

**IN THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE**

In re: Petition of Atmos Energy Corporation)
for Approval of a General Rate Increase) Docket No. 07-00105
)

**CONSUMER ADVOCATE AND PROTECTION DIVISION'S RESPONSES TO FIRST
DISCOVERY REQUESTS OF ATMOS ENERGY CORPORATION**

Robert E. Cooper, Jr., Attorney General and Reporter, through the Consumer Advocate and Protection Division of the Office of the Attorney General ("Consumer Advocate"), pursuant to the procedural schedule entered by the Hearing Officer, respectfully submits its responses to the first discovery requests of Atmos Energy Corporation ("Atmos").

REQUEST NO. 1:

1. Please identify each person whom you expect to call as an expert witness at the hearing on the merits in this docket, and for each such expert witness:

RESPONSE NO. 1:

The Consumer Advocate is still continuing its investigation in this matter. In particular the Consumer Advocate is awaiting responses to its discovery requests. The requested material has not yet been received, reviewed, or analyzed; accordingly, the Consumer Advocate has not yet determined the particular subject matter or issues on which potential witnesses may testify, nor has it determined the expert witnesses whom it may call at the hearing in this matter. The Consumer Advocate does not waive any privileges and procedural protections to which it is entitled, but it will furnish information in good faith as to whom may offer testimony on behalf of the Consumer Advocate in this docket so as not to cause an unnecessary delay in this proceeding. Any testimony

ATTACHMENT B

Daniel McCormac, Coordinator of Regulatory Analyst

Experience

2003 to present Tennessee Attorney General's Office, Consumer Advocate & Protection Division - Coordinator of Analysts.
Supervise and provide management analysis and expert testimony as needed in all major rate cases, earnings reviews, and other investigations.

2001 to 2003 Tennessee Regulatory Authority - Chief of Energy and Water Division.
Provide management analysis and assisted the public, the utilities, and others as needed in all rate cases, earnings reviews, requests for certificates of convenience and necessity, tariffs, audits, and other energy and water utility matters.

1994 to 2001 Tennessee Attorney General's Office, Consumer Advocate & Protection Division - Senior Regulatory Analyst.
Provided management analysis and expert testimony as needed in all major rate cases, earnings reviews, and other investigations.

1987 to 1994 Tennessee Public Service Commission (TPSC) - Manager of Revenue Requirements and Special Studies
Supervised seven professionals, coordinated rate cases, earnings reviews, and other financial investigations of telephone, gas, electric, water, and sewer utilities. Testified on major issues.

1984 to 1987 Wilson, Work, Fossett & Greer, CPAs - Supervisor
Consulted and assisted public utilities in preparing rate cases, cost of capital studies, cost of service studies, Purchased Gas Adjustment rule proposal, capital structure study, valuation study, computer software, research.

1983 to 1984 TPSC - Technical Assistant to Commissioners
Chosen as first Technical Assistant to review and summarize all rate case filings, provide commissioners with research reports, prepare issues lists and analyze those issues. Also assisted in administrative accounting and budgeting by computerizing office records.

1976 to 1983 TPSC - Financial Analyst / Supervisor
Audited and analyzed rate case filings, testified and prepared exhibits for the TPSC.

Education & Certification

1973 - 1976	David Lipscomb University, B.S., Accounting
March 1979	Certified Public Accountant
1981	TSU, Business Finance, Business Management

Oral and written testimony in numerous rate proceeding before the TPSC and the Tennessee Regulatory Authority including the following dockets listed below with references to PDF format web links:

Docket 01-00704: AUDIT OF UNITED CITIES GAS COMPANY'S INCENTIVE PLAN ACCOUNT (IPA) FOR THE PERIOD OF APRIL 1, 2000, THROUGH MARCH 31, 2001.

7/30/04 - Direct Testimony of Dan McCormac:

<http://www.state.tn.us/tra/orders/2001/0100704cq.pdf>

10/5/04 - Rebuttal Testimony of Dan McCormac:

<http://www.state.tn.us/tra/orders/2001/0100704dk.pdf>

Docket 03-00313: APPLICATION OF NASHVILLE GAS COMPANY, A DIVISION OF PIEDMONT NATURAL GAS COMPANY, INC. FOR AN ADJUSTMENT OF ITS RATES AND CHARGES, FOR APPROVAL OF REVISED TARIFFS AND APPROVAL OF REVISED SERVICE REGULATIONS

08/18/03 - Direct Testimony of Dan McCormac:

<http://www.state.tn.us/tra/orders/2003/0300313w.pdf>

04-00034 PETITION OF CHATTANOOGA GAS COMPANY FOR APPROVAL OF ADJUSTMENT OF ITS RATES AND CHARGES AND REVISED TARIFF.

7/26/04 - Direct Testimony of Dan McCormac

<http://www.state.tn.us/tra/orders/2004/0400034do.pdf>

3/30/05 - Supplemental Testimony of Dan McCormac

<http://www.state.tn.us/tra/orders/2004/0400034fh.pdf>

Docket 05-00258: PETITION OF THE CONSUMER ADVOCATE TO OPEN AN INVESTIGATION TO DETERMINE WHETHER ATMOS ENERGY CORP. SHOULD BE REQUIRED BY THE TENNESSEE REGULATORY AUTHORITY TO APPEAR AND SHOW CAUSE THAT ATMOS ENERGY CORP. IS NOT OVEREARNING IN VIOLATION OF TENNESSEE LAW AND THAT IT IS CHARGING RATES THAT ARE JUST AND REASONABLE

9/15/05 - Direct Testimony of Dan McCormac

<http://www.state.tn.us/tra/orders/2005/0500258.pdf>

**Docket 06-00175: PETITION OF CHATTANOOGA GAS COMPANY TO
INCREASE RATES, INCLUDING A COMPREHENSIVE RATE DESIGN
PROPOSAL AND REVISED TARIFF**

10/16/06 - Direct Testimony of Dan McCormac

<http://www.state.tn.us/tra/orders/2006/0600175jp.pdf>

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Q. What is your educational background and what degrees and licenses do you hold?

A. I have a Bachelor of Science Degree in Accounting from David Lipscomb College and I am a licensed Certified Public Accountant in the State of Tennessee.

Q. What is your experience in the field of ratemaking and regulatory accounting?

A. I have 31 years of experience in the field of utility ratemaking and regulatory accounting including more than two years with the Certified Public Accounting firm of Wilson, Work, Fossett & Greer as the supervisor in the utility consulting segment. I served sixteen years with the Tennessee Public Service Commission, including one year as Technical Assistant to the Commissioners. I served two years as Chief of Energy and Water at the Tennessee Regulatory Authority ("TRA") and eleven years with the Tennessee Attorney General's Office. While employed by the Commission and the Attorney General's Office, I supervised the preparation of many utility rate cases and earnings reviews. As part of these investigations, we developed financial exhibits to present to the Commission or TRA. These investigations supplied evidence to the TRA to enable it to set just and reasonable rates for utility services. In addition, I participated in various special studies and provided technical assistance in other cases in which I did not testify.

As the Technical Assistant to the Commissioners I observed hearings and analyzed the issues in each case from an independent technical perspective. I responded to the Commissioners' requests for expert assistance in evaluating and interpreting the financial evidence in the record. I also provided and checked calculations based on that evidence. In each position, my responsibilities have included making decisions on whether the information provided was adequate and suitable for deciding

the questions presented.

My duties with the Consumer Advocate and Protection Division ("CAPD") are similar, but also include the review of various tariffs filed before the TRA. I assist in the decision making process as to whether the terms and conditions of the numerous filings are just and reasonable or whether additional evidence is needed to support the filings. When significant consumer interests appear to be in jeopardy, we investigate further and provide expert testimony before the TRA when needed.

Q. What expertise do you have related to the natural gas industry?

A. Since 1976 I have been involved in auditing gas companies, reviewing testimony, tariffs and exhibits, negotiating rates and preparing testimony and exhibits relating to various revenue, expense and rate base issues of all major Tennessee gas distribution companies. I have prepared testimony in every major case involving a gas utility since my employment with the Attorney General's office in 1994.

ATTACHMENT C

Robert “Terry” Buckner, Regulatory Analyst

B.S. in Business Administration, University of Tennessee, Knoxville

CPA, Member of the AICPA and the Tennessee Society of CPAs

Twenty-nine years of experience with the public utility industry:

1975 - 1978 First Utility District of Knox County

1980 - 1988 TDS Telecom

1989 - 1994 Tennessee Public Service Commission (“TPSC”)

1995 - 2001 Office of the Attorney General for the State of Tennessee - Consumer Advocate
And Protection Division

2001 - 2004 Comptroller’s Office for the State of Tennessee - Public Utility Audit

2004 - 2007 Office of the Attorney General for the State of Tennessee - Consumer Advocate
And Protection Division

Oral and written testimonies were performed in numerous rate proceedings before the TPSC and the Tennessee Regulatory Authority (“TRA”). Including the following dockets and companies:

Dockets

TRA Docket #06-00290 Tennessee American Water Company
<http://www2.state.tn.us/tra/dockets/0600290.htm>

TRA Docket #06-00175 Chattanooga Gas Company
<http://www2.state.tn.us/tra/dockets/0600175.htm>

TRA Docket #05-00258 Atmos Energy Corporation
<http://www2.state.tn.us/tra/dockets/0500258.htm>

TRA Docket #04-00288 Tennessee American Water Company
<http://www2.state.tn.us/tra/dockets/0400288.htm>

TRA Docket #03-00391 BellSouth Telecommunications, Inc.
<http://www2.state.tn.us/tra/dockets/0300391.htm>

TRA Docket #02-00383 Chattanooga Gas Company
<http://www2.state.tn.us/tra/dockets/0200383.htm>

TRA Docket #01-00451 United Telephone Company
<http://www2.state.tn.us/tra/dockets/0100451.htm>

TRA Docket #00-00523 Rural Universal Service
<http://www2.state.tn.us/tra/dockets/0000523.htm>

TRA Docket #99-00210 BellSouth Telecommunications, Inc.
TRA Docket #99-00244 BellSouth Telecommunications, Inc.
TRA Docket #98-00559 BellSouth Telecommunications, Inc.
(Attached)

TRA Docket #99-00995 Telephone Electronics Corporation
<http://www2.state.tn.us/tra/dockets/9900995.htm>

TRA Docket #98-00626 United Telephone - Southeast
(Attached)

TRA Docket #97-00982 Chattanooga Gas Company
(Attached)

TRA Docket #96-00977 Nashville Gas Company
(Attached)

TPSC Docket #95-02258 United Cities Gas Company
(Attached)

TPSC Docket #95-02116 Chattanooga Gas Company
(Attached)

TPSC Docket #94-02876 BellSouth Telecommunications
(Attached)

TPSC Docket #92-13527 South Central Bell
(Testimony N/A)

IN THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

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T.R.A. DOCKET ROOM

IN RE:

PETITION FOR EXEMPTION OF
CERTAIN SERVICES

DOCKET NO. 03-00391

CONSUMER ADVOCATE AND PROTECTION DIVISION'S
SUPPLEMENTAL RESPONSES TO BELL SOUTH
TELECOMMUNICATIONS, INC.'S DISCOVERY REQUESTS

Comes now Paul G. Summers, Attorney General and Reporter for the State of Tennessee, through the Consumer Advocate and Protection Division of the Office of the Attorney General ("Consumer Advocate"), pursuant to Rule 26.05 of the Tennessee Rules of Civil Procedure, and hereby submits the following supplemental responses to the discovery requests propounded by BellSouth Telecommunications, Inc. ("BellSouth"):

SUPPLEMENTAL RESPONSES

BellSouth's First Discovery Request, Interrogatory No. 2: Please identify each expert witness you intend to present in this docket and, for each, please state:

- a) the subject or subjects upon which the expert will testify;
- b) the basis for your assertion that the witness is qualified as an expert including, but not limited to, a current curriculum vitae;
- c) all tests, studies, measurements, experiments, or other analysis or actions performed or observed by the expert relating to the expert's testimony;
- d) all opinions that the expert will present in this docket and the basis for each

opinion; and

e) all facts of which you or the expert are aware that support those opinions.

Supplemental Response: The Consumer Advocate intends to present the expert testimony of Dr. Steve Brown and Mr. Terry Buckner in this docket.

Dr. Brown will testify on the PRI service market as well as economic factors that should be addressed in this docket to determine whether existing or potential competition is an effective regulator of the price of PRI services and whether the public interest and competitive policies are served by exempting PRI services from regulatory requirements, including factors such as relative market position of competitors in the retail market and wholesale or input market, dominance in the retail market and wholesale or input market, and competitive pricing policies and strategies. Dr. Brown's curriculum vitae is attached. It is likely that Dr. Brown will testify that the PRI market conditions do not support the conclusion that existing and potential competition is an effective regulator of the price of those services, and that the public interest and competitive policies are served by current regulatory requirements. Dr. Brown's investigation and analysis are ongoing and his testimony is not complete. The Consumer Advocate will provide or reference all information and documents that support Dr. Brown's testimony at the time that it submits his pre-filed direct testimony on October 4, 2004.

Mr. Buckner will testify on the PRI service market as well as PRI tariffing, pricing, costs, quantities, and service offerings among incumbent and competing carriers. Mr. Buckner's curriculum vitae is attached. It is likely that Mr. Buckner will testify that the pricing, costs, and/or quantities of PRI services among incumbents and competitors do not support the conclusion that existing and potential competition is an effective regulator of the price of those services, and that the

opinion; and

- e) **all facts of which you or the expert are aware that support those opinions.**

Supplemental Response: The Consumer Advocate intends to present the expert testimony of Dr. Steve Brown and Mr. Terry Buckner in this docket.

Dr. Brown will testify on the PRI service market as well as economic factors that should be addressed in this docket to determine whether existing or potential competition is an effective regulator of the price of PRI services and whether the public interest and competitive policies are served by exempting PRI services from regulatory requirements, including factors such as relative market position of competitors in the retail market and wholesale or input market, dominance in the retail market and wholesale or input market, and competitive pricing policies and strategies. Dr. Brown's curriculum vitae is attached. It is likely that Dr. Brown will testify that the PRI market conditions do not support the conclusion that existing and potential competition is an effective regulator of the price of those services, and that the public interest and competitive policies are served by current regulatory requirements. Dr. Brown's investigation and analysis are ongoing and his testimony is not complete. The Consumer Advocate will provide or reference all information and documents that support Dr. Brown's testimony at the time that it submits his pre-filed direct testimony on October 4, 2004.

Mr. Buckner will testify on the PRI service market as well as PRI tariffing, pricing, costs, quantities, and service offerings among incumbent and competing carriers. Mr. Buckner's curriculum vitae is attached. It is likely that Mr. Buckner will testify that the pricing, costs, and/or quantities of PRI services among incumbents and competitors do not support the conclusion that existing and potential competition is an effective regulator of the price of those services, and that the

public interest and competitive policies are served by current tariffing, pricing, costing, and service requirements. Mr. Buckner's investigation and analysis are ongoing and his testimony is not complete. The Consumer Advocate will provide or reference all information and documents that support Mr. Buckner's testimony at the time that it submits his pre-filed direct testimony on October 4, 2004.

BellSouth's First Discovery Request, Interrogatory No. 3: Please state whether you will contend in this docket that PRI service is not sufficiently competitive in Tennessee to qualify for exemption under T.C.A. § 65-5-208(b), and if you will contend such, state all bases upon which you will make such contention, and all facts which you believe support such contention.

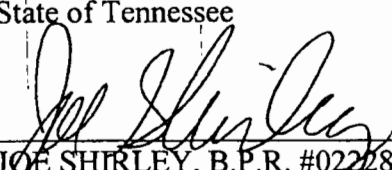
Supplemental Response: See Consumer Advocate's supplemental response to BellSouth's First Discovery Request, Interrogatory No. 2, above.

BellSouth's First Discovery Request, Interrogatory No. 4: Please state whether you agree that competition for PRI services in Tennessee is an effective regulator of price for PRI service, and if you do not agree, please state why you do not agree and all facts that you believe support your position.

Supplemental Response: See Consumer Advocate's supplemental response to BellSouth's First Discovery Request, Interrogatory No. 2, above.

RESPECTFULLY SUBMITTED,

PAUL G. SUMMERS, B.P.R. #6285
Attorney General
State of Tennessee


JOE SHIRLEY, B.P.R. #022287
Assistant Attorney General
Office of the Attorney General
Consumer Advocate and Protection Division
P.O. Box 20207
Nashville, Tennessee 37202
(615) 532-2590

Dated: September 29, 2004

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served via first-class U.S. Mail, postage prepaid, on September 29, 2004, upon:

Joelle Phillips, Esq.
BellSouth Telecommunications, Inc.
333 Commerce Street, Suite 2101
Nashville, Tennessee 37201-3300

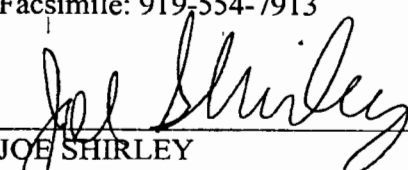
Henry Walker, Esq.
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414 Union Street, Suite 1600
Nashville, Tennessee 37219

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618 Church Street, Suite 300
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424 Church Street, Suite 2800
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1200 Peachtree Street, NE, Suite 8062
Atlanta, Georgia 30309

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United Telephone-Southeast, Inc.
14111 Capital Boulevard
Wake Forest, North Carolina 27587-5900
Facsimile: 919-554-7913


JOE SHIRLEY
Assistant Attorney General

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EXEC. DIR. OFF.

Before the

TENNESSEE PUBLIC SERVICE COMMISSION

Nashville, Tennessee

In Re:

South Central Bell Telephone Company

Docket 94-02876

Direct Testimony

of

Terry Buckner

November 18, 1994

1 Q. Please state your name for the record.

2 A. My name is R. Terry Buckner.

3 Q. By whom are you employed and what is your position?

4 A. I am employed by the Consumer Advocate Division (CA) in the State
5 of Tennessee Attorney General's Office as a Senior Regulatory
6 Analyst.

7 Q. How long have you been employed in the utility industry?

8 A. Approximately seventeen years. Before my employment with the
9 Attorney General, I was employed with the Tennessee Public Service
10 Commission (Commission) as a financial analyst for approximately
11 six years. Prior to my employment with the Commission, I was
12 employed by Telephone and Data Systems (TDS) for eight years and
13 the First Utility District of Knox County for three years.

14 Q. What is your educational background and what degrees do you
15 hold?

16 A. I have a Bachelors degree in Business Administration from the
17 University of Tennessee, Knoxville with a major in Accounting. I am
18 also a Tennessee Certified Public Accountant and a member of the
19 American Institute of Certified Public Accountants.

20 Q. Would you briefly describe your responsibilities as a Senior
21 Regulatory Analyst since your employment with the CA?

22 A. My responsibilities include evaluating financial data, submitting data

1 requests to Companies, making recommendations to the Director of
2 the CA Division and the Consumer Advocate, and preparing
3 testimony and exhibits.

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to present information to the
6 Commission as to the reasonableness of the proposed tariff filing
7 #94-223 by South Central Bell (SCB) in Docket #94-02876 regarding
8 the establishment of regulations, rates, and charges for the provision
9 of Directory Assistance (DA) services in Tennessee.

10 **Q. Would you please identify the general issues regarding Docket**
11 **#94-02876?**

12 A. The Consumer Advocate has filed a motion with the Commission to
13 dismiss SCB's request to impose a charge for DA in Tennessee. In
14 the filed motion, it is the Consumer Advocate's contention that SCB's
15 filing was in fact improperly filed according to Commission rules and
16 that the filing is inappropriate and untimely.

17 Additionally, the CA received responses from SCB to our data
18 request dated November 1, 1994 on November 14, 1994. The CA
19 staff is presently reviewing SCB's responses many of which were
20 inadequate or were not responded to due to SCB's objections. On
21 November 17, 1994, the CA spoke with counsel for SCB and SCB
22 agreed to provide additional information which may offset other

1 issues.

2 Q. Would you please identify the specific issues regarding Docket
3 #94-02876?

4 The specific issues within the filing are as follows:

5 (1) Whether the filing is valid and appropriate under rule 1220-4-2-
6 .55. In exchange for the opportunity to make excessive profits by
7 cutting costs and inefficiencies, SCB agreed that it would not initiate
8 any requests to adjust its earnings except in accordance with rule
9 1220-4-2-.55. SCB is not to initiate any requests and the
10 Commission is not to entertain any unless and until the situation
11 comes within the provision of the rule.

12 The rule requires that SCB not initiate any adjustment unless its
13 earnings are 60 basis points below its prescribed rate of return. The
14 60 basis points translates into 6/10 of 1% or .60%. SCB's prescribed
15 rate of return is 11.25%. Using simple math to subtract .60% from
16 11.25%, one arrives at 10.65% as the point at which SCB can
17 legitimately request an adjustment to its earnings. The Commission
18 Staff knows SCB's most recent report of its earnings in relationship
19 to its prescribed rate of return through the submission of the
20 Commission monthly report 3.01. The Commission 3.01 report for
21 August 1994 shows that SCB is earning 10.79% for the last twelve
22 months to date. Therefore it is clear on its face to SCB and the

1 Commission Staff that there are no grounds to consider this earnings
2 adjustment. The CA believes that this proceeding is illegal,
3 illegitimate and very irregular. It is contrary to both the spirit and the
4 letter of rule 1220-4-2-.55. In addition, it is contrary to what
5 prompted that rule which was to encourage SCB to reduce its
6 expenses and to improve its efficiency. SCB does neither with this
7 particular earnings increase, so therefore it goes even against the
8 policy behind the rule. Certainly, SCB is not offering to reduce any
9 costs or improve its efficiencies by this particular rate increase or rate
10 proposal. SCB has not shown that it is threatened or that the
11 consumer's interests are jeopardized by denying this earnings
12 adjustment. Simply put, SCB is proposing to reduce service that it is
13 presently providing to its customers.

14 The CA would first say that this matter should be dismissed outright
15 and that there was no need for this hearing in the first place if SCB
16 complied with the rule. The Commission should dismiss this
17 proceeding in its entirety and deny SCB any adjustment to its
18 earnings;

19 (2) The determination of the 50% destimulation factor used by SCB
20 to calculate revenue is not factually supported in their filing and calls
21 into question the projected earnings increase identified by SCB. In
22 addition, the imposition of the directory assistance charge will likely

1 increase revenues in the future from the Company's electronic white
2 page offering. The Company has not included the additional revenue
3 from this service in its projection;

4 (3) A local call allowance of 5 residential and 3 business per month
5 for DA calls but no long distance DA allowance. This is backwards,
6 logically there should be a greater DA allowance for long distance
7 calls since a directory for the distant calling area is not normally
8 available to the caller;

9 (4) While SCB has not provided the average monthly amount of new
10 number listings by month, it only provided the activity for October
11 1994 during which 67,889 in new number listings were issued. If this
12 is representative of a normal month, an average of approximately
13 600,000 numbers are not available during the directory publishing
14 cycle. This recognizes that there is a sixty to ninety day lag in the
15 time a number list is compiled and the date when a directory is
16 issued for a particular year. The directory does not include the new
17 number listings during the lag time or for future new number listings
18 until a new directory is published the following year. As a result,
19 there is a significant number of listings which are not available in the
20 directories and the ratepayer has no option but to use DA;

21 (5) SCB is attempting to take advantage of or circumventing the
22 proposed local competition rule currently pending. Under the

1 proposed rule, SCB would be required to reduce access charges half
2 way to the interstate level without offsetting rate increases. By using
3 the DA charge to more than offset the access reductions, SCB avoids
4 the earnings reductions required in the proposed local competition
5 rule. This filing is also an attempt by SCB to stifle potential
6 competition at the expense of the captive monopoly ratepayers by
7 increasing the charges for monopoly directory assistance charges and
8 reducing rates for the potentially competitive access charges;

9 (6) There is a general vagueness in the determination of who the
10 "handicapped or disabled" are and who makes that determination to
11 qualify for an exemption from this tariff filing;

12 (7) Additionally, SCB's recent tariff filing revision filed
13 November 14, 1994, includes a fifty call allowance for "qualified
14 handicapped or disabled" employees of businesses. The Company
15 has provided nothing to show an allowance is adequate. Obviously,
16 the imposition of such a charge on business will impact a business'
17 decision when considering the employment of a disabled person who
18 must obtain telephone numbers in the performance of their jobs. The
19 allowance of approximately 2 calls per work day may not be
20 sufficient especially when the position calls for extensive use of the
21 telephone;

22 (8) There are illiteracy concerns for those citizens who cannot read

1 and would be disadvantaged by this tariff filing. While we recognize
2 that it is not the duty of the telephone company to teach reading, it
3 must be recognized that a large number of Tennesseans are
4 functionally illiterate. Based on data obtained from the Tennessee
5 Department of Education, approximately 1 in 6 Tennesseans is
6 functionally illiterate. This indicates that approximately 816,000 are
7 functionally illiterate based upon the U.S. Census Bureau estimate of
8 the population of Tennessee;

9 (9) SCB's rationale for determining the proposed reductions in access
10 and toll rates, and the amounts per service to be reduced by SCB is
11 questionable as to its propriety. It may be more appropriate to reduce
12 Caller ID or reduce touch-tone calling rates. SCB has not shown any
13 linkage between its revenues for long distance and directory
14 assistance rates;

15 (10) There is no assurance that 100% of the proposed access
16 reductions by SCB will be flowed through by the Inter-exchange
17 Carriers (IXCs) to the ratepayer. There are no new reductions in tariff
18 filings pending for any long distance carrier. In other words, the
19 earnings of the IXCs would increase if the access reductions are not
20 flowed through dollar for dollar by reduced interlata long distance
21 rates;

22 (11) Uncertainty exists as to whether the filing would jeopardize the

1 accuracy of the annual access reduction ordered by the Commission
2 (Megacom Order U-87-7492). The filing made by the Company to
3 reduce access rates in accordance with order U-87-7492 is under the
4 assumption that the proposed tariff is already in effect. This
5 assumption impacts the magnitude of the access reductions;

6 (12) Privacy concerns also exist in that SCB will release name and
7 address to a DA caller seeking identification for a phone number.
8 Presently, SCB's DA will not provide the name and address when the
9 caller has only the telephone number. Under the proposed tariff a
10 caller will be able to obtain such information. In addition, this
11 proposal raises safety issues as well as privacy concerns;

12 (13) SCB should realize a dramatic increase in revenues from
13 unpublished number listings if the tariff is approved. This increase is
14 not recognized anywhere in the filing. Additionally, the tariff filing
15 is a disincentive to timely updates of directories. Also, SCB has not
16 quantified the expected revenue increase and earnings from this new
17 service;

18 (14) SCB has failed to provide evidence to demonstrate the
19 reasonableness and fairness of this tariff filing when it is presently
20 recovering the cost of DA through other revenue streams. This
21 Commission has historically denied SCB's filings for a per call charge
22 for DA, as recent as September 1993 in tariff filing 92-190. SCB has

1 provided NO evidence since September 1993 to change the
2 Commission's current policy DA service in Tennessee.

