_i^2 V_m + V_{ei}, \quad \textbf{(9)}$$

$$C_{ij} = \beta_i \beta_j V_m. \quad \textbf{(10)}$$

15. Substituting Equations (8), (9), and (10) into Equations (2) and (3), we obtain the following equations for the mean and variance of return on a portfolio of securities:

$$E_p = \sum_i X_i (\alpha_i + \beta_i E_m) \quad \textbf{(11)}$$

$$V_p = \sum_i X_i{}^2 \beta_i^2 V_m + \sum_i \sum_{j \neq i} X_i X_j \beta_i \beta_j V_m + \sum_i X_i{}^2 V_{ei}. \quad \textbf{(12)}$$

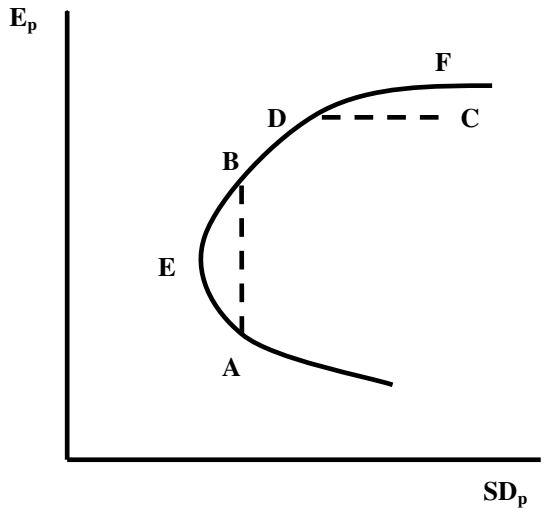
To estimate the mean and variance of return on any portfolio then, we need only to estimate the α_i, β_i, and V_{ei} inputs for each security and the expected return, E_m, and variance of return, V_m, on the market index. Thus, the total number of required estimates has been reduced from $2N + [N \times (N-1)]/2$ to 3N + 2. If the analyst is considering 200 securities for possible inclusion in a portfolio, the number of required estimates is reduced from 20,300 to 602.

B. The Feasible Set of Portfolios and the Efficient Frontier

16. The feasible set of portfolios is the set of all security allocations (X_1, … X_N) that satisfy the individual's portfolio constraints. An obvious portfolio constraint is that the sum of the proportion of wealth invested in all securities must equal 1. Other typical constraints are that the proportion invested in each security must be non-negative (that is, short selling is not allowed) and the investor will not invest more than a certain percentage of wealth in any one security.

17. The Markowitz mean-variance portfolio model allows an investor to translate all feasible portfolio proportions (X_1, … X_N) into feasible combinations of: (i) expected return and variance of return; or (ii) expected return and standard deviation of return. Figure I shows one such feasible set of E_p, SD_p, combinations. Consider portfolio A shown in Figure I. Rational Markowitz mean-variance investors would not choose to invest in portfolio A because they could achieve a higher expected return by investing in portfolio B without increasing the portfolio standard deviation. Similarly, rational investors would not invest in portfolio C because they could achieve a lower portfolio standard deviation by investing in portfolio D without sacrificing mean return. The efficient set of portfolios consists of all portfolios with the highest mean return for any given level of standard deviation of return and the lowest standard deviation of return for any given level of mean return. The curved line EBDF is the efficient frontier for the feasible set of risky portfolios shown in Figure I.

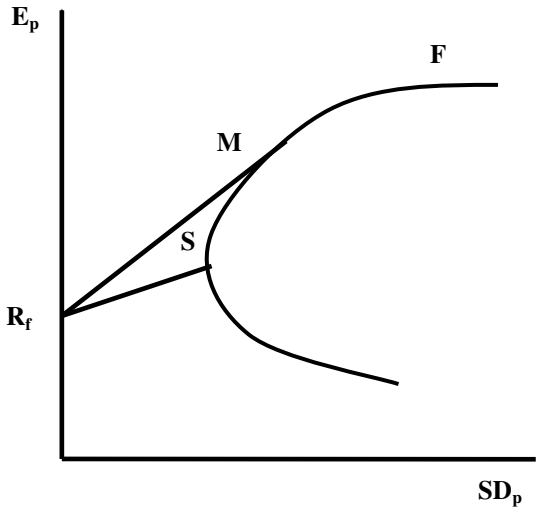
Figure I



C. The Effect of a Risk-free Security on the Shape of the Efficient Frontier

18. When all securities are risky, the efficient frontier typically has a shape similar to that shown in Figure I. Suppose now there exists a security with a risk-free rate of return, R_f. Since the risk-free security has zero variance, its mean-standard deviation combination lies on the vertical axis in mean-standard deviation space (see Figure II). In addition, the risk-free security must lie on the efficient frontier because there are no other securities with the same mean return and a lower standard deviation of return.

Figure II



19. To see how the shapes of the feasible set of securities and the efficient frontier change as a result of the presence of a risk-free security, consider a new portfolio consisting of the fraction X invested in a portfolio S of risky securities and a fraction (1-X) invested in the risk-free security. Because the return on the risk-free security has zero variance and is uncorrelated with the return on portfolio S, both the mean and standard deviation of return on the new portfolio are linearly related to the mean and standard deviation of return on portfolio S.[4]

[4] Specifically, $E_p = X \cdot E_s + (1 - X)\, R_f$ and $SD_p = X \cdot SD_s$.

Thus, the new portfolio lies somewhere on the straight line connecting R_f and S in Figure II, with its exact location depending on the fraction of wealth X invested in portfolio S.

20. Since the risky portfolio S in the above example is selected arbitrarily, the revised set of feasible portfolios consists of E_p, SD_p combinations lying on any line connecting R_f with a point such as S in the feasible set of risky portfolios. The slope of such a line is $(E_s - R_f)/SD_s$. Consider now the line connecting R_f with portfolio M in Figure II. The points on this line represent feasible portfolios with the fraction X invested in the risky portfolio M and the fraction (1-X) invested in the risk-free security. Since the slope $(E_M - R_f)/SD_M$ is greater than the slope $(E_s - R_f)/SD_s$ for any risky portfolio S, for any feasible portfolio not on the line connecting R_f and risky portfolio M, there exists a portfolio on the line connecting R_f and risky portfolio M with a higher mean return and the same standard deviation of return or the same mean return and a lower standard deviation of return. Thus, the points on the line connecting R_f and M are not only feasible but also efficient. Evidently, the new efficient frontier consists of the union of all points on the line connecting R_f and M and all points on the efficient frontier of risky securities between M and F.[5]

D. Identifying the Efficient Frontier

21. As noted above, the efficient set of portfolios consists of all portfolios with the highest mean return for a given level of variance or standard deviation and the lowest variance (standard deviation) for a given level of mean. Once the E_i, V_i, and C_{ij} inputs have been estimated, the analyst can calculate the mean-variance efficient frontier by solving the following optimization problem for all non-negative values of the parameter λ:

[5] This conclusion strictly applies only when the investor cannot finance risky investments with borrowing. If the investor can borrow as well as lend at the risk-free rate, the efficient frontier will consist of the entire straight line emanating from R_f and extending through the tangency point M on the efficient frontier of risky securities.

$$\begin{aligned} &\text{Minimize } V_p - \lambda E_p \\ &\text{with respect to } X_1, X_2 \cdots, X_N \\ &\text{subject to } \sum_i X_i = 1 \\ &X_i \geq 0; i = 1, \cdots, N. \end{aligned} \tag{13}$$

22. The above problem is called the standard mean-variance portfolio selection problem. Non-standard forms of the mean-variance portfolio selection problem include cases where: (i) additional linear constraints apply, and (ii) the amounts invested in one or more securities may be negative. Markowitz (1956, 1959, and 2000) describes efficient algorithms for solving both standard and non-standard versions of the mean-variance portfolio selection problem. These algorithms are used extensively in practical mean-variance portfolio analysis.

23. Elton, Gruber, and Padberg (1976, 1978) demonstrate that an alternative simple procedure can be used to select mean-variance efficient portfolios when the single-index model, Equation (7), is accepted as the best method of forecasting mean-variance portfolio inputs. Their simple procedure requires that securities be ranked based on the ratio of their expected excess return to their beta:

$$(E_i - R_f) \Big/ \beta_i \tag{14}$$

where E_i is the expected return on security i, R_f is the return on the risk-free security, and β_i is the sensitivity of the return on security i to changes in the market index as measured by Equation (7). Elton, Gruber, and Padberg prove that all risky securities with an excess return to β ratio above a specific cut-off, C^*, should be included in a mean-variance efficient portfolio; and all risky securities with an excess return to β ratio below this cut-off value should be excluded. Formulas for C* for both the case where short sales are not permitted and the case where short sales are permitted are given in Elton, Gruber, and Padberg's papers.

E. Choosing the "Best" Portfolio on the Efficient Frontier

24. In the Markowitz mean-variance model, an investor should always choose a portfolio on the mean-variance efficient frontier. However, the investor's choice of the best portfolio on the efficient frontier depends on his or her attitude toward risk. Risk-averse investors will likely choose efficient portfolios near the minimum risk portfolio, E, on the efficient frontier in Figure I (or R_f on the efficient frontier in Figure II), while risk-tolerant investors will likely choose portfolios near the maximum mean portfolio, F.

25. But how does the investor actually make the choice of the "best" portfolio on the efficient frontier? It appears that there are two alternatives: direct choice, and investor utility functions. Direct choice involves a direct comparison of the mean and standard deviation of various portfolios on the efficient frontier. In the direct choice approach, the investor is simply presented with information on the means and standard deviations of various portfolios on the efficient frontier and asked to choose a preferred combination of mean and variance.

26. In contrast, investor utility functions involve an attempt to capture the investor's aversion to risk in the form of an investor-specific utility function:

$$U = E_p - kV_p, \tag{15}$$

where k is a parameter indicating the investor's aversion to risk, as measured by variance of return. In this approach, a portfolio advisor would estimate an investor's risk aversion parameter, k, from the investor's responses to a series of questions regarding the investor's attitude toward risk. Investors with high risk aversion would be assigned high values of k, while investors with low risk aversion would be assigned low values of k. The advisor would then calculate the utility, U, of each portfolio on the efficient frontier and recommend the portfolio with the highest utility.

27. In the tradition of Bernoulli (1738) and von Neuman and Morgenstern (1946), economists generally assume that investors wish to maximize their expected utility of wealth, an assumption that has allowed economists to derive a rich set of conclusions about investment behavior. However, practitioners have found that for most investors, utility functions are an impractical device for selecting portfolios. In their experience, they find that investors do not understand the concept of utility and are generally unable to provide the information required to determine their utility function analytically. While this conclusion probably explains the minimal use of utility functions in practical portfolio analysis, it does not rule out using utility functions to obtain practical insights into optimal investment policies for typical investors. Indeed, we demonstrate below how utility analysis has produced many useful guidelines for lifetime consumption-investment decision making.

F. Comments on the Mean-variance Model

28. The Markowitz mean-variance portfolio model has undoubtedly been one of the most influential models in the history of finance. Since its introduction in 1952, the mean-variance model has provided an intellectual foundation for much later research in finance. Because of its rich practical insights, the Markowitz model also continues to strongly influence practical financial management. Nonetheless, the mean-variance approach to portfolio selection is sometimes criticized because it implicitly assumes that information on a portfolio's mean return and variance of return is sufficient for investors to make rational portfolio decisions. Tobin (1958) notes that information on a portfolio's mean return and variance of return is only sufficient for rational portfolio decision making if: (i) the investor's utility function is quadratic; or (ii) the probability distribution of security returns is normal. Neither of these assumptions is likely to be strictly true.

29. Economists generally agree that a reasonable utility function should display non-satiety, risk aversion, decreasing absolute risk aversion, and constant relative risk aversion.[6] The problem with a quadratic utility function is that it displays satiety (that is, an investor with this utility function eventually prefers less wealth rather than more); and increasing absolute and relative risk aversion. Mossin (1968) demonstrates that the only utility functions that satisfy all four of the above desirable characteristics of utility functions are the logarithmic function, $\log W$,[7] and the power function, $W^{1-\gamma}$. Thus, the assumption that it is rational for investors to evaluate risky choices based solely on the mean and variance of return cannot be strictly justified on the grounds that investors' utility functions are quadratic.

30. The other way to justify the assumption that investors base their risky choices solely on the mean and variance of returns is that security returns are normally distributed. But this justification is also problematic. The normal distribution is symmetric with a positive probability that returns can take any value on the real line. However, with limited liability, an investor can never lose more than his entire wealth—that is, $(1+r_t)$ must be greater than or equal to zero. In addition, the investor's multi-period return is the product of individual period returns, and the product of normally distributed variables is not normally distributed. Thus the rationality of relying solely on the mean and variance of portfolio returns cannot be strictly justified on the grounds that returns are normally distributed.

31. Markowitz (1959), Levy and Markowitz (1979), and Samuelson (1970), among other prominent economists, recognize that investor utility functions are unlikely to be quadratic and that security return distributions are unlikely to be normally distributed. However, they

[6] The desirable attributes of utility functions are discussed more fully below.
[7] In this paper, we use the notation, log W, to indicate the natural logarithm of W.

defend the validity of the mean-variance approach to portfolio decision making based on the belief that one or more of the following statements is true:

- Within any interval, utility functions are approximately quadratic.
- Probability distributions can often be approximated by their first two moments.
- The mean-variance model, though not strictly rational, is nonetheless useful for investors because it provides information that investors find to be relevant and leads them to make better decisions than they would in the absence of the model.

Indeed, Markowitz and Levy and Markowitz demonstrate that many utility functions are approximately quadratic in any interval; Samuelson demonstrates that probability distributions can under fairly general conditions be approximated by their first two moments; and the prevalence of the mean-variance framework in practical decision making suggests that the mean-variance model is useful to investors.

III. The Geometric Mean Portfolio Model

32. As described above, Markowitz achieves simplicity in the mean-variance model by focusing on the economic trade-off between risk and return in a single-period world. However, many investors make portfolio decisions in a multi-period world where portfolios can be rebalanced periodically. For these investors, Latané (1959) recommends an alternative framework, the geometric mean portfolio model. He argues that the maximum geometric mean strategy will almost surely lead to greater wealth in the long run than any significantly different portfolio strategy, a result that follows from similar conclusions of Kelly (1957) in the context of information theory. Breiman (1960, 1961) states the precise conditions for which this result holds and develops additional properties of the geometric mean strategy. A recent news article

describes how two well-known fund managers, Edward Thorp and Bill Gross, have used the geometric mean portfolio strategy to improve the performance of their funds.[8]

A. The Geometric Mean Strategy and Long-run Wealth Maximization

33. Consider an investor who invests an amount, W_0, at the beginning of period 1 and earns a known rate of return on investment of $R_t = (1+r_t)$ in periods t = 1, …, T. If the investor reinvests all proceeds from his investment in each period, his wealth at the end of period T will be:

$$\begin{aligned} W_T &= W_0(1+r_1)(1+r_2)\cdots(1+r_T) \\ &= W_0\prod_t R_t. \end{aligned} \tag{16}$$

Let G=(1+g) denote the investor's compound average, or geometric mean, return on his investment over the period from 1 to T. Then,

$$\begin{aligned} G &= [(1+r_1)(1+r_2)\cdots(1+r_T)]^{1/T} \\ &= \prod_t R_t^{1/T}. \end{aligned} \tag{17}$$

Since $W_T = W_0G^T$, the investor's terminal wealth, W_T, will be maximized when the geometric mean return on investment, G, is maximized.

34. In practice, the returns $R_t = (1+r_t)$ for t = 1, …, T are uncertain at the time the investor makes the initial investment decision. Assume that the return on investment is independently and identically distributed, and that there are J possible outcomes for R. Let P_j denote the probability of obtaining the j^{th} return outcome. Then, the forward-looking geometric mean return on investment in this uncertain case is defined as:

[8] "Old Pros Size Up the Game, Thorp and Pimco's Gross Open Up on Dangers of Over-betting, How to Play the Bond Market," *The Wall Street Journal*, Saturday/Sunday, March 22-23, 2008.

$$G^E = \prod_j R_j^{P_j}. \quad (18)$$

In the geometric mean portfolio model, the investor's objective is to maximize the forward-looking geometric mean return on investment, G^E.

35. When analyzing a variable such as G or G^E that is equal to the product of other variables, it is frequently convenient to analyze the logarithm of the variable rather than the variable itself. From Equation (18), the log of G^E is equal to the expected log return on investment:

$$\begin{aligned} \log G^E &= \sum_j P_j \log R_j \\ &= E \log R. \end{aligned} \quad (19)$$

Because the log function is monotonically increasing throughout its domain, any portfolio that maximizes G^E will also maximize log G^E, and hence E log R. Thus, the geometric mean portfolio strategy is equivalent to a portfolio strategy that seeks to maximize the expected log return on investment, E log R.

36. Since the return on investment is assumed to be independently and identically distributed, the T values for R shown in the definition of G in Equation (17) can be considered to be a random sample of size T from the probability distribution for R. Let G^S denote the geometric mean return calculated from the random sample of size T from the probability distribution for R and log G^S denote the log of the sample geometric mean return. From Equation (17), log G^S is given by:

$$\log G^S = \frac{1}{T} \sum_t \log R_t. \quad (20)$$

According to the weak law of large numbers, the average of the sample values of a random variable will approach the expected value of the random variable as the sample size T approaches infinity. Presuming that the mean and variance of log R are finite, the weak law of large numbers assures that for any positive numbers ε and δ, no matter how small, there exists some positive number τ, perhaps large but nevertheless finite, such that for all T>τ,

$$\text{Prob}\left\{\left|\frac{1}{T}\sum_t \log R_t - E\log R\right| < \varepsilon\right\} \geq 1-\delta. \quad (21)$$

An alternate notation for this condition is

$$\text{plim}\left(\frac{1}{T}\sum_t \log R_t\right) = E\log R, \quad (22)$$

where plim denotes probability limit.

37. Let R^A denote the investor's returns under the maximum geometric mean strategy, and R^B denote the investor's returns under a significantly different strategy.[9] Then, from the above discussion, we know that:

$$\text{plim}\left(\frac{1}{T}\sum_t \log R_t^A\right) = E\log R^A, \quad (23)$$

$$\text{plim}\left(\frac{1}{T}\sum_t \log R_t^B\right) = E\log R^B, \quad (24)$$

and

$$E\log R^A > E\log R^B. \quad (25)$$

Thus,

$$\text{plim}\left(\frac{1}{T}\sum_t \log R_t^A\right) > \text{plim}\left(\frac{1}{T}\sum_t \log R_t^B\right). \quad (26)$$

[9] By "significantly different strategy," we mean a strategy that has a lower expected log return than the maximum geometric mean strategy.

This is turn implies that for T sufficiently large, it is virtually certain that $\left(\frac{1}{T}\right)\sum_t \log R_t^A$ will exceed $\left(\frac{1}{T}\right)\sum_t \log R_t^B$, and do so by an amount very nearly equal to (E log R^A – E log R^B) > 0. That is, in the long run, the investor will almost surely have greater wealth by using the geometric mean strategy than by using any significantly different strategy.

B. The Relationship between the Geometric Mean Strategy and the Log Utility Function

38. As shown above, the geometric mean portfolio strategy: (i) almost surely produces greater wealth in the long run than any significantly different strategy; and (ii) is equivalent to a strategy that seeks to maximize the expected log return. Further, Mossin (1968) demonstrates that for the log and power utility functions, maximizing the expected utility of return is equivalent to maximizing the expected utility of terminal wealth. Thus, for investors with log utility functions, the maximum geometric mean portfolio criterion is equivalent to the maximum expected utility of wealth criterion.

C. Desirable Properties of the Log Utility Function

39. For investors with log utility functions, the equivalence of the maximum geometric mean and the maximum expected log utility criteria is significant because log utility functions have many desirable properties. Among these properties are: (i) non-satiety; (ii) risk aversion; (iii) decreasing absolute risk aversion; (iv) constant relative risk aversion; (v) aversion to margin investing (that is, investing with borrowed money); and (vi) optimality of myopic decision making. Mossin (1968) demonstrates that the log and power functions are the only utility functions with all of these properties.

40. Non-satiety. Because the log utility function is increasing throughout its domain, investors with log utility functions always prefer more wealth to less, an attribute that economists refer to as "non-satiety." Although non-satiety would seem to be an obvious desirable property of a utility function, many utility functions do not possess this property, including the quadratic utility function.

41. Risk aversion. Consider the choice between (i) receiving \$W for certain and (ii) having a 50/50 chance of receiving either \$(W + C) or \$(W – C). Investors who choose alternative (i) over alternative (ii) are said to be risk averse, because these alternatives have the same expected value, but the second alternative has greater risk. Risk-averse investors choose alternative (i) because the difference in utility from receiving \$(W + C) rather than \$(W) is less than the difference in utility from receiving \$(W – C) rather than \$(W). That is, U (W + C) - U (W) < U (W) – U (W – C). Evidently, risk-averse investors have utility functions characterized by U″(W) < 0.[10] Since the second derivative of log W is $-1/W^2$, investors with log utility functions are risk averse.

42. Decreasing absolute risk aversion. Although all risk-averse investors have utility functions characterized by U″(W) < 0, some investors are more risk averse than others. The intensity of an investor's aversion to risk is determined by the curvature of the investor's utility function, where curvature is measured by the ratio of U″(W) to U′(W). Specifically, Pratt (1964) and Arrow (1965) define the coefficient of absolute risk aversion by the equation:

$$ARA(W) = -\frac{U''(W)}{U'(W)}. \qquad (27)$$

[10] We use the notation U″(W) to indicate the second derivative of the utility function U with respect to its argument, W.

For small gambles, Pratt and Arrow demonstrate that ARA(W) determines the dollar amount an investor is willing to pay to avoid a fair gamble with the possibility of either winning or losing a constant absolute dollar amount, C. They argue that absolute risk aversion should decrease with wealth because rich investors would be relatively unconcerned with losing an amount, C, that would cause great concern for poor investors. For the log utility function, ARA(W) equals 1/W. Thus, log utility functions imply that absolute risk aversion declines as wealth increases.

43. Constant relative risk aversion. Pratt and Arrow define the coefficient of relative risk aversion by the equation:

$$RRA(W) = -\frac{WU''(W)}{U'(W)}. \qquad (28)$$

For small gambles, they demonstrate that RRA(W) determines the fraction of wealth that an investor will pay to avoid a fair gamble with a possibility of winning or losing a specific fraction, C/W, of wealth. Economists generally believe that relative risk aversion should remain constant as wealth increases. This belief is consistent with the evidence that interest rates and risk premia have remained constant as average wealth has increased over time. Since RRA(W) equals 1 for the log utility function, log utility functions display constant relative risk aversion.

44. Aversion to investing on margin. Investors can frequently enhance their expected return on investment by investing on margin. However, margin investing is considered to be risky for individual investors because it can greatly increase both the variability of return on investment and the probability of bankruptcy. Investors with log utility functions are averse to margin investing because margin investing increases the probability that wealth will be less than some small value ε greater than zero; and their utility of wealth approaches minus ∞ as W approaches zero.

45. Optimality of myopic decision making. As noted above, lifetime portfolio selection is generally a complex problem that, because of its dynamic interdependence, can only be solved through sophisticated dynamic programming procedures. However, Mossin (1968), Samuelson (1969), and Merton (1969) demonstrate that investors with either log or power utility functions can solve their lifetime portfolio selection problem one period at a time. For these investors, the decision that maximizes the expected utility of wealth at the end of period t is the same as the t^{th} period decision resulting from a dynamic optimization procedure that considers the effect of the individual's t^{th} period decision on all future decisions. Myopic decision making is a highly desirable property of utility functions because it allows analytical solutions to problems that would otherwise be impossible to solve.

D. Solving the Geometric Mean Portfolio Problem

46. An optimal geometric mean portfolio consists of a set of securities, i = 1, … N, and the optimal proportion of wealth, X_i, to invest in each security. Let $R_i = (1 + r_i)$ denote the return on security i. Then the optimal geometric mean portfolio can be found by solving the following optimization problem:

$$\begin{aligned} &\text{Maximize } E\left[\log \sum_{i=1}^{N} R_i X_i\right] \\ &\text{with respect to } X_1, \cdots, X_N \\ &\text{subject to } X_i \geq 0, i = 1, \cdots, N \\ &\sum_{i=1}^{N} X_i = 1. \end{aligned} \tag{29}$$

47. Vander Weide, Peterson, and Maier (1977) establish conditions required for the existence of a solution to the geometric mean portfolio problem and provide computational methods for finding exact solutions when solutions do exist. Maier, Peterson, and Vander Weide

(1977) examine the solutions to a relatively large number of simulated geometric mean portfolio problems obtained with the aid of a numerically efficient nonlinear programming code embedded within a partitioning algorithm. They find that the number of risky securities in an optimal geometric mean portfolio depends on one's expectations concerning future market conditions and on the conditions under which borrowing is permitted. When borrowing is not permitted, the investor who believes the market will fall should invest in just one security; the investor who believes the market will remain unchanged should diversify among two securities; and the investor who believes the market will rise should diversify among four to seven securities.[11]

48. When borrowing is allowed, the geometric mean portfolio problem must be modified to assure that the investor will not go bankrupt. Avoidance of bankruptcy can be accomplished by requiring the investor to withhold sufficient capital from investment to cover interest and principal payments on the borrowing. In the modified geometric mean portfolio problem, the investor who believes the market will rise should choose the same securities in the same relative proportions as when no borrowing is allowed. Furthermore, the individual characteristics of securities contained in optimal geometric mean portfolios also depend on one's assumptions about market conditions and the availability of borrowing. If a rising market is anticipated, the investor should invest in securities for which β_i and σ_i are large, and for which α_i is small. If the market is expected to decline, the investor should invest in stocks with high α_i and low β_i and σ_i.

49. Maier, Peterson, and Vander Weide (1977) also describe several heuristic portfolio building rules that provide near-optimal solutions to the geometric mean portfolio problem, including a geometric mean rule, a reward-to-variability rule, a reward-to-non-

[11] These numbers of securities are obtained under the assumption that the investor has 100 securities from which to choose. If the investor can choose among a greater number of securities, the optimal number to hold is likely to increase.

diversifiable variability rule, and a Kuhn-Tucker rule. Each rule follows the same principle: rank each security on the basis of one criterion, and then allocate equal dollar amounts to several of the top-ranked securities. They find that the geometric mean rule, the reward-to-variability rule, and the Kuhn-Tucker rule provide reasonable approximations to the returns on the optimal geometric mean portfolio.

50. Of course, the geometric mean portfolio problem cannot be solved without appropriate data inputs. Maier, Peterson, and Vander Weide (1977) note that the data inputs to the geometric mean portfolio problem can be estimated by assuming that the distribution of the holding period return, R_i, is related to a market index, I, through the equation:

$$\log R_i = \alpha_i + \beta_i I + \varepsilon_i, \qquad (30)$$

where I is defined as the expected value over all securities of the logarithm of the holding period return, α_i and β_i are constants, and ε_i is a normal random variable with mean zero and variance σ_i^2. The index I is considered a normal random variable whose parameters are chosen subjectively by the investor. Maier, Peterson, and Vander Weide (1982) develop an empirical Bayes estimation procedure for obtaining a simultaneous estimate of the three market model parameters of Equation (30) that makes use of more information than other estimates described in the literature.

E. Relationship between the Maximum Geometric Mean Return and the Mean and Variance of Return on a Portfolio

51. The geometric mean portfolio strategy is specifically designed for investors who wish to maximize their long-run wealth. Since the "long run" may be many years in the future, however, and mean-variance efficient portfolios have desirable short-run properties, it is natural to inquire whether the maximum geometric mean portfolio is mean-variance efficient.

Markowitz (1959) and Young and Trent (1969) address this inquiry by examining the expected value of several Taylor series approximations of either E log R or G. In discussing their methods and results, we will use the following notation:

μ_1	=	E(R)	=	the expected value or first moment of the probability distribution of R,
μ_2	=	$E(R-\mu_1)^2$	=	the variance or second central moment,
μ_3	=	$E(R-\mu_1)^3$	=	the skewness or third central moment, and
μ_4	=	$E(R-\mu_1)^4$	=	the kurtosis or fourth central moment.