3 **Q. Are there other concerns with SCB's tariff filing?**

4 A. Yes, the CA requests that public hearings be held across SCB's
5 Tennessee service area to allow SCB customers the opportunity to
6 express an opinion as to whether customers should be charged on a
7 per DA call basis or that DA be recovered on a business as usual
8 basis. The hearings should be scheduled to allow a representative
9 number of customers of all types, areas and means to express their
10 views on the proposed DA filing. Additionally, the public should be
11 adequately notified of their opportunity and the potential change in
12 the ratepayers bill. After public opinion is expressed, the
13 Commission can more adequately determine the reasonableness of
14 the current DA tariff filing.

15 SCB has not stated how the safety, efficiency, or adequacy of DA
16 relates to those rates. Moreover, the CA is concerned that the DA
17 rate request is priced to operate contrary to a free market system by
18 discouraging calls rather than establishing a low rate and encouraging
19 calls.

20 It must also be recognized that while this tariff was made by SCB, it
21 will impact all Tennessee ratepayers. If approved, it will be a
22 precedent for filings by other carriers such as AT&T.

1 Q. Does this conclude your testimony?

2 A. Not necessarily. As I indicated earlier SCB was not fully responsive
3 to our data request. We may have additional concerns upon receipt of
4 that information.

CERTIFICATE OF SERVICE

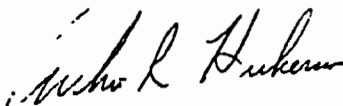
I, L. Vincent Williams, hereby certify that a true and correct copy of the foregoing Testimony of Terry Buckner has been served on the following parties of record by depositing a copy of the same in the United States mail, postage pre-paid, addressed to them, in accordance with the following list, this 18th day of November, 1994:

Charles Howorth, Esq.
South Central Bell Telephone Company
333 Commerce St.
Suite 2101
Nashville, TN 37201-3300

John M. Farris, Esq.
50 North Front St.
Suite 1400
Memphis, TN 38103

Roger Briney, Esq.
AT&T
1200 Peachtree St., NE
Room 4068
Atlanta, GA 30309

Val Sanford, Esq.
230 4th Ave., North
3rd FL P.O. Box 198888
Nashville, TN 37219-8888

for 

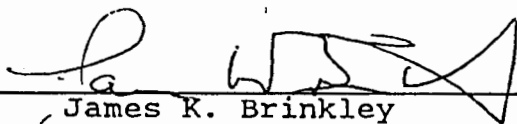
L. Vincent Williams

STATE OF GEORGIA

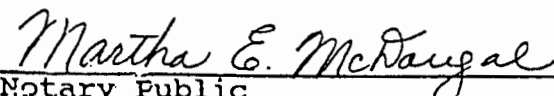
COUNTY OF FULTON

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for the State and County aforesaid, personally came and appeared James K. Brinkley who, being by me first duly sworn deposed and said that:

He is appearing as a witness on behalf of BellSouth Telecommunications, Inc., d/b/a South Central Bell Telephone Company, before the Tennessee Public Service Commission in Docket No. 94-02876, Application of South Central Bell to Establish Regulation, Rates and Charges for the Provision of Directory Assistance Service in Tennessee, and if present before the Commission and duly sworn, his testimony would be set forth in the annexed Testimony consisting of 8 pages and 0 exhibits.


James K. Brinkley

SWORN TO AND SUBSCRIBED BEFORE ME
THIS 11th DAY OF NOVEMBER, 1994.


Notary Public

Notary Public, Gwinnett County, Georgia
My Commission Expires March 8, 1997

DIRECT TESTIMONY OF
JAMES K. BRINKLEY
ON BEHALF OF BELL SOUTH TELECOMMUNICATIONS, INC.,
D/B/A
SOUTH CENTRAL BELL TELEPHONE COMPANY

NOVEMBER 18, 1994

Q. PLEASE STATE YOUR NAME, EMPLOYER, POSITION AND BUSINESS ADDRESS.

A. My name is James K. Brinkley. I am employed by BellSouth Telecommunications, Inc., d/b/a South Central Bell Telephone Company in Tennessee (hereinafter referred to as "South Central Bell" or "the Company"). My present position is Director - Pricing & Economics in the Regulatory and External Affairs department. My business address is 675 West Peachtree Street NE, Atlanta, Georgia 30375.

Q. PLEASE GIVE A BRIEF DESCRIPTION OF YOUR BACKGROUND AND EXPERIENCE.

A. I received a Bachelor of Science degree from Clemson University in 1969 and a Master of Engineering degree from the University of South Carolina in 1973. After graduating from Clemson University, I served approximately two years active duty in the U.S. Army and am presently a Battalion Commander in the U.S. Army Reserves. I began my telephone

career with Southern Bell in 1973 in Columbia, South Carolina as an Outside Plant Engineer. Since then, I have served in various positions in the Engineering, Support Services, Marketing, and Pricing organizations in both South Carolina and Georgia. Currently, I have responsibilities for tariff and rate development for switched access, operator services, and billing and collections services for the nine states in the BellSouth region.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. On October 6, 1994, South Central Bell filed a revenue neutral tariff package to implement a charge for Directory Assistance (hereinafter referred to as "DA"). My testimony will describe the elements of the Company's filing package, why it is appropriate to charge for DA, and the benefits to consumers that will occur with approval of this package by the Tennessee Public Service Commission.

Q. DESCRIBE THE TARIFF PACKAGE FILED BY SOUTH CENTRAL BELL.

A. There are three parts to this tariff filing:

1. The implementation of a charge for DA service,
2. A reduction of Message Telecommunications Service ("MTS") charges, and
3. A reduction of intrastate Switched Access charges.

The revenue generated by a DA charge will be passed on to customers through lower long distance rates and access charges. Specifically, the DA charge proposal will generate approximately ^{22.9}~~\$19.9~~ million in revenue and cost savings annually. The MTS charge proposal will reduce revenues by approximately ^{7.7}~~\$6.6~~ million annually. The Switched Access charge proposal will reduce revenues by approximately ~~\$13.3~~^{15.2} million annually.

It should be noted that the impact of the Switched Access charge reduction on Tennessee consumers will depend on the pricing actions of the interexchange carriers ("IXCs").

Q. DID SOUTH CENTRAL BELL INITIATE THIS PROCEEDING TO ADJUST ITS EARNINGS?

A. No. As I have explained above, if this filing is approved, it will be revenue neutral and thus will have no effect on the company's earnings.

Q. WHAT WILL SOUTH CENTRAL BELL CHARGE FOR DIRECTORY ASSISTANCE?

A. The proposed tariff provides that all residence customers will have an allowance of five free DA calls per line per month and business customers will receive a three call

allowance per line or equivalent per month. A charge of \$.25 per call will be applied on DA calls exceeding the allowance. There will be no charge for DA calls made from hospitals, nursing homes, public and semi-public telephone service locations and customer-provided public telephones. Customers with disabilities that prevent their use of the printed directory will be exempt from the charges on their residential line and will receive a fifty call allowance on their business line.

South Central Bell's proposal protects those customers who use DA service only when necessary by moving some of the responsibility for paying for the service to those who use the service frequently. While the frequent DA user will begin paying for this service, all customers will have access to lower toll rates.

Q. WHY IS IT APPROPRIATE TO CHARGE FOR DIRECTORY ASSISTANCE?

A. In an increasingly competitive telecommunications environment, prices for individual services should reflect their underlying cost. Currently, competitive applications of Time Warner AxS of Tennessee, L.P., AVR, L.P., d/b/a Hyperion of Tennessee; Access Transmission Service, Inc. ("ATS"), Teleport Denver Inc., and Metropolitan Fiber Systems of Tennessee, Inc. ("MFS") are pending before the Commission,

and a rulemaking is underway to open the local exchange to competition. Tariffs such as this one which move rates toward reflecting their underlying cost must be implemented in order to transition customers in Tennessee to a rate structure which will be sustainable in this increasingly competitive environment.

Today, because there is no charge for DA service in Tennessee, over \$27 million of this service cost is recovered each year through prices customers pay for other services. Almost every customer, therefore, pays for DA service whether they use the service or not. Tennessee is the only state in the nation where there is no charge for customers to use intrastate DA service. Present usage studies show that eighty percent of residential customers make five or fewer DA calls, and ninety-five percent of business customers make three or fewer DA calls. From our studies, the majority of Tennessee's customers will not even be affected by the DA charge proposed in the tariff.

Q. IF THIS TARIFF IS APPROVED, WILL SOUTH CENTRAL BELL LAY OFF OPERATORS WHEN THERE IS LESS DEMAND FOR THE SERVICE?

A. The Company does not expect any layoffs as a result of implementing a directory assistance charge and has made this commitment to the Communications Workers of America. Any

necessary reduction in force will be handled by attrition and reassignment.

Q. DESCRIBE THE TOLL CHARGE REDUCTION PROPOSED IN THE TARIFF.

A. There are two parts to the toll reduction proposed in the tariff. First, the tariff proposes to lower the rate on all mileage bands 31 miles and over. This reduction equates to \$2,770,292 annually. The second part of this tariff filing is a volume discount which equates to a ^{4,724,000}~~\$3,803,000~~ revenue reduction.

The volume discount will apply to both residential and business customers. For each billing period, customers billed up to \$10 in intraLATA toll will receive a one percent discount, for ^{5 1/2}~~\$10.01~~ to \$25 - a ~~five~~ percent discount, and for more than \$25 - an ^{11%}~~eight~~ percent discount. The discounts will be applied on an account basis for calls carried by South Central Bell and are in addition to rate period discounts. The discounts will not apply to Optional Calling Plan calls, local exchange service charges, DA charges, operator-handled surcharges, or RegionServ calls. This volume discount will provide a benefit to those customers who rely on long distance service.

Q. DESCRIBE THE SWITCHED ACCESS CHARGE REDUCTION PROPOSED IN THE

TARIFF.

- A. The annual projected gross revenue impact for Switched Access services is a reduction of ^{17,895,470} \$15,738,867 to South Central Bell. The projected net revenue impact, assuming flow through of the access rate decreases by the IXC's, is a reduction of ^{15,223,776} \$13,300,000. This reduction equals ^{more than} approximately half of the amount necessary to attain parity with current interstate Switched Access rates in Tennessee. Additionally, this reduction equates to approximately a twenty ^{five} ~~two~~ percent change in the composite Switched Access rate.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

- A. South Central Bell's tariff filing will result in a much greater benefit to customers than does free DA. Present usage studies show that eighty percent of residential customers make five or fewer DA calls, and ninety-five percent of business customers make three or fewer DA calls. From our studies, the majority of Tennessee's customers will not even be affected by the DA charge proposed in the tariff.

There are many customer benefits to be gained from implementation of South Central Bell's proposed tariff:

* responsibility for paying for DA service shifted to the

individuals and businesses who use it frequently (i.e., move prices toward reflecting their underlying cost);

- * lower MTS rates for the longer mileage bands;
- * a volume discount for customers who use South Central Bell's intralata long distance service and, by choice or necessity, use long distance services frequently; and
- * a reduction in the difference between intrastate and interstate access rates in Tennessee by approximately half.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

STATE OF TENNESSEE

Office of the Attorney General



PAUL G. SUMMERS
ATTORNEY GENERAL AND REPORTER

ANDY D. BENNETT
CHIEF DEPUTY ATTORNEY GENERAL

LUCY HONEY HAYNES
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EXECUTIVE SECRETARY
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SOLICITOR GENERAL

CORDELL HULL BUILDING
NASHVILLE, TN 37243-0486

TELEPHONE (615) 741-3481
FACSIMILE (615) 741-2009

April 30, 1999

Mr David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243-0505

Re: United Telephone-Southeast, Inc. Tariff to Reflect Proposed Changes Under Price
Regulation Plan
Docket No. 98-00626

Dear Mr. Waddell:

I have enclosed an original and thirteen copies of Direct Testimony of Consumer Advocate Division witness Robert T. Buckner, Senior Regulatory Analyst in the above referenced matter. Copies are being furnished to counsel of record for interested parties.

Sincerely,

A handwritten signature in cursive script, appearing to read "L. Vincent Williams".

L. Vincent Williams
Consumer Advocate

c: Counsel of record

Before the

TENNESSEE REGULATORY AUTHORITY

IN RE: UNITED TELEPHONE-SOUTHEAST, INC. TARIFF TO REFLECT
PROPOSED CHANGES UNDER PRICE REGULATION PLAN
DOCKET NO. 98-00626

DIRECT TESTIMONY
of
ROBERT T. BUCKNER

April 30, 1999

1 **Q. Please state your name for the record.**

2 A. My name is Robert T. Buckner ("Terry").

3

4 **Q. By whom are you employed and what is your position?**

5 A. I am employed by the Consumer Advocate Division ("CA") in
6 the State of Tennessee Attorney General's Office as a Senior Regula-
7 tory Analyst.

8

9 **Q. How long have you been employed in the utility industry?**

10 A. Approximately twenty years. Before my employment with the
11 Attorney General, I was employed with the Tennessee Public Service
12 Commission ("Commission") as a financial analyst for approximately
13 six years. Prior to my employment with the Commission, I was
14 employed by Telephone and Data Systems ("TDS") for eight years and
15 the First Utility District of Knox County for three years.

16

17 **Q. What is your educational background and what degrees do you**
18 **hold?**

19 A. I have a Bachelors degree in Business Administration from the
20 University of Tennessee, Knoxville with a major in Accounting. I am
21 also a Tennessee Certified Public Accountant and a member of the
22 American Institute of Certified Public Accountants. Additional

1 education background with respect to my qualifications is provided in
2 Exhibit No. 1 (Attachment A).
3

4 **Q. Would you briefly describe your responsibilities as a Regulatory**
5 **Analyst since your employment with the CA?**

6 A. I prepared testimony and exhibits as an employee with the
7 Commission before becoming a member of the CA. My
8 responsibilities have not changed significantly since becoming
9 employed with the CA.
10

11 **Q. What is the purpose of your testimony before the Tennessee**
12 **Regulatory Authority ("TRA")?**

13 A. The purpose of my testimony is to present the CA's
14 recommendations on the calculated amount to be used in changing
15 United Telephone-Southeast ("UTSE") Tariff under their Price
16 Regulation Plan in Tennessee Regulatory Authority ("TRA") Docket
17 #98-00626. Also, my testimony will address the methodology set
18 forth in the stipulation in TRA Docket #96-01423 and its concurrence
19 with Tenn. Code Ann. § 65-5-209.
20
21
22

1 **Q. By what amount should UTSE be allowed to change their Tariff**
2 **under the Price Regulation Plan?**

3 A. It is the CA's position that UTSE should reduce their Non-Basic
4 Rates by an annual amount of \$351,935 in contrast to UTSE's
5 proposal to increase rates \$2,072,472 for a total difference of
6 \$2,457,406. See Attachment B, Line 10 of Exhibit No. 1. This
7 amount is consistent with the CA's Statement of Issues filed with the
8 TRA on December 1, 1998.

9
10 **Q. Does this reduction include the imputation of Yellow Page**
11 **revenues?**

12 A. No. UTSE has refused to identify the Yellow Page revenue that
13 would have been imputed had the procedures that were in place in
14 1995 were being followed today. Consequently, the impact of this
15 alleged deficiency cannot be determined at this time.

16
17 **Q. Does the methodology as set forth in the stipulation in TRA**
18 **Docket #96-01423 conflict with the requirements of Tenn. Code**
19 **Ann. § 65-5-209?**

20 A. No. The methodology does not conflict. Tenn. Code Ann. §
21 65-5-209 establishes the limit in the amount of rates increases that may
22 occur in any one year:

1 § 65-5-209(e) A price regulation plan shall
2 maintain affordable basic and non-basic rates by
3 **permitting a maximum annual adjustment that**
4 **is capped at the lesser of one half (1/2) the**
5 **percentage change in inflation for the United**
6 **States using the gross domestic product-price**
7 **index ("GDP-PI") from the preceding year as**
8 **the measure of inflation, or the GDP-PI from**
9 **the preceding year minus two (2) percentage**
10 **points.** An incumbent local exchange telephone
11 company may adjust its rates for basic local
12 exchange telephone services or non-basic services
13 only so long as its aggregate revenues for basic
14 local exchange telephone services or non-basic
15 services generated by such changes do not exceed
16 the aggregate revenues generated by the maximum
17 rates permitted by the price regulation plan.
18 (Emphasis added.)
19

20 The stipulation establishes the method of determining the
21 cumulative percentage increases and the maximum cumulative
22 increase allowed over a period of years assuming that rates are
23 increased the maximum allowed each year in accordance with Tenn.
24 Code Ann. § 65-5-209. The stipulation does not modify the provisions
25 of the statute and does not allow UTSE to increase rates in any one
26 year more than the amount otherwise allowed under the statute. The
27 maximum increase in any one year continues to be limited by the
28 statute.

29 Additionally, the stipulation as interpreted by UTSE does
30 conflict with the Telecommunications Act of 1996 and the FCC order

1 in Docket #96-128. Section 276(b)(1)(B) of the Telecommunications
2 Act (See Attachment E) directs the FCC to “discontinue the intrastate
3 and interstate carrier access charge payphone service elements and
4 payments.... and all intrastate and interstate payphone subsidies from
5 basic exchange and exchange access revenue....” In its Docket #96-
6 128, the FCC ordered such subsidies to be removed. UTSE has
7 notified the TRA that its intrastate rates included an estimated subsidy
8 for payphone operations of \$143,500. (See Attachment D.) UTSE
9 reduced its access charges to remove the subsidy in April 1997. If the
10 base rates in effect on June 6, 1995 are used in the computation of the
11 SPI as proposed by UTSE, this subsidy is restored. Clearly, this is
12 contrary to the FCC’s Orders.

13
14 **Q. Does the methodology as adopted in the stipulation create an**
15 **additional limit that was not specifically identified in Tenn. Code**
16 **Ann. § 65-5-209?**

17 **A.** Yes, it could. If the mix in the type of services being provided
18 were to change materially, the formula for establishing the maximum
19 cumulative increase could prohibit a company from increasing rates in
20 any one year to the full amount otherwise allowable under Tenn. Code
21 Ann. § 65-5-209.

22 Attachment C to my testimony is an example of how the

1 stipulation could result in rates that are less than the maximum allowed
2 under Tenn. Code Ann. § 65-5-209.

3 As shown on page 3 of the example, the adjustment allowed
4 under Tenn. Code Ann. § 65-5-209 is a .8% reduction. The
5 cumulative PRI as computed in accordance with the stipulation is
6 100.29%. However, when calculated using the rates that produce the
7 .8% reduction the SPI is 101.23%. Since under the stipulation the SPI
8 cannot exceed the PRI, the proposed rates that produce a .8% reduction
9 would exceed those allowed under the stipulation. In this example, the
10 rates allowed under the stipulation would be lower than those allowed
11 by Tenn. Code Ann. § 65-5-209.

12 This does not indicate that the stipulated methodology is faulty.
13 The parties simply agreed to a methodology that may result in some
14 instances where rates are lower than the maximum allowed otherwise
15 under the statute. As a result, the stipulation serves as the limiting
16 factor. This does not indicate that there is a conflict between the
17 statute and the stipulation since the resulting rates are lower than the
18 maximum allowed by the statute. I have been advised by counsel that
19 while the parties may agree on a procedure that imposes an additional
20 limit on the level of rates, the parties cannot implement a procedure
21 that results in rates greater than those allowed by statute.
22

1 Q. What caused the stipulation methodology to result in a lower rate
2 level in the example?

3 A. The change in the mix of services. I point out that this is a
4 hypothetical example that is being used for illustrative purposes and
5 does not reflect an actual change in mix that has occurred.
6

7 Q. Does this conclude your testimony?

8 A. Yes, it does.
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Before the

TENNESSEE REGULATORY AUTHORITY

IN RE: UNITED TELEPHONE-SOUTHEAST, INC. TARIFF TO REFLECT
PROPOSED CHANGES UNDER PRICE REGULATION PLAN

DOCKET NO. 98-00626

EXHIBITS

April 30, 1999

Attachment A

Robert T. Buckner (Terry)

Senior Regulatory Analyst

Office of the Attorney General for the State of Tennessee

Consumer Advocate Division

Additional Education Background:

Micro-Computer Training, **University of Wisconsin, Madison**

Cost Separations School, **United States Telephone Association, San Diego**

Rate Case School, **Arthur Andersen LLP, Chicago**

Telecommunications Conference, **University of Georgia, Athens**

NARUC Conference, **Michigan State University, Lansing**

Management Training Seminar, **Vanderbilt University**

Interstate Access Settlements, **National Exchange Carrier Association**

SEARUC Conferences, **Birmingham, AL. and Charleston, S.C.**

Telephone Plant Accounting Program, **Ernst and Young LLP, Atlanta**

ATTACHMENT B

Sprint United Telephone-Southeast, Inc
1998 Annual Price Adjustment Filing

<u>Aggregate Non-Basic Revenues at Current Rates</u>		Aggregate Non-Basic Revenues @ 6/98 Rates
Line		
1	General Subscriber Service Tariff	\$30,697,976 40 a/
2	Access	9,103,137 60 b/
3	Directory Revenue	58,353 60 c/
4	Miscellaneous Revenues	4,132,349 88 d/
5	Total Non-Basic per Company [L1+L2+L3+L4]	\$43,991,817 48
 <u>Computation of the Maximum Adjustment Factor</u>		
6	Inflation First QTR 1997 vs First Qtr 1998	1 20% e/
Maximum Annual Adjustment Factor is the lesser of		
7	1/2 Inflation Rate [L6 X 5]	0 60%
	or	
8	Inflation less 2% [L6-2%]	-0 80%
9	Maximum Adjustment Factor [L8]	-0 80% f/
Maximum Allowed Annual Adjustment to Aggregate		
10	Non-Basic Revenue [L5 X L9]	(\$351,934 54)
 <u>Aggregate Non-Basic Revenues Proposed Rates</u>		Aggregate Non-Basic Revenues @ UTSE Proposed Rates
11	General Subscriber Service Tariff	\$32,755,722 24 a/
12	Access	9,120,864 00 b/
13	Directory Revenue	58,353 60 c/
14	Miscellaneous Revenues	4,132,349 88 d/
15	Total Company Proposed Non-Basic Revenue [L11+L12+L13+L14]	\$46,067,289 72
UTSE Proposed Increase in Aggregate Non-Basic		
16	Revenues [L15-L5]	<u>\$2,075,472 24</u>
Proposed Increase in Aggregate Non-Basic Revenues		
17	Exceeds Allowed Adjustment [L16-L10]	\$2,427,406 78
UTSE Proposed % Increase in 1998 Non-Basic		
18	Aggregate Revenues	<u>4 72%</u>

a/ Sprint UTSE Filing as revised 10/16/98 Non-Basic Service Price out page 12

b/ Sprint UTSE Filing as revised 10/16/98 Non-Basic Service (Access) Price out page 2

c/ Sprint UTSE Filing as revised 10/16/98 Non-Basic Service General Ledger [Directory compensation] page 1

d/ Sprint UTSE Filing as revised 10/16/98 Non-Basic Service General Ledger [Miscellaneous] page 1

e/ ATTACHMENT B of Sprint UTSE's Filing as revised 10/16/98

f/ Tenn Code Ann 65-5-209

Hypothetical Example

Proposed changes for each of the three years fall under the maximum annual increase allowed under Tenn. Code Ann. 65-5-209. However in the third year the proposed rates exceed the maximum level established by the Stipulation accepted in 1996.

Assumptions:

	Year 1	Year 2	Year 3
Inflation (GDP-PI)	2.40%	2.70%	1.20%
Maximum Factor [Lesser of (1/2)X(GPI-PI) or (GDP-2%)]	0.40%	0.70%	-0.80%
Year 1 - rate reduction			
Year 2 - No rate change			
Year 3- Rate reduced in accordance with Tenn. Code Ann 65-5-209			

Computed Results

Computed Annual Increase	-1.00%	0.00%	-0.80%
Computed PRI per Stipulation	100.40%	101.10%	100.29%
Computed SPI per Stipulation	99.00%	99.00%	101.23%
SPI Exceeds the Cumulative PRI by			0.93%

Year 1

Comparison of SPI, PRI, and Annual Increase

Base/Current Rates				Proposed Rate			
Service	Volume	Initial	Revenue	Volume	Proposed	Revenue	
		Rates			Rates		
Service 1	1,000	\$1.000	\$1,000.00	1,000	\$0.9900	\$990.00	
Service 2	4,000	2.0000	8,000.00	4,000	\$1.9800	7,920.00	
Service 3	200	5.0000	1,000.00	200	\$4.9500	990.00	
Service 4	600	7.0000	4,200.00	600	\$6.9300	4,158.00	
Service 5	800	3.0000	2,400.00	800	\$2.9700	2,376.00	
Service 6	900	4.0000	3,600.00	900	\$3.9600	3,564.00	
			\$20,200.00				
				Aggregate Revenue		\$19,998.00	99.00% SPI
				PRI			100.40% PRI
				Annual % Change			-1.00%
				Cumulative Change			-1.00%

Year 1 proposed rate changes comply with both Tenn. Code Ann. 65-5-209 and the Stipulation

Hypothetical Example
Year 2

Comparison of proposed increase with annual limit per statute.

Service	Current Rates			Proposed Rate			
	Current Volumes	Current Rates	Current Revenue	Proposed Volume	Proposed Rates	Proposed Revenue	
Service 1	1,100	\$0.9900	\$1,089.00	1,100	\$1.2500	\$1,375.00	
Service 2	4,500	1.9800	8,910.00	4,500	2.2500	10,125.00	
Service 3	300	4.9500	1,485.00	300	4.9500	1,485.00	
Service 4	650	6.9300	4,504.50	650	6.9300	4,504.50	
Service 5	850	2.9700	2,524.50	850	2.9700	2,524.50	
Service 6	1,000	3.9600	3,960.00	1,000	2.4590	2,459.00	
Aggregate Revenues			\$22,473.00	Aggregate Revenues		\$22,473.00	100.00%
				Allowed annual Increase			0.70%
				Annual % Change			0.00%

Comparison of PRI with SPI.

Service	Base Rates			Proposed Rate			
	Current Volumes	Initial Rates	Initial Revenue	Proposed Volume	Proposed Rates	Proposed Revenue	
Service 1	1,100	\$1.0000	\$1,100.00	1,100	\$1.2500	\$1,375.00	
Service 2	4,500	2.0000	9,000.00	4,500	2.2500	10,125.00	
Service 3	300	5.0000	1,500.00	300	4.9500	1,485.00	
Service 4	650	7.0000	4,550.00	650	6.9300	4,504.50	
Service 5	850	3.0000	2,550.00	850	2.9700	2,524.50	
Service 6	1,000	4.0000	4,000.00	1,000	2.4590	2,459.00	
Aggregate Revenues			\$22,700.00	Aggregate Revenues		\$22,473.00	99.0000% =SPI
				Cumulative % Change			-1.00%
							101.10% =PRI
				Allowed Cumulative % Change			1.10%

Year 2 proposed rate changes comply with both Tenn. Code Ann. 65-5-209 and the 1996 Stipulation

Hypothetical Example
Year 3

Comparison of proposed increase with annual limit per statute.

Service	Current Rates			Volume	Proposed Rate		Revenue	
	Current Volumes	Current Rates	Revenue		Proposed Rates	Revenue		
Service 1	3,100	\$1.2500	\$3,875.00	3,100	\$1.5000	\$4,650.00		
Service 2	5,000	\$2.2500	11,250.00	5,000	\$2.3000	11,500.00		
Service 3	450	\$4.9500	2,227.50	450	\$4.9000	2,205.00		
Service 4	700	\$6.9300	4,851.00	700	\$6.9300	4,851.00		
Service 5	860	\$2.9700	2,554.20	860	\$2.9000	2,494.00		
Service 6	900	\$2.4590	2,213.10	900	\$1.1720	1,054.80		
Aggregate Revenues			\$26,970.80	Aggregate Revenues		\$26,754.80		99.20%
				Allowed annual Increase				-0.80%
				Annual % Change				-0.80%

Comparison of PRI with SPI

Service	Base Rates			Volume	Proposed Rate		Revenue	
	Current Volumes	Initial Rates	Revenue		Proposed Rates	Revenue		
Service 1	3,100	\$1.0000	\$3,100.00	3,100	\$1.5000	\$4,650.00		
Service 2	5,000	\$2.0000	10,000.00	5,000	\$2.3000	11,500.00		
Service 3	450	\$5.0000	2,250.00	450	\$4.9000	2,205.00		
Service 4	700	\$7.0000	4,900.00	700	\$6.9300	4,851.00		
Service 5	860	\$3.0000	2,580.00	860	\$2.9000	2,494.00		
Service 6	900	\$4.0000	3,600.00	900	\$1.1720	1,054.80		
Aggregate Revenues			\$26,430.00	Aggregate Revenues		\$26,754.80		101.23% =SPI
				Cumulative % Change				1.23%
				PRI				100.29% PRI
				Allowed Cumulative % Change				0.29%

Year 3 rate changes comply with the limit in Tenn. Code Ann. 65-5-209 but exceed the limit established by the 1996 Stipulation.

Computation of Cumulative Adjustment Limit

	First Qtr. 1995 vs First Qtr 1996	First Qtr. 1996 vs First Qtr 1997	First Qtr. 1997 vs First Qtr 1998
Inflation (GPI-PI)	2.40%	2.70%	1.20%
Calculation			
Step 1			
Base Rate of 100	100.00%	100.00%	100.00%
Step 2			
Plus: The lesser of			
1/2 Inflation Rate	1.20%	1.35%	0.60%
or			
Inflation Rate - 2%	0.40%	0.70%	-0.80%
Annual Adjustment Factor Tenn Code Ann. 65-5-209	0.40%	0.70%	-0.80%
	100.40%	100.70%	99.20%
Step 3			
Divided by 100%	1.004	1.007	0.992
Step 4			
Current PRI	100.00%	100.40%	101.10%
New PRI=Current PRI X Annual Adjustment Factor	100.4000%	101.1028%	100.2940%

Attachment D

May 27, 1997

MEMORANDUM

TO: Lynn Greer, Chairman
Sara Kyle, Director
Melvin Malone, Director

FROM: Chris Klein, Chief Utility Rate Division
Mike Gaines, Telecommunications Manager

SUBJECT: Tariff filing by United Telephone Southeast (UTSE) to reduce the intrastate CCLC access rate to remove the subsidy to pay telephones. Tariff 97-206, Docket 97-00409

UTSE filed tariffs effective April 1, 1997, to remove payphone operations from its tariffs. At that time, UTSE estimated the subsidy to payphone operations to be immaterial and did not reduce rates. However, on May 19, 1997, UTSE submitted a revised subsidy estimate and filed this tariff to reduce access rates \$143,500, effective the same day.

The Staff reviewed this estimated amount, but has not audited the number because this matter will be addressed in the pending Payphone Docket 97-00409. Unless otherwise notified, this tariff will go into effect pending the outcome of Docket 97-00409.

cc: Docket File 97-00409

Telecommunications Act of 1996 Section 276

"SEC. 276. PROVISION OF PAYPHONE SERVICE.

"(a) NONDISCRIMINATION SAFEGUARDS.--After the effective date of the rules prescribed pursuant to subsection (b), any Bell operating company that provides payphone service--

"(1) shall not subsidize its payphone service directly or indirectly from its telephone exchange service operations or its exchange access operations; and

"(2) shall not prefer or discriminate in favor of its payphone service.

"(b) REGULATIONS.--

"(1) CONTENTS OF REGULATIONS.--In order to promote competition among payphone service providers and promote the widespread deployment of payphone services to the benefit of the general public, within 9 months after the date of enactment of the Telecommunications Act of 1996, the Commission shall take all actions necessary (including any reconsideration) to prescribe regulations that--

"(A) establish a per call compensation plan to ensure that all payphone service providers are fairly compensated for each and every completed intrastate and interstate call using their payphone, except that emergency calls and telecommunications relay service calls for hearing disabled individuals shall not be subject to such compensation;

"(B) **discontinue the intrastate and interstate carrier access charge payphone service elements and payments in effect on such date of enactment, and all intrastate and interstate payphone subsidies from basic exchange and exchange access revenues, in favor of a compensation plan as specified in subparagraph (A); (Emphasis Added)**

"(C) prescribe a set of nonstructural safeguards for Bell operating company payphone service to implement the provisions of paragraphs (1) and (2) of subsection (a), which safeguards shall, at a minimum, include the nonstructural safeguards equal to those adopted in the Computer Inquiry-III (CC Docket No. 90-623) proceeding;

"(D) provide for Bell operating company payphone service providers to have the same right that independent payphone providers have to negotiate with the location provider on the location provider's selecting and contracting with, and, subject to the terms of any agreement with the location provider, to select and contract with, the carriers that carry interLATA calls from their payphones, unless the Commission determines in the rulemaking pursuant to this section that it is not in the public interest; and

"(E) provide for all payphone service providers to have the right to negotiate with the location provider on the location provider's selecting and contracting with, and, subject to the terms of any agreement with the location provider, to select and contract with, the carriers that carry intraLATA calls from their payphones.

"(2) PUBLIC INTEREST TELEPHONES.--In the rulemaking conducted pursuant to paragraph (1), the Commission shall determine whether public interest payphones, which are provided in the interest of public health, safety, and welfare, in locations where there would otherwise not be a payphone, should be maintained, and if so, ensure that such public interest payphones are supported fairly and equitably

"(3) EXISTING CONTRACTS.--Nothing in this section shall affect any existing contracts

between location providers and payphone service providers or interLATA or intraLATA carriers that are in force and effect as of the date of enactment of the Telecommunications Act of 1996

"(c) STATE PREEMPTION.--To the extent that any State requirements are inconsistent with the Commission's regulations, the Commission's regulations on such matters shall preempt such State requirements.

"(d) DEFINITION --As used in this section, the term 'payphone service' means the provision of public or semi-public pay telephones, the provision of inmate telephone service in correctional institutions, and any ancillary services."

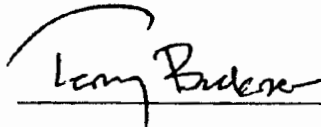
BEFORE THE TENNESSEE REGULATORY AUTHORITY
AT NASHVILLE, TENNESSEE

IN RE: UNITED TELEPHONE-
SOUTHEAST, INC. TARIFF TO
REFLECT PROPOSED CHANGES
UNDER PRICE REGULATION PLAN

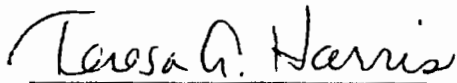
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) DOCKET NO. 98-00626
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AFFIDAVIT

I, Robert T. Buckner, Senior Regulatory Analyst for the Consumer Advocate Division of the Attorney General's Office, hereby certify that the attached Direct Testimony represents my opinion in the above referenced case and the opinion of the Consumer Advocate Division



Sworn to and subscribed before me
this 13th day of April, 1999.



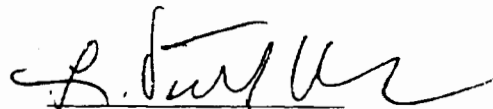
NOTARY PUBLIC

My commission expires on. Jan. 25, 2003

CERTIFICATE OF SERVICE

I hereby certify that this document was served on parties of record by U.S. Mail or by facsimile this 3rd day of April, 1999.

James B. Wright, Esq.
United Telephone-Southeast, Inc
14111 Capital Blvd.
Wake Forest, NC 27587-5900



L. Vincent Williams

STATE OF TENNESSEE

Office of the Attorney General



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TELEPHONE (615) 741-3491
FACSIMILE (615) 741-2009

July 30, 1999

Mr David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243-0505

Re: Proceeding for the Purpose of Addressing Competitive Effects of Contract Service
Arrangements Filed by BellSouth Telecommunications, Inc. in Tennessee
Docket No. 98-00559

Dear Mr. Waddell:

I have enclosed an original and thirteen copies of Rebuttal Testimony of Consumer Advocate Division witness Robert T. Buckner, Senior Regulatory Analyst, in the above referenced matter. Copies are being furnished to counsel of record for interested parties.

Sincerely,

L. Vincent Williams
Consumer Advocate

c: Counsel of record

Before the

TENNESSEE REGULATORY AUTHORITY

IN RE: PROCEEDING FOR THE PURPOSE OF ADDRESSING COMPETITIVE EFFECTS
OF CONTRACT SERVICE ARRANGEMENTS FILED BY BELL SOUTH
TELECOMMUNICATIONS, INC. IN TENNESSEE
DOCKET NO. 98-00559

REBUTTAL TESTIMONY
of
ROBERT T. BUCKNER

July 30, 1999

1 **Q. Please state your name for the record.**

2 A. My name is Robert T.("Terry") Buckner.

3

4 **Q. By whom are you employed and what is your position?**

5 A. I am employed by the Consumer Advocate Division ("CA") in
6 the State of Tennessee Attorney General's Office as a Senior Regula-
7 tory Analyst.

8

9 **Q. How long have you been employed in the utility industry?**

10 A. Approximately twenty years. Before my employment with the
11 Attorney General, I was employed with the Tennessee Public Service
12 Commission ("Commission") as a financial analyst for approximately
13 six years. Prior to my employment with the Commission, I was
14 employed by Telephone and Data Systems ("TDS Telecom") for eight
15 years and the First Utility District of Knox County for three years.

16

17 **Q. What is your educational background and what degrees do you**
18 **hold?**

19 A. I have a Bachelors degree in Business Administration from the
20 University of Tennessee, Knoxville with a major in Accounting. I am
21 also a Certified Public Accountant, a member of the Tennessee Society
22 of Certified Accountants, and a member of the American Institute of

1 Certified Public Accountants. Additional education background with
2 respect to my qualifications is provided in Exhibit RTB-1.

3
4 **Q. Would you briefly describe your responsibilities as a Senior**
5 **Regulatory Analyst since your employment with the CA?**

6 A. Before becoming a member of the CA, I prepared testimony and
7 financial exhibits as an employee with the Commission. Since
8 becoming employed with the CA, my responsibilities have not
9 changed significantly.

10
11 **Q. What is the purpose of your testimony before the Tennessee**
12 **Regulatory Authority ("TRA")?**

13 A. The purpose of my testimony is to present factual information,
14 which supports the CA's position concerning the two Contract Service
15 Arrangements ("CSAs") initiated by BellSouth ("Bell") in TRA
16 Dockets #99-00210 and #99-00244, CSA's TN98-2766-00 and KY98-
17 4958-00 respectively, and to respond to the positions taken by Bell's
18 witness Frame.

19
20 **Q. Have you done any other analysis of Bell's CSAs than the work**
21 **specifically related to these two CSAs?**

22 A. Yes. In Docket #97-01105, I reviewed many of Bell's CSAs

1 that had been filed for period of time in 1997. I set forth the results of
2 my review in a document filed in that docket entitled, *Consumer*
3 *Advocate Division's Comments on BellSouth's Contract Service*
4 *Arrangements*, July 22, 1998. At this time, I wish to adopt my opinion
5 as set forth in that document as part of my testimony in the present
6 Dockets. A copy of the Comments on BellSouth's Contract Service
7 Arrangements is attached as Exhibit RTB-2.

8

9 **Q. In your investigation of Docket #97-01105, what was Bell's**
10 **apparent motive for CSAs?**

11 A. I met with representatives of Bell on February 18, 1998 to
12 discuss the matter of CSAs. I concluded from our discussions that it
13 was Bell's position that there were three basic reasons for the CSAs:
14 (1) Response to a competitive telecommunications provider; (2) To
15 protect Bell's revenue stream for the long-term; and (3) As an
16 incentive for customers to increase the usage of services.

17

18 **Q. In the meeting of February 18, 1998, what was the basis for**
19 **determining discount levels?**

20 A. The basis for determining the discount levels was the following:
21 (1) Up to the individual marketer; (2) There was no specific Bell
22 policy for determination; and (3) The discount amount was dependent

1 upon the volume of services purchased by the customer.

2

3 **Q. How is the information gained in Docket #97-01105 relevant to**
4 **these Dockets?**

5 A. I believe that the information is relevant in that it is indicative of
6 the fluid and evolving nature of the CSAs in Tennessee. Additionally,
7 there is evidence of anti-competitive behavior and price
8 discrimination.

9

10 **Q. In these Dockets, the Bell witness, Mr. Frame, defends the CSAs**
11 **primarily on the basis of competition. (See Frame Direct**
12 **Testimony, Page 2, Lines 19-21.) Has the TRA, the FCC, or any**
13 **other authority found that Bell has complied with the**
14 **requirements necessary to open its local market in Tennessee to**
15 **competition?**

16 A. No. The Telecommunications Act of 1996 requires incumbents
17 such as Bell to take action to allow competition to develop in the local
18 market. Those requirements are found in Sections 251 and 252 of the
19 Act. In Section 271(B), a checklist is provided for determining if an
20 incumbent Regional Bell Operating Company ("RBOC"), such as Bell,
21 has complied with Sections 251 and 252. Neither the TRA, the FCC,
22 nor any other appropriate authority has found that Bell has yet

1 complied with the requirements of the Act in Tennessee.

2 In May 1998, the TRA conducted an extensive hearing of more
3 than ten days in Docket #97-00309 for the purpose of determining if
4 Bell had opened its local market in Tennessee to competition in
5 accordance with the Act and as required to be eligible to enter the
6 regional interLATA long distance market. On April 8, 1999, Bell filed
7 a Notice of Voluntary Dismissal and Withdrawal in Docket #97-00309
8 volunteering to withdraw its request that the TRA find that it had
9 opened its market to allow competition as required by the
10 Telecommunications Act of 1996. Since April 8, 1999, Bell has not
11 filed or otherwise provided persuasive evidence that it has opened its
12 local Tennessee market to competition..

13

14 **Q. Have you reviewed the "Rate Assurance" provisions included in**
15 **the CSA identified by Bell as CSA TN-98-2766-00?**

16 **A.** Yes, on page 9 of the CSA TN98-2766-00 in Docket #99-
17 00210, the following provision is found:

18 If _____ is offered a service proposal
19 from an unauthorized carrier that is
20 comparable both in rate and in level of
21 support provided by BellSouth for any V&T
22 Eligible Service which priced at least 15%
23 less than those provided to _____ by
24 BellSouth which priced at least 15% less
25 than those provided to _____ by BellSouth
26 then these services may be considered for a
27 price reduction. _____ shall provide

1 BellSouth written notice of the service
2 proposal, and sufficient information to
3 validate the terms and rates of the offer and
4 the option to respond to the alternative
5 proposal.

6 BellSouth shall respond in writing
7 within seven (7) calendar days as to whether
8 or not BellSouth will pursue a new rate for
9 _____. In the event BellSouth elects to
10 respond to the offering from the alternative
11 carrier and offers _____ a service proposal
12 with rates that are within ten percent (10%)
13 of the alternative carrier's competitive
14 offering, this agreement shall continue in
15 effect at the new customized rate and
16 charges until the expiration of the V&T
17 Agreement. The parties shall amend the
18 Minimum Annual Revenue Base and the
19 corresponding Discount Levels listed in
20 Appendix II to reflect the rate reduction and
21 any other portions of the Agreement
22 necessary to effect this Rate Assurance
23 Adjustment

24 If BellSouth elects not to respond to
25 the offer from the alternative carrier or does
26 not offer _____ a service proposal with rates
27 that are within ten percent (10%) of the
28 alternative carrier's offering, the parties shall
29 amend Appendix IA, Appendix IB and
30 Appendix II and any other pertinent
31 provisions of this Agreement as necessary to
32 reduce _____'s Minimum Annual Revenue
33 Base, the Annual Revenue Base and the
34 corresponding Discount Levels listed in
35 Appendix II, if necessary, to permit _____ to
36 purchase the services in question from the
37 alternative carrier.

38
39 While this provision is labeled "Rate Assurance," the assurance
40 provided is that Bell will be able to stop a customer from moving to a
41 competitor of Bell. This provision does not assure the customer that

1 Bell will match a competitor's offer. Instead, it tends to guarantee that
2 Bell can retain the customer by offering to provide the service at rates
3 that are 10% higher than the rates offered by the competitor. While
4 the customer could theoretically reject the higher Bell rates, the
5 punitive effect of the termination penalty included in the CSA would
6 likely result in any potential saving being captured by Bell and not by
7 the customer.

8
9 **Q. What amount of a discount would a competitor have to offer the**
10 **customer under this CSA before Bell would need to respond?**

11 A. Under this provision, a competitor would have to offer the
12 customer a rate that is 23.5% below Bell's Tariffed rate before Bell
13 would even have to consider responding.

14 As stated, the prices offered by the competitor must be priced at
15 least 15% less than those provided by Bell under the contract. Since
16 the CSA provides a discount of 10%, the prices under the CSA are at
17 90% of the tariffed rates for the services provided. A 15% reduction
18 in these rates would require the offered rates to be equal to 76.5% of
19 the tariffed rates. (90% X 85% = 76.5%) This, of course, reflects a
20 23.5% discount.

Bell CSA provided Discount off Tariffed Rates	10%
Bells' Rates as % of Tariffed	90%
The required competitive offer must be 15% below Bell	$90\% \times 85\% = 76.5\%$ of Tariffed Rates
Total minimum discounts offered by the Competitor	$100\% - 76.5\% = 23.5\%$

Q. What level of a discount would Bell have to include in its counter offer in order to invoke the termination penalty if the customer elects to purchase service from the competitor?

A. Since Bell needs only to come within 10% of the competitor in order to bind the customer, Bell is only required to increase its contract discount from 10% to 15.85%.

A competitor offers a 23.5% discount off Bell Tariffed Rates Competitors' rates as a percent of Tariffed	76.5%
Bells' response must be within 10% of Competitive offer	$79.5\% \times 110\% = 87.45\%$
Discount Required by Bell to retain the customer	$100\% - 87.45\% = 12.55\%$

As a result, the customer would not be able to take advantage of what might otherwise be deemed a more economic and competitive offer, but instead will be bound to Bell.

While the customer could theoretically reject the Bell counter offer of the 15.85% discount, the punitive termination provision would

1 likely eliminate any savings.

2 How the termination provision would penalize the customer
3 depends on when the contract terminates. As Mr. Frame stated in his
4 pre-filed testimony, termination of the contract at the end of a contract
5 year results in a flat charge. (See Frame Direct Testimony, Page 18,
6 Lines 6-8.) However, if the contract is terminated during a contract
7 year, the charge is likely to be much greater.

8 IX Termination Liability

9 B If written notice of termination is delivered
10 to BellSouth to be effective prior to the end
11 of the current V&T Contract Year,
12 BellSouth will bill ____ the appropriate
13 termination charges calculated in A. above,
14 in addition to an amount equal to the
15 difference between the current Contract
16 Year to date billing for V&T Eligible
17 billings and the current year Minimum
18 Annual Revenue Base.

19
20 The Minimum Annual Revenue Base for CSA TN98-2766-00 is
21 \$5,750,000. Therefore, if the contract is to terminate in the middle of
22 the year and the customer has been billed only \$2,850,000, the
23 termination penalty will be \$2,850,000 in addition to the flat rate
24 charge as stated by Mr. Frame.

25

26

27

1 Q. Would the customer be subject to any additional termination
2 charges?

3 A. Yes. Paragraph C of Section IX of CSA TN98-2766-00
4 provides:

5 C. The application of termination charges
6 pursuant to this Section shall not affect the
7 application of termination charges pursuant
8 to the tariff or any other agreement.
9

10 In accordance with BellSouth's tariffs, the customer would be
11 liable for termination charges for some of the services listed on Mr.
12 Frame's Exhibit RLF-1. For example, from the discounted rate for
13 MegaLink® ISDN identified on the exhibit, it appears that the customer
14 has entered into a 49-72 month agreement¹ to purchase this service.
15 Therefore, the provision of BellSouth's Tariff Section B7.5.4 E would
16 apply.

17 Tariff Section B7.5.4

18
19 E. A Termination Liability Charge is applicable
20 at the date of termination. The applicable
21 charge is dependent on the contract period
22 subscribed to and will be equal to the
23 number of months remaining in the contract
24 times the monthly rate provided under the
25 contract.
26

27 Therefore, not only would the customer be liable for the

¹ The rate for MegaLink® ISDN on Exhibit RLF-1 is \$217.50 with a 13% discount
Therefore the pre-discounted rate would be \$250 (\$217.50 / 87% = \$250.00) BellSouth Tariff
Section 7 5 6 D (1) Primary Rate Interface for a 49-72 month commitment is \$250.00 / month
USOC PRFS1

1 termination penalty in Section IX of the CSA, but the customer would
2 also be required to pay \$250 for each MegaLink ®ISDN Primary Rate
3 Interface for each of the remaining months on its contract to purchase
4 MegaLink ®ISDN service.

5
6 **Q. Are the termination provisions in this CSA consistent with those**
7 **included in other Bell CSAs?**

8 **A.** No. The termination provisions in this CSA and CSA KY 98-
9 4598-00 are different from some other CSA's filed by Bell. For
10 example, in some CSAs the cancellation language is patterned as
11 follows:

12 If Subscriber cancels this Agreement
13 at any time prior to the expiration of
14 the service period set forth in this
15 agreement, Subscriber shall be
16 responsible for all termination
17 charges. Unless otherwise specified
18 by tariff, termination charges are
19 defined as **reasonable** charges due or
20 remaining as a result of the minimum
21 service period agreed to by Company
22 and Subscriber and set forth in the
23 Attachments. (Emphasis added.)
24

25 While the provision calls for the termination charge to be
26 reasonable, as evident from information obtained during our review of
27 the CSA process, the actual charges set forth in the CSA Attachments
28 are arbitrary and dependent upon the ability of the customer to

1 negotiate. For example, Bell provided copies of correspondence
2 between certain of its employees that included the following
3 discussions:

4 wants the first year termination
5 liability to be reduced \$75K (\$325,000 to
6 \$250,000). This shouldn't be an issue since
7 I added an additional \$100K(sic) as a
8 termination liability in the first year of the
9 Supplemental agreement.