52. The Taylor series approximation of log R centered around the mean value, μ_1, of R is given by:

$$\log R = \log \mu_1 + \frac{R-\mu_1}{\mu_1} - \frac{(R-\mu_1)^2}{2\mu_1^2} + \frac{(R-\mu_1)^3}{3\mu_1^3} - \frac{(R-\mu_1)^4}{4\mu_1^4} + \cdots \quad (\mathbf{31})$$

Taking expectations of both sides of Equation (31), and noting that E $(R - \mu_1) = 0$, we then have:

$$\mathrm{E}\log R = \log \mu_1 - \frac{\mu_2}{2\mu_1^2} + \frac{\mu_3}{3\mu_1^3} - \frac{\mu_4}{4\mu_1^4} + \cdots \quad (\mathbf{32})$$

53. Equation (32) provides several important insights about the relationship between the maximum geometric mean return and the mean and variance of return on a portfolio. First, if the third and higher moments of the probability distribution of R are "small" in relation to the first moment, E log R can be reasonably approximated by the expression:

$$\mathrm{E}\log R = \log \mu_1 - \frac{\mu_2}{2\mu_1^2}. \quad (\mathbf{33})$$

Second, if Equation (33) is a reasonable approximation for E log R, the geometric mean portfolio will be approximately mean-variance efficient because E log R will be maximized when the mean, μ_1, is maximized for any value of variance, μ_2, and the variance, μ_2, is minimized for any value of mean, μ_1. Third, if the third and higher moments of the probability distribution for R are

not "small" in relation to the first moment, the geometric mean portfolio may not be mean-variance efficient. An example where the geometric mean portfolio is not mean-variance efficient is provided by Hakansson (1971).

54. To test whether the maximum geometric mean portfolio is approximately mean variance efficient, Markowitz (1959) examines the ability of two geometric mean approximations to E log R to predict the actual geometric mean return on nine securities and two portfolios over the period 1937 to 1954. The two geometric mean approximations include:[12]

$$G(1) = \mu_1 - \frac{\mu_1^2 + \mu_2^2}{2}, \text{ and}$$

$$G(2) = \log \mu_1 - \frac{\mu_2}{2\mu_1^2}.$$

He finds that G(1) consistently underestimates the geometric mean return on the nine securities and two portfolios over the period, with an average error of eight percent. However, G(2) performs significantly better than G(1). It slightly overestimates the actual geometric mean return with an average error of only 1.7 percent. From his analysis of these approximations, Markowitz suggests that G(2) be used to estimate the geometric mean return for each portfolio on the mean-variance efficient frontier. He advises investors never to choose portfolios on the mean variance efficient frontier with greater single-period means than the optimal geometric mean portfolio because such portfolios will have higher short-run variance than the optimal geometric mean portfolio and less wealth in the long run.

55. Using methods similar to Markowitz, Young and Trent (1969) empirically test the ability of five geometric mean approximations to predict the actual geometric mean return on

[12] G(1) is derived from a Taylor series approximation centered on R = 1, while G(2) is the approximation shown in Equation (33).

233 securities and various portfolios based on these securities. The five geometric mean approximations include:[13]

$$G(1) = (\mu_1^2 - \mu_2)^{1/2},$$

$$G(2) = \mu_1 - \frac{\mu_2}{2\mu_1},$$

$$G(3) = \mu_1 - \frac{\mu_2}{2},$$

$$G(4) = \mu_1 - \frac{\mu_2}{2\mu_1} + \frac{\mu_3}{3\mu_1^2}, \text{ and}$$

$$G(5) = \mu_1 - \frac{\mu_2}{2\mu_1} + \frac{\mu_3}{3\mu_1^2} - \frac{\mu_4}{4\mu_1^3}.$$

Using monthly holding period returns for the time period January 1957 to December 1960 and annual holding period returns for the period January 1953 to December 1960, they demonstrate that geometric mean approximations such as G(2) and G(3), based only on the mean and variance of the probability distribution of R, provide predictions of geometric mean returns that differ on average from actual geometric mean returns by 0.5 percent. Thus, for their data set, we may conclude that maximum geometric mean portfolios are highly likely to be mean-variance efficient.

F. Comments on the Geometric Mean Portfolio Model

56. The geometric mean portfolio strategy is designed for investors who seek to maximize the expected value of their wealth in the long run. However, Merton and Samuelson (1974) demonstrate that maximizing the expected value of long-run wealth is not the same as maximizing the expected utility of long-run wealth. Since wealth at the end of a typical lifetime

[13] These approximations are derived from the Taylor series expansion of G centered around the mean value of R.

is variable, investors who are more risk averse than investors with log utility functions may prefer an alternative investment strategy that provides a stronger hedge against values of wealth that are less than the expected value of long-run wealth.

IV. Lifetime Consumption-Investment Model

57. The mean-variance and geometric mean portfolio models are designed to help investors choose the optimal proportions of wealth to invest in each security, based only on information regarding the probability distributions of returns on securities. If the probability distributions of returns are assumed to be independently and identically distributed, these models will recommend that the proportion of wealth invested in each security remain constant over the investor's lifetime. However, a constant proportion investment strategy is inconsistent with conventional wisdom that investors, as they age, should lower the proportion of wealth invested in risky stocks versus less risky bonds. The lifetime consumption-investment model is designed to help investors understand the conditions under which their optimal investment policy might change over their lifetimes, even if their probability beliefs remain constant.

58. Interest in lifetime consumption-investment models began in the late 1960s. Important early papers include Samuelson (1969), Merton (1969), Mossin (1968), and Hakansson (1969, 1970). Important later papers include Viceira (2001), Heaton and Lucas (2000), Koo (1998, 1999), Campbell, Cocco, Gomes, and Maenhout (2001), Bodie, Merton, and William Samuelson (1992), and Campbell and Cochrane (1999). Campbell and Viceira (2002) contains an excellent discussion of lifetime consumption-investment models, as well as a review of the literature on this important topic.

A. The Standard Lifetime Consumption-Investment Model

59. Consider an individual who must choose the amounts to consume, C_t, the fraction of wealth to invest in risky assets, w_t, and the fraction of wealth to invest in a risk-free asset, $(1 - w_t)$, at the beginning of each period (t = 0, 1, …, T). Assume that the individual's goal is to maximize the expected present value of the utility from lifetime consumption and that wealth must be either consumed or invested in each period. Let Z_t denote the random return on the risky asset, ρ the investor's discount rate, and r, the return on the risk-free asset. Then, the individual's standard lifetime consumption-investment problem can be stated as:[14]

$$\begin{gathered} \text{Max } E\left[\sum_{t=0}^{T}(1+\rho)^{-t}U(C_t)\right] \\ \text{with respect to } C_t, w_t \\ \text{subject to } C_t = \left[W_t - \frac{W_{t+1}}{(1+r)(1-w_t)+w_t Z_t}\right] \\ W_0 \text{given, } W_{T+1} \text{ prescribed.} \end{gathered} \tag{34}$$

B. Analysis of the Optimal Lifetime Consumption-Investment Strategy

60. The standard formulation of the lifetime consumption-investment problem is difficult to solve without some simplifying assumptions. In his first paper on this subject, Samuelson (1969) assumes that (i) the individual's utility function displays constant relative risk aversion, that is, the utility function is either a log or power function; and (ii) the probability distribution for Z_t is independently and identically distributed. To his surprise, he finds that the optimal proportion to invest in the risky asset is constant under these assumptions. Thus, under the standard assumptions, the lifetime consumption-investment model produces the same

[14] This formulation is taken from Samuelson (1969).

constant proportion recommendation as the mean-variance and geometric mean models. Merton, Leland, Mossin, and Hakansson reach similar conclusions.

61. However, Samuelson (1989), Bodie, Merton, and William Samuelson (1992), and the authors of later papers cited above, demonstrate that when the standard assumptions of the lifetime consumption-investment model are modified to include non-tradable human wealth,[15] subsistence levels of consumption, and mean-reverting probability distributions of returns, the conclusion that the percentage invested in risky assets is constant must be modified. Since the literature on the effect of these additional variables on the optimal solution to the lifetime consumption-investment problem is complex, we limit our discussion here to a brief summary of relevant conclusions.

62. Non-tradable human wealth. The effect of human wealth on an individual's optimal investment strategy depends on whether human wealth is riskless or risky. Assume first that human wealth is riskless, that is, that the present value of an individual's future income is certain. Since riskless human wealth is equivalent to an implicit investment in a riskless asset, the investor should adjust the proportion of financial wealth, F_t, invested in risky assets to reflect the investor's implicit additional holding of riskless assets. When human wealth is riskless, Campbell and Viceira demonstrate that the optimal proportion of financial wealth, F_t, to invest in risky assets is an increasing function of the ratio of human wealth to financial wealth, H_t/F_t. This ratio will typically vary over an individual's lifetime.

63. For young investors, the ratio of human wealth to financial wealth will typically be high because the young investor (i) can expect to earn labor income for many years to come;

[15] Human wealth, H_t, reflects the expected present value of an individual's future income. Human wealth is non-tradable because the legal system forbids trading in claims on an individual's future income. Financial wealth, F_t, reflects the current market value of an individual's financial assets, that is, stocks and bonds. Total wealth, W_t, is equal to H_t plus F_t.

and (ii) has not had much time to accumulate financial wealth. Thus, young investors should allocate a relatively large percentage of financial wealth to risky assets. In contrast, for investors nearing retirement, the ratio of human wealth to financial wealth will typically be low. Thus, when human wealth is riskless, the percentage of financial wealth invested in risky assets should decline with age.

64. Assume now that labor income, and hence human wealth, is risky. If labor income is uncorrelated with the return on risky assets, the investor with human wealth should still invest a greater percentage of financial wealth in risky assets than the investor without human wealth. However, the percentage invested in risky assets should decrease with increases in the variance of labor income, that is, investors with high variance in labor income should reduce the percentage of financial wealth invested in risky assets to hedge some of the risk of their labor income.

65. If, on the other hand, labor income is perfectly positively correlated with the return on one or more risky financial assets, human wealth is an implicit investment in these financial assets. In this case, the investor should either increase the percentage of financial wealth invested in the riskless asset or diversify into risky assets that are uncorrelated with labor income. This latter conclusion applies to all individuals who hold a high percentage of financial wealth in the stock of their employer.

66. Human wealth also affects the optimal percentage of financial wealth to invest in risky assets through the investor's ability to vary his or her work effort. If the investor can increase work effort to offset losses on financial assets, the optimal percentage of financial wealth to invest in risky assets will increase.

67. Subsistence levels of consumption. The optimal percentage of financial wealth to invest in risky assets also depends on the investor's desire to maintain a minimum level of consumption. A minimum level of consumption may be thought of as negative income because a certain part of income must be set aside to assure the minimum level of consumption. Samuelson (1989) establishes that as the investor nears retirement, the investor should increase the allocation of financial wealth to risk-free bonds in order to assure a minimum level of consumption in retirement. The shift towards risk-free bonds arises as a result of the investor's need to provide a steady income stream in retirement to cover the minimum level of consumption. However, Merton (1969) notes that young investors may also have a need to assure a minimum level of consumption in the face of uncertain human and financial wealth. He establishes that this need would also shift the optimal portfolio of young investors toward riskless bonds. Constantinides (1990) and Campbell and Cochran (1999) analyze the case where the minimum level of consumption itself may depend on either the individual's prior consumption habits or the consumption norms of society.

68. Mean-reverting probability distribution of returns. Samuelson (1989) demonstrates that when asset returns are mean reverting, investors with long investment horizons should invest more in risky assets than investors with short investment horizons. Campbell, Cocco, Gomes, Maenhout, and Viceira (2001) show that if asset returns are mean reverting, investors should reduce the percentage of financial wealth invested in risky assets when the returns on risky assets have recently been above the long-run mean return and increase the percentage of financial wealth invested in risky assets when returns on risky assets have recently been below the long-run mean return. Thus, investors who believe that returns on risky assets

are mean reverting should also vary the percentage of financial wealth invested in risky assets with the status of the capital markets.

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Effectiveness of regulation in the electric utility industry

Francis Tapon and James Vander Weide

In recent years, regulation has come under increasing criticism. It is argued that regulation is ineffective because the regulators are captured by the industry that they are supposed to regulate. Capture results from frequent contact in regulatory hearings and from the realization of both the industry and the regulator that they share common goals. Thus, it may be contended that regulation does not affect significantly the behavior of the regulated industry.

In a recent article, Joskow expounds the hypothesis that regulatory commissions only regulate the profits of firms attempting to raise prices through the regulatory process [8, p. 121]. According to Joskow a strict regulatory constraint exists only for those firms actually engaging in the formal hearing process by seeking rate increases. Firms which can increase their profits without increasing prices tend, within rather wide boundaries, to be left alone by the regulatory authority. (They will not in general be called for a forced regulatory review and a forced price reduction [8, p. 123]). This hypothesis is tested by using data from electric public utilities in the United States. The theorem on which much of the work is based is derived from the Averch and Johnson model [1]. This theorem characterizes the type of bias induced by regulation and postulates that the profit-maximizing regulated firm employs a capital-labor ratio which is greater than one consistent with cost minimization for its level of output. Therefore, it can be inferred that firms which are heavily constrained by regulation (i.e., firms which attempt to raise prices) most likely look for ways to circumvent regulation, and, hence, are most likely to exhibit regulatory bias. More specifically, firms operating at or close to their allowed rate of return boundary because they recently went through the regulatory process face a regulatory constraint and may exhibit an Averch-Johnson type input distortion. These firms are called small-spread firms because the difference between the implicitly allowed rate of return (or earned rate of return) and the firm's cost of capital is small. The regulatory process brings earned rates of return in line with prevailing allowed rates of return which are themselves set equal to the firm's cost of capital.[1] On the other hand, firms operating far above the allowed rate of return boundary because they are ignored by the regulatory authorities are effectively unregulated, and, hence, have an incentive to minimize costs. These firms are called large-spread firms because the difference between the implicitly allowed rate of return (or earned rate of return) and the firm's cost of capital is large.

The Averch-Johnson hypothesis has been tested empirically in four recent studies. Courville [4] and Spann [18] find a significant Averch-Johnson effect; Boyes [3] and McKay [13] do not. The results of this study suggest that input distortions can occur in limited circumstances, but they are not as prevalent as Courville and Spann would have us believe.

Choice and stratification of sample

Since the capital-labor ratio in the production function for electricity is variable only in the planning stage of plant additions, the sample is confined to all newly constructed plants in the U.S. between 1960 and 1967. This makes a total of 90 plants. The study considers plant data only from privately-owned electric utilities. Municipally-owned, cooperative, and TVA plants are excluded because they are not

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1. When the allowed rate of return is not always strictly enforced by the regulatory authorities, some firms are able to earn considerably more than this rate over long periods of time. Therefore, in this paper, the rate of return actually earned by a firm is considered to be the rate of return implicitly allowed by the regulatory authorities (by their lack of intervention).

subject to the same type of rate-of-return regulation as are privately-owned firms which supply nearly 80 percent of the total supply of electricity in the U.S.

The period 1960–1967 was chosen for the sample for three main reasons. First, only in 1961 did the Federal Power Commission [20] begin reporting the earned rates of return for 163 privately-owned electric utilities with sales of two million kilowatt-hours or more. Second, the time period covered in the sample should represent one of relative stability with regard to technological progress in electricity generation which is verified by Hughes [7]. Third, many firms were able to earn substantially more than their cost of capital without having to cut prices. Thus, this particular time period enables one to distinguish between firms which are free of regulatory control and firms which are not. This fact is crucial for the stratification of the sample.

Observations on all newly-constructed steam-electric plants in the U.S. are taken from Federal Power Commission reports [20] and [21] during the first year in which a plant operated for a sufficiently continuous period and with the same equipment (i.e., no additions or deletions of units) in order to have a recorded plant factor. Thus, each plant appears usually only once in the sample, and the year of observation generally is the year following construction of the plant. In most cases a year is sufficient for a new plant to attain its normal or planned level of output. In certain cases, the capacity of some plants was increased substantially (i.e., by more than 50 percent) after the plants were first recorded in the sample. In such cases, these plants were in effect new and, consequently, they appear more than once in the sample. Interpretation of variables and sources of data are discussed in the Appendix.

The study proposes to stratify the sample into utilities with a large spread between the allowed rate of return and the cost of capital and those with a small spread. Firms which requested a rate increase in the current year or in the previous two years are classified as small-spread firms. Firms which did not seek a rate increase in the current year or in the previous two years are classified as large-spread firms.[2,3] The necessary information on the filing of rate increases was obtained from Public Utilities Reports [16]. The validity of the classification was checked by computing, for all firms in each year in the period 1960–1967, the difference between the allowed rate of return and the cost of capital (proxied by the average yield on AAA bonds in the electric utility industry; see Miller and Modigliani [14]).[4] In the case of the large-spread subsample, the average difference in the period 1960–1967 was 2.25 percent; in the case of the small-spread subsample, the average difference in the period 1960-1967 was .866 percent. All but three firms in the total sample earned rates of return in excess of the cost of capital.[5] With a few exceptions, most firms in the large-spread subsample earned rates of return in excess of

2. The choice of three years before the operation of a plant may appear to some to be unrealistically short. This choice of stratification is suggested by Joskow [8, p. 121]; it is used in this study to test Joskow's proposition on the effectiveness of regulation in this industry.

3. One referee has suggested that since the plants considered have a lead time of more than three years from planning to operation, little reason exists to assume that the firm's decision to overcapitalize is affected by the status of the firm, before it went into operation, vis-a-vis the regulatory authorities. It can be argued that it would have been better to examine whether a firm requested a rate increase in the year (or previous two years) before a plant construction was planned. Unfortunately, this idea could not be investigated because the information on the date of first announcement of each plant in the sample could not be found. The necessary statistics (see Appendix) were likewise unobtainable. Having said this, two points should be noted: first, that the plant which is planned is not necessarily the one actually constructed; and second, that the sample stratification procedure is biased against confirming the hypothesis being tested. A firm mistakenly included in the small-spread subsample may show no Averch-Johnson input distortion, thus leading to a rejection of the hypothesis. Likewise, a firm mistakenly added to the large-spread subsample may show Averch-Johnson input distortion, again invalidating the hypothesis.

4. The authors recognize that the average cost of capital includes an equity component which is ignored here. Measuring the actual cost of equity capital is controversial, and no generally accepted procedure exists. However, Miller and Modigliani [14] have found that the movements of their estimates of the cost of capital in the electric utility industry conform quite closely with the average yield on AAA bonds in the industry. By choosing the average yield on AAA bonds, the study underestimates slightly the average cost of capital of electric utilities in the sample; but at the same time, the study establishes a uniform lower bound for the cost of capital of each utility in the sample. This procedure is followed by other authors (Courville [4] and Sankar [17]).

5. The exceptions were Public Service Company of New Hampshire, Southern California Edison Company, and Consolidated Edison Company of New York. As their earned rates of return were very close to the cost of capital for that year, these firms were kept in the sample.

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seven percent. Most firms in the small-spread subsample earned rates of return almost equal to or less than seven percent. From the sample of 90 plants, two subsamples were obtained: 49 plants for the large-spread firms, and 41 plants for the small-spread utilities.

Estimation of a production function of electricity generation

In order to conduct a test of the hypothesis cited above, a production function is estimated for electricity generation. An approach pioneered by Courville [4] is followed. However, this study improves upon Courville's by recognizing the endogenous character of the firm's inputs. Courville assumes implicitly that the firm's inputs are exogenous variables and estimates his single equation model by *OLS*. Therefore, his estimates show simultaneity bias.

The question arises concerning which form of production function best describes the electricity generating process. No consensus exists on this point; various authors have used either the Cobb-Douglas, C.E.S., generalized C.E.S., transcendental-logarithmic, or Leontieff production functions. A study of overcapitalization in the production of electricity should take into account a major characteristic of this process—the existence of possibilities of factor substitution (in the ex-ante sense) between fuel and capital. This characteristic has been recognized by Nerlove [15] and by Dhrymes and Kurz [5] who use production functions allowing substitution between fuel and capital. This consideration is the determining factor in the choice of the Cobb-Douglas production function. Other advantages of the Cobb-Douglas production function are that it is linear in the logarithms and, consequently, easy to estimate, and that it does not seem to violate unduly the real world conditions of electricity supply.[6]

A Cobb-Douglas production function is postulated of the form:

$$Q_i = AK'^{a_1}_i F^{a_2}_i L^{a_3}_i e^{u}_i$$

where

Q_i = annual output of plant i in million kilowatt-hours

K'_i = annual quantity of capital services in thousands of dollars

This flow variable appears as an input in the production function. Since K'_i cannot be observed, it is assumed that the following relationship exists between K'_i, K_i and the plant factor (or rate of utilization of capacity):

$$K'_i = PF_i^{b_1} K_i^{b_2}$$

where

PF_i = plant factor or rate of utilization of capacity of plant i during the year, measured as a percent of maximum output.

K_i = structures and equipment capital of plant i measured in thousands of constant dollars. This formulation attempts to determine which part of total plant investment constitutes the productive capital input. A major feature of electricity production is that the rate of operation varies over time and, thus, affects the productivity of factor inputs. In order to measure productive capital services, the engineering concept of plant factor is introduced. Hence, the production function is specified to allow for variations in the rate of output.

L_i = labor input measured in average number of workers employed by plant i during the year.

F_i = annual fuel consumption measured in 10^7 BTU equivalents.

u_i = random error term assumed to be normally distributed with mean 0 and variance σ^2 such that $E(u_i, u_j) = 0$, $i \neq j$.

The results of the studies by Komiya [10], Dhrymes and Kurz [5], and engineering obser-

6. The Cobb-Douglas production function is used because it yields good results, and because, in the authors' opinion, the extra effort of estimating a C.E.S. production function is not worthwhile in this case. Maddala and Kadane [11] show that in the cases where the distributions of *L*, *K*, and *F* are independent, lognormal, and similar, the use of a *CD* function to estimate the returns to scale parameters do not result in much bias. These conditions are satisfied approximately by the data in the sample. Other studies attempting to test the *A-J* hypothesis empirically have used a variety of production functions. Courville [4] reports investigating alternative functional forms, but he could not reject the null hypothesis that the relevant technology can be summarized by a *CD* formulation. Hayashi and Trapani [6] use both *CD* and *CES* type production functions, with the former providing somewhat better results.

vations suggest that the labor input remains limitational in electricity generation and that the only substitutional processes are between fuel and capital. Labor's main functions are in operational, supervisory maintenance, clerical and office-type activities. The study assumes, as do Dhrymes and Kurz, that a certain amount of labor must be present before generation can begin, and that labor requirements increase with output, with the number of generating units, and/or with capital. Labor enters the production function in a fixed proportion which the following production function of the Dhrymes and Kurz type illustrates:

$$(1) \quad Q = min[\ell(L); AK'_i{}^{a_1}F_i{}^{a_2}].$$

It is assumed that the necessary amount of labor L to produce Q is available so that no optimization takes place with respect to labor. This entails that $\ell(L)$ exceeds the second term on the right and that optimization occurs only with respect to capital and fuel. One can therefore write:

$$(2) \quad Q = AK'_i{}^{a_1}F_i{}^{a_2}e^{u_i}.$$

It should be recognized that capital and fuel inputs may not be determined exogenously as was assumed implicitly in equation (1). Instead, these inputs should be determined jointly by the plant's efficiency, its level of output, and the costs of its factor inputs. To avoid specification bias, these variables should be estimated separately by regressing them on other exogenous variables in the system.

In order to test for overcapitalization in the production process, it is necessary to know the conditions characterizing a proper utilization of inputs. It has been shown elsewhere (Averch and Johnson [1]) that the necessary conditions required for a profit maximizing combination of capital and fuel are:

$$(3) \quad \frac{F_K}{F_f} = \frac{d(l) - \lambda q(s + \delta)}{f(1 - \lambda)},$$

where

$F_K \equiv$ the marginal physical product of capital,
$F_f \equiv$ the marginal physical product of fuel,
$d(l) \equiv$ the shadow rental price of capital,
$\lambda \equiv$ a Lagrange multiplier,
$q \equiv$ the reproduction price of a unit of capital equipment (measured in \$ per unit),
$s \equiv$ the allowed rate of return,
$\delta \equiv$ the rate of depreciation of physical capital,
$f \equiv$ the price of fuel.

The marginal physical products of capital and fuel from the production function equation (2) are now derived and substituted into equation (3). Note that equation (2) can be written as:

$$(4) \quad Q_i = AF_i{}^{a_3}PF_i{}^{a_3}K_i{}^{a_4}e^{u_i}$$

where

$$PF_i{}^{a_3} = PF^{b_1 a_1}$$

$$K_i{}^{a_4} = K_i{}^{b_2 a_1}.$$

Thus,

$$(5) \quad \frac{a_4}{a_2}\frac{F}{K} = \frac{d(l) - \lambda q(s + \delta)}{f(1 - \lambda)}.$$

Taking natural logarithms of both sides of equation (5), and transposing terms, one obtains:

$$(6) \quad ln\ F = ln\frac{d(l) - \lambda q(s + \delta)}{f(1 - \lambda)} + ln\ K - ln\ a_4 + ln\ a_2$$

In equation (6), the factor input price ratio is an exogenous variable since it is assumed that inputs are obtained in competitive markets. Notice that the Lagrange multiplier λ enters the factor input price ratio. The variable λ is an exogenous variable, but no observations are available for it. It is known, however, that it can be constrained between zero and one in the cases being considered (see Baumol and Klevorick [2]). The variable λ can be further constrained using the empirical data of the sample.

In order to derive an equation for K, a procedure first proposed by Dhrymes and Kurz is followed. Assume that $ln\ K$ is related functionally to the logarithms of the factor price ratio and the other exogenous variables in the system as they appear in equation (6). Assume further that this function for $ln\ K$ can be expanded in a MacLaurin series which is sufficiently approximated by, at most, its first degree terms. One obtains:

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$$(7)\quad \ln K = c_0 + c_1 \ln \frac{d(l) - \lambda q\,(s + \delta)}{f(1 - \lambda)} + c_2 \ln PF.$$

If equations (6) and (7) are viewed as stochastic relations, an error term can be added to each. Equations (4), (6), and (7) form a three-equation system. Since the sole interest is in estimating the Cobb-Douglas exponents of the production function (4) and the variances of these estimates, the study concentrates on this equation and estimates it with two-stage least squares.

The exogenous variables in the system are *PF* and the factor price ratio is

$$\frac{d(l) - \lambda q(s + \delta)}{f(1 - \lambda)}.$$

It was already noted that λ, the shadow cost of regulation, is exogenous but that the authors possess no observations on this variable. The variable λ is restricted to be between zero and one and is expected to vary from firm to firm.[7] One does not expect the coefficient estimates of the production function, equation (4), to be significantly affected by the choice of λ; however, because λ is not a direct component of the production function itself, it only affects the production function through the other equations in the system. The production function describes the same physical generating process regardless of the presence or absence of rate of return regulation. Thus, the estimates of the production function's parameters reflect only this fact of life, whether or not the amount of investment by the firm in durable physical capital is unduly large in the light of factor prices prevailing in the market. As long as the firm employs the minimum fuel and labor inputs necessary with the fixed capital to produce the observed output, the production function may be estimated. It may be argued that since the estimation of the production function is based on data obtained from decisions based on financial factors, it is possible that the estimation of the production function be distorted by regulatory effects. The empirical results do not support this argument.

The production function equation (4) was estimated from the three-equation system using two-stage least squares. The exogenous variables in the system are

$$\ln PF,\ \ln\left[\frac{d(l) - \lambda q(s + \delta)}{f(1 - \lambda)}\right],\ OD,\ SOD$$

and the constant term $\ln A$. The necessary order condition for identification is satisfied since the number of exogenous variables excluded from equation (4) is greater than the number of endogenous variables included on the right-hand side of equation (4).

Table 1 presents the results of 2SLS estimation of production function equation (4) for different values of λ altered by increments of 0.05 between the values of 0.000 and 0.415.[8] As anticipated, the coefficient estimates for fuel and capital do not change much as λ varies. The coefficient estimate of fuel varies from 0.918 when $\lambda = 0.415$ to 0.920 when $\lambda = 0.000$. Likewise, the coefficient estimate of capital varies from 0.123 when $\lambda = 0.415$ to 0.127 when $\lambda = 0.000$. All the coefficient estimates are statistically significant at the five percent level with a two-tail *t* test. It also appears that R^2 at $\lambda = 0.415$ differs from R^2 at $\lambda = 0.000$ by only 0.002.

It is tempting to choose a best value of λ by using a goodness of fit criterion on the regression equation of the production function equation (4). Such temptation must be resisted because of the impossibility of verifying whether or not differences in R^2 are statistically signifi-

7. One can further restrict λ by using the marginal productivity condition for capital equation. If one assumes that the marginal revenue product of capital is positive, then it follows that:

$$\frac{d(l) - \lambda q(s + \delta)}{(1 - \lambda)} > 0 \text{ or } \lambda < \frac{d(l)}{max\ q\ (max\ s + \delta)}.$$

The sample data enables one to determine that $\lambda < 0.415$.

8. R^2 is obtained by an asymptotic test suggested by McElroy [12].

R^2 is given by the following formula:

$$R^2 = \frac{\hat{\delta}_j' R_j' N R_j \hat{\delta}_j}{Y_j' N Y_j}$$

where

$\hat{\delta}_j$ = a vector of 2SLS estimators for the production function,

R_j = a matrix of the 90 observations on the included endogenous and exogenous variables,

$N = X(X'X)^{-1}X'\ [1 - 1/n\ \beta\beta']$ and $\beta\beta'$ is a (90 x 90) matrix of ones,

X = a matrix containing all exogenous variables in the system,

Y_j = a vector of 90 observations on the dependent variable.

Table 1
Two-Stage Least Squares Estimation of Equation (4) for Different Values of λ, 1960–1967

ln A	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	λ	R^2	*D.F.*
−3.6446	0.917924	0.20806	0.123006	0.415	0.996	86
(−12.6633)*	(42.3006)*	(3.6324)*	(5.3950)*			
−3.65024	0.917858	0.208023	0.123620	0.400	0.996	86
(−12.6859)*	(42.2976)*	(3.6599)*	(5.4219)*			
−3.66359	0.917872	0.207826	0.124961	0.350	0.997	86
(−12.7453)*	(42.2982)*	(3.7389)*	(5.4808)*			
−3.67257	0.918066	0.207580	0.125739	0.300	0.998	86
(−12.7913)*	(42.3073)*	(3.7786)*	(5.5149)*			
−3.67915	0.918364	0.207304	0.126202	0.250	0.998	86
(−12.8295)*	(42.3200)*	(3.8170)*	(5.5352)*			
−3.68425	0.918676	0.207041	0.126509	0.200	0.999	86
(−12.8617)*	(42.3353)*	(3.8479)*	(5.5486)*			
−3.68830	0.919004	0.206782	0.126696	0.150	0.998	86
(−12.8896)*	(42.3504)*	(3.8732)*	(5.5568)*			
−3.69160	0.919330	0.206535	0.126811	0.100	0.998	86
(−12.9139)*	(42.3654)*	(3.8945)*	(5.5619)*			
−3.69435	0.919645	0.206303	0.126877	0.050	0.998	86
(−12.9353)*	(42.3780)*	(3.9126)*	(5.5648)*			
−3.69666	0.919944	0.206086	0.126909	0.000	0.998	86
(−12.9542)*	(42.3937)*	(3.9281)*	(5.5662)*			

*Statistically significant at the 10 percent and 5 percent levels with a two-tail test.
Note: The numbers in parentheses under each estimate are the corresponding *t* statistics.

cant. Usually, when comparing R^2 values, a variable is added to a regression while keeping the same set of observations for the variables already included in the regression equation. This is not done here. The variable λ is varied by increments of 0.05. This means that as λ changes, the observations on the exogenous factor price ratio change. Therefore, R^2 values may not be compared since they pertain to equations obtained from a varying set of observations.

The study does not abandon this approach of estimating a production function (rather than estimating its dual, a cost function as shown by Nerlove [15]), because it provides results which seem plausible based on other grounds. For example, as expected, changes in λ affect negligibly the estimated parameters for *K, PF,* and *F;* the output elasticities of the various inputs are comparable to other estimates found in the literature.[9]

To conduct the tests described below [equation (9)], one chooses values of the coefficient estimates obtained with λ = 0.000, 0.200, 0.415. This procedure allows one to investigate the sensitivity of empirical results to alternative values of λ. The results are not changed in any way; i.e., the number of times the null hypothesis is rejected and not rejected is the same in all cases; only the range of values of the *t* statistic, equation (9) infra, varies slightly. Since the results of the production function estimation are insensitive to alternative values of λ, to conserve space the study reports only results where coefficient estimates with λ = 0.000 are used.[10]

Empirical results

Now that a particular form of a production function has been selected, the ratio of marginal productivities for each plant in the sample can be specified and written:

$$\frac{F_K}{F_F} = \frac{a_4}{a_2}\frac{F_j}{K_j}$$

9. Note that this particular problem is common in econometric work, and practitioners do not always rely on R^2 as a criterion of goodness of fit. The comparison of R^2 is not straightforward even in models involving such simple changes in the dependent variable as writing *lnY* instead of *Y*.

10. The relative insensitivity of the production function estimates to the value of λ does not imply that λ is in fact zero, i.e., that regulation is ineffective. The procedure requires a λ value in order to estimate the production function coefficients. It does not provide an efficient estimate of the actual value of λ.

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All of the variables have been defined under "Choice and Stratification of Sample" and in the Appendix. The null hypothesis is thus:[11]

$$H_o : \frac{a_4}{a_2}\frac{F_j}{K_j} - \frac{d(I)_j}{f_j} = 0$$

or

$$(8) \quad H_o : a_4\frac{F_j}{K_j} - a_2\frac{d(I)_j}{f_j} = 0.$$

Fuel and capital, respectively F_j and K_j, are assumed to be non-stochastic. Thus, the null hypothesis is studied in the form of a t-test, and, consequently, one should also compute:

$$(9) \qquad t_j = \frac{\hat{a}_4\frac{F_j}{K_j} - \hat{a}_2\frac{d(I)_j}{f_j}}{\sqrt{\sigma^2}}$$

where

$$\sigma^2 = \sigma_{\hat{a}_4}^2\left(\frac{F_j}{K_j}\right)^2 + \sigma_{\hat{a}_2}^2\left(\frac{d(I)_j}{f_j}\right)^2 - 2\sigma_{\hat{a}_4\hat{a}_2}\left(\frac{F_j}{K_j}\times\frac{d(I)_j}{f_j}\right)$$

$\sigma_{\hat{a}_4}^2$ = estimated variance of $\hat{a}_4$

$\sigma_{\hat{a}_2}^2$ = estimated variance of $\hat{a}_2$

$\sigma_{\hat{a}_4\hat{a}_2}$ = estimated covariance of $\hat{a}_4$ and $\hat{a}_2$.

The figures for $d(I)_j$, f_j and K_j are all deflated. The number of degrees of freedom is computed as $n - k$, where n is the number of observations and k is the number of regressors in the estimated equation.

The interest of this study is only in a single-tailed test since it is testing for the possibility of overcapitalization. The region of rejection consists of low and negative values of t_j. This can best be seen when one looks at the alternative hypothesis:

$$(10) \quad H_1 : a_4\frac{F_j}{K_j} - a_2\frac{d(I)_j}{f_j} < 0.$$

Before conducting the t-tests of equation (9), note that the input distortion recognized in the regulatory theorems investigated here holds at each level of output or capacity. Therefore, first one must investigate whether or not the installed generating capacities of the plants in the two subsamples are independent of the allowed rates of return which constrain the parent firms. A second question concerns whether or not the rental prices of capital and the prices of fuel charged to the plants in the two subsamples are independent of the allowed rates of return of the parent firms. It could be argued that overcapitalization occurs within the small-spread subsample because low values of the allowed rate of return coincide in some way with low values of the rental price of capital or with high values of the price of fuel. These questions are investigated in Tapon [19] using variance tests, t-tests, and chi-square tests. It is shown that no difference exists between the installed generating capacity of the plants included in the two subsamples. There is also no relationship among the rental price of capital, the price of fuel, and the allowed rates of return to which each plant is subjected through its parent firm.

The null hypothesis given by equation (8) was tested for all 90 firms in the sample using the t-statistic shown in equation (9) and tables of Student's t distribution. The results of these tests are reported in Table 2 which shows that 24 of the 41 firms in the low-spread subsample chose input combinations that were inefficient in a least cost sense, while only 19 of the 49 firms in the high-spread subsample chose inefficient input combinations. The difference between these two proportions is significant at the 90 percent level using the usual test of significance of the difference between two proportions.[12] These results differ from those of Courville [4] who finds that he rejects the null hypothesis, equation (8), in the vast majority of cases (110 plants in his sample; 71 rejections at the 5 percent level, 76 rejections at the 10 percent level, for the vintage period 1960–1966). A possible explanation for the difference between his findings and those of this study is that Courville's estimates of output elasticities for the inputs may suffer from simul-

11. This formulation was first proposed by Courville [4].

12. Caution should be used in interpreting the study's results as well as those of Courville. The test used above does not discriminate among *A-J* effect, buying excess capacity (gold-plating), and dedication of a plant for peak versus base-load use. In the last case, plants that are shut on and off use more fuel per unit of capital than continuous base-load plants. To some extent, the method of choosing the sample takes some of these problems into account. Since a plant enters the sample only once during its first normal year of operation after construction, it can be assumed that it operated continuously because it embodies the more recent technology and is given priority in producing output.

Table 2
Results of the Test on the Effect of Regulation on the Plant Capital-Fuel Ratio According to Equation (9) for the Large-Spread and Low-Spread Subsamples, 1960–1967

Number of Plants in Each Subsample	High-Spread Subsample 49	Low-Spread Subsample 41
Number of times H_0 was rejected	19	24
Number of times H_0 was not rejected	30	17
Range of values of t_j	−17.5764 + 1.2143	−12.9758 + 1.1102

*The t-tests are single-tail tests conducted at the 5 percent level of significance.

taneity bias since he assumes implicitly that the inputs are exogenous variables.

The results reported in Table 2 seem to confirm the Joskow hypothesis that strictly regulated firms are most likely to exhibit an Averch-Johnson type input distortion. These results should disturb policy makers who feel comfortable with the current mode of regulatory control of public utilities. On the positive side, it is interesting to note that less than one-half of all the firms in the sample displayed the input inefficiency hypothesized by Averch and Johnson. The latter result is considerably more encouraging than that reported by Courville [4] and Spann [18].

In conclusion, it seems that rate of return regulation does not produce the empirical degree of inefficiency that some would suggest. It remains to be determined whether this result stems more from the ineffectiveness with which regulation is applied than from the fact that Averch and Johnson's famous overcapitalization theorem does not hold in the world of regulated utilities.

Data Appendix

Q = output measured in million kilowatt-hours.

C = installed generating capacity (nameplate rating in megawatts).

L = average number of workers

F = total fuel use in 10^7 British Thermal Units (BTU) equivalent.

PF = plant factor which is the average rate of annual utilization of the plant expressed as a percentage.

K_1 = equipment capital in thousands of constant dollars. The wholesale price index for electrical machinery and equipment was used as a deflator; 1957–1959 = 100.

K_2 = structures capital in thousands of constant dollars. The Handy-Whitman utility construction index was used as a deflator; 1957–1959 = 100.

K or q = total deflated cost of plant and equipment; K or $q = K_1 + K_2$.

f = price of fuel, which is computed by dividing the deflated fuel expenditures of a plant by the total fuel use in BTUs during the year of observation. The wholesale price index for fuels and related products was used as a deflator; 1957–1959 = 100.

$d(I)$ = rental price of capital. Since the authors have no observations on this variable apart from the total cost of a plant, it had to be computed. It is argued that this variable corresponds to the yearly outlay the plant manager would have to make to receive the services of capital existing in his plant. Consequently, the rental price of capital is the annual equivalent outlay to the purchase of a new plant every 35 years. (Thirty-five years is the period of depreciation employed by the F.P.C.) The total deflated cost of plant and equipment is thus divided by the present-value of one dollar received per period for 35 years and a

measure of $d(I)$ is obtained.[13] The interest rate used to determine the present-value of one dollar received per period should normally be the weighted average cost of capital for each firm in the sample. However, Miller and Modigliani [14] have found that the movements of their estimates of the costs of capital in the electric utility industry conformed quite closely with the average yield on AAA bonds in the industry (McElroy [12]). Although the average yield on AAA bonds slightly underestimates the cost of capital of electric utilities in the sample, it is used as a proxy measure of the cost of capital.

s = allowed rate of return. Earned rates of return for privately-owned electric utilities have been computed by the F.P.C. since 1961 (Sankar, [17]). Starting with 1963, a three-year average of earned rates of return is taken and used as measure of the allowed rate of return for each firm in the sample. For 1963, a two-year average is taken. For 1960 and 1961, the value of s in 1961 is taken.

OD and SOD = plant types which are: 1) conventional; 2) outdoor; 3) semi-outdoor; 4) outdoor boiler. $OD = 1$ if the plant is outdoor; $OD = 0$ if otherwise. $SOD = 1$ if the plant is semi-outdoor and outdoor boiler; $SOD = 0$ if otherwise. These exogenous dummy variables are included because the construction component of capital input can vary considerably according to location and weather conditions at the plant site. For example, in the South, a plant is frequently outdoor or semi-outdoor, whereas in the North, a plant is generally indoor. These factors affect the measure of capital input and should be reflected in the production function.

13. This method of computing the rental price of capital was first used by Courville [4].

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A Comment on Geometric Mean Portfolios: Reply to Aucamp

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REPLY TO AUCAMP

In our recent article [1] in this journal, we stated in the introduction that a portfolio selected to maximize the geometric mean return will "Maximize the probability of exceeding a given wealth level in a fixed amount of time." Donald C. Aucamp has pointed out to us that this is not true, at least not without further qualifications. A correct statement of the minimum time property can be found in Breiman [2]: as the "desired fortune x becomes infinite, . . . the expected time under Λ^* (the geometric mean strategy) to amass x becomes less than that under any other strategy." We note that the results of our paper are not compromised by the imprecision of our opening statement.

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ESTIMATION AND SIMULATION

A number of papers on estimation procedures for simulation have been published in *Management Science* and related journals. I believe that many of these are on the wrong track. The purpose of this letter is to indicate what appear to be shortcomings in this literature and to suggest (imperfect) remedies.

I pose the following questions:

1. Is it dangerous to extrapolate comparative performance of estimators in idealized situations to their performance in realistic cases?
2. Is the emphasis on estimating steady-state behavior misplaced?

The answer to each of these questions is, in my opinion, "Yes!"

While acknowledging the danger, one can defend extrapolation from idealized models *provided* that the models have been carefully validated. The only way to do this statistically is to drive the real system and the model with identical inputs and then to compare the corresponding outputs, subjecting any discrepancies to rigorous tests. If this is feasible, fine. But often the real system has not yet been built or such comparisons are too expensive.

Much of the literature takes a different tack. Estimators are compared for very simple models, such as a queue with stationary Poisson input or a critical path network with just six arcs, with independently distributed lengths; but there is *no* specific real system in mind. It is usually the case that these models are gross simplifications of real systems and, without a concrete system, the concept of model validation becomes vacuous. This being the case, there is no statistical basis for extrapolating the performance in real systems. It can be (and has been) argued that idealized models should be used to screen techniques that supposedly reduce the variance of estimators. The trouble with this approach is that there are many *a priori* reasonable variance reduction techniques and combinations thereof and that the goal

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General Telephone's Experience With a Short-Run Financial Planning Model

Effective use of financing alternatives is the responsibility of GTE treasurer Jerry Austin. Here, Austin and two Duke University professors outline GTE's time-sharing computer model.

by Jerry Austin, Dr. Steve F. Maier and Dr. James H. Vander Weide

In periods of high and rapidly fluctuating interest rates, wise cash management is especially important. Firms who continuously borrow in the short-term money markets can save 10-50 basis points in such periods through proper timing and choice of financial instruments. Here's how GTE's time-sharing computer model helps minimize interest costs.

The Company. General Telephone Company of the Southeast (GTSE), headquartered in Durham, N.C., provides telecommunication service in seven southeastern states. Effective use of the company's financing alternatives is the responsibility of GTE Treasurer Jerry Austin. Because of high interest rates, inflation, and the capital-intensive nature of the telephone communications industry, GTSE has turned aggressively to new financial decision-making techniques to reduce interest costs.

With few exceptions, GTSE is a net borrower of short-term funds, with commercial paper and master notes being the current least expensive sources. Quick and accurate comparisons of master notes and various maturities of commercial paper has typically been a difficult task, due primarily to the uncertainty of future interest rates, and the sheer number of financing alternatives available.

The Short-Run Financial Planning Model. Prior to the short-run financial planning model, the decisions about borrowing instruments were based primarily on past experience and discussions with the firm's commercial paper dealer. A detailed analysis was impossible because of the limited time available.

The financial planning model allows a cash manager to analyze, inexpensively and accurately, the interest costs of different financing alternatives. The cash manager simply inputs cash flow and interest rate forecasts into the model and in a few seconds, the model generates an optimal short-run financial plan, indicating the best borrowing instruments and the total interest cost.

After the optimal plan, a cash manager can use the model in two different ways to estimate returns and risks of each financial strategy.

First, he can eliminate one or more of the selected instruments, forcing the model to use another alternative. The interest cost of that alternative is then compared to that of the optimal plan.

Second, the cash manager can vary his cash flow and interest rate forecasts to determine the optimal plan's sensitivity to forecast variations. This process provides an estimate of the risk of each strategy.

Jerry L. Austin (left) is treasurer of General Telephone Co. of the Southeast, Durham, N.C. He also serves as a lecturer on finance in GTE's internal management training programs and has spoken before business organizations and university business schools. Austin also testifies as GTE's witness on rate-of-return and cost-of-capital before the public service commissions in the southeastern states where GTE operates. He holds a BA in accounting and economics from Michigan State University, E. Lansing, and an MBA in finance from Pace University, New York.

Drs. Steven F. Maier (center) and James H. Vander Weide (right) are associate professors in the Graduate School of Business Administration at Duke University, Durham, N.C. Both have been active in cash management research and consulting, and were co-founders of University Analytics, a major provider of cash-management services to the banking industry.

Input Requirements for the Model. The short-run financial planning model was especially designed to be user-oriented. All information is entered through a time-sharing conversation via computer terminal. Since data from previous runs is stored, the model is particularly easy to use. once the first case has run. Only data *changes* need be entered on subsequent runs.

The input is conveniently grouped into four types:

1. *Period Duration and Cash Flow Projection*

The cash manager must specify the number and length of each time period within the planning horizon. He is also asked to specify which cash flows will be expected at the beginning of each time period within the horizon. The current model specification allows for a maximum of 25 time periods, with no limitations about the length of these periods. Cash flows may be either positive or negative.

We have found that it is best to keep the first few periods in the time horizon relatively short. For example, it is frequently convenient to use daily periods for the first few days, followed by a three-day period corresponding to a weekend. Later periods can be longer, often a week or two. It is also helpful to have one final period of relatively long duration to give some weight to the firm's long-run cash flow and interest rate projections.

2. *Instrument Description*

The second input section represents a description of the available investment/financing instruments. Each instrument is described by name, maturity length, yield, and interest rate projection.

The maturity may be specified as a constant (a 91-day Treasury Bill would be specified as 91 days.) Since some financial instruments may be purchased to have the same yield, with a range of possible maturities, the model also permits the user to specify a range. For example, commercial paper with a yield of 9.5% could be specified to have a maturity of between 15 and 37 days.

The yield on an instrument is always computed as if the interest will be paid upon maturity. If the instrument was sold or bought at a discount, the discount rate can be specified and the model will automatically convert the discount rate of interest to the interest yield, as if the interest had been paid at maturity.

3 *Interest Rate Projections*

The cash manager can specify an interest rate projection, as either a single interest rate projection (and use it to modify the yields on a group of investment instruments) or he can specify an independent interest rate projection for each of his investment or borrowing instruments.

4. *Borrowing Limit*

The model allows a cash manager to limit the amount of borrowing or investment associated with one of the instruments. This limit allows him to incorporate judgements about the risk of various instruments, or to include company policy decisions.

Output Reports. The short-run financial planning model provides several types of output reports.

1. *Cost Summary*

The cost summary gives five types of information *for each period* (Exhibit 1):

- number of days
- cash flow projection
- marginal rate
- interest expense
- cumulative interest expense

The number of days in the period and the projected cash flow are user-specified. The marginal rate is the value of reducing the firm's borrowing in a given period, and this can help the firm determine whether it wishes to expedite some cash flows, or postpone the payment of specific payable items. The interest expense takes into account *all instruments purchased or sold* during the period, and *all instruments which were activated before the start of the period* and matured at some later date. A negative interest expense (one enclosed in parentheses) indicates interest earned. The cumulative interest expense is the interest expense for the current and all previous periods.

2. *Action Summary*

The action summary, (Exhibit 2) lists eight components for each instrument bought or sold:

- period in which the action is initiated
- instrument name
- type of action (buy or sell).
- action date
- maturity date
- amount of capital involved with the original purchase/sale of the instrument
- maturity value of the instrument
- yield of the instrument

An instrument is only listed in this report on the day the initial action is taken. The example in Exhibit 2, shows that a Master Note activated in period 6, day 71, matures on day 99. Since the Master Note has a fixed maturity of only one day, the note was "rolled over" 28 times in order for its maturity date to coincide with the decision date. "Rolling over" of short-term instruments is an automatic feature of the model. To obtain a list of both initial and concluding actions within a period, the detailed report is required.

The "action" column indicates, with a "B" or "S", whether the instrument was bought or sold. The action date is the first day of the period in which the instrument is activated and the maturity date is the day of maturity.

The instrument yield is set initially as part of the instrument's description and can be revised by an interest rate projection.

3. *Interest Rate Summary*

Exhibit 3 gives an example of the Interest Rate

The Optimal Short Term Financial Plan

Exhibit 1

COST SUMMARY

Period	Length	Cash Flow	Marginal Rate	Interest Expense This Period	Cumulative Interest Expense
1	4	$ 0.00	9.754%	$ 0.00	$ 0.00
2	3	($ 1,450,000.00)	9.770%	$ 1,429.01	$ 1,429.01
3	1	($ 2,270,000.00)	9.877%	$ 1,067.25	$ 2,496.26
4	3	($ 875,000.00)	9.982%	$ 3,874.56	$ 6,370.82
5	3	($ 250,000.00)	10.147%	$ 4,022.50	$ 10,393.32
6	3	($ 3,000,000.00)	10.033%	$ 6,531.21	$ 16,924.53
7	2	($ 2,000,000.00)	10.691%	$ 5,466.53	$ 22,391.06
8	2	($10,300,000.00)	10.444%	$ 11,223.03	$ 33,614.09
9	4	($ 4,270,000.00)	10.177%	$ 27,273.72	$ 60,887.81
10	3	($ 600,000.00)	10.156%	$ 20,955.12	$ 81,842.93
11	3	($ 4,900,000.00)	10.117%	$ 25,036.69	$ 106,879.62
12	3	($ 1,200,000.00)	10.143%	$ 26,034.61	$ 132,914.23
13	15	$ 500,000.00	10.109%	$127,739.15	$ 260,653.38
14	31	$10,000,000.00	10.067%	$178,485.66	$ 439,139.04
15	31	$ 3,000,000.00	9.935%	$152,339.53	$ 591,478.57
16	30	($ 5,500,000.00)	9.807%	$191,081.71	$ 782,560.28
17	31	($ 3,000,000.00)	9.807%	$224,044.10	$1,006,604.38
18	30	$ 2,000,000.00	9.805%	$202,501.18	$1,209,105.56
19	1	($11,300,000.00)	9.787%	$ 9,779.79	$1,218,885.35

Exhibit 2

ACTION SUMMARY

Period	Instrument	Act	Act Date	Mature Date	Amount	Maturity Value	Yield
2	15 DAY CP	S	5	22	$ 8,830,052.28	$ 8,871,731.38	10.134%
2	DAILY REPO	B	5	8	$ 7,380,052.28	$ 7,385,978.41	9.767%
3	DAILY REPO	B	8	9	$ 5,115,978.41	$ 5,117,362.87	9.877%
4	DAILY REPO	B	9	12	$ 4,242,362.87	$ 4,245,843.44	9.979%
5	DAILY REPO	B	12	15	$ 3,995,843.44	$ 3,999,176.08	10.144%
6	DAILY REPO	B	15	18	$ 999,176.08	$ 1,000,000.00	10.030%
7	MASTER NOTE	S	18	20	$ 1,000,000.00	$ 1,000,563.11	10.275%
8	MASTER NOTE	S	20	22	$ 1,000,000.00	$ 1,000,558.93	10.199%
8	15 DAY CP	S	20	35	$10,300,563.11	$10,343,768.23	10.206%
9	MASTER NOTE	S	22	26	$ 1,000,000.00	$ 1,001,113.52	10.157%
9	15 DAY CP	S	22	35	$13,142,290.31	$13,189,866.53	10.164%
10	MASTER NOTE	S	26	29	$ 1,000,000.00	$ 1,000,833.63	10.140%
10	15 DAY CP	S	26	35	$ 601,113.52	$ 602,617.53	10.147%
11	15 DAY CP	S	29	35	$ 5,900,833.63	$ 5,910,664.03	10.134%
12	MASTER NOTE	S	32	35	$ 1,000,000.00	$ 1,000,831.54	10.114%
12	15 DAY CP	S	32	50	$ 200,000.00	$ 200,998.31	10.122%
13	15 DAY CP	S	35	50	$30,547,747.86	$30,674,655.09	10.109%
14	15 DAY CP	S	50	81	$20,875,653.39	$21,054,139.05	10.045%
15	15 DAY CP	S	81	112	$18,054,139.05	$18,206,478.58	9.914%
16	15 DAY CP	S	112	142	$23,706,478.58	$23,897,560.29	9.787%
17	15 DAY CP	S	142	173	$26,897,560.29	$27,121,604.40	9.787%
18	15 DAY CP	S	173	204	$25,121,604.40	$25,330,855.61	9.787%
19	MASTER NOTE	S	203	204	$ 1,000,000.00	$ 1,000,267.93	9.780%
19	15 DAY CP	S	203	204	$10,300,000.00	$10,302,761.82	9.787%

Exhibit 3

INTEREST RATE SUMMARY

Day	Mast	15 D	30 D	60 D	90 D	Bank	DR
1	.10110	.10117	.10160	10299	10388	.11750	.09750
5	10127	10134	10177	10316	10388	11767	09767
8	10237	10245	10287	10426	10388	11877	09877
9	10339	10346	10389	10528	10388	11979	09979
12	10504	10512	10555	10693	10388	12144	10144
15	10390	10397	10440	10579	10388	12030	10030
18	10275	10283	10326	10464	.10388	11915	09915
20	10199	10206	10249	10388	10388	11839	09839
22	10157	10164	10207	10345	10388	11797	.09796
26	10140	10147	10190	10328	10388	11780	09780
29	10127	10134	10177	10316	10388	11767	.09767
32	10114	10122	10165	10303	10388	11754	.09754
35	.10102	.10109	.10152	.10290	.10388	.11742	.09741
50	10038	10045	10088	10227	.10388	11678	.09678
81	09907	.09914	.09957	10095	.10388	11547	.09547
112	09780	.09787	09830	.09968	10388	11420	.09420
142	.09780	.09787	.09830	09968	.10388	11420	.09420
173	.09780	.09787	.09830	09968	10388	11420	09420
203	.09780	.09787	.09830	.09968	.10388	.11420	09420

Summary Report, showing in matrix form the yield of each instrument at the start of each period. The instruments are listed across the top of the matrix: the first four characters in the instrument name are used as an identifier. The first column in the matrix lists the starting day of the period, rather than the period number.

With this information, the cash manager can check how his interest rate projections have modified the yield on each instrument. If there was no projection for the instrument, the same yield will appear throughout the column.

4. *Input Summary*

The input summary lists the data in a particular model file, giving users a consolidated look at all additions and deletions made during a computer session. The report is available upon first entering the model, or as an option after solving the model, and includes information in four major input categories: period duration and cash flow projection; borrowing limit; instrument description; and interest rate projections.

5. *Detailed Output Report*

The detailed output report gives a complete statement of activity on a period-by-period basis. In addition to the period number, starting date, marginal rate of return, and cash flow projection, the report includes all maturing securities, new purchases and sales, and holdings at the close of the period. The following data is given for each instrument:

- instrument name
- action (bought or sold)
- action date
- maturity date
- amount
- maturity value
- current yield

Benefits from Using the Model. The short-term financial planning model has provided GTSE with important ways to use its cash resources efficiently.