10
11 I have done some calculations on
12 the services that we have under contract at
13 _____. Based on the termination penalties
14 on these contracts I share _____ concern that
15 they would be "double gigged" in the highly
16 unlikely event of an early termination on an
17 MSA. For example, if _____ enters into a 36
18 month MSA agreement with an effective
19 date of 2/01/97, but they cancel ALL
20 services through BellSouth at the conclusion
21 of year 1 on 2/01/98, their termination
22 penalties would be as follows

23
24 \$938,000 Contract termination penalties (ESSX,
25 SMARTPath, PRI ISDN, Synchronet)
26 \$775,000 MSA cancellation penalty at end of Year 1

27
28 \$1,713,000 TOTAL TERMINATION PENALTY

29
30 _____ understands that the individual
31 contracts and the MSA agreement are two
32 different issues, but they do not feel that we
33 should have such hefty penalties. My
34 contact tells me that if we can get the MSA
35 penalties more like the following, we can
36 continue with negotiations:

37
38 \$266,000 Year 1
39 \$134,000 Year 2

40
41 (See Exhibit RTB-3.)

1 From these statements, I infer that the termination liabilities
2 included in these contracts are not based on Bell's unrecovered costs
3 or damages that might be incurred by Bell if the contract is breached
4 by the customer. Instead, termination liabilities are largely arbitrary
5 and subject to the ability of the customer's and of Bell's negotiators.

6 Further, these exorbitant Termination Liability amounts are not
7 a financial incentive to the customer as Bell contends, but a penalty
8 imposed on customers. Otherwise, the customer might select services
9 from a competing telecommunications service provider that offers
10 more economical rates. A true financial incentive for the customer
11 would be additional discounts at greater service volumes, not the
12 penalty of paying for services the customer no longer wishes to
13 receive.

14 The revised termination provisions in CSA KY98-4598-00,
15 however, tie the penalties to the discounts received, and do not reflect
16 incurred costs or damages to Bell, which might result from the
17 termination of the contract.

18
19 **Q. Does CSA KY98-4958-00 include the same "Rate Assurance"**
20 **provisions as CSA TN98-2766-00?**

21 **A.** No. The Rate Assurance provision is not included in KY98-
22 4958-00.

1 **Q. Is the computation of the termination penalty under CSA KY98-**
2 **4958-00 consistent with computation under CSA TN98-2766-00?**

3 A. No. Although when Bell filed the CSA, a page identified as
4 "Additional Terms and Conditions" included replacement language for
5 the computation of the termination liability that would have been
6 similar, Mr. Frame testified that the substitute language was not
7 accepted for CSA TN98-2766-00. (See Frame Direct Testimony,
8 Page 17, Line 16.)
9

10 **Q. Does the Consumer Advocate Division have a concern with the**
11 **termination provisions in CSA KY98-4958-00?**

12 A. Yes. While the procedure for determining the termination
13 penalty is different in CSA KY98-4958-00 than in CSA TN98-2766-
14 00, it also results in an amount that is not related to any cost or
15 damages that Bell would incur as the result of the contract being
16 prematurely terminated.

17 In fact, the procedure works somewhat in reverse of what one
18 might expect. It would normally be expected, that the longer the
19 contract has been in effect and the less time remaining on the contract
20 when terminated, the smaller the termination liability. This is not the
21 case as stated in the revised language of CSA KY98-4958-00. The
22 termination penalty actually increases each month for the first year and

1 then remains constant. Therefore, if the customer terminates the
2 contact at the end of the first year or even at the end of the 35th month,
3 when there is only one month remaining on the contract, the
4 termination penalty will be the same. Obviously, any damages, that
5 Bell incurs as the result of the early termination, would not be the same
6 if the contract is terminated after one year when compared to
7 termination with only a month remaining. This termination penalty is
8 unjust and unreasonable.

9
10 **Q. You state that the termination penalty is not related to costs**
11 **incurred by Bell. Doesn't the revised language in KY98-4958-00**
12 **specifically address costs incurred by Bell?**

13 **A.** Yes, it does. The recovery of the costs, however, is in addition
14 to the penalty computed based on the length of time that the CSA has
15 been in place.

16
17 **Q. Are there other provisions in these CSAs that cause you concern?**

18 **A.** In addition to the anti-competitive "Rate Assurance" provision
19 in CSA TN98-2766-00 (TRA Docket #99-00210) and the punitive
20 termination provision as previously discussed, these and other CSAs
21 filed by Bell are discriminatory.

22

1 **Q. Does Tennessee law prohibit discrimination?**

2 A. Yes. Discrimination is addressed in several statutes. For
3 example, Tenn. Code Ann. §65-4-122. Discriminatory charges -
4 Reasonableness of rates - Unreasonable preferences - Penalties
5 provides the following:

6 (a) If **any common carrier** or public
7 service company, directly or indirectly, **by**
8 **any special rate, rebate, drawback**, or
9 **other device**, charges, demands, collects,
10 or receives from any person a **greater** or
11 **less compensation** for any service within
12 this state **than it charges, demands,**
13 **collects, or receives from any other person**
14 **for service of a like kind under**
15 **substantially like circumstances and**
16 **conditions**, and if such common carrier or
17 such other public service company **makes**
18 **any preference between the parties**
19 **aforementioned** such common carrier or
20 other public service company commits
21 **unjust discrimination, which is prohibited**
22 **and declared unlawful.** (Emphasis Added.)

23

24 **Q. Is Bell a common carrier?**

25 A. Yes.

26

27 **Q. Does Bell directly or indirectly, by any special rate, rebate,**
28 **drawback, or other device, charges, demands, collects, or receives**
29 **from any person a greater or less compensation for any service**
30 **within this state than it charges, demands, collects, or receives**

1 from any other person for service of a like kind under
2 substantially like circumstances and conditions?

3 A. Yes. Paragraphs II A, B, C, D, & E, III A of CSA KY98-4958-
4 00 (TRA Docket #99-00244) and paragraphs II A & B of CSA TN 98-
5 2766-00 (TRA Docket #99-00210) provide that service will be
6 furnished to these two customers at a discounted rate, with the amount
7 of the discount being dependent upon the amount of service to which
8 the customer commits to purchase. The level of the service
9 commitment is measured by total revenue collected from the
10 customers. If the actual volume (revenue) during the contract year
11 exceeds the projected volume, the customer is to receive a rebate.

12 As provided in paragraph III A, the customer served under CSA
13 TN98-2766-00 will be billed for services at rates 10% less than the
14 tariffed rates if the customer purchases the contracted level of service.
15 If, however, in accordance with paragraph XIV B, the customer's
16 annual billing equals or exceeds \$6,250,000, the customer will receive
17 a rebate equal to an additional 1%. If the customer's actual purchase
18 equals or exceeds \$6,750,000, the rebate is increased to an additional
19 2% and to an additional 3%, if the actual purchase equals or exceeds
20 \$7,250,000. Bell is providing these customers both a discount and a
21 rebate.
22

1 **Q. Are the same discounts and rebates provided to these two**
2 **customers of the CSAs in this case?**

3 A. No. When the discount and rebate provisions of the two
4 contracts in this proceeding are compared, it is obvious that the
5 amounts being charged, demanded, billed, and collected are lesser for
6 one than the other. For example, the customer served in CSA TN98-
7 2766-00 is required to purchase \$4,750,000 in order to obtain an 8%
8 discount, while the customer served under CSA KY98-4598-00 is
9 required to purchase half the service of \$2,375,000 to obtain the same
10 8% discount. In order to obtain an 11% discount, the customer served
11 under CSA TN98-2766-00 must purchase \$6,250,000 of service, while
12 the customer served under CSA KY98-4598-00 must purchase only
13 \$3,000,000.

14
15 **Q. Is the difference in the amount of the discounts based on a**
16 **difference in the cost?**

17 A. No. The CA previously requested Bell to admit that the
18 difference in the rates charged customers under the approved tariffs
19 and the CSAs was no greater than the difference in the cost of
20 providing the service to the customers served under the CSAs. Bell
21 responded that it could neither admit nor deny because it had not
22 performed the analysis required. Consistent with its response to our

1 discovery request, the cost studies filed by Bell in support of the CSAs
2 in this docket do not reflect customers specific cost, but are the same
3 cost supports that Bell filed in support of its tariffed rates for the
4 services provided under the CSA. When this data is reviewed, it found
5 that many of the services are common to both CSAs, and that the same
6 costs are identified. This again supports the position that the
7 difference in the rates charged under CSA KY98-4958-00 (TRA
8 Docket #99-00244) and CSA TN98-2766-00 (TRA Docket #99-
9 00210) is not based on the costs of providing the services.

10

11 **Q. Are the same discounts and rebates provided to these customers as**
12 **the discounts and rebates provided to other customers, who**
13 **purchase service under CSAs?**

14 A. No. To illustrate that different discounts and rebates are being
15 offered. The following table is provided, which identifies the percent
16 discount provided under the two CSAs that are the specific subject of
17 these dockets as well as discounts provided to customers that are
18 parties to four other CSAs filed by Bell. While each of the CSAs
19 requires the customer to commit to purchase service for a three year
20 period, the amount of service that the customers must agree to
21 purchase in order to qualify for the discounts varies greatly. As I
22 previously explained, the customer served in CSA TN98-2766-00 is

1 required to purchase \$4,750,000 in order to obtain an 8% discount,
2 while the customer served under CSA KY98-4598-00 is required to
3 purchase half the service, \$2,375,000 to obtain the same 8% discount.

4 In order to obtain an 11% discount, the customer served under
5 CSA TN98-2766-00 must purchase \$6,250,000 of service, while the
6 customer served under CSA KY98-4598-00 must purchase only
7 \$3,000,000.

8 This disparity in the amount of revenue required to obtain the
9 discount is also present with CSA TN97-1641-00, which requires the
10 customer to purchase \$5,000,000 of service to obtain a 12% discount,
11 while the customer served under CSA TN98-2766-00 must purchase
12 \$6,500,000.

13 Similarly, the customer that is a party to CSA TN97-5138-00
14 receives a 10.5% discount by committing to purchase only \$1,360,000
15 of service, while the customers under CSAs TN98-2766-00 and
16 KY98-4598-00 must purchase \$5,750,000 and \$2,750,000
17 respectively, in order to obtain 10% discounts.

Other Example CSAs

Discount Provided by CSA	Required Volume under CSA TN98-2766- 00	Required Volume under CSA KY98-4598- 00	Required Volume under CSA TN96-7973- 01	Required Volume under CSA TN96-7961- 02	Required Volume under CSA TN97-1641- 00	Required Volume under CSA TN97-5138- 00	Required Volume under CSA TN96- 7967-03
2.0%							
3.0%							
4.0%			\$104,236				
5.0%				\$284,648			\$63,516
6.0%		\$2,000,000					
7.0%		\$2,250,000					
8.0%	\$4,750,000	\$2,375,000					
9.0%	\$5,250,000	\$2,500,000					
10.0%	\$5,750,000	\$2,750,000					
10.5%						\$1,360,000	
11.0%	\$6,250,000	\$3,000,000					
11.5%						\$1,632,000	
12.0%	\$6,750,000				\$5,000,000		
12.5%						\$1,904,000	
13.0%	\$7,250,000						

Q. Why is it appropriate to compare the discount in these CSAs that are subject to this proceeding with the discounts offered in other CSAs?

A. To determine if CSAs, CSA TN98-2766-00, and CSA KY98-4598-00 are discriminatory, it is not appropriate to simply compare the

1 rates charged the two customers served under these two CSAs. The
2 rates charged in these dockets must be compared to those charged
3 other customers, who are provided service under tariffed rates or under
4 other CSAs. The table, which is provided here, is not an attempt to
5 identify all of the CSAs that provide for discriminatory rates. The
6 comparisons' presented in the table, however, accurately represent the
7 unjust disparities in the rates that exist among the CSAs filed by Bell.
8

9 **Q. Have you made any comparison of the rates charged for specific**
10 **services billed under the CSAs and those for customers billed**
11 **under Bell's General Subscriber Service Tariff rates?**

12 A. Yes. The following table compares the rates charged for some
13 of the services under the provision of the CSAs with the rates for the
14 same service billed at the General Subscriber Service Tariff rates.
15 Again, these are only examples of the disparity and are not intended to
16 be all inclusive. Attachment III,² which was filed with the TRA in
17 support of CSA TN98-2766-00 and identifies the services provided in
18 accordance with that CSA, consists of 17 pages. I have not prepared a
19 schedule that compares the discounted rates charged with the tariffed
20 rates for each service on that listing or for all of the services listed on

² Exhibit RLF-1 filed by BellSouth as an exhibit to Mr. Frame's testimony is a duplicate of Attachment III.

1 similar supporting schedules filed in support of the other CSAs.
2 Instead, I have compared the rates for some of the more familiar
3 services.

4 As shown in this table, the price demanded, charged, and
5 collected from a customer, who purchases one party business line
6 (USOC³ 1FB) service at the tariffed rate in a Group 5 exchange is
7 \$39.70 per month. (Group 5 Exchanges are those exchanges, which
8 have 300,001 -500,000 lines, see BST TN Tariff Section A 3.2.1
9 Eighth Revised Page 1.1) Bell collects \$34.54⁴ per month for this
10 service from the customer billed in accordance with CSA TN98-2766-
11 00. This is a \$5.16 difference. The customer served under KY98-
12 4598-00 is charged \$35.53¹ and the customers served under CSAs
13 TN96-7961-02, TN97-1641-00, and TN97-5138-00 are charged
14 \$37.72, \$34.94, and \$31.87 respectively, for this same one party
15 business line service. This evidence shows an unjust difference in
16 rates for exactly the same service.

³ USOC (Universal Service Ordering Code)

⁴ This is the rate at the maximum discount level provided under the contract.

1 **Q. Are their similar disparities between the rates charged customers**
2 **served under Bell's General Subscriber Service Tariff and those**
3 **served under these CSAs for other services?**

4 **A. Yes. The charges for single business lines in rate group 3 & 4**
5 **exchanges are compared as are the charges for MegaLink ® ISDN,**
6 **MegaLink ®Channel Service, and DID service. In each instance, the**
7 **customers, who are billed the General Subscriber Service Tariff Rates**
8 **pay more than those billed under the CSAs.**

9

10 **Q. Are the same amounts billed for these services under the various**
11 **CSAs?**

12 **A. No The discounts provided under the CSAs vary. Therefore,**
13 **the amount charged for the same services are different under the**
14 **various CSAs.**

15

16

17

18

19

1	Service	USOC	Tariff Rate	Rate CSA TN98-2766-00 ⁵	Rate CSA KY98-4958-00 ¹	Rate CSA TN96-7961-02	Rate CSA TN96-7973-01	Rate CSA TN97-1641-00	Rate CSA TN97-5138-00 ¹
2	Flat Rate Business Line	1 FB Group 5	\$39.70	\$34.54	\$35.33	\$37.72		\$34.94 ⁶	\$31.87 ⁷
3									
4	Flat Rate Business Line	1 FB Group 4	\$39.05	\$33.97	\$34.75				
5									
6	Flat Rate Business Line	1 FB Group 3	\$32.75	\$28.49	\$29.15		\$31.44 ⁸		
7									
8	MegaLink ISDN	PRFS1 (3yr commit)	\$260.00	\$217.50 ⁹		\$247.00	\$240.00		
9									
10	MegaLink Channel Service	VUM 24 (3 yr commit)	\$189.00	\$182.70 ¹⁰	\$168.21				\$165.38
11									
12	DID/AIOD	NDT	\$20.00 ¹¹	\$17.40	\$17.80	\$19.00	\$19.20	\$17.60	\$17.56

⁵ Prices based on the maximum discount provided under the CSA

⁶ Tariff Rate Group 1 \$39.70 X 88%=\$34.94 (100%-12%=88%)

⁷ Discounted rate per workpapers filed with the TRA Staff in support of CSA

⁸ Clarksville is a Class 3 rate schedule wire center. The business rate for a class 3 wire center is \$32.75 (BellSouth Tariff Eighth revised page 1.1 Tariff Section A3 2 1, and Fifteenth revised page 20, Tariff Section A3 7 1) Discount is 4% \$32.75 X 96%=\$31.44.

⁹ The Tariff rates for MegaLink®ISDN service are \$360/ month, Month to Month, \$260/ month with a contract commitment 24 - 48 months, \$250/ month with a contract commitment 49-72 months, \$240 / month with a contract commitment 73 - 96 months (BellSouth Tariff Section B7 5.6 First Revised Page 37 4)While each of these contracts are for 3 years the discount for MegaLink ®ISDN service under CSA TN98-2766-00 appears to have been computed on Attachment III assuming a \$250 / month rate indicating a commitment of at least 49 months. It appears that the discounted rate for TN96-7961-02 was computed based on the \$260/month for a 3 yr commitment. The discounted rate for TN96-7973-01 again appears to have been computed assuming that the \$250/month rate for a 49 to 72 month commitment was used. \$250 discounted 4% is \$240.

¹⁰ The Tariff rates for MegaLink® Channel Service are \$210/month, Month to Month, \$189/ month with a contract commitment 24 - 48 months, \$171/ month with a contract commitment 49-72 months, \$154/ month with a contract commitment 73 - 96 months (BellSouth Tariff Section B7 3 4 First Revised Page 19)Each of these contracts are for 3 years. Therefore it would appear that the discounts would have been computed based on the \$189 tariffed rates. The discounted rate for CSA TN98-2766-00 would be \$164.43 (13% discount) instead of the discounted rate of \$182.70 based on the Month to Month rate of \$210. The result is an actual discount is only 3.4%. (182.70/189=96.6%) [Four MegaLink® Channel were discounted to \$164.43, apparently based on a 3 yr contract commitment.]

The discounted rate for KY98-4958-00 was computed correctly using the \$189 rate for a 24-48 month contract. \$189 discounted at 11% is \$168.21

¹¹ BellSouth Tariff Section A12.7 2 Eighth Revised Page 2

1 **Q. Is the customer billed under CSA TN98-2766-00 provided any**
2 **additional discounts from that specified in the CSA?**

3 A. Yes. For example, Bell's Tariff Section B7.5.6 First Revised
4 Page 37.4 provides that the monthly rate for MegaLink® ISDN service
5 is \$360. If the subscriber commits to take the service for a period of
6 24 to 48 months, the rate is discounted to \$260. (A 27.7% discount.)
7 If the customer commits to take the service for a period of 49 to 72
8 months, the rate is reduced to \$250 and to \$240 with a commitment of
9 from 73 to 96 months. From the price-out filed by Bell with the
10 Authority in support of this CSA, it is apparent that the customer is
11 being given a discount for committing to purchase MegaLink®ISDN
12 for at least four years. The discounted rate shown on Attachment III
13 filed in support of the CSA is \$217.50 per month, which is a 13%
14 discount off of the \$250 tariffed rate charged to a customer that signed
15 a 49 to 72 month commitment. It appears that the service billed in
16 accordance with CSA TN98-2766-00 is receiving a 30.55% discount
17 for committing to continue to purchase the service as provided in the
18 tariff and an additional 10%-13% discount¹² under the CSA for a total
19 discount of 37.5% to 39.6%¹³.

¹² The 13% discount assumes the customer billing reaches the maximum discount level provided under the CSA. The discount at the contract level is 10%.

¹³ At 10% discount level under the CSA the rates would be \$225. ($\$250 \times 90\% = \$225$) [$\$225/\$360 = 62.5\%$, $1 - 62.5\% = 37.5\%$] At 13% discount level under the CSA the rate would be

1 The customers billed under the provisions of CSAs KY98-4958-
2 00, CSA TN96-7961-02, CSA TN97-5138-00, and CSA TN96-7973-
3 01 appear to have also received discounts in accordance with the
4 provision of the Tariffs in addition to the discounts provided in the
5 CSA.

6
7 **Q. Do the tariffs also provide for termination penalties?**

8 A. Yes. The tariffs do have termination provisions. In some
9 instances, when the customer is provided a discount for committing to
10 purchase service over an extended period of time. For example, Bell's
11 Tariff Section B7.5.4 E provides that:

12 A Termination Liability Charge is
13 applicable at the date of termination. The
14 applicable charge is dependent on the
15 contract period subscribed to and will be
16 equal to the number of months remaining in
17 the contract times the monthly rate
18 provided under the contract.

19
20 Similar provisions are included in other tariff sections, where a
21 discounted rate is provided in exchange for customer's commitment to
22 purchase service over an extended period of time.

23
24 **Q. In the event that the customer being billed under the CSA**

\$217.50 (\$250 X 87%=\$217.50) [\$217.50/\$360=60.4%, 1-60.4%=39.6%]

1 transfers the service to a competitor of Bell, which termination
2 penalty would apply?

3 A. Both penalties would apply. Section IX paragraph C of CSA
4 TN98-2766-00 and the first sentence of Section IX paragraph B of
5 CSA KY98-4958-00 provides the following:

6 The application of termination
7 charges pursuant to this Section shall
8 not affect the application of the
9 termination charges pursuant to the
10 tariff or any other agreement
11

12 Q. Mr. Frame, testifying on behalf of Bell, contends that the CSA
13 does not modify the tariffed rates:

14 Q. WHAT RATE OR PRICE DOES
15 BELL SOUTH CHARGE THIS
16 C U S T O M E R F O R
17 T E L E C O M M U N I C A T I O N S
18 S E R V I C E S ?
19

20 A. The rates charged to the customer
21 are those specified in the
22 appropriate tariffs and available
23 to any customer ordering the same
24 services. This CSA does not
25 modify those tariffed rates in any
26 way, but rather provides discounts
27 based on billed revenue from the
28 eligible services identified in the
29 contract. (See Frame Direct
30 Testimony, Page 7, Lines 12-17.)
31

32 Is this statement consistent with the documents that BellSouth has
33 filed in support of its CSAs?

1 A. No. In support of its CSAs, Bell had filed documents that
2 provide the same information as Frame Exhibit RLF-1, which
3 identifies each service subject to the CSA and for **each** such service
4 identifies the following:

- 5 1. The USOC
- 6 2. Service Description
- 7 3. Quantity
- 8 4. **Discounted Rate**
- 9 5. Annual Revenue
- 10 6. Unit Cost
- 11 7. Annual Cost
- 12 8. Annual Contribution
- 13 9. Percent Contribution
- 14 (Emphasis Added.)
- 15

16 **Q. You state that this document identifies the discounted rates for the**
17 **individual service provided under the CSA. Are the tariffed rates**
18 **for the individual service stated on the document?**

19 A. No. The tariffed rates for the services are not identified. The
20 only rates are the individual discounted rates. This document
21 identifies each individual service being discounted, and the discounted
22 rate to be billed under the CSA for each specific service.

23

24 **Q. Does the Frame Exhibit RLF-1 identify CSA rates for one party**
25 **business service in a Group 5 exchange than that charged for a**
26 **Group 4 exchange?**

1 A. Yes. On page 3 of Exhibit RLF-1 four rates are identified for
2 Flat Rate Business line: \$34.54, \$33.97, \$28.49, \$26.80 and \$23.93.

3
4 Q. Are these the tariffed rates for a Flat Rate Business line in the
5 various exchange groups?

6 A. No. These are the discounted rates. The tariffed rates for a 1
7 party business lines for group 5, group 4, group 3, group 2, and group
8 1 exchanges, are \$39.70, \$39.05, \$32.75, \$30.80, and \$27.05,
9 respectively. The tariff rates and the rates discounted at 13% as shown
10 on Mr. Frame's Exhibit RLF-1 are presented in comparative format in
11 the following table.

Service	Tariffed Rate ¹⁴	Tariffed Rate Discounted 13%
1 FB Group5 exchange	\$39 70	\$34 54
1 FB Group4 exchange	\$39.05	\$33.97
1 FB Group3 exchange	\$32.75	\$28.49
1 FB Group2 exchange	\$30.80	\$26.80
1 FB Group1 exchange	\$27.05	\$23.53

12
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19 The filing of the exhibit that compares the revenue from the individual
20 services after a discount with the cost of providing the individual services is

¹⁴ BellSouth Tariff Section A3.2.1, Eighth Revised Page 1 1.

1 not consistent with Mr. Frames position that the individual service rates are
2 not discounted.

3

4 **Q. Are Bell's CSAs evidence of anti-competitive behavior?**

5 A. Yes. Bell's CSAs are evidence of anti-competitive behavior.
6 Tenn. Code Ann §65-5-208. Classification of services - Exempt
7 services - Price floor - Maximum rates for non-basic services states the
8 following:

9 (c) Effective January 1, 1996, an
10 incumbent local exchange telephone
11 company shall adhere to a price floor
12 for its competitive services subject to
13 such determination as the authority
14 shall make pursuant to § 65-5-207.
15 The price floor shall equal the
16 incumbent local exchange telephone
17 company's tariffed rates for essential
18 elements utilized by competing
19 telecommunications service
20 providers plus the total long-run
21 incremental cost of the competitive
22 elements of the service. When shown
23 to be in the public interest, the
24 authority shall exempt a service or
25 group of services provided by an
26 incumbent local exchange telephone
27 company from the requirement of the
28 price floor. **The authority shall, as
29 appropriate, also adopt other rules
30 or issue orders to prohibit
31 cross-subsidization, preferences to
32 competitive services or affiliated
33 entities, predatory pricing, price
34 squeezing, price discrimination,
35 tying arrangements or other
36 anti-competitive practices.**

(Emphasis added.)

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Q. Do the prices for services provided under the CSAs reflect price discrimination?

A. The economic definition of price discrimination is defined as, "the practice of selling the same product at two or more prices where the price differences do not reflect cost differences."¹⁵ The price of service provided to the customers subject to the CSAs is different from the price of the service when provided under tariff rates. In addition, the same services provided under different CSAs are at different prices.

Bell does not contend that the cost of providing the service differs. In fact, the documents that Bell has filed in support of the CSAs, which identifies the cost of the various services, is the same as the cost used to support the tariffed rates. (See Attachment III to the various CSAs and Bell's Exhibit RLF-1 filed with Mr. Frame's testimony.) While the rates are different, the costs of providing the service are the same. Bell is selling the same product at two or more prices, where the price differences do not reflect cost differences. By definition, the rates are discriminatory.