First, the model makes a cash manager sensitive to variables which affect his day-to-day borrowing decisions, leading to increased awareness of economic trade-offs associated with short-run financial decision-making.

Second, the model provides a means of comparing alternative instruments on the basis of "effective" vs "posted" interest rates. This is especially important for GTSE because of its heavy reliance on commercial paper, which is quoted on a discount basis.

Third, the model helps the cash manager to quickly and efficiently make comparisons of borrowing instruments which have variable maturities, providing a quantitative measure and the expected value of different financing strategies. This important feature allows a cash manager to analyze risk/return relationships.

Finally, the model's flexibility allows identification of the strengths and weaknesses of the present cash management system and forecasting methods, and offers ways to improve.

The model has also proved to be a valuable teaching and budgeting aid by providing simple, effective ways of budgeting short-term interest payments within a particular cash flow and interest rate scenario. The model will also quickly measure the impact of cash flow/interest rate variances on total interest expense. As a teaching tool, the model illustrates basic techniques and gives users an appreciation for the investment/borrowing selection process.

In summary, the short-term financial planning model has allowed GTSE to quantitatively analyze a multitude of potential borrowing options in a timely fashion, in a way which was heretofore impossible. Through continual emphasis on the importance of good cash management, the model has provided an impetus for improving the overall cash management process.

Our Philosophy

To provide, through the "forum" concept, a useful medium for the exchange of current thoughts, questions and experiences of corporate executives in the cash management profession

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READING 32

A Unified Location Model for Cash Disbursements and Lock-Box Collections

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The benefits from an improved corporate cash management system generally stem from three sources. First, the firm can often achieve a considerable reduction in its collection float by locating lock-boxes in strategic customer areas and utilizing devices such as wire transfers to shorten the time between customer mailing and fund availability. Second, the firm can usually increase its disbursement float by choosing wisely the offices and banks from which it disburses. Finally, the firm can reduce the costs of banking services it receives by carefully setting the levels of its bank deposit balances. In this paper, we provide a brief review of the models that are currently available to analyze each of these areas, and then present a unified model which can be used to optimally design an entire cash management system.

THE LOCK-BOX LOCATION PROBLEM

It is well-known that corporate treasurers can sometimes significantly increase the amount of funds available for investment by locating check collection points, commonly called "lock-boxes," in one or more of the firm's major customer areas. The problem of locating those check collection points which minimize the value of uncollected funds can be formulated mathematically as follows:

(1) MINIMIZE
$$W = \Sigma_k \Sigma_m [p(q_{mk} + r_{mk}) + e_{mk}] \cdot Y_{mk} + \Sigma_k f_k^c \cdot Z_k^c$$

(2) s.t. $\Sigma_k Y_{mk} = b_m \quad \forall m$

(3) $\Sigma_m Y_{mk} \leq (\Sigma_m b_m) Z_k^c \quad \forall k$

(4) $Y_{mk} \geq 0, \; Z_k^c = 0 \text{ or } 1 \quad \forall k, m$

Where Y_{mk} = the number of deposit items from customer group m processed by bank k

b_m = the total number of checks to be processed from customer group m

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q_{mk} = the dollar value of the mail float carried as accounts receivable balances that is generated when one check is mailed by customer group m to bank k

r_{mk} = the dollar value of the collection float that is generated when one check of customer group m is cleared through bank k

e_{mk} = the variable bank costs of processing one check from customer group m through a lock-box operated by bank k (if this cost does not differ for customer groups, then use e_k)

p = the opportunity cost of ledger balances

f_k^c = a fixed charge for using bank k as a collection point

Z_k^c = one if bank k is used as a lock-box site, zero otherwise

The constraint sets (2) and (4) together insure that all the checks will be allocated, while constraint set (3) insures that no checks will be sent to a "closed" lock-box.

In this model, a homogenous customer group is defined as a collection of customers whose combined mailing and clearing time to each potential lock-box site is the same. Although this does not require that customers be geographically contiguous, in practice customers are grouped by the first two or three digits of their ZIP codes.

The lock-box problem is equivalent to the simple warehouse location problem. Both problems have received extensive coverage in the O.R. literature (see, for example, [Drysdale and Sandiford, 1969], [Feldman, et. al., 1966], [Kraus, et. al., 1970], [Kuehn and Hamburger, 1963], [Shanker and Zoltners, 1972], and [Spielberg, 1969].) In fact, both of these formulations are part of a class of models referred to as the fixed charge location allocation problem by Ellwein [1970] and Ellwein and Gray [1971]. The name stems from the fact that the problem may be approached in two stages. First, one selects a subset of the possible bank location sites and second, one allocates the customers among those selected sites in a manner which minimizes the mail and collection float.

The first stage of the problem is combinatorial in nature, since the number of possible subsets of the location sites is $2^k - 1$ where k is the number of banks under consideration. The second stage of the problem can be solved in general as a transportation problem; however, for the lock-box problem this simplifies further because the bank collection activities are uncapacitated. This simplification permits a solution to be obtained for the second stage of the problem by assigning each customer group to the bank location that gives the minimum float. Because of the simple nature of the second stage, the algorithms that have been proposed are primarily concerned with finding an efficient method for searching the feasible subsets of location sites. Both branch and bound and implicit enumeration have been shown to be efficient and capable of finding the optimal solution to a reasonably sized versions of this problem in a matter of seconds. (See, [Bent, 1972], [Bulfin and Unger, 1973], [Ciochetto, et. al., 1972], [Davis and Ray, 1969], [Effroymson and Ray, 1966], [Khumawala, 1971 and 1972] and [Pogue, et. al., 1970].)

In this paper we will not be further concerned with the computational aspects of the lock-box problem. Instead, we will examine whether this model, which focuses only on the collection side of the cash management function, is in fact a useful planning tool. In a previous paper [1974], we focused our attention on the difficulties inherent in implementing this model because of the high cost of obtaining bank service price information. Now we will ask the more fundamental question: Can the cost of operating a lock-box system be considered independently of the other

cash management costs? With that as our goal, we proceed to review the models for the disbursement activity.

THE CORPORATE PAYMENT PROBLEM

Corporate cash managers can also often generate significant cash savings from a more efficient use of their disbursement system. This savings is achieved by locating the check disbursement activity at offices and banks with "slow" mail and clearing times, respectively. The problem of locating those disbursement activities which maximize the net benefits from the increased disbursement float was first discussed by Shanker and Zoltner [1972, Spring]. The formulation that follows is an extension of Shanker and Zoltner's work:

$$\text{(5)}\quad \text{MAX } W = \Sigma_i \Sigma_j \Sigma_k (p \cdot P_{ijk} - d_{jk}) X_{ijk} - \Sigma_k f_k^D \cdot Z_k^D - \Sigma_i f_i^R \cdot Z_i^R - \Sigma_i \Sigma_k f_{ik}^{DR} \cdot Z_{ik}^{DR}$$

$$\text{(6)}\quad \text{s.t. } \Sigma_i \Sigma_k X_{ijk} = a_j \qquad \forall j$$

$$\text{(7)}\quad \Sigma_i \Sigma_j X_{ijk} \leq (\Sigma_j a_j) Z_k^D \qquad \forall k$$

$$\text{(8)}\quad \Sigma_j \Sigma_k X_{ijk} \leq (\Sigma_j a_j) Z_i^R \qquad \forall i$$

$$\text{(9)}\quad \Sigma_j X_{ijk} \leq (\Sigma_j a_j) Z_{ik}^{DR} \qquad \forall i,k$$

$$\text{(10)}\quad X_{ijk} \geq 0;\ Z_k^D, Z_i^R, Z_{ik}^{DR} = 0 \text{ or } 1 \qquad \forall i,j,k$$

where X_{ijk} = the number of checks to be issued by regional office i to creditor group j on bank k

a_j = the total number of checks to be issued to creditor group j

P_{ijk} = the dollar value of the float generated by disbursing one check from regional office i to creditor group j on bank k

d_{jk} = the per item bank cost of processing one check for creditor group j through bank k (if this cost does not differ for creditor goups, then use d_k)

p = the opportunity cost of ledger balances

f_k^D = a fixed charge for disbursing at bank k

Z_k^D = one if bank k is used for disbursements, zero otherwise

f_i^R = a fixed cost to the firm for locating and maintaining a disbursement activity at regional office i

Z_i^R = one if a disbursement activity is located at regional office i, zero otherwise

f_{ik}^{DR} = a fixed cost to the firm for maintaining a relationship between regional office i and bank k

Z_{ik}^{DR} = one if a relationship is established between regional office i and bank k, zero otherwise

Here, the constraint set (6) is needed to insure that all of the checks that are owed to creditor group j are processed while the constraint sets (7), (8) and (9) are needed to insure that all activities occur through "open" offices and banks.

On first inspection, it may appear that this model is considerably more difficult to solve than that of the lock-box location problem. This is in fact not the case. The two-stage approach described in the

previous section can still be applied to this model with no serious increase in complexity. However, it would generally be true that the number of integer 0-1 variables would be considerably greater here than in the lock-box problem. Again, we must caution against overenthusiastic acceptance of the solution of this model, since it makes the very strong implicit assumption that the cost of operating the disbursement system is independent of other cash management costs.

A SYSTEMS APPROACH TO CASH MANAGEMENT

The two preceding models described in this paper are characterized by their failure to view the collection and disbursement activities in a framework which properly considers the interrelationships between them. Calman[1968] first proposed a comprehensive model of the firm's entire banking system. This model, which was later revised by Pogue et. al, [1970] provides a means of determining the true costs of the various components of the system. A limitation of their model is that it only determines activity levels within the firm's current banking system. As the two previous models indicate, firms often want to consider possible changes in the current banking structure. Therefore, in the next section we present a cash management model which unifies the two previous location models along the lines suggested by Calman and Pogue into a model capable of locating banking activities as well as determining their optimal levels.

A UNIFIED LOCATION MODEL

The key to a unified cash management model is the explicit determination of the optimal level of total bank compensation. In order to appreciate why this is so, one must understand the service pricing policy of commercial banks. Generally, commercial banks offer their services in a package for which they are partially compensated by a minimum balance requirement on a line of credit. When a compensating balance is required, the bank will often allow a service charge credit to be earned on the balance, which may be used to offset charges for other bank services. This policy often permits the firm to obtain double use of such funds. If a firm has already established its lines of credit, it may have a sizable pool of service charge credit that it can use to offset lock-box and disbursement charges. Therefore, unless all of the firm's banking activities are considered simultaneously, it is impossible to establish a basis for a cost analysis. It is this conclusion that makes the cost information required by the first two models impossible to obtain and leads us to the consideration of a unified approach.

In this model we will consider three separate ways of compensating a bank for its services. First, the bank can be paid in the form of cash fees FEE_k. Second, the bank can give a service charge credit C_k^N for each dollar of average net collected balances NCB_k on deposit. (The net collected balance is the true bank balance.) Finally, the bank can give a credit C_k^T for each dollar of tax payments TP_k the firm makes through the bank. (The reason the bank will allow credit is that there is often a substantial delay between the time the firm is required to pay its taxes and the time the U.S. Treasury actually withdraws funds.) We assume that the bank must be compensated for its total cost of processing disbursements TCD_k, its total cost of processing lock-box collections TCC_k and the value of any other tangible or intangible services V_k it performs for the firm. With

these assumptions, we can write the bank compensation constraint as:

$$(11)\quad FEE_k + C_k^T \cdot TP_k + C_k^N \cdot NCB_k \geq TCD_k + TCC_k + V_k$$

which must hold for each bank k under consideration in the system. Each of the variables in this equation is subject to additional constraints, which we now explore in some detail.

The tax payments the firm makes thru its bank is constrained by its total tax liability TPP. We express this as:

$$(12)\quad \Sigma_{k=1}^{K} TP_k \leq TTP$$

Because of its existing lines of credit, the firm must maintain a minimum level of net collection balances in each bank. Thus,

$$(13)\quad NCB \geq g_k,$$

where g_k is the required minimum balance.

Since an assumption of our model is that all parameters are known with certainty, the firm will generally find it optimal to allocate its cash balances to banks in such a way that equation (13) holds with equality. In practice, firms may desire to keep net collected balances above those required by its credit agreements because of the uncertainties associated with the timing of collections and disbursements and because of the desire to maintain access to bank loans in the event of an unforeseen credit need. These uncertainties can easily be incorporated into the model at this point through the introduction of chance constraints. Since an excellent discussion of these constraints in contained in Pogue, Faucett and Bussard [1970], however, we will proceed under our initial assumption.

In order to evaluate the benefits from a redesigned cash management system, we must find a relationship between the firm's average ledger-cash balance and the net collected balance on which the bank bases its computations. These two figures differ because of delays in the payment of checks written by the firm and the collection of checks received by the firm.

The delay in payments (positive float) is due to two factors: the mail delay between the firm's regional office i that issued the check and the location j of the vendor's receiving address; and the clearing time from the vendor's bank back to the firm's bank k upon which the check was drawn. (In addition to the mail and clearing float, there are generally various small delays such as the time the customer needs to process the check. For the purposes of this model, we assume these delays are independent of the issuing location and the bank on which the check was drawn.) If we let X_{ijk} denote the number of checks to be issued by regional office i to creditor group j on bank k, and let p_{ijk} denote the average dollar value of the float generated by disbursing one check for group j from regional office i through bank k, then $\Sigma_i \Sigma_j p_{ijk} X_{ijk}$ will represent the total amount of positive float associated with bank k.

Similarly, the delay in collections (negative float) has two contributions: The mail time from customer group m's location to a lockbox located at bank k; and the clearing time from bank k back to the customer's bank. The mail time, however, does not affect the relationship between the firm's average ledger cash balance and its net collected balances because both balances are computed after the mail time has elapsed. Using our previous definition of Y_{mk} as the number of deposit items processed from customer group m by bank k, and letting r_{mk} be the average dollar value of the collection float generated when one check of customer

group m is cleared through bank k, we can formulate the negative float associated with bank k as $\Sigma_m r_{mk} \cdot Y_{mk}$.

The relationship between NCB_k, the net collected balance, and BAL_k, the ledger balance, can now be expressed as:

$$(14) \quad NCB_k = BAL_k + \Sigma_{i=1}^{I} \Sigma_{j=1}^{J} P_{ijk} \cdot X_{ijk} - \Sigma_{m=1}^{M} r_{mk} \cdot Y_{mk}$$

which holds for all banks k under consideration.

Additional constraints are required to guarantee the assignment of all checks to one of the lock-box or disbursement account locations. These constraints were used in the previous models and are simply rewritten here as:

$$(6) \quad \Sigma_{i=1}^{I} \Sigma_{k=1}^{K} X_{ijk} = a_j \text{ for all creditor groups } j.$$

$$(2) \quad \Sigma_{k=1}^{K} Y_{mk} = b_m \text{ for all customer groups } m.$$

Returning now to the right hand side of the bank compensation constraint (11), we derive a formula that relates the disbursement activity levels X_{ijk} to the bank's total cost for operating the disbursement system TCD_k. We assume that the costs of operating the disbursement system can be divided into fixed and variable portions. If we let d_{jk} be the cost of processing one check from creditor group j through bank k, then the variable portion can be expressed as: $\Sigma_i \Sigma_j d_{jk} \cdot X_{ijk}$. The fixed costs, those costs that do not depend on the level of various activities, can be either attributed to the individual regional offices that use the account or to the bank's maintenance of that account. Therefore, in this model the treatment of the fixed charges f_k^C, f_k^D and F_{ik}^{DR} differs from that of the previous models. We have divided the fixed charges into the portion the bank incurs $\hat{f}_k^C$, $\hat{f}_k^D$, and $\hat{f}_{ik}^{DR}$ and therefore must receive compensation for, and the portion that the firm incurs $\bar{f}_k^C$, $\bar{f}_i^R$, $\bar{f}_{ik}^{DR}$ and must therefore be accounted for, but for which it does not have to compensate its banks.

With these assumptions, we can express TCD_k as:

$$(15) \quad TCD_k = \Sigma_{i=1}^{I} \Sigma_{j=1}^{J} d_{jk} \cdot X_{ijk} + \Sigma_{i=1}^{I} \hat{f}_{ik}^{DR} \cdot Z_{ik}^{DR} + \hat{f}_k^D \cdot Z_k^D$$

which holds for each bank k. The variables Z_{ik}^{DR} and Z_k^D are integer 0-1 variables that indicate the existence of a disbursement account at bank k (Z_k^D) or the existence of regional office-bank relationship (Z_{ik}^{DR}).

The analysis of the total cost of processing lock-box collections is similar. Letting e_{mk} be the cost of processing one customer check from customer group m at the lock-box located at bank k, we have as the variable portion of TCC_k: $\Sigma_m e_{mk} \cdot Y_{mk}$. If we let $\hat{f}_k^C$ be the fixed charge assesed by bank k for servicing the lock-box, then the total cost of collections can be written as:

$$(16) \quad TCC_k = \Sigma_{m=1}^{M} e_{mk} \cdot Y_{mk} + \hat{f}_k^C \cdot Z_k^C \text{ for each bank } k,$$

where Z_k^C is an integer 0-1 variable that indicates the existence of the lock-box at bank k.

A final set of constraints are need to control the values of the integer variables Z_k^D, Z_k^C, Z_i^R and Z_{ik}^{DR}. They are constraints (3), (7), (8) and (9) from the previous models:

(3) $\Sigma_{m=1}^{M} Y_{mk} \leq (\Sigma_{m=1}^{M} b_m) \cdot Z_k^C$

for all banks k.

(7) $\Sigma_{i=1}^{I} \Sigma_{k=1}^{K} X_{ijk} \leq (\Sigma_{j=1}^{J} a_j) \cdot Z_k^D$

for all banks k.

(8) $\Sigma_{j=1}^{J} \Sigma_{k=1}^{K} X_{ijk} \leq (\Sigma_{j=1}^{J} a_j) \cdot Z_i^R$

for all regional offices i.

(9) $\Sigma_{j=1}^{J} X_{ijk} \leq (\Sigma_{j=1}^{J} a_j) \cdot Z_{ik}^{DR}$

for all regional office i and bank k combinations.

The last part of the model to be specified is the objective function. We assume that the firm wishes to minimize the cost of its banking system. The cost of the system can be viewed as consisting of two portions. First, there is the direct out of pocket costs. These include the fees paid to the bank and the fixed costs of the various banking relationships:

$$\Sigma_{k=1}^{K} FEE_k + \Sigma_{k=1}^{K} [\overline{f}_k^C \cdot Z_k^C + \overline{f}_k^D \cdot Z_k^D + \Sigma_{i=1}^{I} \overline{f}_{ik}^{DR} \cdot Z_{ik}^{DR}] + \Sigma_{i=1}^{I} \overline{f}_i^R \cdot Z_i^R$$

where $\overline{f}_k^C$, $\overline{f}_k^D$, and $\overline{f}_{ik}^{DR}$ represents the fixed cost to the firm respectively of its collection, disbursement and regional office relationships. The cost $\overline{f}_i^R$ represents the fixed cost for locating and maintaining a disbursement activity at regional office i.

The second portion of the objective function evaluates the savings from decreased collection and increased disbursement times in the form of lower cash requirements to operate the banking system. More explicitly, we measure the change in the firm's ledger balance $\Sigma_k BAL_k$ and the reduction in receivables due to reduced mail collection times $\Sigma_m \Sigma_k q_{mk} \cdot Y_{mk}$. We evaluate these savings by using the opportunity cost p of the ledger balances. Combining these savings terms with the previous costs we have as our objective function the following:

(17) MINIMIZE $W = p(\Sigma_{k=1}^{K} BAL_k + \Sigma_{m=1}^{M} \Sigma_{k=1}^{K} q_{mk} \cdot Y_{mk}) + \Sigma_{k=1}^{K} FEE_k + \Sigma_{k=1}^{K} [\overline{f}_k^C \cdot Z_k^C + \overline{f}_k^D \cdot Z_k^D + \Sigma_{i=1}^{I} \overline{f}_{ik}^{DR} \cdot Z_{ik}^{DR}] + \Sigma_{i=1}^{I} \overline{f}_i^R \cdot Z_i^R$

COMPUTATIONAL CONSIDERATIONS

The unified location model fits into the framework of the fixed charge location allocation formulation, and may therefore be solved by the two-stage procedure previously described. Two major considerations in the use of branch and bound or implicit enumeration as a solution technique should be mentioned. First, the second stage of the solution process can no longer be solved by a simple assignment of customers to the nearest bank location and vendors to the furthest bank location; rather one must solve a linear program to find the optimal choice of these assignments. Second, the number of integer 0-1 variables is potentially greater in this model than in either of the previous ones. Because of the sensitivity of integer programs to the number of integer variables involved, the user must be cautious when defining his set of bank and regional office locations. He should be especially cautious about the number of regional office-bank relationships he wishes to consider, since the number of integer variables is given by $I + 2K + IK$ where I is the number of regional offices and K is the number of banks. After careful consideration of reported computational experience, the authors believe that a problem containing 25 potential bank sites and three potential regional offices is within the range of available integer

programming codes. (See specifically [Ciocio, et. al., 1972], [Davis and Ray, 1969], [Ellwein, 1970], [Khumawala, 1971 and 1972] and [Spielberg, 1969].

POST OPTIMAL ANALYSIS

A solution to the dual problem of the proposed unified location model can provide additional information about the sensitivity of the model to changes in some of its parameters. For instance, the shadow price associated with constraint (13) can be used to measure the cost of an increase in a required compensating balance level. In addition, the shadow prices on constraints (2) and (6) can measure the impact of a shift in creditor or customer geographic distrubtion. Unfortunately, the integer nature of the model precludes using simple shadow price information to measure the cost of different office and banking relationships. However, this information could be obtained as a byproduct of the branch and bound or implicit enumeration algorithm chosen as a solution procedure.

CONCLUDING REMARKS

In this paper we were concerned with the question of whether the lockbox and disbursement portions of the cash management problem could be unified in one model. The need for this unification arises from the interrelationship between the costs of these two activities. Following Calman and Pogue, we found that the key to such a unification was the explicit consideration of the total level of bank compensation. The proposed model is designed to locate bank activities as well as to determine the optimal levels of these activities.

APPENDIX A

SUMMARY OF THE MODEL

Objective Function

$$(18)\quad \text{MINIMIZE } W = p\Big(\sum_{k=1}^{K} BAL_k + \sum_{M=1}^{M}\sum_{k=1}^{K} q_{mk} \cdot Y_{mk}\Big) + \sum_{k=1}^{K} FEE_k + \sum_{k=1}^{K}\Big[\overline{f}_k^C \cdot Z_k^C + \overline{f}_k^D \cdot Z_k^C + \sum_{i=1}^{I} \overline{f}_{ik}^{DR} \cdot Z_{ik}^{DR}\Big] + \sum_{i=1}^{I} \overline{f}_i^R \cdot Z_i^R$$

Constraints

All creditor checks must be processed:

$$(6)\quad \sum_{i=1}^{I}\sum_{k=1}^{K} X_{ijk} = a_j \qquad \forall_j$$

All customer deposits must be processed:

$$(2)\quad \sum_{k=1}^{K} Y_{mk} = b_m \qquad \forall_m$$

Definition of net collected balances:

$$(14)\quad NCB_k = BAL_k + \sum_{i=1}^{I}\sum_{j=1}^{J} P_{ijk} \cdot X_{ijk} - \sum_{m=1}^{M} r_{mk} \cdot Y_{mk} \qquad \forall_k$$

Net collected balances can support either compensating balances or supporting balances:

$$(13)\quad NCB_k \geq g_k \qquad \forall_k$$

Definition of TCD_k:

$$(15)\quad TCD_k = \sum_{i=1}^{I}\sum_{j=1}^{J} d_{jk} \cdot X_{ijk} + \hat{f}_k^D \cdot Z_k^D + \sum_{i=1}^{I} \hat{f}_{ik}^{DR} \cdot Z_{ik}^{DR} \qquad \forall_k$$

Definition of TCC_k:

$$(16)\quad TCC_k = \sum_{m=1}^{M} e_{mk} \cdot Y_{mk} + \hat{f}_k^C \cdot Z_k^C \qquad \forall_k$$

Bank compensation constraint:

$$(11)\quad FEE_k + c_k^T \cdot TP_k + c_k^N \cdot NCB_k \geq TCD_k + TCC_k + V_k \qquad \forall_k$$

Constraints for integer variables Z_k^C:

$$(3)\quad \Sigma_{m=1}^{M} Y_{mk} \leq \left(\Sigma_{m=1}^{M} b_m\right) \cdot Z_k^C \qquad \forall_k$$

Constraints for integer variable Z_k^D:

$$(7)\quad \Sigma_{i=1}^{I} \Sigma_{j=1}^{J} X_{ijk} \leq \left(\Sigma_{j=1}^{J} a_j\right) \cdot Z_k^D \qquad \forall_k$$

Constraints for integer variable Z_i^R:

$$(8)\quad \Sigma_{j=1}^{J} \Sigma_{k=1}^{K} X_{ijk} \leq \left(\Sigma_{j=1}^{J} a_j\right) \cdot Z_i^R \qquad \forall_i$$

Constraint for integer variable Z_{ik}^{DR}:

$$(9)\quad \Sigma_{j=1}^{J} X_{ijk} \leq \left(\Sigma_{j=1}^{J} a_j\right) \cdot Z_{ik}^{DR} \qquad \forall_{i,k}$$

Constraint on available tax payments:

$$(12)\quad \Sigma_{k=1}^{K} TP_k \leq TTP$$

We assume the continuous variables, FEE_k, X_{ijk}, Y_{mk}, NCB_k, and TP_k are non-negative and BAL_k is unrestricted in sign. The integer variables Z_k^D, Z_k^C, Z_i^R, and Z_{ik}^{DR} are all restricted to be either 0 or 1.

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Deregulation and Oligopolistic Price-Quality Rivalry

By JAMES H. VANDER WEIDE AND JULIE H. ZALKIND*

Domestic airlines, commercial banks, and motor trucking are oft-cited examples of industries in which price and the number of competitors are regulated, but firms compete freely on product quality. Other industries, such as commercial banks in limited-branching states, are more usefully thought of as being regulated on the quality dimension, but free to compete on price. Congress is considering several proposals to deregulate both types of industry. This paper presents a model of regulated, oligopolistic rivalry that can help evaluate congressional proposals for deregulation.

Deregulation of price-, quality-, and entry-regulated industries will be discussed in this paper within the framework of an explicit model of oligopolistic rivalry. The earlier work of Lawrence White, David Levhari and Yoram Peles, James Rosse, Elisha Pazner, and Rosse and John Panzar analyzed the effect of regulation on quality offerings in both monopolistic and perfectly competitive industries. These authors either said nothing directly about quality offerings in other industries, or indicated that oligopolistic results lie between those of monopoly and perfect competition. Panzar and Richard Schmalensee have shown that additional insight about the economic performance of oligopolistic markets such as airlines, banking, and trucking can be obtained from explicit models of oligopolistic behavior.

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The present work differs from those of Panzar and Schmalensee in three important respects. First, we present a model of price variation in oligopolistic, *quality*-regulated markets such as commercial banking in limited-branching states, as well as a model of quality variation in price-regulated markets. Panzar and Schmalensee only consider models of the latter type.

Second, we extend the analysis of Panzar and Schmalensee to include situations of increasing or decreasing returns to scale in quality. Since Arthur DeVany finds evidence of increasing unit flight costs in the airline industry, and both George Benston and Frederick Bell and Neil Murphy find evidence of decreasing returns to scale in bank branches, we believe this extension significantly broadens the applicability of our results.

Finally, we explicitly analyze the economic effects of price, quality and/or entry deregulation of oligopolistic markets. Our analysis of deregulation is particularly relevant at a time when Congress is deregulating the airline, banking, and trucking industries, the CAB is allowing airline firms more freedom to lower fares and enter markets, and state legislatures are loosening restrictions on bank branches. The comparative static analyses of our predecessors do not address the economic effects of these changes directly.

The economic consequences of deregulation depend on a variety of factors, including the previously regulated variables, the choice of variables to deregulate, the appropriate type of individual firm cost and demand functions, and the relationship of the fixed values of the regulated variables to those which would obtain in an unregulated oligopoly. If entry into airline markets is deregulated, for instance, then the number of flights per carrier, the number of passengers per carrier and the load factor de-

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crease, but total flights serving the market and total passengers in the market increase. If both price and the number of competitors are deregulated, however, the increase in market flights resulting from entry deregulation may be more than offset by a decrease in market flights resulting from price deregulation. Regulators should be aware of these dependencies when choosing a deregulation policy.

I. The Model

The oligopolistic firm of our model produces a product with both quantity and quality dimensions. Although the firm's revenue is explicitly based only on the quantity sold, the demand for its product depends on its own price and quality, as well as its competitor's price and quality levels.

The meaning of the product quantity, quality, and price dimensions depends on the market context. Within the context of airline regulation, quantity is often measured by the number of passengers, quality is measured by either the level of amenities per passenger or the number of flights serving each market, and price is measured by the ticket fare. Within the context of bank regulation, quantity might be measured by the number of customers served, quality by either the number of bank branches or the amount of free services per customer, and price by the interest offered on deposits.

The ensuing analysis depends on three simplifying assumptions: the assumption that the n firms in the market face identical demand and cost conditions; the assumption that the demand and cost functions take special forms; and the Cournot-Nash behavioral assumption that each firm views its rival's decisions as fixed. These assumptions reflect the economic character of price-quality rivalry in many oligopolistic markets. (Evidence in support of this assertion is cited in Schmalensee, fn. 3.)[1] They also permit analytic tractibility. Except for our generalization of their demand and cost functions, the above assumptions are identical to those chosen by Panzar and Schmalensee.

Let x_i be the quantity of firm i's product, q_i be the quality of firm i's product, p_i its price, and n the number of firms in the industry. Then the demand function is

$$(1)\quad x_i = G^0(q_i; q_1, \ldots, q_{i-1}, q_{i+1}, \ldots, q_n; \; p_i; p_1, \ldots, p_{i-1}, p_{i+1}, \ldots, p_n)$$

The identical firms assumption implies that G^0 is invariant with respect to permutations of its second through nth arguments and also with respect to permutations of its $n+2nd$ through $2n$th arguments. Thus, G^0 is the same for each firm. We assume that G^0 is homogeneous of degree α, $0 \leqslant \alpha < 1$, in its first n arguments and that G^0 is homogeneous of degree $-\gamma$, $0 \leqslant \gamma < 1$ in its final n arguments. The terms α and $-\gamma$ are the elasticity of firm i's quantity with respect to a simultaneous proportional change in all the firms' quality and in all the firms' price levels, respectively.

In the unregulated case, firm i's objective is to select q_i and p_i to maximize its profits

$$(2)\quad \pi_i(q_1, \ldots, q_n, p_1, \ldots, p_n) = p_i x_i - C(q_i, x_i)$$

where $C(q_i, x_i)$ is the (identical) cost function faced by all firms in the industry.

Under the Cournot and identical firms assumptions, firms make identical decisions. Thus, firm i can view its rival's choices as identical and equal to $\hat{q}$, $\hat{p}$, and it can view its own demand function (1) as

$$(3)\quad x = G(q, \hat{q}, p, \hat{p}, n) = G^0(q; \hat{q}, \ldots, \hat{q}; p; \hat{p}, \ldots, \hat{p})$$

The function G is homogeneous of degree α in its first two arguments and of degree $-\gamma$ in its third and fourth arguments. Similarly, we can write the demand function as in (3) in the case where p or q is regulated.

The homogeneity of the demand function implies (as shown in the Appendix) that

[1] The evidence in Schmalensee only provides support for these assumptions in the quality rivalry case. The argument in favor of the Cournot-Nash behavioral assumption is less convincing when firms compete on price. However, the Cournot-Nash assumption permits analytical tractibility and the results are likely to be indicative of those in a more realistic, but less tractible, setting.

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there exists $g(n)$ such that

$$(4) \quad G(q,q,p,p,n)=q^{\alpha}p^{-\gamma}g(n)$$

Denote the partial derivative of $G(q,\hat{q},p,\hat{p},n)$ with respect to the first argument q as $G_1(q,\hat{q},p,\hat{p},n)$. Then when $\hat{q}=q$ and $\hat{p}=p$, there exists $k(n)$ such that

$$(5) \quad G_1(q,q,p,p,n)=q^{\alpha-1}p^{-\gamma}k(n)$$

Similarly, there exists $\rho(n)$ such that

$$(6) \quad G_3(q,q,p,p,n)=q^{\alpha}p^{-\gamma-1}\rho(n)$$

Economic considerations suggest that quantity demanded is positive, that demand for a firm's product decreases as additional firms enter the market, that a firm's demand increases as its quality increases and that a firm's demand decreases as its price increases. These considerations imply

$$(7) \quad g(n)>0,\ g'(n)<0,\ k(n)>0,$$

and

$$\rho(n)<0$$

The elasticities of demand with respect to changes in the firm's own price and quality decisions are

$$(8) \quad E(n)=-\frac{\partial x/\partial p}{x/p}=-\frac{G_3P}{G}=-\frac{\rho(n)}{g(n)}$$

$$(9) \quad B(n)=\frac{\partial x/\partial q}{x/q}=\frac{G_1q}{G}=\frac{k(n)}{g(n)}$$

respectively. Both $E(n)$ and $B(n)$ are positive under assumptions (7).

The following special case of demand function (1), which we call the *market share rivalry* demand function, sometimes provides additional insight

$$(10) \quad x_i=\frac{q_i^e}{\sum_{j=1}^{n}q_j^e}\left(\sum_{j=i}^{n}q_j\right)^{\alpha}\left[\frac{a}{p_i}-\frac{b(n-1)}{\sum_{j\neq i}p_j}\right]$$

where

$$1>\frac{b}{a}>\frac{\gamma+1}{2}$$

This demand function is a generalization, to permit price rivalry as well as quality rivalry, of the special market share scheduling rivalry demand function used by Joseph Yance, George Douglas and James Miller, and Schmalensee. In this demand function $(\Sigma q_j)^{\alpha}$ measures the effect of total market quality and the term $q_i^e/\Sigma q_j^e$ measures the effect of changes in firm i's market share of quality. Quantity is negatively related to the firm's own price and positively related to the average price charged by other firms. For this demand function, we show in the Appendix that

$$g(n)=n^{\alpha-1}(a-b)^{\gamma}$$

$$k(n)=n^{\alpha-2}(ne+\alpha-e)(a-b)^{\gamma}$$

$$\rho(n)=-n^{\alpha-1}\left(\gamma a(a-b)^{\gamma-1}\right)$$

Then $E'(n)=0$ and if $\alpha<1<e$, $B'(n)>0$ and $\rho'(n)<0$.[2]

The demand function (1) permits the study of different types of regulation, including price regulation, quality regulation, and entry regulation. For example, the government may regulate airline price and restrict entry, leaving the quality choice to the firm. In contrast, the government may regulate both bank entry and a quality variable such as the number of branches per bank, and the firm is free to set price.

We will use two different types of cost functions, depending on the interpretation of the quality variable. The first cost function is appropriate to situations, such as branch banking and airline flight schedules, where the costs of additional quality are independent of the number of customers served.[3] This cost function is[4]

$$(11) \quad C(x,q)=dx+cq^{\beta}$$

[2] Douglas and Miller show that $\alpha<1<e$ is characteristic of the airline industry.

[3] Throughout the remainder of our analysis, we assume that the quantity variable x also measures the number of customers served. We noted earlier that this is appropriate for both the airline and banking industries.

[4] Panzar and Schmalensee use the version of this cost function where $\beta=1$.

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where c, d and β are nonnegative. The variable β measures the economies of scale with respect to quality in this case.

The second type of cost function is appropriate to situations, such as automobile safety, where quality attaches to each unit of output. For this case, we use the cost function[5]

$$C(x,q)=axq^{\delta}+dx \tag{12}$$

where a, δ, and d are nonnegative. The variable d is the cost of providing the basic unit of output, such as an automobile, to each customer and aq^{δ} represents the per customer cost of providing the quality of service q. The variable δ measures economies of scale in quality for this second case.

Although it is possible to combine the two types of cost functions into a single, more general form, the issues become considerably more complex when this is done. We believe our results are indicative of results that would obtain in a more complex setting.

II. Deregulation of Price and Entry when Quality is Independent of Output

Firms often compete on the basis of product quality in industries where price is fixed by regulatory control. The basic model can be adapted to such situations simply by fixing price at some level, say $\bar{p}$. The objective in this case is to choose q to maximize

$$\pi(q)=\bar{p}.x-C(x,q) \tag{13}$$

If quality is independent of the number of customers served, we can rewrite equation (13) as

$$\pi(q)=(\bar{p}-d)G(q,\hat{q},\bar{p},\bar{p},n)-cq^{\beta}$$

Each firm maximizes $\pi(q)$ under the assumption that competitors' decisions are invariant with respect to changes in q. The initial first-order condition is

$$(\bar{p}-d)G_1(q,\hat{q},\bar{p},\bar{p},n)-c\beta q^{\beta-1}=0$$

Since all firms are identical, under the Cournot assumption, they will all produce the same quality, i.e., $\hat{q}=q$. In equilibrium then, we can use equation (5) to rewrite the first-order condition as[6]

$$(\bar{p}-d)\bar{p}^{-\gamma}k(n)-c\beta q^{\beta-\alpha}=0 \tag{14}$$

A typical firm's equilibrium reaction to a change in the regulated price p, and number of firms n, is found through implicit differentiation of (14). Table 1 displays the comparative static results developed in the Appendix. The variables of interest include quality q and quantity x per firm, market output of quantity nx, quality nq, quality per customer q/x, and firm profits π.

A. *Banking*

We can use results of Table 1 to evaluate some current congressional proposals to deregulate the commercial banking industry. (In our interpretation of these results, we let the quality variable q measure branches per bank, the quantity variable x measure the number of customers per bank, and the variable n measure the number of banks in the market.) Most proposals call for an increase in the number of competitors and removal of all restrictions on the interest rates banks pay on demand and time deposits. In the context of our model, we evaluate these proposals by considering the effects of 1) a decrease in price $\bar{p}$ (a decrease in price is equivalent to an increase in interest rates), 2) an increase in the number of competitors n, and 3) a simultaneous decrease in price and increase in the number of competitors.

The first line of Table 1 describes both the firm and industry response to a decrease in price, holding the number of firms fixed.

[5]Levhari and Peles treat a more general form of this cost function. White treats the case where $\delta=1$ and Pazner treats a more general version of this cost function but with $d=0$. None of these analyses, however, apply to oligopolistic industries.

[6]The solution to this equation exists, is unique among symmetric solutions and satisfies second-order and entry restrictions as long as $(p-d)>0$, $G_{11}<0$, and $\beta>1$. Second-order conditions may also be satisfied for some values of $\beta<1$.

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TABLE 1—COMPARATIVE STATIC EFFECTS OF CHANGES IN THE REGULATED VARIABLES p AND n WHEN QUALITY IS INDEPENDENT OF OUTPUT

Regulated Variables	Endogenous Variables					
	q	x	nx	q/x	π	$Q=nq$
p	Pos	$\frac{\alpha}{\beta\gamma}-\frac{p-d}{p}$	$\frac{\partial x}{\partial p}$	Pos	Pos	Pos
n	$k'(n)$[b]	Neg	Pos	Pos[a]	Neg	Pos

Note: Definition of variables: p = output price; n = number of firms in industry; q = amount of quality, for example, branches or flights; x = quantity of output; π = profit; α = elasticity of firm i's quantity with respect to simultaneous proportional change in all the firms' quality levels; $-\gamma$ = elasticity of firm i's quantity with respect to simultaneous proportional change in all the firms' price levels.

[a] True for market share rivalry demand function.

[b] In the case of the market share rivalry demand function, $k'(n)$ is negative for large n.

Branches per bank q, and total branches in the market nq, both decrease. This result is consistent with the results for a competitive firm found by White; namely, that when firms in a regulated competitive industry cannot compete on price, they compete away their excess profits through the quality variable. Since $d\pi/d\bar{p}>0$ in the oligopoly case, however, firms do not decrease quality so much that they compete away profits entirely.

A surprising result of our analysis is that the sign of $\partial x/\partial\bar{p}$ is indeterminate. We believe that $\partial x/\partial\bar{p}<0$ in most cases. In some cases, however, a decrease in the regulated price causes the bank to decrease its branches so much that demand actually decreases. This phenomenon occurs when $\alpha/\beta\gamma>(\bar{p}-d)/\bar{p}>1$. In this case, the market reaction to matched price changes measured by α is significantly greater than the product of the market reaction to matched quality changes measured by γ and the measure of economies of scale, β. Total industry output changes in the same direction as firm output.

The second line of Table 1 shows the responses to a change in the number of competitors, holding the regulated price fixed. The assumption that the banks entering (or leaving) the market are identical to the banks already in the market is implicit in the derivation of these results. An increase in n leads to a decrease in output per bank, but an increase in total output and branches in the market. Individual bank profits decline.

Policymakers could decide, of course, to allow free entry at the same time that they deregulate price. The effect of a simultaneous change in $\bar{p}$ and n can be found through analysis of the total differential:

$$dz=\frac{\partial z}{\partial\bar{p}}d\bar{p}+\frac{\partial z}{\partial n}dn$$

where z represents the variable of interest. For example,

$$dq=\frac{\partial q}{\partial\bar{p}}d\bar{p}+\frac{\partial q}{\partial n}dn \tag{15}$$

measures the effect of deregulation on the individual firm's quality choice. We know from Table 1 that $\partial\pi/\partial\bar{p}>0$ and $\partial\pi/\partial n<0$. Since simultaneous deregulation of both price and entry leads to lower p and higher n, deregulation will cause a decrease in individual bank profits. The effect of deregulation on total branches and output is indeterminate without empirical estimation of the demand and cost parameters.

B. *Airlines*

Recent models of the airline industry (see, for example, Douglas and Miller, Schmalensee, and Panzar) have assumed that regulatory authorities fix fares and the number of competitors, but allow firms to compete on their flight schedules. Both Congress and the CAB have deregulated the domestic airline industry. Most observers agree that deregulation will produce a de-

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crease in price and/or an increase in the number of competitors. If this observation is correct, the remaining consequences of deregulation can be predicted from the results displayed in Table 1. For the purposes of this analysis, the quality variable q is the number of flights per firm, the quantity variable x is the number of customers served by each firm, and the variable n is the number of airline firms in the market.

If price alone is deregulated, then deregulation will lead to a lower fare, fewer total flights, and lower industry profits.[7] The load factor will increase as well. More customers will be served if price effects significantly dominate quality effects. The social benefit of such a change is ambiguous, since customers pay lower fares at the possible expense of a reduction in flights. In small markets in which the regulated price may be below the equilibrium unregulated fare, these effects are reversed.

An alternative deregulation policy is to allow free entry into a given airline market, but retain control over fares. Adoption of this alternative would lead to a decrease in the number of flights per carrier (in the case of the demand function (10)); a decrease in customers served per carrier but an increase in total customers served by the market. If the special demand function (10) applies, there will be a decrease in the load factor and firm profits, and an increase in total flights in the market.

Finally, a policy of total deregulation of the large airline market will cause a decrease in fares, a decrease in the number of flights per market, and a decrease in firm profits.[8]

What alternative should the deregulators adopt? The answer depends on the social welfare weights attached to each price-quantity-quality combination. By indicating the directions of the economic effects of deregulation, as well as the parameters which need measurement to estimate the magnitude of these economic effects, however, our analysis should help clarify the debate.

[7]Firms will earn lower profits after deregulation if they are earning a positive economic profit prior to deregulation. If firms are not making positive economic profits prior to deregulation, then deregulation leads to higher profits, as shown in the Appendix. Casual empiricism suggest that this may be the case on many airline routes currently being deregulated.

[8]See fn. 7.

III. Price and Entry Deregulation when Quality Depends on Output

We use the cost function (12) to study the effects of deregulation when the quality variable of interest is attached to each unit of output sold, as in the airline meals case studied by White. In this case, profits are

$$\pi(q)=(\bar{p}-aq^{\delta}-d)G(q,\hat{q},\bar{p},\bar{p},n)$$

The Cournot equilibrium first-order condition for profit maximization is[9]

$$(\bar{p}-d)\frac{B(n)}{[1+B(n)]}-aq^{\delta}=0$$

where $B(n)$, the elasticity of demand with respect to matched changes in quality, is nonnegative.

The interpretation of quality in this case differs from the interpretation in the earlier case. Since quality in this case is inextricably attached to each unit of output sold, the variable q now measures quality per unit, and total firm quality offerings is measured by qx; that is, by quality per unit times the number of units sold. Similarly, the variable nqx measures total market quality.

Table 2 shows a comparative static analysis of the firm's reaction to changes in the regulatory variables p and n. The differences in the meaning of the quality variable lead to a number of differences between these results and those applicable to the previous cost function. First, the reactions of the quantity variables x and nx to changes in price restrictions are negative, and the reactions of excess profits π are positive only when $\gamma>\alpha$ and $\gamma\geqslant 1$. The reaction of the firm's and the market's total output of quality qx and nqx to changes in price is only determinate and positive when there are economies of scale in quality, i.e., $\delta\leqslant 1$.

[9]The solution to this equation exists, is unique among symmetric solutions, and satisfies second-order and entry restrictions as long as $p-af^{\delta}-d>0$, $G_{11}<0$, and $\delta>0$. Second-order conditions may be satisfied if $\delta<1$.

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TABLE 2—COMPARATIVE STATIC EFFECTS OF CHANGES IN THE REGULATED VARIABLES p AND n WHEN QUALITY IS TIED TO OUTPUT

Regulated Variables	Endogenous Variables						
	q	x	nx	qx		π	
p	Pos	$\frac{\alpha}{\gamma\delta}-\frac{p}{p-d}$	$\frac{\partial x}{\partial p}$	$\frac{\alpha+1}{\delta}-\frac{p-d}{p}$	$\frac{\partial qx}{\partial p}$	Pos	
n	Pos[a]	$\frac{\alpha}{\delta}+\frac{g'}{g}\frac{B(1+B)}{B'}$	Pos[a]	$\frac{\alpha+1}{\delta}+\frac{g'}{g}\frac{B(1+B)}{B}$	Pos[a]	$\frac{\alpha}{\gamma}-1+\frac{g'}{g}\frac{B(1+B)}{B'}$	[b]

Note: See Table 1; q = amount of quality per unit of output, δ = measure of economies of scale in quality, B = elasticity of demand with respect to changes in the firms' own price decision, g = a function reflecting the impact of the number of firms n on the quantity demanded of firm i's product.

[a] See Table 1.

[b] Negative for $\alpha < \gamma$.

Finally, in this case $\partial\pi/\partial n$ could be positive if α is much greater than γ. If the further assumptions that $\delta = 1$ and $\gamma > \alpha$ are made, then Table 2 shows that price deregulation leads to more customers but fewer services per customer.

The market share rivalry demand function permits analysis of the effects of entry deregulation. As the number of firms in the market increase, services per customer and per market increase.

IV. Quality-Regulated Oligopolies: Branch Banking and Safety

Quality regulation characterizes some industries better than price regulation. Examples of these industries include banking in limited-branching states and safety-regulated industries such as automobiles. The economics of quality regulation can be analyzed within the context of our model by treating the firm's quality variable as fixed. Then, the firm's objective is to choose p to maximize

$$\pi(p) = p \cdot x - C(x, \bar{q}) \tag{16}$$

We use (16) with the appropriate cost function to analyze cases such as branching where quality is independent of the firm's output and cases, such as automobile safety, where quality and output are inextricably tied together.

A. *Branch Banking*

Many states limit the number of branches that may be operated by any one bank and/or restrict entry into banking markets. Our model permits analysis of the economic effects of branch and/or entry deregulation. We treat the number of branches as an advertising-type quality variable measuring "convenience" and assume that banks are free to compete on price.

If the cost of establishing a branch is independent of the number of customers served, then (16) can be written as

$$\pi(p) = (p-d)G(\bar{q}, \bar{q}, p, \hat{p}, n) - c\bar{q}^{\beta}$$

and the profit-maximizing values of p is one which satisfies the first-order condition:[10]

$$p = \frac{dE(n)}{E(n)-1}$$

a solution which only makes economic sense when $E(n) > 1$.

Table 3 presents comparative static results useful for evaluation of branch and entry deregulation. We assume that branches per firm q and the number of firms n are less than their equilibrium unregulated values. The first row of Table 3 indicates the effect of deregulating the number of branches per firm, holding the number of firms constant. The second row indicates the effect of allowing free entry, while continuing to regulate branches.

[10] A solution exists, is unique among symmetric solutions, and satisfies positive profit requirements for entry if $(p-d) > 0$ and $G_{33} < 0$.

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TABLE 3—COMPARATIVE STATIC EFFECTS OF CHANGES IN THE REGULATED VARIABLES q AND n WHEN QUALITY COST IS INDEPENDENT OF OUTPUT

Regulated Variables	Endogenous Variables				
	p	x	nx	x/q	π
q	0	Pos	Pos	Neg	Indet[b]
n	0[a]	Neg[a]	Pos[a]	Neg[a]	Neg[a]

Note: See Table 1; q = the amount of quality, for example, the number of branches.
[a]See Table 1.
[b]Positive for $\beta < 1$.

TABLE 4—COMPARATIVE STATIC EFFECTS OF CHANGES IN THE LEVEL OF SAFETY WHEN SAFETY IS INDEPENDENT OF UNITS SOLD

Regulated Variables	Endogenous Variables				
	p	x	nx	q/x	π
q	0	0	0	Pos	Neg
n	0[a]	Neg[a]	0	Pos[a]	Neg[a]

Note: See Table 1; q = amount of safety when safety is independent of output.
[a]See Table 1.

TABLE 5—COMPARATIVE STATIC EFFECTS OF CHANGES IN THE LEVEL OF SAFETY WHEN SAFETY IS ATTACHED TO EACH UNIT SOLD

Regulated Variables	Endogenous Variables			
	p	x	nx	π
q'	Pos	Neg	Neg	Neg
n	Neg	Neg[a]	0[a]	Neg[a]

Note: See Table 1; q' = amount of safety when safety depends on output.
[a]See Table 1.

Deregulation of branching leads to an increase in both bank and industry output. Since the number of branches affects marginal revenue and marginal cost proportionately, however, deregulation has no effect on equilibrium price. Because consumers can receive both greater convenience and quantity at the same price, their welfare is improved by free branching. Consumer welfare always comes at the expense of the firm when there are diseconomies of scale ($\beta > 1$).

If the market share rivalry demand function applies, deregulation of entry leads to an increase in market output and no change in price. Thus, consumer welfare is improved by this form of deregulation as well. Since individual firm profits decline under free entry, improvements in consumer welfare come at the expense of the firm.

B. *Safety Regulation*

Safety regulation is a special case of quality regulation in which quality has little or no effect on demand. This phenomenon is especially apparent in the automobile industry where manufacturers frequently insist that safety has no effect on passenger demand for automobiles. It is also apparent in the airline industry where passengers do not possess the knowledge to select a carrier on the basis of safety.

There are two types of safety: one that attaches to each unit sold, as in automobile safety, and another which is independent of the number of customers, as in airline safety. Tables 4 and 5, derived under the assumption that $\alpha = 0$, show the comparative static effects of safety regulation for the cost functions corresponding to these two cases. The

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contrast is striking. Since increased safety standards have no effect on the firms' price and output decisions in the case where safety is independent of the number of customers served, consumer welfare is unambiguously improved, but firm profits decline. In the case where safety attaches to each unit sold, however, equilibrium market price increases and quantity decreases when safety standards are raised. Thus, consumers share the cost burden of higher safety with firms.

V. Conclusion

We have developed an explicit model showing the effects of deregulation of an oligopolistic industry. The oligopoly form of the model permits explicit analysis of entry as well as price and/or quality deregulation. Our model pertains to two interpretations of quality and also allows for nonconstant returns to scale in quality. The direction and magnitude of the effects of deregulation depends on which variables were previously regulated and which are deregulated. These effects were determined in many cases without resort to statistical estimation of model parameters. The results of this paper should aid in the evaluation of recent proposals to deregulate important sectors of the American economy.

Appendix

A: The Demand Function

LEMMA: *$G_1(q, \hat{q}, p, \hat{p}, n)$ is homogeneous of degree $\alpha-1$ in the first two arguments.*

PROOF:

Differentiating G, gives

(A1)

$$\frac{\partial G(\lambda q, \lambda \hat{q}, p, \hat{p}, n)}{\partial q} = \lambda G_1(\lambda q, \lambda \hat{q}, p, \hat{p}, n)$$

and by definition

(A2)

$$\frac{\partial G(\lambda q, \lambda \hat{q}, p, \hat{p}, n)}{\lambda q} = \frac{\partial \lambda^{\alpha} G(q, \hat{q}, p, \hat{p}, n)}{\partial q}$$

$$= \lambda^{\alpha} G_1(q, \hat{q}, p, \hat{p}, n)$$

Combining (A1) and (A2) gives

$$G_1(\lambda q, \lambda \hat{q}, p, \hat{p}, n) = \lambda^{\alpha-1} G_1(q, \hat{q}, p, \hat{p}, n)$$

LEMMA: *There exists $g(n)$ such that* $G(q, q, p, p, n) = q^{\alpha} p^{-\gamma} g(n)$.

PROOF:

$G(q, q, p, p, n) = q^{\alpha} p^{-\gamma}\ G(1, 1, 1, 1, n)$ from the assumed homogeneity. Let $g(n) = G(1, 1, 1, 1, n)$.

LEMMA: *For the market share rivalry demand function*

$$x_i = \frac{q_i^e}{\sum_{j=1}^{n} q_j^e} \left(\sum_{j=1}^{n} q_j \right)^{\alpha} \left[\frac{a}{p_i} - \frac{b(n-1)}{\sum_{j \neq i} p_j} \right]^{\gamma}$$

A. $g(n) = n^{\alpha-1}(a-b)^{\gamma}$
B. $k(n) = n^{\alpha-2}(ne+\alpha-e)(a-b)^{\gamma}$
C. $\rho(n) = -n^{\alpha-1}\gamma a(a-b)^{\gamma-1}$

PROOF:

A. Let $q_i = q$, $p_i = p$ for $i = 1, \ldots, n$. Then

$$x_i = \frac{q^e}{nq^e}(nq)^{\alpha}\left(\frac{a}{p} - \frac{b(n-1)}{(n-1)p} \right)^{\gamma}$$

$$= q^{\alpha} p^{-\gamma} n^{\alpha-1}(a-b)^{\gamma}$$

B. Differentiate x_i with respect to q_i to get

$$\frac{\partial x_i}{\partial q_i} = \left(\sum q_j^e\right)\left[eq_i^{e-1}\left(\sum q_j\right)^{\alpha} + \alpha\left(\sum q_j\right)^{\alpha-1} q_i^e \right]$$

$$- q_i^e\left(\sum q_j\right)\alpha e q_i^{e-1} + \left(\sum q_j^e\right)^2$$

$$x\left[\frac{a}{p_i} - \frac{b(n-1)}{\sum_{j \neq i} p_j} \right]^{\gamma}$$

Set $q_i = q$ and $p_i = p$ for $i = 1, \ldots, n$. Then

$$\frac{\partial x_i}{\partial q_i} = nq^e\left[eq^{e-1}(nq)^{\alpha} + \alpha(nq)^{\alpha-1} q^e \right]$$

$$- q^e(nq)^{\alpha} e q^{e-1} +$$

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$$+(nq^e)^2 x\left(\frac{a-b}{p}\right)^{\gamma}$$

$$=n^{\alpha-1}[en+\alpha-1]q^{\alpha-1}p^{-\gamma}(a-b)^{\gamma}$$

C. The proof of C is similar to the proof of B.

B: Comparative Statics

The comparative static results shown in Table 1 are derived in this Appendix. (The results in Tables 2–5 are derived in much the same way as those in Table 1; the interested reader may obtain these derivations from the authors.)