¹⁵ Kaserman, David L. and Mayo, John W., *The Economics of Antitrust and Regulation*, Orlando. The Dryden Press, 1995

1 **Q. Are there tying arrangements included within the CSAs?**

2 A. While there is no specific wording in the CSA state there are
3 tying arrangements, Mr. Frame has entered testimony that; "...the
4 discount on billed revenue is determined by the specific mix for each
5 customer . . . " (Frame Direct Testimony, Page 14, Lines 13-14.) The
6 discounts are therefore apparently specifically tied to the combination
7 of services purchased by the customer. This would indicate, that in
8 order to obtain a discount on one service, a customer may have to
9 purchase another specific service or a specific group of other services.

10

11 **Q. Do the CSA's include other anti-competitive practices?**

12 A. Yes. As Dr. Brown will provide in more detail, the CSAs
13 provide that Bell will react to the same economic event differently
14 based on the underlying cause of the event. If the event is caused by a
15 competitor, Bell's actions will be different from its actions if the event
16 has other causes. For example, in Paragraph X of CSA TN98-2766-
17 00, the following language is found:

18 In the event of a Business Change as
19 defined herein which significantly
20 reduces the volume of network
21 services required by____, and those
22 subsidiaries listed in Appendix III,
23 with the result that _____ is unable
24 to meet its Minimum Annual
25 Revenue Base under this Agreement
26 (notwithstanding _____ best efforts
27 to avoid such a shortfall), BellSouth

1 and _____ shall cooperate in efforts
2 to develop a mutually agreeable
3 alternative that will **reduce** _____
4 **liability** under the Minimum Annual
5 Revenue Base, the Annual Revenue
6 Base and the Discount levels which
7 satisfies the concerns of both parties
8 and complies with all applicable
9 legal and regulatory requirements.
10 Such alternative will reduce the
11 Customer's Annual Revenue Base,
12 Minimum Annual Revenue Base and
13 the corresponding Discount levels to
14 the extent of any shortfall resulting
15 from a Business Change as defined
16 herein. **This provision shall not**
17 **apply to a change resulting from a**
18 **decision by _____ to transfer**
19 **portions of its traffic or projected**
20 **growth to providers other than**
21 **BellSouth.** (Emphasis added.)
22

23 Similar language is found in CSA KY98-4958-00.

24

25 **Q. How does this language indicate that Bell will react differently to**
26 **the same economic event dependent on the underlying cause?**

27 A. As stated in the previously quoted paragraph, Bell will work
28 with the customer and will reduce or adjust the minimum annual
29 revenue base and the related discount level if the decline is the result
30 of a business change. However, if the decline in demand is caused by
31 the customer electing to transfer part of its telecommunications
32 operations to a competitor of Bell, no such reduction will be made.
33 From Bell's perspective the end result of a decline in the level of

1 service purchased by the customer is the same. Bell will receive less
2 revenue. In accordance with the provision in the CSAs, Bell's actions
3 in response to such a decline will be different depending upon the
4 cause in the revenue decline and will be punitive toward the customer
5 if the decline is caused by a competitor. Dr. Brown will provide a
6 more thorough discussion on this matter.

7
8 **Q. In his testimony Mr. Frame states:**

9
10 Although I am not a lawyer, the
11 discount on billed revenue is
12 determined by specific service mix
13 for each customer as described
14 above. Because these customers
15 have a different product mix, they
16 are not similarly situated such that
17 BellSouth can lawfully offer the
18 customer different discounts and
19 revenue commitments. (See Frame
20 Direct Testimony, Page 14, Lines
21 13-16.)
22

23 **Do you agree with his conclusion that because two customers**
24 **subscribe to different groups of services they are not similarly**
25 **situated?**

26 **A.** No. If you accept his definition of similarly situated, the idea of
27 uniform tariffed rates for business services is useless. Using his
28 argument as justification, Bell could charge a business customer, who
29 subscribes to only a single business line, more for that line than it
30 would charge the customer's business neighbor for a single business

1 line, who also purchases a call forwarding. Since the customers would
2 have a different product mix, Mr. Frame's definition would allow Bell
3 to find that the two business customers would not be similarly situated.

4 Additionally, if a business customer had an office with three
5 business lines with caller ID on each line and another customer
6 occupying an adjacent office in the same building has four business
7 lines and call waiting on each line, Mr. Frame's definition would find
8 these customers are not similarly situated.

9 If adopted, Mr. Frame's definition of similarly situated could
10 virtually result in each customer being placed in a separate one
11 customer class.

12

13 **Q. Is there some relationship between the mix of services being**
14 **provided and the amount of discounts provided under the**
15 **individual CSAs?**

16 **A.** The revenue contribution is largely a matter of the mix of
17 services being provided. Using the revenue and cost data filed as
18 Bell's Exhibit RLF-1 and the corresponding schedules filed with other
19 CSAs, I have compared the discounts awarded with the weighted per
20 cent contribution before and after the discount for various CSAs. The
21 results as shown on Exhibit RTB-4 do not reflect a consistent pattern.
22 It does appear that the customers, whose mix of services produces the

1 lesser contributions before discounts, are the customers who are also
2 receiving the larger discounts. For example, the services discounted
3 under TN98-2766-00 produce a contribution of 127% before the rates
4 were discounted by 13%. Similarly, the services for CSA KY98-4958-
5 00 resulted in a contribution of 137% before the discounts of 11%-
6 13%. In contrast, the contributions from the services being
7 discounted under CSA TN97-7973-01 produce a contribution of 999%
8 before the 4% discount, while the services under CSA TN97-7961-01
9 produce a contribution of 540% before the 5% discount.

10

11 **Q. Did you compute the "contribution" consistent with the**
12 **computation on Bell's Exhibit RLF-1?**

13 **A. Yes.**

14

15 **Q. Are any of the services discounted under the CSA TN98-2766-00**
16 **and CSA KY98-4958-00 being discounted below the cost of**
17 **providing the service as identified by Bell?**

18 **A. Yes.** On Bell Exhibit RLF-1, there are 80 instances of service
19 being discounted below the cost as identified by Bell for CSA TN98-
20 2766-00 and 15 instances of service being discounted below cost under
21 CSA KY98-4958-00. The USOCs and the resulting negative
22 contributions are presented on Exhibit RTB-5. The service

1 descriptions, quantities, and cost of these are presented on Bell Exhibit

2 RLF-1.

3

4 **Q. Does this conclude your testimony?**

5 **A.** Yes, it does.

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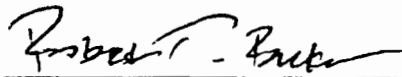
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BEFORE THE TENNESSEE REGULATORY AUTHORITY
AT NASHVILLE, TENNESSEE

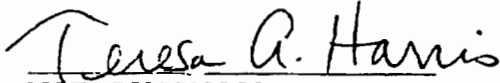
IN RE: PROCEEDING FOR THE)
PURPOSE OF ADDRESSING)
COMPETITIVE EFFECTS OF CONTRACT) DOCKET NO. 98-00559
SERVICE ARRANGEMENTS FILED BY)
BELLSOUTH TELECOMMUNICATIONS,)
INC IN TENNESSEE.)
)

AFFIDAVIT

I, Robert T. Buckner, Senior Regulatory Analyst, for the Consumer Advocate Division of the Attorney General's Office, hereby certify that the attached Rebuttal Testimony represents my opinion in the above referenced case and the opinion of the Consumer Advocate Division



Sworn to and subscribed before me
this 30th day of July, 1999.


NOTARY PUBLIC

My commission expires on: Jan. 25, 2003

Before the

TENNESSEE REGULATORY AUTHORITY

IN RE: PROCEEDING FOR THE PURPOSE OF ADDRESSING COMPETITIVE EFFECTS
OF CONTRACT SERVICE ARRANGEMENTS FILED BY BELL SOUTH
TELECOMMUNICATIONS, INC. IN TENNESSEE.
DOCKET NO. 98-00559

EXHIBITS
of
ROBERT T. BUCKNER

July 30, 1999

Robert T. Buckner (Terry)

Senior Regulatory Analyst

Office of the Attorney General for the State of Tennessee

Consumer Advocate Division

Additional Education Background:

Micro-Computer Training, University of Wisconsin, Madison

Cost Separations School, United States Telephone Association, San Diego

Rate Case School, Arthur Andersen LLP, Chicago

Telecommunications Conference, University of Georgia, Athens

NARUC Conference, Michigan State University, Lansing

Management Training Seminar, Vanderbilt University

Interstate Access Settlements, National Exchange Carrier Association

SEARUC Conferences, Birmingham, AL. and Charleston, S.C.

Telephone Plant Accounting Program, Ernst and Young LLP, Atlanta

Before the

TENNESSEE REGULATORY AUTHORITY

In Re: Nashville Gas Company

Docket No. 96-00977

DIRECT TESTIMONY

of

R. Terry Buckner

October 28, 1996

1 Q. Please state your name for the record.

2 A. My name is R. Terry Buckner.

3

4 Q. By whom are you employed and what is your position?

5 A. I am employed by the Consumer Advocate Division ("CA") in the
6 State of Tennessee Attorney General's Office as a Senior Regulatory
7 Analyst.

8

9 Q. How long have you been in the utility industry related
10 employment?

11 A. Approximately nineteen years. Before my employment with the
12 Attorney General, I was employed with the Tennessee Public Service
13 Commission ("Commission") as a financial analyst for approximately
14 six years. My responsibilities included testifying before the
15 Commission as to the appropriate cost of service for public utilities
16 operating in Tennessee. Prior to my employment with the
17 Commission, I was employed by Telephone and Data Systems
18 ("TDS") for eight years and the First Utility District of Knox County
19 for three years.

20

21

22

1 Q. What is your educational background and what degrees do you
2 hold?

3 A. I have a Bachelors degree in Business Administration from the
4 University of Tennessee, Knoxville with a major in Accounting. I am
5 also a Tennessee Certified Public Accountant and a member of the
6 American Institute of Certified Public Accountants.

7

8 Q. Would you briefly describe your responsibilities as a Senior
9 Regulatory Analyst since your employment with the CA?

10 A. I prepared testimony and exhibits as an employee with the
11 Commission before becoming a member of the CA. My
12 responsibilities have not been altered significantly since my
13 employment change.

14

15 Q. What is the purpose of your testimony?

16 A. The purpose of my testimony is to present information to the
17 Tennessee Regulatory Authority ("TRA") on the appropriate
18 operating expenses other than depreciation for the attrition year
19 November 1, 1996 to October 31, 1997 for Nashville Gas Company
20 ("Company"). Additionally, I will present the CA's calculation of
21 other taxes and income taxes for the attrition year.

22

1 **Q. What is an attrition year?**

2 A. An attrition year is a synonym for a forecasted or projected 12 month
3 period.
4

5 **Q. Please identify the issues regarding operation and maintenance**
6 **expenses for Nashville Gas Company in Docket #96-00977?**

7 A. The CA Exhibit, Schedule 8 indicates the differences in the CA and
8 the Company forecasted expenses for the twelve months ended
9 October 31, 1997. The total operation and maintenance expenses
10 projected by the CA are \$7,838,394 lower than the operation and
11 maintenance expenses projected by the Company for the attrition
12 year. The differences that make up this \$7.8 million include the
13 following just and reasonable exclusions, reductions and increases:
14 (1) the CA has excluded approximately \$1.6 million in excessive net
15 expense growth and inappropriate expenses for setting rates for the
16 ratepayer; (2) a \$1.9 million reduction in forecasted expenses
17 associated with sales promotion and advertising; (3) a \$1.3 million
18 reduction in forecasted allocated net pension expense; (4) a \$2
19 million reduction in allocated service company charges; (5) a \$.6
20 million reduction in the Company's Long Term Incentive Pay plan;
21 and (6) a \$.4 million increase in the amount of General and
22 Administrative expenses which are capitalized and charged to non-

1 regulated operations.

2

3 **Q. Please explain the just and reasonable \$1.6 million exclusion due**
4 **to forecasted expense growth differences of the Company and the**
5 **CA for the attrition year.**

6 A. The primary reason for the exclusion is the difference in forecasted
7 expense growth caused by the Company's use of an excessive
8 inflation factor and unsubstantiated growth rates for various
9 expenses. The CA used an annual customer growth of 5.1% and an
10 annual inflation rate of 2.39% which generates a compound growth
11 rate of 12.66% through the attrition year ended October 31, 1997.
12 The information used to determine the CA's forecasted inflation
13 factor was taken from the publication "Blue Chip Indicators."¹ The
14 percentage increase of the attrition year Gross Domestic Product
15 ("GDP") deflator over the test year GDP deflator, equates to an
16 annual inflation rate of 2.39%. The annual inflation rate of 2.39%
17 generates a compounded growth rate of 4.01%. The compound
18 growth rate of 12.66% (customer growth plus inflation growth
19 compounded) was applied to most of the CA's test year ended
20 February 1996 expenses excluding salaries and wages.

¹The Blue Chip Economic Indicators publication is a consensus summary of fifty top economists in the United States.

1 Q. How does the 12.66% growth rate compare with the Company's
2 experience in recent years?

3 The CA's compounded growth rate is somewhat greater than the
4 actual annual expense growth of the Company over the last thirty-
5 three months ended April 1996 of 3.735%, which was a compounded
6 growth rate of 10.61%. In contrast, the Company used an unjust and
7 unreasonable projected 16.10% compounded growth rate for a
8 twenty-two month period ending October 31, 1997 for certain
9 expense items based on an annual inflation rate of 3.2% and an
10 annual customer growth rate of 5.1%. The Company's overall
11 operation and maintenance expenses, however, are projected to grow
12 21.31% for the attrition year over actual 1995.

13 One difference from the CA projection is that, instead of using the
14 GDP deflator, the Company used the CPI inflation indicator from the
15 Economic Forecasting Center of Georgia State University for its
16 speculative annual inflation rate. The GDP deflator, which was used
17 by the CA, has been traditionally used by the Commission and TRA
18 staff, not the CPI inflation factor proposed by the Company. Current
19 evidence supports the CA's projected annual inflation rate of 2.39%.
20 The difference in growth rates results in a lower expense amount of
21 approximately \$1.1 million for expenses excluding salaries and
22 wages.

1 This amount, also, recognizes an error by the Company in their
2 growth of Injuries and Damages of approximately \$.4 million. The
3 Company miscalculated their projected amount of Injuries and
4 Damages for the attrition year. Additionally, the CA has deducted
5 \$145,983 of non-recurring expenses recorded during the test year
6 ended February 28, 1996.

7 Finally, the CA has used actual employees and wage rates as of
8 August 31, 1996 grown during the attrition year. The Company used
9 outdated 1995 actual employee levels. This difference results in
10 \$307,473 in lower salaries and wages than the Company's salary and
11 wage projection for the attrition year.

12
13 **Q. Please explain the forecasted difference in advertising and sales**
14 **promotion expense amounting to \$1.9 million.**

15 A. The CA requested that the Company provide a detailed analysis of the
16 1995 projected advertising and sales promotion expenses in the
17 following categories: Institutional, Conservation, Promotional,
18 Informational and non-regulated Promotional for the sale of
19 appliances. The Company's response was such that amounts
20 projected for each advertising category cannot be determined. Since
21 the Company declined to furnish the breakdown of advertising
22 expenditures, it is not clear if the amount includes advertising that

1 would be included in the rates charged ratepayers. Without such
2 information, there is no possible way to determine if the advertising
3 expense budgeted by the Company is appropriate for setting rates. As
4 with any other expense, the Company is obligated to prove that costs
5 that are recovered in rates are just and reasonable. Since the
6 information is not available, the CA has excluded approximately \$1.9
7 million (\$.8 million in salaries and wages) in advertising and sales
8 promotion expenses. Since the Company failed to support the cost of
9 advertising expense, we have included an amount based on a standard
10 adopted by the Commission. Further, regarding advertising expenses
11 Commission rule 1220-4-5- 45 (Attachment) states, "A utility may
12 not recover from any person other than their shareholders (or other
13 owners) any direct or indirect expenditure for promotional or political
14 advertising. The term 'promotional advertising' means any
15 advertising for the purpose of encouraging any person to select or use
16 gas service or additional gas service or the selection or installation of
17 any appliance or equipment designed to use gas service." We have
18 included an amount equal to .5% of revenues. The CA has applied
19 this threshold to all NARUC Uniform System of Accounts ("USOA")
20 accounts which include advertising and sales promotion expenditures.
21 This standard criteria was set in Commission Docket U-85-7355 for
22 Nashville Gas Company and is consistent with positions taken by the

1 Commission staff in subsequent gas company rate cases, i.e. United
2 Cities Gas Company, Docket #92-02987. Mr. Hal Novak, of the TRA
3 staff and formerly of the Commission staff, recommended in Docket
4 #92-02987, "that the Commission approve its interpretation of the
5 Commission policy by disallowing all advertising and sales
6 promotion expenses that are in excess of .5% of operating revenues."
7 Again, in September 1994, the Commission staff cited the Company
8 in a compliance audit report that "The Company is understating the
9 monthly rate of return that it reports to the Commission" due to
10 excessive advertising expenses which are not in compliance with the
11 Commission Orders. Our case is consistent with the standard as
12 applied in the past.

13
14 **Q. Please explain the forecasted difference in net pension expense of**
15 **\$1.3 million.**

16 A. The Company's pension plan is fully funded and no funding is
17 anticipated during the attrition year based on the Company's 1995
18 annual report to their stockholders. Additionally, Company personnel
19 indicated through CA verbal inquiries that there would be no funding
20 during the attrition year. The CA has not recognized any pension
21 expense for the attrition year which is consistent with Federal Income
22 Tax treatment. The Company, however, has unjustly and

unreasonably included approximately \$1.3 million of net pension expense in its filing. The Company's recognition of a \$1.3 million pension expense in fact causes the ratepayer to pay an expense that has already been paid. Finally, the Commission historically recognized only the actual contributions to the pension plan in the cost of service for setting rates for both telephone and other utilities.

Please note the following examples in cases:

Tennessee-American Water Company	U-87-07534	Mar. 1988
Tennessee-American Water Company	89-15388	May 1990
Tennessee-American Water Company	91-05224	Dec. 1991
Tennessee-American Water Company	96-00959	Oct. 1996
Chattanooga Gas Company	U-87-07531	Apr. 1989
Chattanooga Gas Company	91-03765	Apr. 1991
Nashville Gas Company	U-87-07499	Nov. 1987
Nashville Gas Company	89-10491	Nov. 1989
Nashville Gas Company	91-02636	Nov. 1991
Nashville Gas Company	94-01054	Oct. 1994
United Cities Gas Company	89-10017	Nov. 1989
United Cities Gas Company	92-02987	Sep. 1992
Kingsport Power Company	90-05735	Dec. 1990
Kingsport Power Company	92-04425	Nov. 1992
Tellico Telephone Company	91-09061	Feb. 1992
Tennessee Telephone Company	91-09062	Feb. 1992
Concord Telephone Company	91-09063	Feb. 1992

In summary, the Company should not be allowed to recover the \$1.3 million a second time.

1 Q. Please explain the forecasted difference in allocated service
2 company charges of \$2 million.

3 A. The CA has allocated the general and administrative expenses
4 (service company charges) of Piedmont Natural Gas Company
5 ("PNG") based upon the ratio of the number of Nashville Gas
6 customers at the end of 1995 to the total PNG customers. This results
7 in 22.16% of PNG's customers being in Tennessee, therefore,
8 Nashville Gas is allocated 22.16% of PNG's general and
9 administrative expenses. The Company, however, has allocated these
10 expenses based upon the ratio of net plant in Tennessee to PNG's
11 total net plant in service. This method is inappropriate and
12 inconsistent with allocation methods historically used and further, is
13 unjust and unreasonable. Historically, audit procedures have
14 allocated operating expenses based on the number of customers in
15 Tennessee to the total number of customers in all states in which
16 PNG operates. This method was recommended by the Commission
17 Staff in Docket #92-02987. The Company's method for no real
18 reason ignores the distinctive nature of the plant assets in each state
19 as to age, cost and the rate at which the plant is being depreciated and
20 should be rejected. The CA's method of allocation is approximately
21 \$.6 million lower than the Company's allocation amount.

22 Additionally, the Company has included a projection of \$2.4 million

1 in salaries and wages allocated from PNG to Tennessee customers.
2 This amount is \$1.6 million higher than the 1995 amount and \$1.5
3 million higher than the test year ended February 1996, a 200%
4 increase from the test year. Although we requested all supporting
5 workpapers, the Company provided no support for the reasonableness
6 and accuracy of this 200% increase which is unjust and unreasonable.
7 There is no evidence that any change in the Company's operations
8 warrant a \$1.4 million increase for the attrition year. The Company's
9 projection should be rejected.

10

11 **Q. Please explain the forecasted difference in Long-Term Incentive**
12 **Pay plan of \$.6 million.**

13 A. The Company has included \$.6 million in Long-Term Incentive Pay
14 ("LTIP") during the attrition year. The Company has defined the
15 LTIP as:

16 "a shareholder-approved Executive Long-Term
17 Incentive Plan for the purpose of promoting the
18 interests of the Company by attracting and
19 retaining in its employment persons of outstanding
20 ability....provides executives and other key
21 employees of the Company greater incentive to
22 make material contributions to the success of the
23 Company by granting them incentive
24 compensation conditioned upon the corporate
25 achievement of financial and other performance
26 objectives."
27

1 Thus, the Company rewards employees if the Company
2 overearns. The Company has defined the performance objective "as
3 being a 5% compounded, average, annual increase in net, real
4 (corrected for inflation) after-tax earnings.... Thus, the targets for
5 the periods 1987 through 1991 and 1989 through 1994 were each
6 established as being a 27.6% (5% per year, compounded) increase in
7 net after-tax earnings." After review of the Company's LTIP, the CA
8 recommends exclusion of this expenditure due to the following: (1)
9 The LTIP is based principally on earnings growth. In fact, the plan
10 encourages the executives to seek earnings growth through rate
11 increases such as this one in order to produce growth in earnings
12 instead of performance gains or improved service. In other words
13 increasing rates to the ratepayers for LTIP expenses results in
14 increased earnings, which in turn increases LTIP in the future, and
15 which also increases revenue requirements from the ratepayers in the
16 future. This circular incentive program rewards the Company for
17 increasing rates and **harms** customers; (2) All LTIP employees
18 receive the compensation regardless of the individual employee's
19 performance; and (3) There is no measurable benefit to the
20 ratepayers.

1 Q. Have other regulatory commissions rejected the expense resulting
2 from such incentive plans?

3 Yes, earlier this year the Washington Utilities and Transportation
4 Commission ("WUTC") disallowed incentive pay with the following
5 statement²:

6 "Plans which do not tie payments to goals that
7 clearly and directly benefit ratepayers will face
8 disallowance in future proceedings. (Emphasis
9 added.)

10
11 Additionally, the WUTC commented,

12 "....there is a potential tension between quality and
13 earnings. A firm can concentrate on financial
14 elements so heavily that it can lose sight of the
15 importance of providing customer service. In a
16 public utility service, where many customers have
17 no reasonably substitutable alternatives, the
18 Commission must substitute for the competitive
19 market in assuring that customer service remains a
20 priority to the business. Financial goals are at best
21 a very crude way to measure specific efficiencies
22 that employees can accomplish." (Emphasis
23 added)
24

25 Finally, in 1995 the South Carolina Public Service Commission staff
26 excluded over \$.3 million of Piedmont LTIP³ (Attachment). In fact,
27 in that case both the South Carolina Commission and the Company

²WUTC v. U S WEST Communications, Docket No. UT-950200

³ In RE. Piedmont Natural Gas Company, Inc. Docket No. 95-715-G, Accounting Exhibit A-1, Line No. 13.

1 had excluded LTIP amounts in the projected cost of service
2 schedules.

3
4 **Q. Please explain the forecasted difference of General and**
5 **Administrative expenses transferred for capitalization and to**
6 **non-regulated operations in the amount of \$.4 million.**

7 The Company has made an error in their calculation of General and
8 Administrative expenses to be transferred for capitalization and to
9 non-regulated operations in the amount of \$.4 million for the attrition
10 year. This error was noted in detail on pages 21-22 of the TRA
11 staff's compliance audit of October 14, 1996 (Attachment). Further,
12 the Company was cited by the Commission staff for this same error in
13 a previous compliance audit of September 1994. The Company, as of
14 this date, has failed to correct the error. The Company agreed with
15 the TRA staff finding and has stated that it would implement the
16 change at the beginning of the attrition year, November 1, 1996.

17
18 **Q. Please identify the differences regarding other taxes and income**
19 **taxes for Nashville Gas Company in Docket #96-00977.**

20 A. The CA Exhibit, Schedule 9 indicates the differences in the
21 forecasted amounts between the CA and the Company. The other
22 taxes projected by the CA are \$.2 million lower than the tax amounts

1 projected by the Company for the attrition year. This \$.2 million
2 difference is due to lower payroll taxes.

3
4 **Q. Please explain why the CA forecasted difference of approximately**
5 **\$.2 million in payroll taxes .**

6 A. \$.163 million of the \$.2 million Company overstatement is associated
7 with the unsubstantiated allocation of salaries and wages from PNG
8 (See p.10-11). The residual \$.037 million is half due to the Company
9 including the Company's portion of payroll tax on the personal use of
10 the Company cars. The other half is attributable to an overstated
11 salary and wage calculation by the Company as discussed previously
12 (See p.6).

13
14 **Q. Please explain the forecasted difference in income taxes.**

15 A. The \$1.9 million difference in the CA and Company's income taxes
16 is due to lower operating expenses projected by the CA (discussed on
17 P. 3) and the difference in capital structure, specifically the cost of
18 debt or interest expense (See testimony of Dr. Steve Brown).