If p is regulated and the cost of quality is independent of output, then the firm's objective is to choose q to maximize

$$\text{(A3)}\quad \pi(q)=(\bar{p}-d)G(q,\hat{q},\bar{p},\bar{p},n)-cq^{\beta}$$

and the first-order condition is

$$(\bar{p}-d)G_1(q,\hat{q},\bar{p},\bar{p},n)-c\beta q^{\beta-1}=0$$

Substituting for G_1, setting $\hat{q}=q$ and rearranging yields

$$\text{(A4)}\quad (\bar{p}-d)\bar{p}^{-\gamma}k(n)-c\beta q^{\beta-\alpha}=0$$

To determine the effect of changes in the regulatory variable n, implicitly differentiate (A4) and substitute (A4) into the result to obtain

(A5)

$$\frac{\partial q}{\partial n}=\frac{(\bar{p}-d)\bar{p}^{-\gamma}k\,(n)}{c\beta(\beta-\alpha)q^{\beta-\alpha-1}}=\frac{q}{\beta-\alpha}\cdot\frac{k'(n)}{k(n)}$$

Equation (A4) is used in a similar manner to obtain

$$\text{(A6)}\quad \frac{\partial q}{\partial \bar{p}}=\frac{k(n)\bar{p}^{-\gamma-1}[\,\bar{p}(1-\gamma)+d\gamma]}{c\beta(\beta-\alpha)q^{\beta-\alpha-1}}$$

$$=\frac{q}{\bar{p}}\cdot\frac{[\,\bar{p}(1-\gamma)+d\gamma]}{(\bar{p}-d)(\beta-\alpha)}$$

If profits are positive, then $\bar{p}>d$. Under the assumptions that $\beta>\alpha$ and $k'(n)<0$ (true in the special case) we then have $\partial q/\partial n<0$. Furthermore, since $\gamma<1$, when $\beta>\alpha$, $\partial q/\partial\bar{p}>0$. In equilibrium and from (A4)

$$\text{(A7)}\quad x=q^{\alpha}\bar{p}^{-\gamma}g(n)$$

$$=\left[\frac{(\bar{p}-d)k(n)\bar{p}^{-\gamma}}{c\beta}\right]^{\frac{\alpha}{\beta-\alpha}}\bar{p}^{-\gamma}g(n)$$

Differentiating $\ln x$ from (7) with respect to $\bar{p}$ we find that

$$\text{(A8)}\quad \operatorname{sgn}\frac{\partial x}{\partial\bar{p}}=\operatorname{sgn}\left(\frac{\alpha}{\beta\gamma}-\frac{\bar{p}-d}{\bar{p}}\right)$$

Differentiating (A7) with respect to n yields

$$\text{(A9)}\quad \frac{\partial x}{\partial n}=q^{\alpha-1}\bar{p}^{-\gamma}\left[\alpha g(n)\frac{\partial q}{\partial n}+qg'(n)\right]$$

We know that $\partial q/\partial n<0$, as derived above, and from the assumption that $g'(n)<0$ that $\partial q/\partial n<0$.

Let $Q=nq$ be total quality produced by the market. Then

$$\frac{\partial Q}{\partial\bar{p}}=n\frac{\partial q}{\partial\bar{p}}>0$$

and

$$\frac{\partial Q}{\partial n}=n\frac{\partial q}{\partial\bar{p}}+q\gtrless 0$$

Let $X=nx$ be market output. Then

$$\frac{\partial X}{\partial n}=n\frac{\partial q}{\partial n}+q\gtrless 0$$

Let $x/q=q^{\alpha-1}\bar{p}^{-\gamma}g(n)$ be customers per unit of quality. Then using (A6)

$$\frac{\partial(x/q)}{\partial\bar{p}}=q^{\alpha-2}\bar{p}^{-\gamma-1}g(n)$$

$$\left[(\alpha-1)\bar{p}\frac{\partial q}{\partial\bar{p}}-\gamma q\right]<0$$

and

$$\frac{\partial(x/q)}{\partial n}=q^{\alpha-2}\bar{p}^{-\gamma}$$

$$\left[(\alpha-1)g(n)\frac{\partial q}{\partial n}+qg'(n)\right]\gtrless 0$$

Therefore $\dfrac{\partial q/x}{\partial\bar{p}}>0$.

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Equilibrium profits are found by substituting the cost function into (A3), and using (A4) and the definition of $B(n)$:

$$\text{(A10)} \quad \pi=(\bar{p}-d)\bar{p}^{-\gamma}q^{\alpha}g(n)-cq^{\beta}$$

$$=cq^{\beta}\left[\frac{\beta}{B(n)}-1\right]$$

When economic profits are positive, $\beta/B(n)>1$. Then, differentiating (A10) with respect to $\bar{p}$ and using (A6) we obtain

$$\frac{\partial\pi}{\partial\bar{p}}=c\beta q^{\beta-1}\left(\frac{\beta}{B(n)}-1\right)\frac{\partial q}{\partial\bar{p}}$$

which is positive when economic profits are positive. Differentiating (A9) with respect to n yields

$$\frac{\partial\pi}{\partial n}=c\beta q^{\beta-1}\left[\left(\frac{\beta}{B(n)}-1\right)\frac{\partial q}{\partial n}-\frac{qB'(n)}{B(n)^2}\right]$$

Since $(\beta/B(n)-1)>0$, $\partial q/\partial n<0$ and $B(n)>0$, then $\partial\pi/\partial n<0$, if $B'(n)>0$, which is true for the special case of our demand function.

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Issues in Cash Flow Management

A Short–Term Disbursement Forecasting Model

Steven F. Maier, David W. Robinson, and James H. Vander Weide

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Introduction

Cash forecasting plays a critical role in the development of the firm's short-run financial plans. In times of stress, the cash forecast alerts the manager to pending financial problems, allowing him time to solve these problems before they become serious. In more normal periods, the forecast helps the manager determine the size and maturity of his short-term asset and borrowing portfolios. It also helps him to minimize idle cash balances.

Because the forecasting goals of firms differ significantly, a great variety of forecasting methods has been developed. Many firms feel most comfortable with deterministic forecasting methods that rely on the structure provided by the firm's financial statements. Examples are the cash budget and the *pro forma* balance sheets and income statements. These methods are based on a sales forecast together with assumptions concerning inventory and receivable policy, work force levels and changes in plant capacity. Computerized versions of these methods are described in Francis and Rowell [2], Scott, *et al.* [5], Stone [6], and Warren and Shelton [10].

Two recent papers by Stone and Miller [8] and Stone and Wood [9] describe an alternative, statistically-based approach to cash forecasting that was especially designed to forecast the firm's daily cash position. This approach uses a dummy-variable regression equation to estimate the typical pattern of cash flows over the days of the week and the days of the month. The resulting pattern is then used to "distribute" the firm's monthly cash budget to the days within the month. Stone and Wood use an additive form of the distribution model, while Stone and Miller use a multiplicative and mixed-effect form. The multiplicative form of the model provides better results for the case where the monthly cycle is large relative to a weekly

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pattern. A similar approach was used by Boyd and Mabert [1] to forecast daily check volume at Chemical Bank of New York.

The payments pattern method represents yet a third approach to cash forecasting. This approach relates components of the cash stream, such as cash collections, back to the source that generates them, *e.g.*, customer bills. It then estimates the distribution of the time delay between the mailing of the bill and the receipt of payment. For example, if the firm estimates that 80% of a given month's sales are collected in one month and 20% the following month, then the forecast of cash collections for this month is the sum of 80% of last month's sales and 20% of the sales made two months ago. As described in Lewellen and Edmister [3], Lewellen and Johnson [4], and Stone [7], the payments pattern approach is usually applied to the preparation of monthly cash forecasts, but there is no reason why it cannot be applied to daily cash forecasting as well.

This paper describes a statistical model of the firm's daily disbursements that follows the logic of the payments pattern approach to cash forecasting. The model generates daily cash forecasts from the mailing date and dollar amount of disbursements that are made, or that are scheduled to be made, during a time horizon not expected to exceed 90 days. Using the historical distribution of time between mailing date and clearing date, the model predicts when each disbursement item will affect the demand deposit account on which it is written.

In addition to its use of a payments pattern methodology, the model described here has three distinct features. First, it dynamically revises its cash forecast for future periods as previously written checks are paid. Second, it tracks and updates the distribution of check processing times for the firm's largest vendors as new information becomes available. Third, it can produce reports that alert the manager to significant changes in a particular vendor's check processing time, caused perhaps by a change in his lock box site.

Because the model addresses a very short-term forecasting problem, it may be useful for only some companies. In particular, the model should prove primarily useful for companies that cannot avail themselves of "controlled disbursing" or "managing around a target" methods. In controlled disbursing, a company uses a bank that can report actual check clearings on the same day they are presented. This allows the company to keep no idle balances in the bank and simply to transfer funds as needed, obviating the need for a disbursement forecast. Unfortunately, not all banks can provide this service. For example, because of the way checks are cleared, California and Chicago banks cannot offer controlled disbursing.

Another alternative to forecasting arises when a company has bank balances related to its financial activity or when it uses balances to compensate its bank for providing credit. In this case, the daily uncertainty in cash requirements associated with disbursing activity would be unimportant, because all that is of concern is that (on average) a target level of balances be achieved.

In summary, the model presented in this paper will prove most useful for companies that choose not to use controlled disbursing banks and whose required cash balances are insufficient to sustain the uncertainty associated with check clearings. Of course, many firms who do not need or require a good one- or two-day forecast could still benefit from forecasts of up to 30 days in order to better manage their investment and/or borrowing requirements.

The Disbursement Float Forecasting Model

The Disbursement Float Forecasting Model generates disbursement cash flow forecasts for individual large vendors and for the remaining vendors as a whole. Large vendor forecasts are based on a history of clearing times for each vendor. This history includes the minimum pay time, the expected time, and the variance. The aggregate check class uses the history for the weekday on which the checks were mailed as determined by observations obtained from the large vendor history file. Thus, checks mailed (or written) on Monday would have a different history of clearing times from those mailed on, say, Thursday.

The forecast of disbursements for a given day is prepared on a check-by-check basis for individual vendor checks and on a group basis for the aggregate class of checks. The expected dollars to be disbursed on or before the forecast day is found by multiplying the check amount by the estimated probability that the check will clear. For example, if there is a 75% chance that a $1,000 check will clear by June 5, the single check forecast amount would be $750. The estimated probabilities will increase with the forecast date, *i.e.*, as the check becomes older. Thus, the forecast for June 6 might be $830 (83% chance of clearing) and $900 for June 7.

There is often considerable variation in the length of time it takes for a particular check to clear. For this

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reason, the model generates both an expected value projection and a more conservative forecast.

The individual check values for each forecast day are added together to produce a single disbursement estimate. The aggregate group of checks gives rise to the same quantities (expected payments and variances), and these too are summed into the forecast. The variance figures allow the model to obtain the conservative estimates by increasing each day's expected cumulative disbursement amount by an appropriate safety factor.

The method works well when good estimates of the required probabilities can be obtained. Because check clearing times change periodically (for example, when a vendor opens a new lock box, or an existing mail route is changed), the probability estimates must be adjusted from time to time. The update method used insures that the system will "learn" the payment patterns for the company's checks as data are observed.

The distinction between the individual vendor and aggregate check classifications is important for the proper functioning of the model. Data on individual vendor clearings are used in the model in four ways:

1. To prepare forecasts of disbursements for all items in the individual vendor classification. These items are more predictable than those in the aggregate check classification because the clearing patterns of large vendors tend to be relatively stable (aside from major changes noted in 2 below).
2. To discover major changes in vendor clearing times caused, for example, by a change in the vendor's lock box system.
3. To update disbursement predictions for particular days in the future. If a certain check were expected to clear in five days and it actually clears in three, then the forecast for the fifth day should be adjusted downward for this new information. Adjustments of this kind are straightforward for items in the individual vendor classification.
4. To provide a history of average clearing times for each day of the week on which checks are mailed. Aggregate check forecasts are based on these average weekday times for individual vendors. (For the aggregate classification, it is not possible to associate the clearing date with the original mail date for each item; thus one cannot measure the aggregate average directly.)

The aggregate check classification is useful because it can considerably reduce the model's input requirements. Only one entry need be made for each day for the aggregate classification, as opposed to one for each check issued in the vendor classification. By using the individual vendor classification for large vendors and the aggregate check classification for the remaining vendors, the user obtains a reasonable tradeoff between desired accuracy and the cost of data input.

Probability Estimates

The probability that a given check (or group of checks) will clear on or before a given date depends on a number of significant factors:

1. The day of the week on which the check was mailed. (This turns out to be the most statistically significant effect because of the influence of weekend delays on mail, processing, and clearing times.)
2. The distance of the vendor from the check mail point.
3. Whether the vendor uses a lock box or has slower internal processing methods.
4. The location of the vendor's deposit bank and the extent to which it uses accelerated check clearing methods.
5. The amount of the check. (Large checks are often given priority treatment by vendors and banks. This occurs because large checks are generally routed to lock boxes, and many banks send such large items directly to expedite the clearing process.)
6. Environmental factors. (For example, mail is notoriously slow during the Christmas season and may be delayed at other times by such factors as strikes and weather.)

Rather than consider each of the above effects separately, the model summarizes the clearing history in terms of three statistics for each vendor and for each weekday on which the checks in the aggregate class are mailed. The three statistics computed for each check group are:

1. The expected time for a check to clear (in days).
2. The minimum time for a check to clear (in days). This is the smallest observed time.
3. The standard deviation of the time for a check to clear. This is computed as usual, *i.e.*, if n checks have been observed and the ith check cleared in d_i days, the standard deviation would be

$$SD = \sqrt{\frac{1}{n}\left[\sum_{i=1}^{n} d_i^2 - \frac{1}{n}\left(\sum_{i=1}^{n} d_i\right)^2\right]}. \qquad (1)$$

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The probability distribution of the number of days for an item to clear is the key variable in the model. A fairly large sample of these times was analyzed on a vendor-by-vendor basis, and the following conclusions were reached:

1. There is a characteristic minimum clearing time for each vendor; this varied from 1 to 10 days in our sample.
2. Once the data are transformed by subtracting the observed minimum time, the remaining values show a variety of distributions. A good characterization of such positive random variables is the coefficient of variation:

$$CV = \frac{\text{standard deviation}}{\text{mean}}.$$

   Coefficients of variation between 0.5 and 4.5 were observed.
3. A generally good fit to the observed distribution was obtained by selecting a discrete probability distribution based on the coefficient of variation:
   a. A binomial distribution when $CV \leq 0.95$.
   b. A Poisson distribution when $0.95 < CV < 1.05$.
   c. A negative binomial (or Polya) distribution when $CV \geq 1.05$.
   The parameters for each of the three distributions were selected so that they matched the observed times in both mean and standard deviation. Unfortunately, there were not sufficient data for any vendor to apply chi-square or other tests. The distributions do have the advantage of being easy to compute with well-understood properties.

Using the above conclusions, the model selects one of the three distributions for each vendor based on the vendor history parameters. As our development has been largely *ad hoc,* the justification for our method lies in its ability to produce good forecasts.

Forecast Production

The Disbursement Float Forecasting Model uses the vendor probability distributions to produce forecasts of expected *cumulative* payments. This forecast amount is determined by the following formula:

$$F_t = \sum_{i=1}^{n} A_i P_{it},$$

where

F_t = the cumulative amount predicted to clear by day t;

A_i = the amount of the ith check (the aggregate group of checks may be thought of as a single check for the purpose of this explanation);

P_{it} = the probability that check i clears on *or before* day t (computed using the probability distribution and parameters as determined by observation of previous check clearing times as discussed in the last section. As explained previously, the aggregate classification is based on observations for the individually tracked vendors.); and

n = the total number of outstanding checks.

The predicted amount to clear on a given day is computed from

$$f_t = F_t - F_{t-1};$$

i.e., it is the difference between two successive cumulative amounts.

The conservative forecast amounts are computed using the estimated standard deviation of F_t. This value is found from

$$SD = \left[\sum_{i=1}^{n} A_i^2 P_{it}(1-P_{it}) \right]^{1/2},$$

i.e., the square root of the sum of variances of the individual check clearing times. It should be noted that this formula assumes that the probability distributions for individual checks are independent. The authors have found this assumption to be reasonably accurate, especially when weekend effects are accounted for. (Companies must still be aware that certain phenomena such as unusual weather could cause this assumption to be violated.)

If n (the number of outstanding checks) is large, F_t will have an approximately normal distribution, and a β% confidence limit on the daily amount cleared is:

$$C_t = F_t + Z_\beta SD_t,$$

where Z_β is the β% point of the standard normal dis-

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tribution and C_t is the value of F_t that will be exceeded only β% of the time. (For example, $Z_{95} = .645$ is the default confidence level in the model.)

The conservative forecast amounts are modified somewhat to insure consistency. Thus, C_t will never be larger than the total amount of the outstanding checks on day t and it will be adjusted if necessary so that $C_t \leq C_{t+1}$. The conservative daily clearings c_t are determined in the same way as f_t, *i.e.*,

$$c_t = C_t - C_{t-1}.$$

Note that c_t may well be less than f_t in some cases, but the conservative cumulative disbursement forecast will always be higher than the expected forecast.

Parameter Updating

Each time an individual vendor check is paid, the parameters for the vendor and the mail day corresponding to this check in the aggregate class are updated. The minimum number of days is changed to a new lower value if the observed clearing time is below the previous minimum, and the sample variance is revised using Equation (1). The expected clearing time is treated somewhat differently.

To understand the treatment of expected values, consider the situation where one of the company's vendors opens a new lock box in the company's city. Mail, clearing, and processing times are likely to decrease substantially, which must be rapidly detected and allowed for in the forecast. This would not occur if the overall average clearing time were used in the forecast as the expected clearing time. For example, if 40 checks had been previously written by the vendor with an average clearing time of 7 days, and the new clearing time were 4 days, about 200 more checks would have to be observed at this level before the expected clearing time for the forecast would be equal to 4.5 days.

The expected clearing time is therefore updated using exponential smoothing. In this technique, the most recent observed clearing time and the previous expected time are used to create a new expected time using the following formula:

New Expected Time = $(1 - \alpha) \cdot$ Previous Expected Time + $\alpha \cdot$ Observed Time.

In the formula, the parameter α is the smoothing weight; its value is between 0 and 1. When α is small, little weight is given to the new observation, and the model tends to retain the existing expectation. When α becomes larger, the model's values change more rapidly.

Updating Aggregated Checks

Because checks assigned to aggregate check groups are not individually recorded, they cannot be deducted from the proper day's outstanding total when they are paid. For this reason, an approximate method is used to keep these totals up to date.

Suppose that the total amount of outstanding checks written on day t is T_t for t = 1, . . .,m. The probability that a check written on day t is paid on or before the current date is calculated using observations of previous check clearing times and the proper weekday history for day t; suppose that these probabilities are P_t, t = 1, . . .,m. (Note that this set of probabilities need not necessarily sum to 1, because each value is separately calculated from the different distributions for the days of the week.) The amount of money, E, which the model expects to clear on the current day is thus:

$$E = \sum_{t=1}^{m} P_t T_t.$$

As the paid check file is processed, the Disbursement Float Forecasting Model keeps track of the aggregate checks and it computes the total amount that has cleared. Suppose this amount is X. Then there are three cases to consider:

1. X is exactly equal to E. In this case, the outstanding total for each day is reduced by the expected amount paid, *i.e.*, P_tT_t is subtracted from T_t for t = 1,. . .,m.
2. X is less than E. The same kind of adjustment is made here as in case 1 except that the amount to be subtracted is multiplied by X/E so that the total deduction is equal to X. Thus, T_t is reduced by XP_tT_t/E for t = 1,. . .,m.
3. X is greater than E. Here we wish to subtract an amount greater than the expected payment from T_t, but the deduction cannot reduce the total below zero. Thus, it is decreased to:

   $$\text{Maximum } (T_t - XP_tT_t/E, 0)$$

   and the total amount subtracted is computed. If this amount is less than X, the entire process is repeated using the revised amounts T_t and a new value for X corresponding to the unallocated remainder of X.

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The Impact of Weekends

The impact of weekends on the model's ability to predict cumulative cash disbursements on day t can be explained in terms of the difference between two types of forecasting error: systematic error that affects all or almost all checks in a similar way, and non-systematic error that is unique to specific checks. Since the cash flow forecast is almost always the result of the sum of the predictions for a very large number of checks, the impact of non-systematic error is reduced by the prediction process itself. Further reduction in forecast error is thus most likely to occur only through the identification of systematic effects. Weekends are such an effect.

For the purpose of disbursement float forecasting, two weekend effects must be examined. The first occurs when a mailed check arrives at the vendor's office. If the office is closed on the weekend, the check must wait until Monday to be processed. The second effect occurs when a check completes the Federal Reserve clearing process. A check that normally would take three business days to be cleared may become available for presentation to the drawee bank on the weekend, when the bank is closed, causing the actual clearing time to be four or five calendar days.

We examined the impact of the first weekend effect by comparing a weekend-adjusted and an unadjusted forecast. The first was computed using the sum of surveyed business day mail times, an adjustment for checks arriving on weekends, and surveyed calendar day clearing times. This was compared to a forecast based on the sum of calendar day mail and clearing times. The results of our analysis showed no appreciable difference in the two approaches. (Our mail time and clearing time data were supplied by Phoenix-Hecht, Inc., a Chicago-based consulting firm that provides such data to the banking industry.)

This result could be explained at least for the large vendors by the efficiency of their bank lock box processing. The reason is that many but not all banks remain open throughout the weekend for receipt of items; some even initiate collection by depositing the checks with the Federal Reserve on Saturday.

The lack of an impact because of the first weekend effect has a very important side benefit. It turns out that, if we are not trying to detect the weekend effect described above, there is no need to isolate the mail time and clearing time from the total disbursement time. This means that the corporation that uses the model will not need to have access to externally surveyed mail and clearing time data.

The impact of the second weekend effect was examined by comparing 1) a prediction based on the number of working days, adjusting if the check would have been presented for payment on a weekend, with 2) a simple calendar day estimate of disbursement time. Our comparison was based on the standard deviation of the disbursement time error computed as follows:

$$\text{Standard Deviation of Disbursement Time Error} = \frac{\sqrt{\sum_{i=1}^{N} X_i^2 (A_i - D_i)^2}}{\sum_{i=1}^{N} X_i} \qquad (2)$$

where

X_i = dollar value of the ith check,
A_i = actual (observed) disbursement time for the ith check,
D_i = predicted disbursement time for the ith check in working days or calendar days, and
N = number of checks during the sample period.

In Exhibit 1, the first column is computed using a calendar-day forecast, while the second column uses a business-day forecast adjusted for a weekend if it occurs on the day of check presentation. The exhibit also contains information on the use of the exponential

Exhibit 1. Standard Deviations of Predicted Disbursement Times (in days) for both Calendar and Working Day Forecasts

Statistical Estimation Method	Calendar Day Forecast	Working Day Forecast (adjusted for weekends)
Exponential Smoothing		
$\alpha = 0.0$	1.89	1.88
$\alpha = 0.1$	1.93	1.69
$\alpha = 0.2$	1.90	1.69
$\alpha = 0.3$	1.78	1.72
$\alpha = 0.4$	1.79	1.80
$\alpha = 0.5$	2.06	1.90
$\alpha = 0.6$	2.02	2.00
$\alpha = 0.7$	1.89	2.10
$\alpha = 0.8$	2.02	2.18
$\alpha = 0.9$	2.23	2.26
$\alpha = 1.0$	2.14	2.36

Note: Based on the largest 55 vendors who account for approximately 75% of the disbursement dollars.

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smoothing method of updating a check's expected clearing time.

It is interesting to note that it is really the combination of the weekend correction and the use of the exponential smoothing method that is most effective. If one did not try to apply a statistical updating method (corresponding to the $\alpha = 0$ row of the exhibit), then the change due to a weekend correction is insignificant (a reduction in standard deviation from 1.89 to 1.88). Yet the reduction for the best exponential smoothing model was from 1.78 to 1.69. Moreover, the weekend correction projection also shows a lower sensitivity to a change in the optimal α value, which is a desirable property from the standpoint of statistical estimation.

In conclusion, our results would indicate that a correction for weekend effects is worthwhile for a weekend that occurs at the time of check presentation at the drawee bank, but not for a weekend that occurs at the time of receipt by the vendor.

Statistical Test

The Disbursement Float Forecasting Model was tested on disbursement data supplied by First Union National Bank for one of its corporate clients. It covered the three-month period, January–March 1977. The first two months were used to estimate the statistical distributions and the third month to test the model. The data showed an average of $8,200,000 disbursed per month. The average dollar-weighted days the checks were outstanding were 6.4 days, and the average check size was $2,300. The data also showed that the checks were being disbursed unevenly throughout the week. For the March data, the disbursement percentages over the period Monday through Friday were 16%, 8%, 16%, 22%, and 38%, respectively.

In trying to determine whether the model offers useful forecasting capabilities, it is important to consider the influence of the length of time being forecasted. In this study, we examined a simple one-day forecast and a longer range one-month forecast. A one-day forecast is of special importance to corporations without access to controlled disbursing accounts, since without this information a company will need to maintain large bank balances to cover check clearings instead of investing the funds. The need for a longer-term forecast is to provide better control over the investment and borrowing strategy of the firm. We limited our long-range forecast to one month because of data limitations.

Exhibit 2 shows the actual dollars paid and the actual number of dollars outstanding in checks that have been mailed as of each day in the sample period. We think the most useful statistic in this exhibit is the ratio of dollars paid to dollars outstanding expressed as a percent. For our test data, this ranged from a low of 6.1% to a high of 39.4%. On average, 24% of the total dollars outstanding was paid on the next business day. (The standard deviation expressed as a percentage of the total dollars outstanding was 10.5.)

Exhibits 3 and 4 present data on the accuracy of our expected and conservative one-month forecasts. The fourth column in Exhibit 3 shows the difference between the expected forecast and the actual amount paid on a cumulative basis. The fourth column in Exhibit 4 shows the difference between the conservative forecast and the actual amount paid. Column five in each exhibit expresses these two amounts as percentages of the dollars outstanding on each date.

Notice the following characteristics. First, the expected forecast in Exhibit 3 shows 10 instances in which the forecast was greater than the actual amount cumulative to that day and 13 times when the forecast was less than the actual amount. Using this measure (and others), we are able to confirm that our expected forecasts are in fact unbiased statistical estimates of the cumulative amount to be paid. Exhibit 4 is the most interesting, as this corresponds to our conservative forecast. In column four of this exhibit, we find all the entries are greater than the actual amount paid except three. Since the probability should be no more than 5% that we will underestimate, and since we have 23 observations, the 3 instances in which we underestimated the amount to be paid is a little high, but statistically acceptable. This provides some confirmation that our statistical methodology is working reasonably.

We now seek to see how much better the model's methodology does than a naive approach to estimating disbursements. One simple method of estimating the cumulative value of disbursements to any future date would be to use a regression-generated estimate adjusted for possible differences in disbursements by day of week. This approach should not be confused with the dummy-variable regression approach used by Stone and Miller [8] and Stone and Wood [9]. In point of fact, the regression we use does no more than conditionally average each weekday's disbursements. Given the limited historical data available, it was not possible to identify weekly and monthly patterns in a more sophisticated manner. By using our January and February data, we were able to obtain the following 95% confidence estimate:

$$\text{Cumulative Disbursements} = 175{,}521 \times N_1 + 95{,}151 \times N_2 + 186{,}653 \times N_3 + 171{,}466 \times N_4 + 111{,}366 \times N_5 + 1.6905 \times 100{,}589 \times \sqrt{N_1+N_2+N_3+N_4+N_5}$$

where:

N_1 = number of Mondays in the disbursement forecast period,
N_2 = number of Tuesdays in the disbursement forecast period, etc.

Note that the standard deviation of the forecast is $100,589 which follows a t-distribution with 35 degrees of freedom. This formula is based on the assumption that each day's disbursement is independent of all previous and future disbursements. In the absence of a seasonal or other intra-monthly pattern not corrected for by the day-of-week regression, this assumption seems reasonable. As a point of information, our weekday correction regression only had an $R^2 = .13$, but the t-statistics for all days of the week were significant at the 99% confidence level. Thus, the regression shows a small but predictable weekday bias.

Exhibit 5 provides a direct comparison between the regression forecast method and the method used by the model. Notice that the model shows projected cash flows that are in almost every case lower than the regression forecast. Moreover, as the forecast period is lengthened, the differences between the two forecasted amounts tend to increase. We conclude that the model provides a better projection simply because it takes advantage of the knowledge of when checks are being mailed in making its projection. Of course, our conclusions here must be tempered by the observation that we performed our analysis on only one company with a relatively small amount of data.

For short-range projections, the model can also take advantage of knowledge of when outstanding checks were paid. Our one-day projections illustrate this. We look at two different cases. First, we assume that all checks that were paid through the previous business day are deleted from the outstanding check file. In the second case, we again make one-day projections, but this time we update the outstanding check file only to a time two days prior to the forecast. For the previous day, we provide the system with information as to the total amount of checks that were paid, but not the actual checks paid. (This second test is useful for evaluating the model in conjunction with balance reporting systems that have the capability of providing the actual checks paid only after a one-day delay.)

Exhibits 6 and 7 present the results that compare

Exhibit 2. Characteristics for March 1977 Disbursements

Date	Checks Outstanding	Checks Written	Checks Paid	Ratio Paid/ Outstanding (%)
3/1/77	$578,179	$ 81,584	$ 37,937	6.6
3/2/77	621,827	169,076	172,751	27.8
3/3/77	618,151	104,310	136,033	22.0
3/4/77	586,429	407,062	35,561	6.1
3/7/77	957,929	48,426	203,000	21.2
3/8/77	803,356	176,154	74,788	9.3
3/9/77	904,720	53,135	243,352	26.9
3/10/77	714,503	181,048	175,242	24.5
3/11/77	720,310	245,477	211,893	29.4
3/14/77	753,893	92,683	211,799	28.1
3/15/77	634,778	94,916	42,652	6.7
3/16/77	687,042	141,116	202,194	29.4
3/17/77	625,964	53,773	208,389	33.3
3/18/77	471,348	198,070	174,747	37.1
3/21/77	494,670	51,332	195,093	39.4
3/22/77	350,910	133,905	82,703	23.6
3/23/77	402,112	47,490	34,624	8.6
3/24/77	414,977	61,763	82,462	19.9
3/25/77	394,278	205,057	149,577	37.9
3/28/77	449,759	20,790	73,451	16.3
3/29/77	397,099	16,444	143,268	36.1
3/30/77	270,274	32,948	60,457	22.4
3/31/77	242,764	0	74,317	30.6

Exhibit 3. Expected Forecasts for March 1977 Disbursements

Date	Cumulative Actual Payments	Expected Forecast of Payments	Difference	Difference as a Percent of Payables Outstanding
3/1/77	$ 37,937	$ 132,955	$ 95,018	16.4
3/2/77	210,688	218,445	7,757	1.2
3/3/77	346,721	300,558	(46,163)	-7.5
3/4/77	382,282	379,841	(2,441)	-0.4
3/7/77	585,282	681,316	96,034	10.0
3/8/77	660,070	815,796	155,726	19.4
3/9/77	903,422	942,199	38,777	4.3
3/10/77	1,078,664	1,055,819	(22,845)	-3.2
3/11/77	1,290,557	1,164,975	(125,582)	-17.4
3/14/77	1,502,356	1,548,848	46,492	6.2
3/15/77	1,545,008	1,650,610	105,602	16.6
3/16/77	1,747,202	1,767,291	20,089	2.9
3/17/77	1,955,591	1,901,538	(54,053)	-8.6
3/18/77	2,130,338	1,990,040	(140,298)	-29.8
3/21/77	2,325,431	2,287,846	(37,585)	-7.6
3/22/77	2,408,134	2,370,929	(37,205)	-10.6
3/23/77	2,442,758	2,443,839	1,081	0.3
3/24/77	2,525,220	2,511,486	(13,734)	-3.3
3/25/77	2,674,797	2,570,383	(104,414)	-26.5
3/28/77	2,748,248	2,761,776	13,528	3.0
3/29/77	2,891,516	2,840,055	(51,461)	-13.0
3/30/77	2,951,973	2,918,663	(33,310)	-12.3
3/31/77	3,026,290	2,981,741	(44,549)	-18.4

Exhibit 4. Conservative Forecast for March 1977 Disbursements

Date	Cumulative Actual Payments	Conservative Forecast of Payments	Difference	Difference as a Percent of Payables Outstanding
3/1/77	$ 37,937	$ 160,367	$122,430	21.2
3/2/77	210,688	263,862	53,174	8.6
3/3/77	346,721	373,705	26,984	4.4
3/4/77	382,282	492,128	109,846	18.7
3/7/77	585,282	816,626	231,344	24.2
3/8/77	660,070	940,642	280,572	34.9
3/9/77	903,422	1,045,725	142,303	15.7
3/10/77	1,078,664	1,157,912	79,248	11.1
3/11/77	1,290,557	1,289,507	(1,050)	-0.1
3/14/77	1,502,356	1,623,626	121,270	16.1
3/15/77	1,545,008	1,726,844	181,836	28.6
3/16/77	1,747,202	1,851,217	104,015	15.1
3/17/77	1,955,591	1,987,338	31,747	5.1
3/18/77	2,130,338	2,064,920	(65,418)	-13.9
3/21/77	2,325,431	2,364,282	38,851	7.9
3/22/77	2,408,134	2,430,777	22,643	6.5
3/23/77	2,442,758	2,495,547	52,789	13.1
3/24/77	2,525,220	2,570,406	45,186	10.9
3/25/77	2,674,797	2,627,212	(47,585)	-12.1
3/28/77	2,748,248	2,826,864	78,616	17.5
3/29/77	2,891,516	2,900,497	8,981	2.3
3/30/77	2,951,973	2,968,623	16,650	6.2
3/31/77	3,026,290	3,034,590	8,300	3.4

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the regression approach using the formula given above with one-day projections from our forecasting model under the two different conditions. Notice that the model forecasts are lower on average than the regression forecasts. A very interesting statistic in this regard is the average forecast amount (95% confidence) divided by the actual average daily disbursement amount. This computation yields:

$$\text{Regression Estimate} = \frac{\$319{,}563}{\$131{,}578} = 2.42 \text{ days}$$

$$\text{Model Forecast (same day information)} = \frac{\$220{,}207}{\$131{,}578} = 1.67 \text{ days}$$

$$\text{Model Forecast (one day delayed information)} = \frac{\$211{,}506}{\$131{,}578} = 1.61 \text{ days}$$

This tells us that use of the model can allow a company to reduce precautionary balances by approximately 75% of an average day's disbursement over what would be possible using regression. Again, our results were obtained with only limited data for one company. We are only able to conclude that our forecasting approach appears to be worthy of consideration as a possible forecasting method in similar situations for other companies.

Conclusion

An ability to forecast daily cash disbursements is valuable for several reasons. First, daily cash flow forecasts can help a firm to select the maturity structure for a short-term portfolio of marketable securities. Second, the company can improve repayment timing of short-term borrowings with such information. Third, short-term forecasts provide information for funding disbursement activities when other than a controlled disbursement point is used. Finally, a cash flow forecast is an important element of any company's sophisticated cash control system.

The statistical model described here provides reasonable forecasts of daily cash disbursements. Our

Exhibit 5. Comparison of 30-Day Forecasts

Date	Regression Forecast (95% Confidence)	Model Forecast (95% Confidence)	Difference	Difference as a Percent of Cumulative Actual Payments
3/1/77	$ 268,197	$ 160,367	$ 107,830	284.2
3/2/77	527,284	263,862	263,422	125.0
3/3/77	752,798	373,705	379,093	109.3
3/4/77	909,727	492,128	417,599	109.2
3/7/77	1,125,391	816,626	308,765	52.8
3/8/77	1,259,833	940,642	319,191	48.4
3/9/77	1,481,860	1,045,725	436,135	48.3
3/10/77	1,684,389	1,157,912	526,477	48.8
3/11/77	1,824,930	1,289,507*	535,423	41.5
3/14/77	2,028,046	1,623,626	404,420	26.9
3/15/77	2,152,443	1,726,844	425,599	27.5
3/16/77	2,336,174	1,851,217	514,957	29.5
3/17/77	2,561,693	1,987,338	574,355	29.4
3/18/77	2,696,203	2,064,920	631,283	29.6
3/21/77	2,894,055	2,364,282	529,773	22.8
3/22/77	3,013,805	2,430,777	583,028	24.2
3/23/77	3,223,391	2,495,547	727,844	29.8
3/24/77	3,415,184	2,570,406	844,778	33.5
3/25/77	3,546,319	2,627,212*	919,107	34.4
3/28/77	3,741,096	2,826,864	914,232	33.3
3/29/77	3,858,026	2,900,497	957,529	33.1
3/30/77	4,065,017	2,968,623	1,096,394	37.1
3/31/77	4,254,409	3,034,590	1,219,819	40.3

*Amounts that are below the actual disbursement.

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results suggest that managers may significantly reduce idle balances through the use of such forecasting.

As we recognize that disbursements represent only part of the firm's total cash flows, our model is but a first step in the development of a complete cash forecasting system. The next step requires development of a complementary approach for forecasting collection cash flows.

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Exhibit 6. Comparison of One-Day Forecasts (Same Day Information)

Date	Regression Forecast (95% Confidence)	Model Forecast (95% Confidence)	Difference	Difference as a Percent of Payables Outstanding
3/1/77	$268,197	$160,367	$107,830	18.6
3/2/77	358,699	232,205	126,494	20.3
3/3/77	341,512	178,428	163,084	26.4
3/4/77	281,412	172,206	109,206	18.6
3/7/77	345,566	453,161	(107,595)	-11.2
3/8/77	268,197	360,303	(92,106)	-11.5
3/9/77	358,699	397,847	(39,148)	-4.3
3/10/77	341,512	258,509	83,003	11.6
3/11/77	281,412	267,941	13,471	1.9
3/14/77	345,566	336,880	8,686	1.2
3/15/77	268,197	212,745	55,452	8.7
3/16/77	358,699	290,852	67,847	9.9
3/17/77	341,512	237,279	104,233	16.7
3/18/77	281,412	135,768*	145,644	30.9
3/21/77	345,566	246,003	99,563	20.1
3/22/77	268,197	121,602	146,595	41.8
3/23/77	358,699	116,483	242,216	60.2
3/24/77	341,512	159,832	181,680	43.8
3/25/77	281,412	125,405*	156,007	39.6
3/28/77	345,566	166,886	178,680	39.7
3/29/77	268,197	186,445	81,752	20.6
3/30/77	358,699	92,931	265,768	98.3
3/31/77	341,512	154,694	186,818	77.0

*Amounts that are below the actual disbursement.

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Exhibit 7. Comparison of One-Day Forecasts (One Day Delayed Information)

Date	Regression Forecast (95% Confidence)	Model Forecast (95% Confidence)	Difference	Difference as a Percent of Payables Outstanding
3/1/77	$268,197	$155,656	$112,541	19.5
3/2/77	358,699	225,925	132,774	21.4
3/3/77	341,512	226,015	115,497	18.7
3/4/77	281,412	152,073	129,339	22.1
3/7/77	345,566	449,389	(103,823)	-10.8
3/8/77	268,197	354,232	(86,035)	-10.7
3/9/77	358,699	385,765	(27,066)	-3.0
3/10/77	341,512	259,730	81,782	11.4
3/11/77	281,412	212,851	68,561	9.5
3/14/77	345,566	327,494	18,072	2.4
3/15/77	268,197	217,485	50,712	8.0
3/16/77	358,699	285,855	72,844	10.6
3/17/77	341,512	219,588	121,924	19.5
3/18/77	281,412	103,764*	177,648	37.7
3/21/77	345,566	219,998	125,568	25.4
3/22/77	268,197	114,462	153,735	43.8
3/23/77	358,699	107,407	251,292	62.5
3/24/77	341,512	153,641	187,871	45.3
3/25/77	281,412	118,632*	162,780	41.3
3/28/77	345,566	156,598	188,968	42.0
3/29/77	268,197	176,908	91,289	23.0
3/30/77	358,699	96,637	262,062	97.0
3/31/77	341,512	144,555	195,957	80.7

*Amounts that are below the actual disbursement.

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Investor growth expectations: Analysts vs. history

Analysts' growth forecasts dominate past trends in predicting stock prices.

James H. Vander Weide and Willard T. Carleton

For the purposes of implementing the Discounted Cash Flow (DCF) cost of equity model, the analyst must know which growth estimate is embodied in the firm's stock price. A study by Cragg and Malkiel (1982) suggests that the stock valuation process embodies analysts' forecasts rather than historically based growth figures such as the ten-year historical growth in dividends per share or the five-year growth in book value per share. The Cragg and Malkiel study is based on data for the 1960s, however, a decade that was considerably more stable than the recent past.

As the issue of which growth rate to use in implementing the DCF model is so important to applications of the model, we decided to investigate whether the Cragg and Malkiel conclusions continue to hold in more recent periods. This paper describes the results of our study.

STATISTICAL MODEL

The DCF model suggests that the firm's stock price is equal to the present value of the stream of dividends that investors expect to receive from owning the firm's shares. Under the assumption that investors expect dividends to grow at a constant rate, g, in perpetuity, the stock price is given by the following simple expression:

$$P_S = \frac{D(1+g)}{k-g} \quad (1)$$

where:

P_S = current price per share of the firm's stock;

D = current annual dividend per share;

g = expected constant dividend growth rate; and

k = required return on the firm's stock.

Dividing both sides of Equation (1) by the firm's current earnings, E, we obtain:

$$\frac{P_S}{E} = \frac{D}{E} \cdot \frac{(1+g)}{k-g} \quad (2)$$

Thus, the firm's price/earnings (P/E) ratio is a nonlinear function of the firm's dividend payout ratio (D/E), the expected growth in dividends (g), and the required rate of return.

To investigate what growth expectation is embodied in the firm's current stock price, it is more convenient to work with a linear approximation to Equation (2). Thus, we will assume that:

$$P/E = a_0(D/E) + a_1 g + a_2 k. \quad (3)$$

(Cragg and Malkiel found this assumption to be reasonable throughout their investigation.)

Furthermore, we will assume that the required

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rate of return, k, in Equation (3) depends on the values of the risk variables B, Cov, Rsq, and Sa, where B is the firm's Value Line beta; Cov is the firm's pretax interest coverage ratio; Rsq is a measure of the stability of the firm's five-year historical EPS; and Sa is the standard deviation of the consensus analysts' five-year EPS growth forecast for the firm. Finally, as the linear form of the P/E equation is only an approximation to the true P/E equation, and B, Cov, Rsq, and Sa are only proxies for k, we will add an error term, e, that represents the degree of approximation to the true relationship.

With these assumptions, the final form of our P/E equation is as follows:

$$P/E = a_0(D/E) + a_1 g + a_2 B + a_3 Cov + a_4 Rsq + a_5 Sa + e. \quad (4)$$

The purpose of our study is to use more recent data to determine which of the popular approaches for estimating future growth in the Discounted Cash Flow model is embodied in the market price of the firm's shares.

We estimated Equation (4) to determine which estimate of future growth, g, when combined with the payout ratio, D/E, and risk variables B, Cov, Rsq, and Sa, provides the best predictor of the firm's P/E ratio. To paraphrase Cragg and Malkiel, we would expect that growth estimates found in the best-fitting equation more closely approximate the expectation used by investors than those found in poorer-fitting equations.

DESCRIPTION OF DATA

Our data sets include both historically based measures of future growth and the consensus analysts' forecasts of five-year earnings growth supplied by the Institutional Brokers Estimate System of Lynch, Jones & Ryan (IBES). The data also include the firm's dividend payout ratio and various measures of the firm's risk. We include the latter items in the regression, along with earnings growth, to account for other variables that may affect the firm's stock price.

The data include:

Earnings Per Share. Because our goal is to determine which earnings variable is embodied in the firm's market price, we need to define this variable with care. Financial analysts who study a firm's financial results in detail generally prefer to "normalize" the firm's reported earnings for the effect of extraordinary items, such as write-offs of discontinued operations, or mergers and acquisitions. They also attempt, to the extent possible, to state earnings for different firms using a common set of accounting conventions.

We have defined "earnings" as the consensus analyst estimate (as reported by IBES) of the firm's earnings for the forthcoming year.[1] This definition approximates the normalized earnings that investors most likely have in mind when they make stock purchase and sell decisions. It implicitly incorporates the analysts' adjustments for differences in accounting treatment among firms and the effects of the business cycle on each firm's results of operations. Although we thought at first that this earnings estimate might be highly correlated with the analysts' five-year earnings growth forecasts, that was not the case. Thus, we avoided a potential spurious correlation problem.

Price/Earnings Ratio. Corresponding to our definition of "earnings," the price/earnings ratio (P/E) is calculated as the closing stock price for the year divided by the consensus analyst earnings forecast for the forthcoming fiscal year.

Dividends. Dividends per share represent the common dividends declared per share during the calendar year, after adjustment for all stock splits and stock dividends). The firm's dividend payout ratio is then defined as common dividends per share divided by the consensus analyst estimate of the earnings per share for the forthcoming calendar year (D/E). Although this definition has the deficiency that it is obviously biased downward — it divides this year's dividend by next year's earnings — it has the advantage that it implicitly uses a "normalized" figure for earnings. We believe that this advantage outweighs the deficiency, especially when one considers the flaws of the apparent alternatives. Furthermore, we have verified that the results are insensitive to reasonable alternative definitions (see footnote 1).

Growth. In comparing historically based and consensus analysts' forecasts, we calculated forty-one different historical growth measures. These included the following: 1) the past growth rate in EPS as determined by a log-linear least squares regression for the latest year,[2] two years, three years, . . ., and ten years; 2) the past growth rate in DPS for the latest year, two years, three years, . . ., and ten years; 3) the past growth rate in book value per share (computed as the ratio of common equity to the outstanding common equity shares) for the latest year, two years, three years, . . ., and ten years; 4) the past growth rate in cash flow per share (computed as the ratio of pretax income, depreciation, and deferred taxes to the outstanding common equity shares) for the latest year, two years, three years, . . ., and ten years; and 5) plowback growth (computed as the firm's retention ratio for the current year times the firm's latest annual return on common equity).

We also used the five-year forecast of earnings

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per share growth compiled by IBES and reported in mid-January of each year. This number represents the consensus (i.e., mean) forecast produced by analysts from the research departments of leading Wall Street and regional brokerage firms over the preceding three months. IBES selects the contributing brokers "because of the superior quality of their research, professional reputation, and client demand" (IBES *Monthly Summary Book*).

Risk Variables. Although many risk factors could potentially affect the firm's stock price, most of these factors are highly correlated with one another. As shown above in Equation (4), we decided to restrict our attention to four risk measures that have intuitive appeal and are followed by many financial analysts: 1) B, the firm's beta as published by Value Line; 2) Cov, the firm's pretax interest coverage ratio (obtained from Standard & Poor's Compustat); 3) Rsq, the stability of the firm's five-year historical EPS (measured by the R^2 from a log-linear least squares regression); and 4) Sa, the standard deviation of the consensus analysts' five-year EPS growth forecast (mean forecast) as computed by IBES.

After careful analysis of the data used in our study, we felt that we could obtain more meaningful results by imposing six restrictions on the companies included in our study:

1. Because of the need to calculate ten-year historical growth rates, and because we studied three different time periods, 1981, 1982, and 1983, our study requires data for the thirteen-year period 1971-1983. We included only companies with at least a thirteen-year operating history in our study.
2. As our historical growth rate calculations were based on log-linear regressions, and the logarithm of a negative number is not defined, we excluded all companies that experienced negative EPS during any of the years 1971-1983.
3. For similar reasons, we also eliminated companies that did not pay a dividend during any one of the years 1971-1983.
4. To insure comparability of time periods covered by each consensus earnings figure in the P/E ratios, we eliminated all companies that did not have a December 31 fiscal year-end.
5. To eliminate distortions caused by highly unusual events that distort current earnings but not expected future earnings, and thus the firm's price/earnings ratio, we eliminated any firm with a price/earnings ratio greater than 50.
6. As the evaluation of analysts' forecasts is a major part of this study, we eliminated all firms that IBES did not follow.

Our final sample consisted of approximately sixty-five utility firms.[3]

RESULTS

To keep the number of calculations in our study to a reasonable level, we performed the study in two stages. In Stage 1, all forty-one historically oriented approaches for estimating future growth were correlated with each firm's P/E ratio. In Stage 2, the historical growth rate with the highest correlation to the P/E ratio was compared to the consensus analyst growth rate in the multiple regression model described by Equation (4) above. We performed our regressions for each of three recent time periods, because we felt the results of our study might vary over time.

First-Stage Correlation Study

Table 1 gives the results of our first-stage correlation study for each group of companies in each of the years 1981, 1982, and 1983. The values in this table measure the correlation between the historically oriented growth rates for the various time periods and the firm's end-of-year P/E ratio.

The four variables for which historical growth rates were calculated are shown in the left-hand column: EPS indicates historical earnings per share growth, DPS indicates historical dividend per share growth, BVPS indicates historical book value per share growth, and CFPS indicates historical cash flow per share growth. The term "plowback" refers to the product of the firm's retention ratio in the currennt year and its return on book equity for that year. In all, we calculated forty-one historically oriented growth rates for each group of firms in each study period.

The goal of the first-stage correlation analysis was to determine which historically oriented growth rate is most highly correlated with each group's year-end P/E ratio. Eight-year growth in CFPS has the highest correlation with P/E in 1981 and 1982, and ten-year growth in CFPS has the highest correlation with year-end P/E in 1983. In all cases, the plowback estimate of future growth performed poorly, indicating that — contrary to generally held views — plowback is not a factor in investor expectations of future growth.

Second-Stage Regression Study

In the second stage of our regression study, we ran the regression in Equation (4) using two different measures of future growth, g: 1) the best historically oriented growth rate (g_h) from the first-stage correlation study, and 2) the consensus analysts' forecast (g_a) of five-year EPS growth. The regression results, which are shown in Table 2, support at least

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TABLE 1

Correlation Coefficients of All Historically Based Growth Estimates by Group and by Year with P/E

Current Year	*Historical Growth Rate Period in Years* 1	2	3	4	5	6	7	8	9	10
1981										
EPS	−0.02	0.07	0.03	0.01	0.03	0.12	0.08	0.09	0.09	0.09
DPS	0.05	0.18	0.14	0.15	0.14	0.15	0.19	0.23	0.23	0.23
BVPS	0.01	0.11	0.13	0.13	0.16	0.18	0.15	0.15	0.15	0.15
CFPS	−0.05	0.04	0.13	0.22	0.28	0.31	0.30	0.31	−0.57	−0.54
Plowback	0.19									
1982										
EPS	−0.10	−0.13	−0.06	−0.02	−0.02	−0.01	−0.03	−0.03	0.00	0.00
DPS	−0.19	−0.10	0.03	0.05	0.07	0.08	0.09	0.11	0.13	0.13
BVPS	0.07	0.08	0.11	0.11	0.09	0.10	0.11	0.11	0.09	0.09
CFPS	−0.02	−0.08	0.00	0.10	0.16	0.19	0.23	0.25	0.24	0.07
Plowback	0.04									
1983										
EPS	−0.06	−0.25	−0.25	−0.24	−0.16	−0.11	−0.05	0.00	0.02	0.02
DPS	0.03	−0.10	−0.03	0.08	0.15	0.21	0.21	0.21	0.22	0.24
BVPS	0.03	0.10	0.04	0.09	0.15	0.16	0.19	0.21	0.22	0.21
CFPS	−0.08	0.01	0.02	0.08	0.20	0.29	0.35	0.38	0.40	0.42
Plowback	−0.08									

two general conclusions regarding the pricing of equity securities.

First, we found overwhelming evidence that the consensus analysts' forecast of future growth is superior to historically oriented growth measures in predicting the firm's stock price. In every case, the R^2 in the regression containing the consensus analysts' forecast is higher than the R^2 in the regression containing the historical growth measure. The regression coefficients in the equation containing the consensus analysts' forecast also are considerably more significant than they are in the alternative regression. These results are consistent with those found by Cragg and Malkiel for data covering the period 1961-1968. Our results also are consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy–and–sell decisions.

TABLE 2

Regression Results
Model I

Part A: *Historical*

$P/E = a_0 + a_1 D/E + a_2 g_h + a_3 B + a_4 Cov + a_5 Rsq + a_6 Sa$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	$\hat{a}_5$	$\hat{a}_6$	R^2	F Ratio
1981	−6.42*	10.31*	7.67*	3.24	0.54*	1.42*	57.43	0.83	46.49
	(5.50)	(14.79)	(2.20)	(2.86)	(2.50)	(2.85)	(4.07)		
1982	−2.90*	9.32*	8.49*	2.85	0.45*	−0.42	3.63	0.86	65.53
	(2.75)	(18.52)	(4.18)	(2.83)	(2.60)	(0.05)	(0.26)		
1983	−5.96*	10.20*	19.78*	4.85	0.44*	0.33	32.49	0.82	45.26
	(3.70)	(12.20)	(4.83)	(2.95)	(1.89)	(0.50)	(1.29)		

Part B: *Analysis*

$P/E = a_0 + a_1 D/E + a_2 g_a + a_3 B + a_4 Cov + a_5 Rsq + a_6 Sa$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	$\hat{a}_3$	$\hat{a}_4$	$\hat{a}_5$	$\hat{a}_6$	R^2	F Ratio
1981	−4.97*	10.62*	54.85*	−0.61	0.33*	0.63*	4.34	0.91	103.10
	(6.23)	(21.57)	(8.56)	(0.68)	(2.28)	(1.74)	(0.37)		
1982	−2.16*	9.47*	50.71*	−1.07	0.36*	−0.31	119.05*	0.90	97.62
	(2.59)	(22.46)	(9.31)	(1.14)	(2.53)	(1.09)	(1.60)		
1983	−8.47*	11.96*	79.05*	2.16	0.56*	0.20	−34.43	0.87	69.81
	(7.07)	(16.48)	(7.84)	(1.55)	(3.08)	(0.38)	(1.44)		

Notes:
* Coefficient is significant at the 5% level (using a one-tailed test) and has the correct sign. T-statistic in parentheses.

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Second, there is some evidence that investors tend to view risk in traditional terms. The interest coverage variable is statistically significant in all but one of our samples, and the stability of the operating income variable is statistically significant in six of the twelve samples we studied. On the other hand, the beta is never statistically significant, and the standard deviation of the analysts' five-year growth forecasts is statistically significant in only two of our twelve samples. This evidence is far from conclusive, however, because, as we demonstrate later, a significant degree of cross-correlation among our four risk variables makes any general inference about risk extremely hazardous.

Possible Misspecification of Risk

The stock valuation theory says nothing about which risk variables are most important to investors. Therefore, we need to consider the possibility that the risk variables of our study are only proxies for the "true" risk variables used by investors. The inclusion of proxy variables may increase the variance of the parameters of most concern, which in this case are the coefficients of the growth variables.[4]

To allow for the possibility that the use of risk proxies has caused us to draw incorrect conclusions concerning the relative importance of analysts' growth forecasts and historical growth extrapolations, we have also estimated Equation (4) with the risk variables excluded. The results of these regressions are shown in Table 3.

Again, there is overwhelming evidence that the consensus analysts' growth forecast is superior to the historically oriented growth measures in predicting the firm's stock price. The R^2 and t-statistics are higher in every case.

TABLE 3

Regression Results
Model II

Part A: *Historical*

$P/E = a_0 + a_1 D/E + a_2 g_h$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	R^2	F Ratio
1981	−1.05	9.59	21.20	0.73	82.95
	(1.61)	(12.13)	(7.05)		
1982	0.54	8.92	12.18	0.83	167.97
	(1.38)	(17.73)	(6.95)		
1983	−0.75	8.92	12.18	0.77	107.82
	(1.13)	(12.38)	(7.94)		

Part B: *Analysis*

$P/E + a_0 + a_1 D/E + a_2 g_a$

Year	$\hat{a}_0$	$\hat{a}_1$	$\hat{a}_2$	R^2	F Ratio
1981	3.96	10.07	60.53	0.90	274.16
	(8.31)	(8.31)	(20.91)	(15.79)	
1982	−1.75	9.19	44.92	0.88	246.36
	(4.00)	(4.00)	(21.35)	(11.06)	
1983	−4.97	10.95	82.02	0.83	168.28
	(6.93)	(6.93)	(15.93)	(11.02)	

Notes:
* Coefficient is significant at the 5% level (using a one-tailed test) and has the correct sign. T-statistic in parentheses.

CONCLUSION

The relationship between growth expectations and share prices is important in several major areas of finance. The data base of analysts' growth forecasts collected by Lynch, Jones & Ryan provides a unique opportunity to test the hypothesis that investors rely more heavily on analysts' growth forecasts than on historical growth extrapolations in making security buy–and–sell decisions. With the help of this data base, our studies affirm the superiority of analysts' forecasts over simple historical growth extrapolations in the stock price formation process. Indirectly, this finding lends support to the use of valuation models whose input includes expected growth rates.