19
20 **Q. Does this conclude your testimony?**

21 A. Yes, it does.

22

STATE OF TENNESSEE

Office of the Attorney General



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September 19, 1997

Mr. David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243-0505

Re: Petition of Chattanooga Gas Company to Place into Effect a Revised Natural Gas
Tariff
Docket No. 97-00982

Dear Mr. Waddell

I have enclosed an original and thirteen copies of Direct Testimony of Consumer Advocate Division witness Robert T. Buckner, Senior Regulatory Analyst in the above referenced matter. Copies are being furnished to counsel of record for interested parties.

Sincerely,

L. Vincent Williams
Consumer Advocate

c Counsel of record

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Before the

TENNESSEE REGULATORY AUTHORITY

IN RE: PETITION OF CHATTANOOGA GAS COMPANY TO PLACE INTO
EFFECT A REVISED NATURAL GAS TARIFF
DOCKET NO. 97-00982

DIRECT TESTIMONY
of
ROBERT T. BUCKNER

September 19, 1997

1 Q. Please state your name for the record.

2 A. My name is Robert T Buckner ("Terry").

3

4 Q. By whom are you employed and what is your position?

5 A. I am employed by the Consumer Advocate Division ("CA") in the
6 State of Tennessee Attorney General's Office as a Senior Regulatory
7 Analyst.

8

9 Q. How long have you been employed in the utility industry?

10 A. Approximately twenty years. Before my employment with the
11 Attorney General, I was employed with the Tennessee Public Service
12 Commission ("Commission") as a financial analyst for approximately
13 six years. Prior to my employment with the Commission, I was
14 employed by Telephone and Data Systems ("TDS") for eight years
15 and the First Utility District of Knox County for three years.

16

17 Q. What is your educational background and what degrees do you
18 hold?

19 A. I have a Bachelors degree in Business Administration from the
20 University of Tennessee, Knoxville with a major in Accounting. I am
21 also a Tennessee Certified Public Accountant and a member of the
22 American Institute of Certified Public Accountants.

1 Q. Would you briefly describe your responsibilities as a Regulatory
2 Analyst since your employment with the CA?

3 A. I prepared testimony and exhibits as an employee with the
4 Commission before becoming a member of the CA. My
5 responsibilities have not changed significantly since becoming
6 employed with the CA.

7
8 Q. What is the purpose of your testimony before the Tennessee
9 Regulatory Authority ("TRA")?

10 A. The purpose of my testimony is to present the CA's recommended
11 revenue requirement for Docket #97-00982 for Chattanooga Gas
12 Company ("Company"). The CA is recommending a rate reduction
13 of \$1.393 million. A summary of the revenue requirement issues is
14 found in Schedule A of my exhibit. Mr. Dan McCormac will present
15 direct testimony regarding the forecast of revenues. Mr. Archie
16 Hickerson, Director of the CA staff will present direct testimony and
17 exhibits regarding the Company's proposed acquisition adjustment.
18 Dr. Stephen Brown will present direct testimony and exhibits as to
19 the just and reasonable cost of equity. Additionally, I will present my
20 opinion on behalf of the CA as to the appropriate operating expenses
21 for the attrition year October 1, 1997 to September 30, 1998 for the
22 Company. Also, I will present my opinion as to the appropriate

1 calculation of other taxes, income taxes, rate base and depreciation
2 expense for the attrition year.

3

4 **Q. Please identify the issues regarding operating expenses for**
5 **Chattanooga Gas Company in Docket #97-00982?**

6 A. The CA Exhibit, Schedule 10 indicates the differences in the
7 forecasted amounts between the CA and the Company. The operating
8 expenses projected by the CA are \$2.239 million lower than the
9 operating expenses projected by the Company for the attrition year.
10 The issues regarding this \$2.239 million include the following: (1)
11 the CA has excluded \$1.497 million in excessive expense growth due
12 to the allocation of charges from the Company's corporate parent,
13 Atlanta Gas Light ("AGL"); (2) a reduction of \$.227 million in
14 forecasted expenses associated with promotional advertising; (3) a
15 \$.219 million reduction in projected uncollectible expense; (4) a
16 reduction of \$.192 million in expenses primarily due to excessive
17 growth rates; and (5) \$.142 million in rate case expense and
18 miscellaneous income deductions. (This includes \$.038 million of
19 miscellaneous income deductions per CA Exhibit, Schedule 8, Line
20 10). Additionally, a reconciliation of all revenue requirement
21 differences between the CA and the Company is provided in Buckner
22 Exhibit, Schedule A.

1 Q. Please explain your opinion as to the forecasted difference of
2 \$1.497 million in forecasted allocation of AGL expenses of the
3 Company and the CA for the attrition year.

4 A AGL performs most of the management and financial operations of
5 the Company. AGL performs these same operations for its customers
6 in Georgia. As of June 30, 1997, AGL serves nearly 1.37 million
7 customers in Georgia and just over 53,000 in Tennessee or 3.73% of
8 AGL's total customers. Since AGL personnel perform the same
9 operations for both states, their costs are allocated between the two
10 jurisdictions. The Company has included \$5.227 million of allocated
11 operating expenses from AGL in its forecast for the attrition year.
12 This amount is 5.13% of AGL's forecasted total of \$102 million in
13 expenses subject to allocation and is disproportionate to the number
14 of customers in Chattanooga. In my opinion, the TRA should reject
15 the Company's expense allocation amount because it simply seeks to
16 impose the highest possible costs on Chattanooga consumers instead
17 of just and reasonable costs. The CA has included in its forecast
18 \$3.730 million of allocated operating expenses from AGL, resulting
19 in a difference of \$1.497 million. The total difference in allocation is
20 \$1.497 million in the following three areas: (1) \$1.253 million in
21 allocation based on the current number of customers of the Company
22 to total AGL; (2) \$.151 million in excessive rate of return on net

1 investment; and (3) \$.093 million of allocated AGL expenses that
2 should be charged to non-utility operations rather than regulated
3 ratepayers.

4 First, in my opinion, a change is required as to the result from the
5 allocation methodology proposed by the Company to one based on
6 the percentage of Company customers to the total number of
7 customers served by AGL (3.73%). My opinion is based on several
8 criteria.

9 (A) Financial: AGL's proposed forecast of charges allocated to the
10 Company is nearly 300% higher than the 1996 amount (an increase of
11 \$3.908 million). This increase causes results that are not logical.
12 According to the Company's accounting records, the new allocation
13 methodology was implemented October 1, 1996. While the
14 theoretical multi-component allocation methodology proposed by the
15 Company seems reasonable, the practical end result of the
16 methodology is not reasonable to the ratepayer. Mr. James E. Kissel,
17 who filed direct testimony on behalf of the Company, explains the
18 allocation methodology change. In his testimony, he states the
19 following:

20 "Chattanooga Gas Company is expected to see an
21 increase of approximately \$2.3 million in the total
22 amount being allocated versus the estimated amount to
23 be allocated using the prior method....The new
24 methodology allocates 3.7% of the central services costs

1 to Chattanooga Gas Company "

2
3 As previously mentioned, the Company has forecasted a \$3.908
4 million increase over fiscal year end 1996 (New allocation
5 methodology over old allocation methodology). Also in contrast,
6 AGL forecasts 5.13% of the total costs subject to allocation to be
7 charged to Chattanooga. Mr. Kissel did not testify to the validity of
8 the Company's forecasted allocation amount, nor is there any
9 assurance that AGL is following Mr. Kissel's recommended
10 allocation methodology with precision.

11 Further, as an offset, the Company has reduced its local employee
12 level from an average of 127 in 1996 to an average of 91 for year-to-
13 date May 1997. As a result, the Company realized \$2.267 million in
14 personnel related cost savings. Despite the lower number of
15 employees, the Company's forecast of operations and maintenance
16 expenses does not reflect a decline in expense for the attrition year,
17 but is unjustifiably 15% higher than fiscal year ended September 30,
18 1996 (See Buckner Exhibit, Schedule B). Additionally, the 1996
19 amount is abnormally high because it includes \$2.8 million of one-
20 time employee severance expenses for the Company's restructuring.
21 Further, AGL's 1996 annual report to its shareholders reports that,
22 "Fiscal 1996 was a record earnings year for us." AGL is merely
23 shifting costs previously charged to their Georgia operations to their

1 Tennessee operations. If a rate increase is granted from this issue, the
2 net result is an increase in profit for AGL.

3 (B) Regulatory: In my opinion, the CA's recommended
4 methodology is consistent with the findings of the preliminary draft
5 of the TRA staff compliance audit dated July 29, 1997. It is standard
6 practice for the operating utility companies regulated by the TRA to
7 apply a single percentage allocation formula when allocating
8 corporate charges. A single component allocation eliminates the
9 potential for recovering over or under 100% of its allocated common
10 costs. Also, this practice offers consistent treatment of costs in all
11 jurisdictions, thereby eliminating the potential for cost manipulation
12 between entities by AGL management. The use of a multi-
13 component allocation method is problematic. For example, while
14 using the multi-component method, the actual fiscal year-to-date May
15 1997 charges from AGL to the Company are 4.36% of the total
16 subject to allocation and not AGL's forecast of 5.13%. If the year-to-
17 date factor of 4.36% is applied to AGL's forecasted \$102 million
18 subject to allocation, then the allocated expense is \$.780 million in
19 lower expenses. Also, AGL has reduced its level of employees by
20 over 70 since year end December 31, 1996. Consequently, if the
21 TRA approves the Company's proposed allocated amount for the
22 attrition year, the Company will over recover costs using its current

1 allocation methodology. When the single allocation percent of 3.73%
2 based on number of customers is applied, the allocated charges from
3 AGL are lowered by \$1 253 million or an additional \$ 473 million in
4 lower allocated expenses.

5 Finally, if either the Georgia and the Tennessee regulatory agencies
6 set rates using other than rate base regulation, i.e. incentive
7 regulation, then a temptation exists for the Company to maximize
8 costs in one jurisdiction over another.

9 (C) Practicality: The use of a single allocation component makes a
10 cleaner trail to audit and to verify the accuracy of the charges
11 allocated to both Chattanooga and Georgia customers. A regulatory
12 agency usually has limited time and resources to validate the financial
13 records of the Company. The Company's external auditors rarely, if
14 ever, certify the accuracy of charges between jurisdictions, but
15 usually examine only the Company's operations in total.
16 Consequently, the Company's use of a multi-component allocation
17 method makes the regulator's audit exponentially more difficult. If
18 the multi-components change from month to month, then the
19 regulator is forced to examine every employee's record of time, every
20 paid invoice and every financial accounting change for its veracity.
21 The use of a multi-component allocation method significantly
22 improves the regulator's oversight abilities.

1 (D) Equity By using a single component allocation method, every
2 customer bears equally the charges from corporate's common costs.
3 When dealing with common or joint costs, there is no way to pinpoint
4 the party that actually causes the cost. By definition, common or
5 joint cost is not associated with any particular party. It is a fine
6 notion in attempting to pinpoint every cost causation to a particular
7 customer or a group of customers, but that is not practical. The
8 TRA's goal should be one of providing excellent utility service for
9 every customer at a just and reasonable price. For example, if a main
10 is in need of repair for a particular neighborhood, all the customers of
11 the Company bear the cost in repairing the main, not only the
12 neighborhood. Further, when the Company expands the service, all
13 of the customers bear the cost of the expansion.

14 Secondly, the forecasted AGL allocations for the attrition year
15 include a return component on the net investment used for both
16 jurisdictions (For example, the AGL corporate office building). This
17 return amount is calculated using the Georgia Public Service
18 Commission authorized rate of return of 9.32% in AGL's last rate
19 case. By updating the rate of return to the just and reasonable rates at
20 this time, based upon the opinion of Dr. Stephen Brown, the CA
21 recommends 8.85% as the rate of return using the net investment of
22 April 1997. Based upon that just and reasonable return, the rate of

1 return component is reduced by \$.151 million.

2 Finally, AGL has not allocated any of its corporate office costs to
3 non-utility operations. This finding was made in the previously
4 mentioned TRA staff compliance audit report. The Company has
5 stated in response that it will change its allocation to non-utility
6 operations beginning October 1, 1997. This change results in a
7 reduction in allocated expenses of \$92,503.

8 In summary, it is germane to the TRA and the ratepayer that the
9 allocation of AGL expenses should be based on a consistent
10 methodology. Most importantly, the expenses borne by the ratepayer
11 must be just and reasonable. Although the Company trumpets its
12 efficiency from restructuring, the results are not evident in what AGL
13 is asking the customer to pay. Finally, AGL's proposed rates should
14 not be granted to placate Company management, but only if they are
15 just and reasonable.

16
17 **Q. Please explain the forecasted difference in sales promotion**
18 **expense amounting to \$.227 million.**

19 A. The CA has excluded \$.227 million in sales promotion expenses.
20 The sales promotion expense proposed by the CA meets the standard
21 criteria of 5% of revenues in determining the amount of expense to
22 allow for advertising. This standard criteria was set in Tennessee

1 Public Service Commission ("TPSC") Docket U-85-7355 for
2 Nashville Gas Company as a surrogate for actually identifying the
3 advertising expense by category because most of the advertising
4 expense was promotional in nature. This is consistent with positions
5 taken by the Commission Staff in subsequent gas company rate cases
6 i.e. United Cities Gas Company, Docket #92-02987. Further,
7 regarding advertising expenses Commission rule 1220-4-5- 45 states,
8 "A utility may not recover from any person other than their
9 shareholders (or other owners) any direct or indirect expenditure for
10 promotional or political advertising. The term 'promotional
11 advertising' means any advertising for the purpose of encouraging
12 any person to select or use gas service or additional gas service or the
13 selection or installation of any appliance or equipment designed to
14 use gas service."

15 The TPSC found the .5% to be consistent with the rule and
16 departure from the policy is inappropriate under existing legal
17 standards which require the agency to follow existing rules and
18 practices.

19
20 **Q. Please explain the forecasted difference in uncollectible expense**
21 **of \$.219 million.**

22 **A. The CA's uncollectible expense for the attrition year was calculated**

1 based on the Company's most recent seven years and eight months
2 experience of net write-offs. The CA uncollectible expense amount
3 for the attrition year is \$165,968. This amount is \$219,051 lower than
4 the Company's amount of \$385,019 which was based on a 12 month
5 average from March 1996 to February 1997. The Company's
6 selected time period is an aberrant and abnormal time period for
7 forecasting purposes and is more than double the historical amounts
8 for the previous six fiscal years. The Company has not presented
9 substantial and material evidence which shows that the expense will
10 continue at that unusual rate. Further, the Company forecasted
11 amount is not indicative of even their current expense. The Company
12 booked \$14,293 for uncollectible expense in May 1997.

13

14 **Q. Please explain the difference in the forecasted expense growth**
15 **rates of the Company and the CA for the attrition year.**

16 A. The Company has used a compound customer and inflation ("CPI")
17 growth rate of 15.62% for the majority of the operating expense
18 accounts excluding salaries and wages. The Company grew these
19 accounts for the test year, the fiscal year ended September 30, 1996,
20 by 15.62% to arrive at their attrition year amounts. It is generally
21 accepted that CPI overstates inflation. Because use of the CPI
22 overstates inflation, it creates more than a just and reasonable

1 expense

2 In my opinion and the opinion of most experts the GDP is a better
3 indicator than CPI. The CA used one half of the annual customer
4 growth rate of 4.65% and an annual inflation ("GDP") rate of 2.36%
5 which generates a compound growth rate of 7.25% from the nineteen
6 months ended May 31, 1997 through September 30, 1998. The
7 information used to determine the CA's inflation factor was taken
8 from the publication "Blue Chip Indicators". The difference between
9 GDP and CPI results in \$.057 million in lower operations and
10 maintenance expenses. Also, the CA used a later test period from
11 June 30, 1996 through May 31, 1997. This period is used because it
12 is more indicative of the Company's post-restructuring costs and of
13 their current cost of operation. The annual customer growth rate was
14 based on the Company's projections of customer growth.
15 Additionally, the CA priced out employee's salaries and wages for
16 the attrition year resulting in \$.052 million lower expense.
17 Consequently, it was not necessary to grow salary and wage expense
18 from the test period using an inflation factor. The cumulative effect
19 of the difference in the compound inflation rates, customer growth
20 rates and test period differences amounts to \$.192 million.

1 Q. Please explain the difference in the forecasted rate case expenses
2 and miscellaneous income deductions of the Company and the CA
3 for the attrition year and your opinion on these differences.

4 A. The CA included \$144,500 of Company anticipated costs for this
5 rate filing to be amortized over three years or \$48,167 for the attrition
6 year plus one year's amortization of Docket #95-02116 at \$16,167.
7 The excess expense difference between the CA calculated amount
8 and the Company projection amounts to \$.104 million. The
9 Company has taken the fiscal 1996 year end amount and has
10 increased it for "CPI" inflation and customer growth. The
11 Company's adjustment has no relationship to historic or prospective
12 amortization amounts from rate filings.

13 Finally, the CA disallowed approximately \$37,540 in miscellaneous
14 expenses as proposed by the Company which are not allowed for use
15 in setting rates. In my opinion, the CA position on this item is
16 consistent with previous positions taken by the TRA Staff.

17

18 Q. Please identify the issues and your opinion regarding other taxes
19 and income taxes for Chattanooga Gas Company in Docket #97-
20 00982?

21 A. The CA Exhibit, Schedule 11 indicates the differences in the
22 forecasted amounts between the CA and the Company. In my

1 opinion, the projected other taxes are \$ 401 million lower than the tax
2 amounts projected by the Company for the attrition year. My opinion
3 regarding this \$.401 million includes the following: (1) I exclude
4 approximately \$.207 million in excessive property tax expense; (2) a
5 reduction of \$.151 million in forecasted Tennessee gross receipts tax
6 expense; (3) a reduction of \$26,340 in forecasted Tennessee state
7 franchise tax expense; (4) approximately \$6,800 in lower payroll
8 taxes and the TRA inspection fee; and (5) income taxes per Schedule
9 12 are due to the difference in taxable net operating income.

10

11 **Q. Please explain your opinion as to the forecasted difference in**
12 **other taxes of approximately \$.401 million.**

13 A. The Company has erroneously mixed un-equalized property
14 assessment value with equalized property assessment value in its
15 calculation of average property assessment growth from 1991 through
16 1996. The Company's use of assessment history, beside its inherent
17 error in calculation, does not reflect current trends. I calculated
18 property taxes using the 1996 tax rates and equalized property
19 assessment values which reflects the most recent historical increases
20 (1995-1996). This results in a \$.217 million adjustment to remove
21 the overstated projected property tax expense proposed by the
22 Company.

1 In addition, the Company has used a five year average of effective
2 Tennessee State Gross Receipts Tax rates to calculate the amount of
3 Tennessee Gross Receipts Tax for the attrition period. The
4 Company's use of a five year average does not reflect the current
5 effective tax rate for use in setting rates and consequently overstates
6 the Tennessee Gross Receipts Tax. For example, the Gross Receipts
7 Tax to be paid is offset by the amount of Tennessee Franchise and
8 Excise Tax paid in the prior year. The Excise tax is calculated based
9 on normalized tax depreciation. The use of accelerated tax
10 depreciation reduces the Tennessee excise tax, but conversely
11 increases the Tennessee Gross Receipts Tax. For setting rates, both
12 the Company and the CA have ignored accelerated tax depreciation
13 rates for calculating Tennessee Excise Tax. The Company, however,
14 has used the normalized tax depreciation benefit when calculating its
15 Gross Receipts Tax. The difference in calculated amounts between
16 the Company and the CA amounts to \$.151 million for the attrition
17 year.

18 The Company has included an acquisition adjustment in its
19 calculation of Tennessee State Franchise Tax. This is an
20 inappropriate inclusion for calculating franchise tax expense in
21 setting rates. I excluded this amount resulting in \$26,340 lower
22 franchise tax expense.

1 Additionally, the payroll taxes for the attrition year are overstated
2 by the Company by approximately \$4,141 due to an overstated salary
3 and wage calculation by the Company.

4 Finally, the Company has overstated the TRA inspection fee by
5 \$2,746 primarily due to overstated revenues for the inspection fee
6 period.

7
8 **Q. Please explain the forecasted difference in income taxes.**

9 A. The difference in the CA and Company's income taxes is due to
10 lower operating expenses by the CA and the difference in capital cost,
11 specifically the cost of debt.

12
13 **Q. Please define, "Rate Base."**

14 A. Simply put, Rate Base is the net investment upon which the
15 Company is allowed to earn a just and reasonable rate of return. A
16 summary comparison of the rate base amounts for both the CA and
17 the Company is found in the CA Exhibit, Schedule 3.

18
19 **Q. Please explain you opinion and the forecasted difference in Rate**
20 **Base.**

21 A. The CA Rate Base is \$6.783 million lower than the Company and
22 my opinion relies on the following:

1 Net Acquisition Adjustment - The CA has excluded \$13.356
2 million Acquisition Adjustment and \$4 196 million of Accumulated
3 Amortization of Acquisition Adjustment for a net reduction in rate
4 base of \$9 160 million. As previously mentioned, Mr. Archie
5 Hickerson, Director of the CA will address these amounts in his
6 direct testimony.

7 Working Capital - The CA is \$1.636 million higher than the
8 Company primarily due to an erroneous customer deposit amount by
9 the Company in its forecast. According to the Company, there is a
10 transposition error in their filing of forecasted customer deposits.

11 Net Utility Plant in Service - The CA used a simple average rather
12 than a thirteen month average to develop the two major Rate Base
13 components, Utility Plant and Service and Accumulated
14 Depreciation. This amounts to the CA being a net \$.691 million
15 higher than the Company.

16
17 **Q. How did you calculate depreciation expense for the attrition**
18 **year?**

19 **A.** The average attrition year plant balances were multiplied by the
20 Company proposed depreciation rates. I am not expressing an
21 opinion on the accuracy of the Company's request to reduce the
22 composite depreciation rate from 3.66% to 3.61%. The CA did not

1 have sufficient time nor the resources to investigate the
2 reasonableness of the Company proposed depreciation rates. The
3 calculated result, however, is \$4.811 million in depreciation expense
4 for the attrition year. This amount is \$9,875 lower than Company
5 amount. This amount is due to the CA's exclusion of depreciation
6 expense on Land and Land Rights as proposed by the Company. In
7 my opinion, Land and Land Rights should not be depreciated.

8

9 **Q. Does this conclude your testimony?**

10 **A.** Yes, it does.

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BEFORE THE
TENNESSEE PUBLIC SERVICE COMMISSION

In Re Petition of United Cities Gas Company to Place Into Effect a Revised
Natural Gas Tariff

Docket No 95-02258

DIRECT TESTIMONY

OF

R TERRY BUCKNER

September 25, 1995

1 Q. Please state your name for the record.

2 A. My name is R. Terry Buckner.

3 Q. By whom are you employed and what is your position?

4 A. I am employed by the Consumer Advocate Division ("CA") in the
5 State of Tennessee Attorney General's Office as a Senior Regulatory
6 Analyst.

7 Q. How long have you been employed in the utility industry?

8 A. Approximately eighteen years. Before my employment with the
9 Attorney General, I was employed with the Tennessee Public Service
10 Commission ("Commission") as a financial analyst for approximately
11 six years. Prior to my employment with the Commission, I was
12 employed by Telephone and Data Systems ("TDS") for eight years
13 and the First Utility District of Knox County for three years.

14 Q. What is your educational background and what degrees do you
15 hold?

16 A. I have a Bachelors degree in Business Administration from the
17 University of Tennessee, Knoxville with a major in Accounting. I am
18 also a Tennessee Certified Public Accountant and a member of the
19 American Institute of Certified Public Accountants.

20 Q. Would you briefly describe your responsibilities as a Regulatory
21 Analyst since your employment with the CA?

22 A. I prepared testimony and exhibits as an employee with the

1 Commission before becoming a member of the CA. My
2 responsibilities have not been altered significantly since my
3 employment change.

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to present information to the
6 Commission on the appropriate operating expenses other than
7 depreciation and salaries and wages for the attrition year December 1,
8 1995 to November 30, 1996 for United Cities Gas Company
9 ("Company"). Additionally, I will present the CA's calculation of
10 other non-payroll taxes and income taxes for the attrition year.

11 **Q. Please identify the issues regarding operating expenses for United**
12 **Cities Gas Company in Docket #95-02258?**

13 A. The CA Exhibit, Schedule 5, indicates the differences in the
14 forecasted amounts between the CA and the Company. The non-
15 payroll operating expenses projected by the CA are \$3.166 million
16 lower than the non-payroll operating expenses projected by the
17 Company for the attrition year. The eight principle issues regarding
18 this \$3.166 million include the following: (1) The CA Exhibit,
19 Schedule 4, Line 11 has included \$1.502 million in annual savings as
20 found in the Management Audit of the Company by The Liberty
21 Consulting Group ("Liberty"). Liberty was employed at the direction
22 of the Commission to conduct the management audit of the Company

1 in Docket #92-02987. The Commission ordered in Docket #92-
2 02987 that the results of the audit be considered in the next rate filing
3 which is this Docket #95-02258. Liberty has completed the audit and
4 has provided the report to the Commission. Liberty representatives
5 will testify as to the validity of the annual savings amount. The CA
6 relied on their expertise in incorporating the identified annual savings
7 in its forecast for the attrition year as found in Liberty's management
8 audit report; (2) The Company has overstated \$.694 million in
9 forecasted non-payroll operating expenses originating from the CA's
10 test period reconciliation; (3) The Company overstated \$.390 million
11 in projected employee health insurance; (4) The CA recommends
12 \$.334 million in disallowed and non-recurring expenses; (5) The CA
13 inflation and customer growth rate used for non-payroll expenses is
14 \$.244 million in higher than the Company for the attrition year; (6)
15 The CA proposes a disallowance of \$.198 million in forecasted sales
16 promotion expense; (7) The Company has improperly included \$.189
17 million of interest on customer deposits with operating expenses.
18 The CA has recognized this item for presentation purposes as interest
19 expense and as a separate line item in the comparative income
20 statement; (8) The CA has disallowed Company adjustments of \$.103
21 million in storage expense, postage expense, and management audit
22 amortization expense.