[1] We also tried several other definitions of "earnings," including the firm's most recent primary earnings per share prior to any extraordinary items or discontinued operations. As our results were insensitive to reasonable alternative definitions of "earnings" we report only the results for the IBES consensus.

[2] For the latest year, we actually employed a point-to-point growth calculation because there were only two available observations.

[3] We use the word "approximately," because the set of available firms varied each year. In any case, the number varied only from zero to three firms on either side of the figures cited here.

[4] See Maddala (1977).

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Kentucky.com

A10

Posted on Mon, Apr. 17, 2006

Fixing dams won't solve water problem

By Linda Bridwell

Kentucky legislators' recent decision to allocate funds for the replacement of Kentucky River dams is great news for Central Kentucky.

Kentucky American Water has advocated for repairs to the dams for years. As a company, we first identified the need for a long-term water supply solution in 1986. Our company is very pleased to see this support for the Kentucky River Authority and one of the most important projects of this century.

Certainly, repairing the aging dams is a critical component to addressing the water supply problem our region faces. After all, the Kentucky River remains the primary water source for Kentucky American Water's more than 114,000 customers and for those of numerous other water utilities in the area. But the solution to our region's water-supply deficit cannot stop there.

To sufficiently address the water needs for our region, additional measures are required. We caution those who believe that restoring the dams and raising Dam 10 solves the water supply problem.

The Bluegrass Water Supply Commission is a group of water suppliers from throughout the region who have collectively studied the water supply issue since 1999. This group agreed in 2005on a regional solution that included additional water supply behind a raised Dam 10.

It concluded that even with this additional supply, there would not be enough water to meet all of the region's water needs during a drought, and that there would not be enough water to erase Kentucky American Water's current water supply deficit.

Add to this the fact that it is not clear how the additional water that would be available would be allocated among users.

The consensus for a regional solution is a treatment plant downstream on the Kentucky River. Kentucky American was ordered by the Kentucky Public Service Commission in 1997 to solve the water supply issue for our customers and has become concerned about the funding and time line for implementing the regional solution.

Therefore, Kentucky American recently began the process of moving forward with the design of a treatment plant on Kentucky River pool 2 or 3 that can solve the water supply deficit.

As a participant in, but not a voting member of, the Bluegrass Water Supply Commission, we continue dialogue with the commission to determine how it and our company might work together to make this effort part of the regional solution and make the regional solution a reality.

We agree that solutions to Central Kentucky's water supply situation will not be simple or inexpensive, but solving this problem with no more delays has become critical.

For the first time in my memory, there is real momentum to solve the most important water issue our region faces. With funding for the dams in sight, design for a downstream treatment plant moving forward and continued discussion between Kentucky American and the Bluegrass Water Supply Commission, we are optimistic that this longstanding issue is closer than it ever has been to being solved.

Linda Bridwell is the project delivery and developer services manager for Kentucky American Water.

American Water

News Release

Valeria Cummings Swope
Kentucky American Water
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FOR IMMEDIATE RELEASE

KENTUCKY AMERICAN WATER RESPONDS TO JULY 10 LFUCG WORK SESSION
Statement from Linda Bridwell, Manager of Engineering and project manager

Lexington, Ky., (July 5, 2007) – "Kentucky American Water remains focused on moving forward with the Kentucky River project the company filed with the Public Service Commission earlier this year. We respect Louisville Water Company and appreciate their cooperation over the years in working on a water supply solution for Central Kentucky. However, we and the Bluegrass Water Supply Commission chose not to pursue a project with LWC because a number of factors changed since this was last considered in 1999 – including the scope of the project and the cost. The current regional project can be implemented sooner, and we can't afford any more delays.

Based on extensive research conducted by two well-respected engineering firms, Kentucky American Water, the BWSC, and the Bluegrass Area Development District agree that the project submitted is the most cost-effective and feasible approach to solving our region's water supply problem. That said, additional debate regarding options will be covered in the PSC's extensive review process."

- end -

RWE GROUP

American Water®

Kentucky American Water®

Opinion-Editorial
August 6, 2007

To the Editor of the Georgetown News-Graphic:

The Kentucky River solution to the regional water deficit, which Kentucky American Water submitted to the Public Service Commission (PSC), is the least expensive and most feasible option for solving Central Kentucky's water supply problems.

Many regional water utility experts have researched countless alternatives, working with two nationally recognized, independent engineering firms. Our project, which includes a new treatment plant on Pool 3 of the Kentucky River, was selected as the best by both Kentucky American Water and the Bluegrass Water Supply Commission (BWSC), of which the city of Georgetown is a member.

At first glance some general figures provided recently by Louisville Water Company at a Lexington council meeting for a water line between that city and Lexington may appear less expensive. However, in the mid-and long-term, it is significantly more costly and potentially implausible.

In fact, multiple Louisville Water Company proposals were considered during the extensive review process that ultimately led our company and the BWSC to our Kentucky River solution. In addition to cost, permitting issues, such as running parallel to I-64, and the need for a much longer water line made the Louisville option less feasible than the detailed plan that is now well along in the PSC review process.

This project involves less than 11 miles in Scott County and we are committed to doing the utmost to protect the environment, historic elements and private property. Easement agreements with property owners primarily provide us access to property during construction. Most residents soon forget underground lines exist along their property since they can soon resume all normal activities. Grass, trees, landscaping, fencing and other enhancements are replaced as part of the agreement.

The PSC will scrutinize the application and approve or deny it based on the feasibility and cost. At $160 - $170 million, the estimated investment is significant, but a value when human health and economic viability are considered.

This project is desperately needed throughout Central Kentucky, including Georgetown/Scott County. Kentucky American Water and representatives of the BWSC are pleased to talk with individuals or groups to share more information. More information is also available at bluegrasswater.com

Linda Bridwell, P.E.
Manager of Engineering
Kentucky American Water

RWE Group

Kentucky American Water®

Opinion-Editorial
August 8, 2007

To the Editor of the Lexington Herald-Leader:

The Kentucky River solution to the regional water deficit, which Kentucky American Water submitted to the Public Service Commission (PSC), is the least expensive and most feasible option for solving Central Kentucky's water supply problems.

Many regional water utility experts have researched countless alternatives, working with two nationally recognized, independent engineering firms. Our project, which includes a new treatment plant on Pool 3 of the Kentucky River, was selected as the best by both Kentucky American Water and the Bluegrass Water Supply Commission (BWSC), of which the city of Lexington is a member.

At first glance some general figures provided recently by Louisville Water Company at a Lexington council meeting for a water line between that city and Lexington may appear less expensive. However, in the mid-and long-term, it is significantly more costly and potentially implausible.

In fact, multiple Louisville Water Company proposals were considered during the extensive review process that ultimately led our company and the BWSC to our Kentucky River solution. In addition to cost, permitting issues, such as running parallel to I-64, and the need for a much longer water line made the Louisville option less feasible than the detailed plan that is now well along in the PSC review process.

We are committed to doing the utmost to protect the environment, historic elements and private property. Most residents soon forget underground lines exist along their property since they can soon resume all normal activities. Grass, trees, landscaping, fencing and other enhancements are replaced.

The PSC will scrutinize the application and approve or deny it based on the feasibility and cost. At $160 - $170 million, this project is a value when human health, economic viability and the impact on customer rates are considered.

This solution is desperately needed throughout Central Kentucky. Kentucky American Water and representatives of the BWSC are pleased to talk with individuals or groups to share more information. More information also is available at www. bluegrasswater.com.

Linda Bridwell, P.E.
Manager of Engineering
Kentucky American Water

RWE Group

Lexington Herald-Leader
August 20, 2007
Page A9 – Opinion Page

Utility has best water-supply plan

By Linda Bridwell

The Kentucky River solution to the regional water deficit, which Kentucky American Water submitted to the state Public Service Commission, is the least expensive and most feasible option for solving Central Kentucky's water-supply problems.

Many regional water utility experts have researched countless alternatives, working with two nationally recognized, independent engineering firms.

Our project, which includes a new treatment plant on Pool 3 of the Kentucky River, was selected as the best by both Kentucky American Water and the Bluegrass Water Supply Commission, of which the city of Lexington is a member.

Linda Bridwell is manager of engineering at Kentucky American Water and the water-supply project manager.

At first glance, some general figures provided recently by Louisville Water Co. at a Lexington council meeting for a water line between the two cities may appear less expensive. However, in the mid- and long-term, the Louisville plan is significantly more costly and potentially implausible.

In fact, multiple Louisville Water Co. proposals were considered during the extensive review process that ultimately led Kentucky American and the water-supply commission to the Kentucky River solution.

In addition to cost, permitting issues, such as running parallel to Interstate 64, and the need for a much longer water line made the Louisville option less feasible than the detailed plan that is now well along in the PSC review process.

We are committed to doing the utmost to protect the environment, historic elements and private property. Most residents soon forget that underground lines exist along their property since they can soon resume all normal activities. Grass, trees, landscaping, fencing and other enhancements are replaced.

The PSC will scrutinize the application and approve or deny it based on the project's feasibility and cost. At $160 million to $170 million, this project is a value when human health, economic viability and the impact on customer rates are considered.

This solution is desperately needed throughout Central Kentucky.

Kentucky American Water and representatives of the water-supply commission are pleased to talk with individuals or groups to share more information.

KENTUCKY
AMERICAN WATER

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December 9, 2009

Mr. Randy Patrick
Managing Editor
The Winchester Sun
20 Wall Street
P.O. Box 4300
Winchester, KY 40391

Letter to the Editor of *The Winchester Sun*

(Also submitted via email to rpatrick@winchestersun.com)

Mike Wynn's Dec. 4 article on water supply included a statement that the regional water supply solution fell "through because Kentucky American Water withdrew from the talks." In fact, Kentucky American Water was an active participant, along with the Winchester Municipal Utilities, in the Bluegrass Water Supply Consortium. This group studied the regional water supply issue between 1999 and 2004, and in 2005 officially became the Bluegrass Water Supply Commission (BWSC).

The BWSC's proposed plan included a regional water treatment plant at Pool 3 of the Kentucky River near Frankfort, a transmission main into Central Kentucky and a grid system for water distribution to area water utilities. Kentucky American Water would purchase over two-thirds of the water produced by the plant. When this group formally became a regional water commission, Kentucky American Water continued to work with the group as a partner, although as private water utility it was legally excluded from membership.

In 2006, the company determined that in order to meet the needs of its customers, it should move forward more quickly on this project than the BWSC proposed. The company announced that it would design a water treatment plant on Pool 3 (as the BWSC plan recommended) within one year and continue to partner with the BWSC on the possibility of the plant being a regional operation.

The project is now 70 percent complete. Kentucky American Water remains willing and able to work with any regional utility, including Winchester, on partnerships for their water supply. This new system offers great opportunities for Central Kentucky at a substantially lower cost than other solutions currently under consideration.

Submitted by:

Linda Bridwell, Manager-Water Supply
Kentucky American Water
859-268-6373

KENTUCKY
AMERICAN WATER

Stick with the Facts

Kentucky American Water initiated an historic project in June 2008, beginning construction of a new 20 million gallon per day (MGD) water treatment plant at Pool 3 of the Kentucky River, a 3 million gallon storage tank and booster pumping station, and 30.5 miles of 42-inch transmission main. This critical project is the solution to Central Kentucky's water deficit after nearly twenty years of review of various alternatives.

The Kentucky Public Service Commission comprehensively reviewed the proposed facilities for over a year, and found they were economically feasible and necessary to provide adequate service. The PSC fully investigated Kentucky American Water's review of potential solutions and granted approval to construct the facilities. Other potential alternatives were either inadequate or more expensive than the approved project. The proceedings required rigorous analysis of costs and provided opportunities for public review and participation.

The project is actually three simultaneous construction projects. Construction is currently on budget, and on schedule for completion in the Summer of 2010. As the recent 2007 drought demonstrated, this project is critical to meeting central Kentucky's existing water needs. This project also provides supplies to meet future water needs through 2030. The current economic situation and its slight impact on immediate water use do not eliminate the current or future need for the project. In early April, the treatment facility was nearly one-third complete and almost half of the pipeline was installed. The Company has acquired 91% of the property easements required for completion of the pipeline construction.

Despite challenging conditions associated with winter-time construction, Kentucky American Water and its contractors are committed to regulatory compliance. The contractors have been limited in doing final grading and road paving work because of the wet, wintry conditions but have initiated those efforts as the weather now permits. Where the road has been impacted, new pavement will be applied once most heavy equipment use of the roads is completed. Soil erosion control measures have been established, maintained, and adjusted as necessary. Kentucky American Water and the contractor have made adjustments to maintain compliance with transportation and environmental permits, minimizing the impact to area residents. Sensitive to local residents' concerns, the Transportation Cabinet located an inspector at the project site to check progress and monitor permit compliance.

The project will do more than just provide Central Kentucky with a safe and reliable water supply for years to come. It will also contribute more than $1.1 million in additional property taxes annually in Fayette, Franklin, Scott and Owen Counties. Kentucky American Water worked with the Franklin County Fire Department to place flushing fire hydrants in strategic locations along the pipeline route to maximize fire protection capabilities.

Kentucky American Water worked since 1999 with the Bluegrass Water Supply Commission to develop a regional project that utilized the Kentucky River and met the needs of all of Central Kentucky. Although currently no other regional utilities have committed to participate in the project, Kentucky American Water will continue its commitment to a regional partnership in the facilities for the future. The facilities can be expanded in 5 MGD increments up to 30 MGD.

The project is estimated to cost $162 million. That will ultimately be an increase on the average residential water bill between $8 and $10 monthly. On a daily basis, this translates into 33 cents per day for a new 20-million gallon per day water treatment plant. Kentucky American Water is pursuing all opportunities to reasonably minimize the cost of the project, including lower cost financing for a portion of the project.

Kentucky American Water employees are proud to be a part of this community and have the opportunity to meet our current and future water needs with the new project. We're proud to be your water company and take our accountability, resource stewardship and community responsibilities very seriously.

Submitted by Linda Bridwell, Manager-Water Supply
(859) 268-6373

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Linda C. Bridwell

Other Participating Employees: None

Question:

81. Please ***Identify*** and produce any and all ***Documents*** or evidence of any kind that ***TAWC*** intends to offer as evidence at the hearing or to refer to in any way at the hearing.

Response:

TAW intends to offer the testimony and exhibits which it has already filed in this docket along with the responses it has provided to data and discovery requests from the TRA staff and intervenors. Based on previous cases, TAW would fully expect to offer additional testimony, rebuttal testimony and any document produced in further discovery in this proceeding. Having said all of that, TAW has not made final decisions as to what documents and/or evidence it will introduce at the evidentiary hearing and specifically reserves the right to do so at a later date closer to the time of hearing.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: **Linda C. Bridwell**

Other Participating Employees: **None**

Question:

82. If your response to any of the City of Chattanooga's Requests for Admission was anything other than an unqualified admission, please ***Explain*** the basis for your failure to admit each such request without qualification and ***Identify*** all ***Documents*** related to, referring to, or describing the basis for that failure.

Response:

Please refer to the response to each Request for Admission.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

1. Please admit that the document attached as. Exhibit 1 to this Request is a genuine copy of AWWC's Form 10-K filed with the United States Securities and Exchange Commission for the fiscal year ended December 31, 2011.

Response:

Exhibit 1 is the genuine copy of AWWC's Form 10-K filed with the SEC for December 31, 2011. There are ten supplemental pages not attached to Exhibit 1. These pages include certifications, consent, and an American Water Works Company, Inc. subsidiary list. Please see the attachment for these ten pages.

EXHIBIT 21.1

American Water Works Company, Inc. and its Subsidiaries Ownership Schedule

As of February 21, 2012

Subsidiaries of American Water	Nature of Legal Organization	Jurisdiction of Incorporation or Formation	Percentage of Equity Interest held directly or indirectly by American Water	Line of Business
AAET, Inc.	Corporation	Delaware	100% held through American Water Enterprises, Inc.	General Partner of AAET, L.P.
American Lake Water Company	Corporation	Illinois	100% held through American Water	Water pipeline company
American Water – Acciona Agua LLC	Limited Liability Company	Delaware	50% held through American Water Enterprises, Inc.; 50% outside ownership by Acciona Agua Corporation (USA)	Joint Venture entity, which contracts with Tampa Bay to remedy, operate and manage the Tampa Bay Seawater Desalination Plant.
American Water Canada Corp.	Corporation	Ontario	100% held through American Water Enterprises Holding, Inc.	Holds contracts for operation and maintenance of water and/or wastewater facilities in Canada
American Water Capital Corp.	Corporation	Delaware	100% held through American Water	Funding vehicle for AWW and its utility subsidiaries
American Water Carbon Services Corp.	Corporation	Ontario	100% held through American Water Canada Corp.	Supplies carbon regeneration materials to water facilities in Canada
American Water Engineering, Inc.	Corporation	New Jersey	100% held through American Water (USA), Inc.	Inactive
American Water Enterprises Holding, Inc.	Corporation	Delaware	100% held through American Water Enterprises, Inc.	Holding company for many AWE subsidiaries in the US; Holds contract to operate and maintain Jefferson Parish, LA East Bank wastewater treatment plant
American Water Enterprises, Inc.	Corporation	Delaware	100% held through American Water	Holding company for the non-regulated business; Has some contracts due to historical reasons
American Water Industrials, Inc.	Corporation	Delaware	100% held through American Water Enterprises, Inc.	Holding company
American Water Operations and Maintenance, Inc.	Corporation	Texas	100% held through American Water (USA), Inc.	Primary entity for contracts for design, building and/or operation of water and wastewater facilities and operations, maintenance and management of water and wastewater facilities in the US
American Water Resources, Inc.	Corporation	Virginia	100% held through American Water	a) Homeowner Services Group – water line and sewer line protection programs b) Carbon Services – reactivates spent carbon c) Leasing (NOT managed by AWEG)

Subsidiaries of American Water	Nature of Legal Organization	Jurisdiction of Incorporation or Formation	Percentage of Equity Interest held directly or indirectly by American Water	Line of Business
American Water Resources Holdings, Inc.	Corporation	Delaware	Wholly owned subsidiary of American Water (USA), Inc.	Holding company
American Water Resources of Texas, Inc.	Corporation	Delaware	Wholly owned subsidiary of American Water Resources Holdings, Inc.	Entity allows for the sale of service contracts in the state of Texas.
American Water Services CDM, Inc.	Corporation	Washington	80% held through American Water (USA), Inc.; 20% outside common stock held by Camp Dresser and McKee, Inc.	Joint venture operating the Tolt water treatment facility located in Seattle, WA
American Water Services Underground Infrastructure Corp.	Corporation	Ontario	100% held through American Water Canada Corp.	Current contracts for closed circuit television inspection of water and/ or wastewater pipes
American Water (USA), Inc.	Corporation	Delaware	100% held through American Water Enterprises Holding, Inc.	Holding company
American Water Works Company, Inc.	Corporation	Delaware	100% held through AMERICAN WATER	Water and Wastewater-related product and services
American Water Works Service Company, Inc.	Corporation	Delaware	100% held through American Water	Professional water and/or wastewater services
American Water Services LLC	Limited Liability Company	New Jersey	100% held through American Water	Holding Company
AW Contract Services Holding, Inc.	Corporation	Delaware	100% held through AWE	Holding Company
AW Contract Services (USA), Inc.	Corporation	Delaware	100% held through AW Contract Services Holding, Inc.	Current contracts for water and/or wastewater services
AW Contract Services (Canada), Inc.	Corporation	Federal Canada	100% held through AW Contract Services Holding, Inc.	Current contracts for water and/or wastewater services
AW Technologies Incorporated	Corporation	Delaware	100% held through AWE	Water and/or wastewater services using emerging technologies
Bluefield Valley Water Works Company	Corporation	Virginia	100% held through West Virginia-American Water Company	Water and/or wastewater utility
Braemar Acres Limited	Corporation	Ontario	100% held through Uniflo Limited	Currently owns real property for storage of lime materials used by Terratec Environmental Ltd. in Canada
California – American Water Company	Corporation	California	100% held through American Water	Water and/or wastewater utility

Subsidiaries of American Water	Nature of Legal Organization	Jurisdiction of Incorporation or Formation	Percentage of Equity Interest held directly or indirectly by American Water	Line of Business
EMC American Water Canada, Inc.	Corporation	Canada (Federal Corporation)	100% held through American Water Canada Corp.	Operation and maintenance of water and wastewater facilities in Canada.
E'town LLC	Limited liability company	Delaware	100% held through TWH LLC	Holding company
E'town Properties, Inc.	Corporation	Delaware	100% held through American Water Works Company, Inc.	Set up by Elizabethtown Water Company entity to hold real estate for development and/or sale
E'town Services, LLC	Limited Liability Company	New Jersey	100% held through AWE	Holds wastewater services contract among E'town Corp, Elizabeth, NJ and the Union County Improvement Authority
Edison Water Company	Corporation	New Jersey	100% held through AWE	Manage water contract for Township of Edison, NJ
EMC Batesville, LLC	Limited liability company	Missouri	100% held through EMC	Single purpose entity formed for improvements made to, and subsequent operation of, a wastewater treatment plant and water reuse system located in Batesville, Arkansas, as well as for the lease of related equipment used thereon.
EMC of St. Charles County, LLC	Limited liability company	Missouri	100% held through EMC	Regulated sewer utility providing sewer services to a residential development located in St. Charles County, Missouri.
Environmental Management Corp.	Corporation	New Jersey	100% held through AWE	Provides design, build and operation services for the water and wastewater assets of industrial firms and municipalities in the US and other countries.
Hawaii – American Water Company	Corporation	Nevada	100% held through American Water	Water and/or wastewater utility
Illinois – American Water Company	Corporation	Illinois	100% held through American Water (0.1% outside preferred stock)	Water and/or wastewater utility
Indiana – American Water Company	Corporation	Indiana	100% held through American Water	Water and/or wastewater utility
Iowa – American Water Company	Corporation	Delaware	100% held through American Water	Water and/or wastewater utility
Kentucky – American Water Company	Corporation	Kentucky	100% held through American Water	Water and/or wastewater utility
Laurel Oak Properties Corporation	Corporation	Delaware	100% held through American Water	Entity to hold real estate for development and/or sale

Subsidiaries of American Water	Nature of Legal Organization	Jurisdiction of Incorporation or Formation	Percentage of Equity Interest held directly or indirectly by American Water	Line of Business
Liberty Water Company	Corporation	New Jersey	100% held through AWE	Manage water contract for City of Elizabeth, NJ
Long Island Water Corporation	Corporation	New York	100% held through American Water	Water and/or wastewater utility
Maryland – American Water Company	Corporation	Maryland	100% held through American Water	Water and/or wastewater utility
Michigan – American Water Company	Corporation	Michigan	100% held through American Water	Water and/or wastewater utility
Missouri – American Water Company	Corporation	Missouri	100% held through American Water	Water and/or wastewater utility
Mobile Residuals Management Inc.	Corporation	Ontario	100% held through American Water Canada Corp.	Inactive
Mobile Residuals Management (USA), Inc.	Corporation	Delaware	100% held through American Water (USA), Inc	Mobile biosolids and residuals management; Ongoing contracts in CA and NJ
New Jersey – American Water Company	Corporation	New Jersey	100% held through American Water	Water and/or wastewater utility
Ohio – American Water Company	Corporation	Ohio	100% held through American Water	Water and/or wastewater utility
OMI/Thames Water Stockton, Inc.	Corporation	Delaware	50% held through TWNA, Inc. and 50% held through Operations and Management, Inc.	Water and/or wastewater services
Pennsylvania – American Water Company	Corporation	Pennsylvania	96.5% held through American Water (3.5% outside preferred stock)	Water and/or wastewater utility
Philip Automated Management Controls, Inc.	Corporation	Georgia	100% held through American Water (USA), Inc.	Inactive
Prism-Berlie (Windsor) Limited	Corporation	Ontario	100% held through Terratec Environmental Ltd.	Holds contract to operate pelitizing facility in Windsor, Ontario
Rialto Water Services, L.P.	Limited Partnership	Delaware	100% held through American Water (USA) and Rialto Water Services, Inc.	Rialto concession bid. Percentage will fall below 50% if transaction completed as a concession.
Tennessee – American Water Company	Corporation	Tennessee	99.89% held through American Water (0.11% outside preferred stock)	Water and/or wastewater utility
Terratec Environmental Ltd.	Corporation	Ontario	100% held through American Water Canada Corp.	Primary entity for holding contracts for biosolids management land application and disposal
Texas-American Water Company	Corporation	Texas	100% through American Water	Water and/or wastewater utility

Subsidiaries of American Water	Nature of Legal Organization	Jurisdiction of Incorporation or Formation	Percentage of Equity Interest held directly or indirectly by American Water	Line of Business
TWH LLC	Limited Liability Company	Delaware	100% held through American Water	Holding company
TWNA, Inc. formerly Thames Water North America, Inc.	Corporation	Delaware	100% held through American Water	Water and/or wastewater services
Uniflo Limited	Corporation	Ontario	100% held through Terratec Environmental Ltd.	Holding company
Virginia – American Water Company	Corporation	Virginia	100% held through American Water	Water and/or wastewater utility
West Virginia – American Water Company	Corporation	West Virginia	99.97% held through American Water (0.03% outside common stock)	Water and/or wastewater utility

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-168543 and 333-150381) and Form S-3 (Nos. 333-165624 and 333-158949) of American Water Works Company, Inc. of our report dated February 28, 2012 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Philadelphia, Pennsylvania
February 28, 2012

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

I, Jeffry Sterba, certify that:

1. I have reviewed this annual report on Form 10-K of American Water Works Company, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the consolidated financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2012

By: /s/ JEFFRY STERBA

Jeffry Sterba
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER AND CHIEF ACCOUNTING OFFICER

I, Ellen C. Wolf, certify that:

1. I have reviewed this annual report on Form 10-K of American Water Works Company, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the consolidated financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2012

By: /S/ ELLEN C. WOLF

Ellen C. Wolf
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

AMERICAN WATER WORKS COMPANY, INC.

CERTIFICATION PURSUANT TO
RULE 13a-14(b) UNDER THE SECURITIES EXCHANGE ACT AND
18 U.S.C. SECTION 1350,

I, Jeffry Sterba, President and Chief Executive Officer of American Water Works Company, Inc. (the "Company"), hereby certify that, based on my knowledge:

(1) The Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2011 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

By: /S/ JEFFRY STERBA
Jeffry Sterba
President and Chief Executive Officer
(Principal Executive Officer)

February 28, 2012

Exhibit 32.2

AMERICAN WATER WORKS COMPANY, INC.

CERTIFICATION PURSUANT TO
RULE 13a-14(b) UNDER THE SECURITIES EXCHANGE ACT AND
18 U.S.C. SECTION 1350,

I, Ellen C. Wolf, Senior Vice President and Chief Financial Officer, of American Water Works Company, Inc. (the "Company"), hereby certify that, based on my knowledge:

(1) The Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2011 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

By: /S/ ELLEN C. WOLF

Ellen C. Wolf
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

February 28, 2012

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

2. Please admit that there was an average of 176,531,000 shares, on a diluted basis, of AWWC's common stock outstanding during the fiscal year ending December 31, 2011.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

3. Please admit that AWWC's common stockholders' equity for the fiscal year ended December 31, 2011 was $4,235,837,000.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

4. Please admit that AWWC's net income for the fiscal year ended December 31, 2011 was $309,613,000.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

5. Please admit that AWWC's net income for the fiscal year ended December 31, 2011 was $1.75 per share, on a diluted basis.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

6. Please admit that AWWC has since January 1, 2010, provided all of TAWC's equity capital.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

7. Please admit that TAWC has not since January 1, 2010 sought to obtain equity capital from any person or entity other than AWWC.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

8. Please admit that AWWC is capable of maintaining its credit so as to attract equity capital.

Response:

Admitted.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 12-00049
FIRST DISCOVERY REQUEST OF THE
CITY OF CHATTANOOGA

Responsible Witness: Gary M. VerDouw

Requests for Admission:

9. Please admit that TAWC does not intend to seek to obtain equity capital from any person or entity other than AWWC during the Attrition Year identified by TAWC in the direct testimony offered by TAWC in this docket.

Response:

Admitted.