1 **Q. Please explain the \$.694 million difference in the test period non-**
2 **payroll operating expense amount of the Company and the CA**
3 **used in forecasting non-payroll expenses for the attrition year.**

4 A. The Company has over-allocated non-payroll costs to Tennessee
5 operations for the test year 1994 by \$.694 million. Approximately
6 \$.656 million of this amount is classified in the General and
7 Administrative expenses. The Company has four major divisions of
8 operation and allocation of costs: (1) The Division Corporate Office;
9 (2) The Illinois/Tennessee Division; (3) The Virginia/East Tennessee
10 Division; and (4) The Tennessee Division. Tennessee operations
11 receive an allocation of payroll and non-payroll expenses from each
12 Division for reporting purposes and setting rates. The allocation
13 amounts in the Company's filing are not consistent with the actual
14 test period 1994 Divisional income statements ("R50400") furnished
15 to the CA by the Company. Consequently, the allocation percentages
16 used by the Company in its rate filing to allocate costs to Tennessee
17 are overstated and are not consistent with the actual amounts or the
18 factors used in Commission Docket #92-02987, the last rate increase
19 for the Company.

20 **Q. Please explain the forecasted difference in employee health**
21 **insurance amounting to \$.390 million.**

22 A. The Company has proposed an increase of nearly 50% in health

1 insurance expense from 1994 to the attrition year. A review of actual
2 growth has been well below this level of growth. The medical claims
3 furnished to the CA have grown closer to the annual inflation rate of
4 2% to 3% for 1994 over 1993. Additionally, year to date 1995
5 annualized amounts are approximately at the same level as 1994.

6 **Q. Please explain the forecasted difference in disallowed and non-**
7 **recurring amounts of \$.334 million.**

8 A. The Company has included \$.334 million in expenses from the 1994
9 test period which are not valid for setting rates or are non-recurring in
10 nature. These expenses include the following: (1) expenses for Non-
11 competition agreements primarily with Union Gas Company incurred
12 during acquisition of their natural gas systems. These payments in
13 effect represent a premium paid in excess of the book value of the
14 Union Gas Company and are not a cost of providing utility service to
15 Tennessee customers. This position is supported by Liberty. In its
16 management audit report, Liberty agrees that this cost should not be
17 recognized for setting rates (See pages II-45,48). Further, the
18 Commission has historically recommended that these costs be borne
19 by the shareholder of the Company and not the ratepayer; (2)
20 expenses for an equity funding fee were also excluded in the CA's
21 attrition year forecast. Simply put, the Company relies upon the
22 earnings of an affiliated company, Energy Company, in order to issue

1 utility bonds, therefore, justifying a fee. However, the affiliated
2 Energy company generates most of its earnings from captive
3 financing agreements with the Company. The Commission Staff has
4 historically not allowed this expense in setting rates. Additionally,
5 Liberty recommended that this equity funding fee be eliminated (See
6 pages II-44,45); and (3) The CA excluded one-time expenses incurred
7 by the Company in 1994 through a class-action lawsuit alleging price
8 fixing in East Tennessee in the 1980's. In February 1995, the
9 Company reached a settlement agreement with the Tennessee
10 Attorney General in the amount of \$80,000. This settlement was
11 pending the United States District Court's approval according to the
12 Company's audited 1994 annual report to the stockholders. This is
13 not a normal or recurring expense.

14 **Q. Please explain the forecasted difference in expense growth rates**
15 **amounting to \$.244 million.**

16 A. The Company has proposed a growth factor of 6.71% to increase
17 most of its non-payroll operating expenses. The CA used a
18 compound growth factor of 9.81% from the twelve months ended
19 December 31, 1994 to November 30, 1996. The CA used an annual
20 weighted customer growth rate of 2.5% and an inflation rate of
21 2.56%. The information used to determine the CA's inflation factor
22 was taken from the publication *Blue Chip Indicators*. The cumulative

1 effect of the difference in the compound growth rate of non-payroll
2 expense amounts to \$.244 million more than the Company.

3 **Q. Please explain the forecasted difference in sales promotion**
4 **expense amounting to \$.198 million.**

5 A. The CA has excluded \$.198 million in sales promotion expenses. The
6 sales promotion expense proposed by the CA meets the standard
7 criteria of .5% of revenues in determining the amount of expense to
8 allow for advertising. This standard criteria was set in Commission
9 Docket U-85-7355 for Nashville Gas Company and is consistent with
10 positions taken by the Commission Staff in subsequent gas company
11 rate cases i.e. United Cities Gas Company, Docket #92-02987. In
12 addition, Commission rule 1220-4-5- 45 states, "A utility may not
13 recover from any person other than their shareholders (or other
14 owners) any direct or indirect expenditure for promotional or political
15 advertising. The term 'promotional advertising' means any
16 advertising for the purpose of encouraging any person to select or use
17 gas service or additional gas service or the selection or installation of
18 any appliance or equipment designed to use gas service." While this
19 rule prohibits promotional advertising, safety and informational
20 advertising is allowed. In previous years, disagreements have arisen
21 as to the proper classification of advertising expenses. The .5%
22 allowance threshold was adopted in lieu of specifically identifying

1 the type of advertising expense.

2 **Q. Please explain the forecasted difference in storage expense,**
3 **management audit amortization, and postage expense amounting**
4 **to \$.103 million.**

5 A. Storage expense amount of \$42,334 is excluded by the CA because
6 the test year amount in the Company's exhibit (See Exhibit 7, Page 1,
7 Line 7, Column 2) does not reconcile to the amount in the Company's
8 corporate division income statement.

9 Also, the CA has amortized the management audit expense over a
10 four year period. A four year period more adequately reflects the
11 potential life of the management audit investment cost. This is
12 consistent with the Commission Staff recommended amortization
13 period as stated in their compliance audit report dated September 13,
14 1995. In the Company's rate filing, an amortization period of three
15 years was used resulting in excess expense for the attrition year of
16 \$29,791.

17 Finally, the Company has included a \$31,137 increase for postage
18 expense. As previously mentioned, the CA has already recognized
19 this increase through the growth factor applied to all non-payroll
20 expenses. (See p. 7, Line 2).

21 **Q. Please identify and explain the issues regarding other taxes and**
22 **income taxes for United Cities Gas Company in Docket #95-**

1 **02258.**

2 A. The CA Exhibit, Schedule 8 indicates the differences in the
3 forecasted amounts between the CA and the Company. Other taxes
4 are a separate tax category for classification purposes and are non-
5 income taxes. The other taxes projected by the CA are a net \$60,000
6 lower than the tax amounts projected by the Company for the attrition
7 year. The issue regarding this \$60,000 include primarily the
8 calculated net differences in gross receipts tax, property tax and
9 franchise tax.

10 Income taxes are higher per Schedule 10 primarily due to the
11 difference in taxable net operating income. However, based on the
12 capital structure of Dr. Brown, the CA has included \$.600 million in
13 additional interest expense in its calculation of income taxes,
14 Schedule 9, Line 15. This inclusion reduces income taxes, but also
15 the CA has included permanent differences, items which are not
16 deductible for income tax purposes, of \$.164 million which increases
17 income taxes. These permanent differences have apparently been
18 excluded by the Company in its tax calculation.

19 **Q. Does this conclude your testimony?**

20 A. Yes, it does.

21

22

1 Q. Please state your name for the record.

2 A. My name is R. Terry Buckner.

3 Q. By whom are you employed and what is your position?

4 A. I am employed by the Consumer Advocate Division ("CA") in the
5 State of Tennessee Attorney General's Office as a Senior Regulatory
6 Analyst.

7 Q. How long have you been employed in the utility industry?

8 A. Approximately eighteen years. Before my employment with the
9 Attorney General, I was employed with the Tennessee Public Service
10 Commission ("Commission") as a financial analyst for approximately
11 six years. Prior to my employment with the Commission, I was
12 employed by Telephone and Data Systems ("TDS") for eight years
13 and the First Utility District of Knox County for three years.

14 Q. What is your educational background and what degrees do you
15 hold?

16 A. I have a Bachelors degree in Business Administration from the
17 University of Tennessee, Knoxville with a major in Accounting. I am
18 also a Tennessee Certified Public Accountant and a member of the
19 American Institute of Certified Public Accountants.

20 Q. Would you briefly describe your responsibilities as a Regulatory
21 Analyst since your employment with the CA?

22 A. I prepared testimony and exhibits as an employee with the

1 Commission before becoming a member of the CA. My
2 responsibilities have not been altered significantly since my
3 employment change.

4 **Q. What is the purpose of your testimony?**

5 A. The purpose of my testimony is to present information to the
6 Commission on the appropriate operating expenses other than
7 depreciation for the attrition year October 1, 1995 to September 30,
8 1996 for Chattanooga Gas Company ("Company"). Additionally, I
9 will present the CA's calculation of other taxes and income taxes for
10 the attrition year.

11 **Q. Please identify the issues regarding operating expenses for**
12 **Chattanooga Gas Company in Docket #95-02116?**

13 A. The CA Exhibit, Schedule 10 indicates the differences in the
14 forecasted amounts between the CA and the Company. The operating
15 expenses projected by the CA are \$1.854 million lower than the
16 operating expenses projected by the Company for the attrition year.
17 The issues regarding this \$1.854 million include the following. (1)
18 the CA has excluded approximately \$.577 million in excessive
19 expense growth and inappropriate expenses for setting rates for the
20 ratepayer; (2) a reduction of \$.398 million in forecasted salaries and
21 wages associated with advertising; (3) a reduction of \$.280 million in
22 forecasted medical insurance; (4) \$.248 million reduction in projected

1 uncollectible expense, sales promotion expense, management audit
2 expense, and miscellaneous expense; (5) \$.194 million in legal and
3 rate case expense; and (6) \$.157 million in payroll clearings.

4 **Q. Please explain the difference in forecasted expense growth of the**
5 **Company and the CA for the attrition year.**

6 A. The Company has used a compound customer and inflation growth
7 rate of 18.06% for the majority of the operating expense accounts
8 excluding salaries and wages. The CA used an annual customer
9 growth rate of 4.65% and an annual inflation rate of 2.56% which
10 generates a compound growth rate of 9.89% from the twelve months
11 ended September 30, 1994 through September 30, 1996. The
12 information used to determine the CA's inflation factor was taken
13 from the publication "Blue Chip Indicators". The annual customer
14 growth rate was based on the Company's projections of customer
15 growth. The cumulative effect of the difference in the compound
16 growth of non salary and wage expense amounts to \$.310 million.

17 The CA's calculation of salaries and wages is approximately \$.220
18 million lower than the Company. This difference is due to
19 overstatement of salaries and wages in the Company's filing when
20 reconciled with the price-out of employee's salaries, the exclusion of
21 one employee, and lower salary increases for management and non-
22 union supervisory personnel. The Company included an employee

1 who is no longer with the organization in its projection of salary and
2 wages. Additionally, the Company projected annual increases of 5%
3 and 4.5% for it's non-union management and supervisory personnel.
4 The CA limited the increase for these employees to a 4% annual
5 increase, the same level agreed to by the union supervisory personnel
6 in year one of their contract.

7 The remaining \$47,000 difference is due to the erroneous exclusion
8 by the Company of flex vacation deduction amounts of
9 approximately \$28,000; and approximately \$19,000 of under-
10 allocated costs to non-regulated operations and capitalization.

11 **Q. Please explain the forecasted difference in sales promotion**
12 **salaries and wages expense amounting to \$.398 million.**

13 A. The CA has excluded \$.398 million in sales promotion salaries and
14 wage expenses. The sales promotion expense proposed by the CA
15 meets the standard criteria of .5% of revenues in determining the
16 amount of expense to allow for advertising. This standard criteria
17 was set in Commission Docket U-85-7355 for Nashville Gas
18 Company and is consistent with positions taken by the Commission
19 Staff in subsequent gas company rate cases i.e. United Cities Gas
20 Company, Docket #92-02987. Further, regarding advertising
21 expenses Commission rule 1220-4-5- 45 states, "A utility may not
22 recover from any person other than their shareholders (or other

1 owners) any direct or indirect expenditure for promotional or political
2 advertising. The term 'promotional advertising' means any
3 advertising for the purpose of encouraging any person to select or use
4 gas service or additional gas service or the selection or installation of
5 any appliance or equipment designed to use gas service."

6 **Q. Please explain the forecasted difference in employee health and**
7 **life insurance expense of \$.280 million.**

8 A. The Company erroneously used the projected 1997 amount for
9 employee insurance expense rather than the appropriate 1996 per
10 Company workpapers. Further, the Company failed to allocate a
11 portion of these expenses to capitalization and non-regulated
12 operations. The correction of these "oversights" amounts to
13 approximately \$.280 million.

14 **Q. Please explain the forecasted difference in uncollectible expense,**
15 **sales promotion expense, and management audit expense**
16 **accumulating to \$.248 million.**

17 A. The CA's uncollectible expense for the attrition year was calculated
18 based on the most recent five year history of net write-offs. The CA
19 amount is approximately \$65,000 lower than the Company's amount
20 which excludes an abnormally high recovery amount for 1994, but
21 fails to exclude the abnormally high write-off as well. The CA
22 amount reflects both exclusions.

1 The CA has excluded \$90,226 in additional Company proposed sales
2 promotion expenses. As previously discussed, the sales promotion
3 expense proposed by the CA meets the standard criteria of .5% of
4 revenues in determining the amount of expense to allow for
5 advertising. This standard criteria was set in Commission Docket U-
6 85-7355 for Nashville Gas Company and is consistent with positions
7 taken by the Commission Staff in subsequent gas company rate cases
8 i.e. United Cities Gas Company, Docket #92-02987.

9 Also, the CA has amortized the management audit expense over a
10 four year period. This is consistent with the Commission Staff
11 recommended amortization period as stated in their compliance audit
12 report dated August 28, 1995. In it's rate filing, the Company
13 amortized the management audit expense over a two year period
14 resulting in excess expense of \$49,347.

15 Finally, the CA disallowed approximately \$42,000 in miscellaneous
16 expenses as proposed by the Company which are not allowed for use
17 in setting rates. The CA position on this item is consistent with
18 previous positions taken by the Commission Staff.

19 **Q. Please explain the forecasted difference in legal and rate case**
20 **expense of \$.194 million.**

21 **A.** The Company included legal costs for Federal Regulatory Energy
22 Commission ("FERC") orders incurred in or prior to the test year and

1 have no basis for inclusion in the attrition year. The CA included
2 \$48,500 of anticipated costs for this rate filing to be amortized over
3 three years or \$16,167 for the attrition year. The excess expense
4 difference between the CA calculated amount and the Company
5 projection amounts to \$.194 million.

6 **Q. Please explain the forecasted difference in payroll clearings of**
7 **\$.157 million.**

8 A. The Company has included in its calculation of non-salary and
9 wage expenses, \$.157 million in payroll clearing. The Company
10 calculated its attrition year salaries and wages expense including
11 amounts charged to clearing accounts. Some employees charge their
12 work time to a clearing account. A portion of the clearing account
13 amount is redistributed to expense accounts. The redistributing or
14 clearing process allocates payroll charged to clearing accounts to an
15 expense account based on salaries and wages charged directly to
16 expense accounts. However, through the Company's accounting
17 processes, the payroll clearing amount is recognized as non-payroll
18 dollars. The Company has in effect double-counted the \$.157 million
19 payroll clearing dollars by including them in their salaries and wages
20 expense calculation and also in their calculation of non-salary and
21 wage expenses.

1 **Q. Please identify the issues regarding other taxes and income taxes**
2 **for Chattanooga Gas Company in Docket #95-02116?**

3 A. The CA Exhibit, Schedule 11 indicates the differences in the
4 forecasted amounts between the CA and the Company. The other
5 taxes projected by the CA are \$.400 million lower than the tax
6 amounts projected by the Company for the attrition year. The issues
7 regarding this \$.400 million include the following: (1) the CA has
8 excluded approximately \$.200 million in excessive property tax
9 expense; (2) a reduction of \$.106 million in forecasted Tennessee
10 gross receipts tax expense; (3) a reduction of \$45,550 in forecasted
11 Tennessee state franchise tax expense; (4) approximately \$30,000 in
12 lower payroll taxes; and (5) income taxes per Schedule 13 which are
13 primarily due to the difference in taxable net operating income.

14 **Q. Please explain the forecasted difference in other taxes of**
15 **approximately \$.400 million.**

16 A. The Company has assumed a significant property tax rate change for
17 Hamilton County during the attrition year. There is no evidence to
18 support this rate change. Further, the composite tax rate for the
19 Company has not changed significantly over the last three years. The
20 CA has calculated property taxes using the 1994 tax rates and
21 property assessment values which reflects recent historical increases.
22 This results in \$.200 million in overstated projected property tax

1 expense by the Company.

2 The Company has used a five year average of effective Tennessee
3 State Gross Receipts Tax rates to calculate the amount of Tennessee
4 Gross Receipts Tax for the attrition period. The effective tax rate has
5 declined by 20% over the last five years. The Company's use of a
6 five year average does not reflect the current effective tax rate and
7 consequently overstates the Tennessee Gross Receipts Tax. The CA
8 has used an average of actual and projected gross receipts for the
9 attrition year at the actual tax rate less 1994 estimated franchise and
10 excise taxes. The difference in calculated amounts between the
11 Company and the Staff amounts to \$.107 million for the attrition
12 year.

13 The Company has included an acquisition adjustment in its
14 calculation of Tennessee State Franchise Tax. This is an
15 inappropriate inclusion for calculating franchise tax expense in
16 setting rates. The CA has excluded this amount resulting in \$45,550
17 lower franchise tax expense.

18 Additionally, the payroll taxes for the attrition year are overstated by
19 approximately \$30,000 due to an overstated salary and wage
20 calculation by the Company.

1 **Q. Please explain the forecasted difference in income taxes.**

2 A. The difference in the CA and Company's income taxes is due to
3 lower operating expenses by the CA and the difference in capital
4 structure, specifically the cost of debt.

5 **Q. Does this conclude your testimony?**

6 A. Yes, it does.

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ATTACHMENT D

**MICHAEL CHRYSLER:
EXPERT WITNESS QUALIFICATIONS & PRIOR TESTIMONY AND
PUBLICATIONS**

Regulatory Analyst

Education:

Bachelor of Business Administration (Accounting)
Ft. Lauderdale University, 1970

TN AG (Consumer Advocate & Protection Division)

1998-Present

Provided analysis in Energy and Water issues, rate cases as assigned
Active in analysis related to Consumer Protection telephone issues
Testified in Docket No. 02-00383 Petition of Chattanooga Gas Company For Approval of Change in Purchased Gas Adjustment
Testified in Docket No. 03-00118 Petition of Tennessee-American Water Company To Change And Increase Certain Rates and Charges
Testified In Docket No. 03-00313 Application of Nashville Gas Company, a Division of Piedmont Natural Gas Company, Inc. for an Adjustment of its Rates and Charges, the Approval of Revised Tariffs and the Approval of Revised Service Regulations
Testified in Docket No. 04-0034 Petition of Chattanooga Gas Company for Approval of Adjustment of its Rates and Charges and Revised Tariff
Testified in Docket No. 04-00288 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 Service to its Customers.
Testified in Docket No. 05-00258 Petition of the Consumer Advocate to Open an Investigation to Determine Whether Atmos Energy Corp. Should Be Required by the Tennessee Regulatory Authority to Appear and Show Cause That Atmos Energy Corp. Is Not Overearning in Violation of Tennessee Law and That it Is Charging Rates That Are Just and Reasonable
Testified in Docket No. 06-00175 Petition of Chattanooga Gas Company to Increase Rates, Including a Comprehensive Rate Design Proposal and Revised Tariff
Testified in Docket No. 06-00290 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 Service to its Customers
- Internet Links to Testimony provided on following pages

Chairman of NASUCA's Consumer Protection Committee

2004-Present

NASUCA Committee Resolutions contributed to by Mike Chrysler (copies attached):

- *Energy Conservation and Decoupling Resolution*
- *High Winter Energy Costs Resolution* regarding LIHEAP funding
- *Uncollectible Accounts Resolution* regarding for State Authority's to resist expansion of definition
- *Minimum Service Quality Standards Resolution* calling for regular reporting and industry standards
- *Infrastructure Surcharge Resolution* calling for annual tracking adjustments

Principal of Electric Business Planning: Electric Business Planning Department (1990-1997)

Coordinated \$147 million Capital, \$101 million Expense, and \$789 million Margin budget development of The Electric Business, with subsequent monthly/quarterly explanation of variances reported to Senior Management.

- Provided consulting assistance to station/district planners for proper explanation of their Capital & Expense variances to Senior Management, then summarized for reporting.
- Assisted with O&M and Capital Budget ABM training (budget development and data entry in budgeting system); plus proper development of budgets for presentation and approval.
- Provided Electric Margin variance analysis by class on a monthly/quarterly basis to Senior Management.
- Developed a sophisticated computer model for the Director of Electric Production in Microsoft Excel, providing "what if" analysis along with historical data to reach a goal of \$16 per megawatt hour generation cost goal.
- Assisted the Vice President and General Manager, Electric Business in the development of written speeches as well as corresponding presentation slides.

Senior Consultant: Corporate Consulting Services (1989-1990)

Responsible for providing expertise and assistance to various departments within the company, including training of management personnel on various productivity seminars and software programs.

- Researched "under-billing" of NIPSCO gas customers due to the variable of "Supercompressibility." Quantified over \$200,000 of annual under-billing for the gas metering department.
- Interviewed NIPSCO management personnel to ensure compliance with "Automatic Time Reporting" program for Human Resources Department.

Senior Strategic Planning Analyst: Corporate Strategic Planning Department (1985-1989)

Responsible for providing top-down, bottom-up communication of the Corporate Strategic Plan to all management levels.

- Assisted in the development, coordination of data and reporting of meaningful performance measures to Senior Management for each business unit.
- Assisted management employees with the training classes "Business Strategies" and "Operations Strategies." This assistance included ensuring appropriate workbase study, drafting of the company strategic plan, involvement and understanding of principles and strategies in making business decisions to be entered in case studies and computer simulations.

Senior Rate Analyst: Rate and Contract Department (1978-1985)

Responsible for supporting rate case development, and associated work papers and supporting materials for Case-In-Chief. Provided tracking updates, reflecting modification to rate filings until subsequent filing.

- Prepared filing and exhibits for purchase gas adjustment, fuel cost adjustment, purchase power tracking adjustments with the Indiana PSC/TURC
- Audited large gas and electric industrial bills prior to release on a monthly basis
- Billed large industrial gas and electric customers during union contract negotiations (approximately 60% of company revenue). Customers included U.S. Steel, Inland and Bethlehem Steel.

- Assisted in the preparation of testimony and exhibits for regulatory hearings.

Junior Accountant: Customer Accounting Department (1973-1978)

Responsible for communicating corporate billing and office procedures to district commercial offices. Provided special data analysis regarding billing to corporate accounting.

- Provided vacation relief for district office managers. These responsibilities included supervision of meter readers, application credit, billing and cash representatives.
- Calculated source reports and reported to Accounting Department including gas cost, fuel cost, purchase power adjustment and other revenue amounts on a monthly basis.

Internet Links to Expert Testimony of Michael D. Chrysler on behalf of CAPD

TRA Docket 06-00290

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 SERVICE TO ITS CUSTOMERS

Direct Testimony Filed 3/5/07: <http://www.state.tn.us/tra/orders/2006/0600290ca.pdf>

TRA Docket No. 05-00258

IN RE: PETITION TO OPEN AN INVESTIGATION TO DETERMINE WHETHER ATMOS ENERGY CORPORATION SHOULD BE REQUIRED BY THE TRA TO APPEAR AND SHOW CAUSE THAT ATMOS ENERGY CORPORATION IS NOT OVEREARNING IN VIOLATION OF TENNESSEE LAW AND THAT IT IS CHARGING RATES THAT ARE JUST AND REASONABLE

Direct Testimony filed 7/17/06: <http://www.state.tn.us/tra/orders/2005/05258by.pdf>

TRA Docket 04-00034

IN RE: PETITION OF CHATTANOOGA GAS COMPANY FOR APPROVAL OF ADJUSTMENT OF ITS RATES AND CHARGES AND REVISED TARIFF.

Direct Testimony filed 7/26/04: <http://www.state.tn.us/tra/orders/2004/0400034dn.pdf>

TRA Docket 04-00288

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 SERVICE TO ITS CUSTOMERS.

Direct Testimony filed 12/3/04: <http://www.state.tn.us/tra/orders/2004/0400288bl.pdf>

TRA Docket 03-00313

IN RE: APPLICATION OF NASHVILLE GAS COMPANY, A DIVISION OF PIEDMONT NATURAL GAS COMPANY, INC. FOR AN ADJUSTMENT OF ITS RATES AND CHARGES, FOR APPROVAL OF REVISED TARIFFS AND APPROVAL OF REVISED SERVICE REGULATIONS.

Direct Testimony filed 8/18/03: <http://www.state.tn.us/tra/orders/2003/0300313x.pdf>

TRA Docket 03-00118

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 SERVICE TO ITS CUSTOMERS.

Direct Testimony filed 5/30/03: <http://www.state.tn.us/tra/orders/2003/0300118bo.pdf>

TRA Docket 02-00383

IN RE: PETITION OF CHATTANOOGA GAS COMPANY FOR APPROVAL OF CHANGE IN PURCHASE GAS ADJUSTMENT

Direct Testimony filed 5/21/03: <http://www.state.tn.us/tra/orders/2002/0200383m.pdf>

NASUCA Committee Resolutions contributed to by Mike Chrysler

(copies attached)

**THE NATIONAL ASSOCIATION OF
STATE UTILITY CONSUMER ADVOCATES
RESOLUTION 2007-01**

NASUCA ENERGY CONSERVATION AND DECOUPLING RESOLUTION

Whereas, the provision and promotion of energy efficiency measures are increasingly viewed by state commissions as a necessary component of utility service;

Whereas, many states are now encouraging rate-regulated utilities to adopt energy efficiency programs and other demand-side measures to decrease the number of units of energy each utility's customers purchase from the utility;

Whereas NASUCA has long supported the adoption of effective energy efficiency programs;

Whereas recent proposals by rate-regulated public utilities for the initiation or expansion of energy efficiency measures have featured utility rate incentives or revenue "decoupling" mechanisms that guarantee utilities a predetermined amount of revenues regardless of the number of units of energy sold;

Whereas, the utilities proposing decoupling measures seek guarantees from public utilities commissions that they will receive their allowed level of revenues;

Whereas, these utilities justify this departure from traditional rate-making principles on the theory they are being asked to help their customers purchase fewer energy units from them by promoting energy efficiency measures and other demand-side measures; thereby reducing their revenues and, consequently, their returns to their shareholders, and that decoupling mechanisms compensate utilities for revenues lost due to conservation;

Whereas, these utilities contend that because these measures reduce their revenues, they have a disincentive to encourage programs that aid their customers in purchasing fewer units of energy;

Whereas, historically, rates have been set in periodic rate cases by matching test-year revenues with test-year expenses, adding pro forma adjustments and allowing the utilities an opportunity to earn a reasonable rate of return on their investments in exchange for a state-protected monopoly;

Whereas revenue guarantee mechanisms allow rate adjustments to occur based upon one element that affects a utility's revenue requirement, without supervision or review of other factors that may offset the need for such a rate change;

Whereas, historically, rate-regulated utilities were not guaranteed they would earn the allowed return; rather, earnings depended on capable management operating the utilities in an efficient manner;

Whereas, many utilities proposing revenue decoupling request compensation for revenue lost per customer, implying that sales volumes are declining, when in fact these utilities' total energy sales revenues are stable or increasing;

Whereas, there are a number of factors that may cause a utility to sell fewer units of energy over a period of time, including weather, changing economic conditions, shifts in population, loss of large customers and switches to other types of energy, as well as energy efficiency and other demand-side measures;

Whereas many utilities have been offering cost-effective energy efficiency programs and actively marketing these programs for years without proposing or implementing rate incentives or revenue guarantee mechanisms such as decoupling, and have continued to enjoy financial health;

Whereas past experience has shown that revenue guarantee mechanisms such as decoupling may result in significant rate increases to customers;

Whereas some utilities have referenced the benefit of encouraging energy efficiency programs as a justification for revenue guarantee mechanisms without in fact offering any energy efficiency programs, indicating that the revenue guarantee mechanisms are attractive to utilities for reasons other than their interest in promoting energy conservation;

Whereas past experience has shown that rate increases prompted by revenue guarantee mechanisms such as decoupling are often driven not so much by reduced consumption caused by utility energy efficiency programs, as by reduced consumption due to normal business risks such as changes in weather, price sensitivity, or changes in the state of the economy;

Whereas utilities are better situated than are consumers or state regulators to anticipate, plan for, and respond to changes in revenue prompted by normal business risks, and the shifting of normal business risks away from utilities insulates them from business changes and reduces their incentive to operate efficiently and effectively;

Whereas the traditional ratemaking process has historically compensated utilities for experiencing revenue variations associated with normal business risks;

NOW THEREFORE NASUCA RESOLVES:

To continue its long tradition of support for the adoption of effective energy efficiency programs;

And to oppose decoupling mechanisms that would guarantee utilities the recovery of a predetermined level of revenue without regard to the number of energy units sold and the cause of lost revenue between rate cases;

BE IT FURTHER RESOLVED:

NASUCA urges Public Utilities Commissions to disallow revenue true-ups between rate cases that violate the matching principle, the prohibition against retroactive ratemaking, the prohibition against single-issue ratemaking, or that diminish the incentives to control costs that would otherwise apply between rate cases;

NASUCA urges State legislatures and Public Utilities Commissions to, prior to using decoupling as a means to blunt utility opposition to energy efficiency and other demand-side measures, (1) consider alternative measures that more efficiently promote energy efficiency and other demand side measures; (2) evaluate whether a utility proposing the adoption of a revenue decoupling mechanism has demonstrated a commitment to energy efficiency programs in the recent past; and (3) examine whether a utility proposing the adoption of a revenue decoupling mechanism has a history of prudently and reasonably utilizing alternative ratemaking tools;

If decoupling is allowed by any state commission, NASUCA recommends that the mechanism be structured to (1) prevent over-earning and provide a significant downward adjustment to the utilities' ROE in recognition of the significant reduction in risk associated with the use of a decoupling mechanism, (2) ensure the utility engages in incremental conservation efforts, such as including conservation targets and reduced or withheld recovery should the utility fail to meet those targets, and (3) require utilities to demonstrate that the reduced usage reflected in monthly revenue decoupling adjustments are specifically linked to the utility's promotion of energy efficiency programs.

NASUCA authorizes its Standing Committees to develop specific positions and to take appropriate actions consistent with the terms of this resolution to secure its implementation, with the approval of the Executive Committee of NASUCA. The Standing Committees or the Executive Committee shall notify the membership of any action taken pursuant to this resolution.

Approved by NASUCA:
Denver, Colorado

June 12, 2007

Opposed:
Ohio
Indiana
Colorado
Wyoming

Submitted by:
NASUCA Consumer Protection Committee

June 11, 2007

Abstained:
Massachusetts
California

**The National Association of State Utility Consumer Advocates
Resolution 2005-03**

INFRASTRUCTURE SURCHARGE RESOLUTION

Calling upon state regulatory authorities and legislatures to refuse to allow, or to consider revoking, annual tracking adjustments to rates resulting from additional non-traditional gas, water, sewer or electric infrastructure replacement programs;

Whereas, traditional ratemaking methodologies have allowed investor shareholders to earn a return on new and upgraded mains and electric plant through general rate case reviews allowing the ratepayers being charged for the prudent and necessary system upgrades to be represented in traditional contested rate proceedings in which all items of expense and capital investments are considered; and

Whereas, depreciation provides a "funding" mechanism for natural gas, water, sewer, and electric plant replacement because it reduces net operating income and increases the revenue required from rate payers for an acceptable rate of return during the formal rate proceeding; and

Whereas, traditional ratemaking processes have withstood the test of time, so that all parties represented have an opportunity to have their interests fairly represented; and

Whereas, parties representing the interests of shareholders and company managements may propose "short-circuit" methods focused on single categories of increased expense, in order to "speed up" the recovery of costs outside the normal regulatory process, and to provide regulators ways to avoid the rate review process; and

Whereas, utilities in several states have proposed, either in rate cases or as state legislation, various "tracking methodologies" which, if allowed, would enable them to increase rates through non-traditional ratemaking processes sometimes called DSIC (Distribution System Improvement Charge), DSR (Distribution System Replacement), AMRP (Accelerated Main Replacement Program) PRP (Pipeline Replacement Program) which would allow immediate rate recovery of capital investment for new projects on a year-by-year basis in order to replace certain rate base infrastructure through a surcharge; and

Whereas, if such tracking methodologies were allowed, regulatory authorities may not be able to review such capital investments for prudence, and may not be able to review possible offsetting contemporaneous cost reductions or revenue increases from other utility activities; and

Whereas, if such tracking methodologies are allowed ratepayers will become involuntary investors paying for unreviewed investments that will increase rates;

Whereas, at a time of rising commodity costs, regulators need to understand the potential significant new burden upon consumers caused by a tracking surcharge for plant additions;

THEREFORE BE IT RESOLVED, that NASUCA calls upon state regulatory authorities and legislators to refuse to impose on consumers, or to consider revoking, non-traditional infrastructure surcharges that would increase natural gas, water, sewer or electric utility bills without traditional opportunity for consideration of countervailing cost decreases and revenue increases, and review by all parties including appropriate consumer advocacy offices prior to implementation and to remain committed to traditional ratemaking principles fairly representing the interests of both consumers and stockholders.

BE IT FURTHER RESOLVED, that NASUCA authorizes its Standing Committees to develop specific positions and to take appropriate actions consistent with the terms of this resolution to secure its implementation, with the approval of the Executive Committee of NASUCA. The Standing Committees or the Executive Committee shall notify the membership of any action taken pursuant to this resolution.

Submitted by:

Michael D. Chrysler, Chair, Consumer Protection Committee
June 12, 2005

Approved by NASUCA

Place: New Orleans, LA
Date: June 14, 2005

91974



**The National Association of State Utility Consumer Advocates
Resolution 2005-04**

MINIMUM SERVICE QUALITY STANDARDS RESOLUTION

Calling upon state regulatory authorities to establish regular reporting requirements for utilities on service quality and to establish minimum performance standards with appropriate enforcement provisions so that adequate, reliable, and safe service is achieved and maintained; and

Whereas, adequate service quality from providers of gas, electric, water, and telecommunications services is essential to everyday life and affects almost every function of our society, and service inadequacies and interruptions frustrate or disrupt normal functions; and

Whereas, adequate service quality from such providers is also vital to our Nation's economy, our position in the global economy and to national security;

Whereas, gas, electric, water, and telecommunications service providers have a duty to provide service that is adequate, reliable, and safe; and

Whereas, consumers expect and should receive service that is consistently adequate, reliable, and safe; and

Whereas, utility industry developments over the past decade such as mergers, diversification, and changing economic conditions have encouraged utilities to cut costs, reduce staffs and outsource some utility operating functions, and such efforts to economize may have led to deterioration of service quality; and

Whereas, a gradual decline in performance may not be detected for some time if regulators do not keep informed as to service quality through regular monitoring; and

Whereas, by keeping informed, regulators are better able to recognize signs of deterioration and inadequacies so that they can take corrective action to avert major service quality problems that would otherwise be frustrating and disruptive to consumers; and

Whereas, standardized reporting requirements and regular reporting are necessary for regulators to be able to monitor service quality and changes in performance; and

Whereas, reports should address performance areas such as customer relations and billing (e.g., responsiveness of customer call centers, responsiveness to consumer complaints, timeliness of installations and repairs, and accuracy and frequency of billing and meter reading) and operating performance (e.g., frequency and duration of outages, and responsiveness to safety calls); and

Whereas, reporting requirements should be carefully designed to yield accurate data that is uniform and consistent; and

Whereas, in addition to keeping informed about service quality, regulators should establish measurable performance standards that must be met for providers to achieve and maintain a minimum quality of service, to the extent that quality of service is measurable, so that expectations are clear and problems are minimized; and

Whereas, performance standards should be supported by appropriate enforcement provisions; and

Whereas, service quality data and information should be available to the public to encourage companies to achieve good performance results, to assure that regulation is open and effective and to assist consumers who must choose among competitive providers;

THEREFORE BE IT RESOLVED, that NASUCA calls upon state regulatory authorities to establish regular service quality reporting requirements applicable to gas, electric, water, and telecommunications service providers, and to establish minimum performance standards with appropriate enforcement provisions to monitor and promote improvement toward a consistently high level of service quality for their gas, electric, water, and telecommunications customers.

BE IT FURTHER RESOLVED, that NASUCA authorizes its Standing Committees to develop specific positions and to take appropriate actions consistent with the terms of this resolution to secure its implementation, with the approval of the Executive Committee of NASUCA. The Standing Committees or the Executive Committee shall notify the membership of any action taken pursuant to this resolution.

Submitted by:

Michael D. Chrysler, Chair, Consumer Protection Committee
June 12, 2005

Approved by NASUCA:

Place: New Orleans, LA
Date: June 14, 2005

RESOLUTION

Calling Upon State Regulatory Authorities to resist the efforts of Local Gas Distribution Companies to expand the interpretation of gas cost to include a calculated portion of their uncollectible accounts expense or other non-gas costs in purchased gas cost recovery mechanisms.

Whereas, many natural gas Local Distribution Companies (LDCs) are permitted by State laws or regulations to change rates from time to time to track changes in the cost of natural gas supply and transportation through gas cost adjustments without a review of general rates;

Whereas, many such gas cost adjustment mechanisms provide for the periodic adjustment of rates to true up the difference between gas costs billed to consumers and gas costs incurred;

Whereas, the gas cost adjustment mechanisms have been found justified due to characteristics of the costs associated with purchasing and transporting gas to an LDC's distribution system; i.e., that such cost may make up a sizable portion of the total rate for natural gas service, that such costs are affected by many market conditions that are not within the control of the LDC, that such gas costs are volatile and may change significantly in a short time;

Whereas, some State regulatory authorities have been petitioned by LDCs to broaden the sort of expenses that may be recovered through gas cost adjustment mechanisms to include a portion of the expenses associated with uncollectible charges experienced by the LDC;

Whereas, the characteristics of uncollectible accounts are materially different from gas costs; i.e., while they are somewhat affected by variations in rates caused by changes in gas costs, uncollectible accounts expenses do not make up a sizeable portion of the total rate for natural gas service, they are affected by factors such as staffing and procedures within the control of the LDC, and the changes in uncollectible costs do not tend to be volatile;

Whereas, an expanded definition of gas costs would shift more risk to ratepayers and may remove traditional or performance based incentives for utilities to minimize costs;

THEREFORE BE IT RESOLVED, that NASUCA encourages state regulatory authorities to limit the use of gas cost adjustment mechanisms to the cost of purchasing and transporting natural gas supply to the LDC's distribution system.

BE IT FURTHER RESOLVED, that the Gas Committee of NASUCA, with the approval of the Executive Committee of NASUCA, is authorized to take all steps consistent with this Resolution in order to secure its implementation.

Submitted by:

June, 15, 2004

Approved by NASUCA

91970



NASUCA RESOLUTION

HIGH WINTER ENERGY COSTS RESOLUTION

WHEREAS the cost of home heating energy has always burdened low income households disproportionately compared with households of all other income levels; and

WHEREAS one of the most effective means of measuring this disparity is to evaluate the energy burden of a household by dividing the cost of home energy by the gross income of the same household to determine the percentage of income needed to meet energy costs; and

WHEREAS in 2005, the National Energy Assistance Directors Association ("NEADA") determined that all low-income households used, on average, 15% of their gross household income for energy costs (6% for heat alone), while all households used, on average, only 3% of their gross household income for energy costs (1% heat alone); and

WHEREAS in 2004, elderly households in receipt of Supplemental Security Income paid nearly 19% of their income for energy, and households in receipt of Aid to Families with Dependent Children paid 26% of their income for energy; and

WHEREAS the Energy Information Administration ("EIA") has forecast dramatic increases in the cost of energy which will have an immediate and deleterious short term effect on the already disproportionate energy burden on low-income households; and

WHEREAS, based on EIA data from September 2005, the average family heating with oil could spend as much as \$1,666 during the winter of 2005-2006. This would represent an increase of \$403 over the costs for the winter of 2004-2005 and an increase of \$714 over the costs for the winter of 2003-2004; and

WHEREAS the EIA anticipates that heating fuel expenditure increases from the winter of 2004 to the winter of 2005 are likely to average 73% for natural gas in the Midwest; 19% for electricity in the South; 31% for heating oil in the Northeast; and 41% for propane in the Midwest; and

WHEREAS, the Center on Budget and Policy Priorities ("CBPP"), an independent, bipartisan research institute, calculated (<http://www.cbpp.org/10-6-05bud.htm>) that the average low income household (income below the greater of 150% of the federal poverty guidelines or 60% of the state median income) will incur an average heating bill increase of \$500 for the 2005-2006 winter; and

WHEREAS the easily predictable outcome of the combination of the extreme energy burden

currently facing low-income households and the anticipated increase in home energy costs is the creation of a "perfect storm" which will result in an unparalleled challenge to the energy safety net below low-income households; and

WHEREAS these increased costs for home energy during the winter of 2005-2006 were predicated on the foreseeable actions in the marketplace based upon historically accurate and verifiable facts, factors, formulae and information; and

WHEREAS short-term and long-term effects of Hurricanes Katrina and Rita including the damage and destruction to the production, storage, transportation and infrastructure of the natural gas and crude oil industries, and the resulting escalation of home energy costs as a result of the depletion of reserves and the inability of the industries to quickly recover from the devastation remains to be calculated; and

WHEREAS the severe constraints on state and local government budgets already strain the ability of those entities to reinforce the low income safety net; and

WHEREAS the nonprofit, faith-based, and other community-based organizations, secondarily charged with the task of assisting low-income households with problems such as the imminent energy crisis are similarly constrained by limited resources and increasing energy costs; and

WHEREAS the Low Income Home Energy Assistance Program ("LIHEAP") is a federally-funded, state-administered energy plan designed to provide funding to the states to assist low-income households in meeting the costs of home energy; and

WHEREAS since the winter of 2001-2002, the national appropriation for LIHEAP has wholly failed to match the pace of the increase in home heating costs; and

WHEREAS the anticipated funding for the 2005-2006 LIHEAP Year fails to keep pace with inflation and would fail to be even minimally adequate to compensate for the anticipated spikes in home energy and home heating energy now predicted by the EIA; and

WHEREAS in 2005, NEADA determined that LIHEAP funding between the 2001-2002 and 2004-2005 fiscal year increased by 21.4%, but the share of a low-income households' heating expenditures met by the average LIHEAP grant fell from 49.4% to 25.2% for heating oil, from 52.3% to 33.4% for natural gas, and from 35.5% to 23.1% for propane; and

WHEREAS in 2005, NEADA determined that between 2001-2002 and 2004-2005 the price of oil for heating increased by \$624, and the price of natural gas for heating increased by \$352, and the price of propane for heating increased by \$489, yet, the average LIHEAP grant increased by \$3; and

WHEREAS, according to the EIA, while the average cost of home heating fuel for the coming winter may rise precipitously: heating oil by 98%, propane by 55%, and natural gas by 58%, the national appropriation for LIHEAP, since the winter of 2001-2002, has risen by only about 20%; and

WHEREAS the proposed 2005-2006 executive federal budget appropriation called for a decrease in funding of approximately \$250 million with no emergency contingency funding; and

WHEREAS the House of Representatives Labor-HHS-Education Appropriations Committee has proposed FY 2006 LIHEAP funding at \$2.006 billion in regular funding and no emergency contingency funding; and

WHEREAS the Senate Appropriations Committee has proposed FY 2006 LIHEAP funding at \$1.8 billion in regular funding and \$300 million in emergency contingency funding; and

WHEREAS the CBPP calculates that, in order to maintain 2005-2006 LIHEAP purchasing power, taking into consideration general inflation, at the same level as 2004-2005 LIHEAP, the national appropriation should increase to \$3.025 billion; and

WHEREAS the CBPP calculates that a mere 5% increase in the number of eligible applicants for LIHEAP assistance would require additional national 2005-2006 LIHEAP funding in the amount of \$150 million; and

WHEREAS the CBPP calculates that to hold beneficiaries of LIHEAP assistance harmless in the face of the entire expected price increase would require additional 2005-2006 LIHEAP funding in the amount of \$2.033 billion; and

WHEREAS the CBPP calculates that the total minimum federal appropriation required for the 2005-2006 LIHEAP is \$5.208 billion; and

WHEREAS LIHEAP remains a targeted block grant program with the built-in flexibility and an established federal-state partnership to effectively and efficiently deliver the funding necessary to ease the crisis on increasingly unaffordable energy costs for low-income households; and

WHEREAS the current appropriations and proffered amendments clearly are insufficient to deal with the anticipated increases in home energy costs; *now therefore be it*

RESOLVED that NASUCA urges Congress to appropriate FY 2006 LIHEAP regular funding of at least \$5.208 billion, as recommended by CBPP, and to appropriate an additional \$500 million for emergency contingency funding to assist low-income households in meeting the exorbitant home energy costs anticipated for the winter of 2005-2006; and

BE IT FURTHER RESOLVED that NASUCA authorizes its Standing Committees to develop specific positions and to take appropriate actions consistent with the terms of this resolution to secure its implementation, with the approval of the Executive Committee of NASUCA. The Standing Committees or the Executive Committee shall notify the membership of any action taken to this resolution.

Submitted by:

Michael D. Chrysler, Chair, Consumer Protection Committee
November 16, 2005

Approved by NASUCA

91969

ATTACHMENT E

Experience

Snively King Majoros O'Connor & Lee, Inc. Washington, DC

***President (1989 to Present)
Vice President (1970 - 1989)***

Mr. King, a founder of the firm and acknowledged authority on regulatory economics, brings over thirty years of experience in economic consulting to his direction of the firm's work in transportation, utility and telecommunications economics.

Mr. King has appeared as an expert witness on over 300 separate occasions before more than thirty state and nine U.S. and Canadian federal regulatory agencies, presenting testimony on rate base calculations, rate of return, rate design, costing methodology, depreciation market forecasting, and ratemaking principles. Mr. King has also testified before House and Senate Committees on energy and telecommunications legislation pending before the U.S. Congress.

In telecommunications, Mr. King has testified before the Federal Communications Commission on a number of policy issues, service authorization, competitive impacts, video dialtone, and prescription of interstate depreciation rates. Before state regulatory bodies, he has presented testimony in proceedings on intrastate rates, costs earnings and depreciation.

Mr. King has testified in electric, gas and water utility cases on virtually every aspect of regulation, including cost of capital, revenue requirements, depreciation, cost allocation and rate design. Mr. King is one of the nation's leading authorities on utility depreciation practices, having testified on this subject in several dozen cases before state regulatory bodies.

In addition to his appearances as a witness in judicial and administrative proceedings, Mr. King has negotiated settlements among private parties and between private parties and regulatory offices. Mr. King also has directed depreciation studies, investment cost benefit analyses, demand forecasts, cost allocation studies and antitrust damage calculations. Mr. King directed analyses of the prices of services under Federal Government's FTS2000 long distance system.

In Canada, Mr. King designed and directed an extended inquiry into the principles and procedures for regulating the telecommunication carriers subject to the jurisdiction of the Canadian Transport Commission. He also was the principal investigator in the Canadian Transport Commission's comprehensive review of rail costing procedures.

EBS Management Consultants, Inc., Washington, DC

***Director, Economic Development Department
(1968-1970)***

Mr. King organized and directed a five-person staff of economists performing research, evaluation, and planning relating to economic development of depressed areas and communities within the U.S. Most of this work was on behalf of federal, state, and municipal agencies responsible for community or regional economic development.

Principal Consultant (1966-1968)

Mr. King conducted research on a broad range of economic topics, including transportation, regional economic development, communications, and physical distribution.

W.B. Saunders & Company, Inc., Washington, DC

Staff Economist (1962-1966)

For this economic consulting firm, which later merged with EBS Management Consultants, Inc., Mr. King engaged in numerous research efforts relating primarily to economic development and transportation.

U.S. Bureau of the Budget, Office of Statistical Standards

Analytical Statistician (1961-1962)

Mr. King was responsible for the review of all federal statistical and data-gathering programs relating to transportation.

Education

Washington & Lee University, B.A. in Economics

*The George Washington University, M.A. in
Government Economic Policy*

State	Electric, Gas, Water Utility Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
AK	Exxon USA	P-89-1,2	Trans Alaska Pipeline System	October 18, 1990
AZ	Arizona Corporation Commission Arizona Retailers Association	U-1345-I U-1345-II	Arizona Public Service Co. Arizona Public Service Co.	December 16, 1980 January 15, 1981
CA	California Retailers Association California Retailers Association California Retailers Association California Retailers & California Manufacturers California Retailers Association	57666 57602 59351 59351 61138	Pacific Gas & Electric Co. Southern California Edison Pacific Gas & Electric Co. Southern California Edison Southern California Edison	March 6, 1978 April 25, 1978 June 12, 1981 May 20, 1982 May 28, 1982
CO	U. S. Department of Defense J.C. Penney Company U.S. Department of Defense U. S. Department of Defense U. S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense	I&S 1100 5693 I&S 1339 I&S 1540 C. Council C. Council C. Council C. Council	Colorado Springs (Elec) All Electric Utilities Colorado Springs DPU (Gas) Colorado Springs DPU (Gas) Colorado Springs DPU (Gas) Colorado Springs DPU (Elec) Colorado Springs DPU (Elec) Colorado Springs DPU (Elec)	June 14, 1977 March 8, 1978 October 18, 1979 February 9, 1982 September 30, 1984 June 6, 1985 May 19, 1986 June 30, 1987
CT	Retailers Merchants Association Division of Consumer Counsel Public Utilities Control Auto Division of Consumer Counsel Division of Consumer Counsel Division of Consumer Counsel Division of Consumer Counsel Coalition of Hotels, Alloys & Retailers Coalition of Hotels, Alloys & Retailers	72-0204 76-0604,5 78-0303 80-0403,4 81-0413 81-0602,4 82-0701 85-10-22 87-07-01	Various Electric Utilities CL&P and HELCO Bridgeport Hydraulic Co. CL&P and HELCO United Illuminating Company CL&P and HELCO CL&P CL&P CL&P	July 22, 1976 November 10, 1977 (none) August 11, 1980 July 20, 1981 October 5, 1981 September 28, 1982 (none) April 25, 1988

Electric, Gas, Water Utility Cases				
State	Client	Case		Date of Cross-Examination
		Case Number	Utility	
DC	D.C. People's Counsel	685	Potomac Electric Power Company	March 6, 1978
	D.C. People's Counsel	715	Potomac Electric Power Company	(none)
	D.C. People's Counsel	725	Potomac Electric Power Company	April 4, 1980
	D.C. People's Counsel	737	Potomac Electric Power Company	January 1, 1981
	Washington Metro Area Transit Authority	748	Potomac Electric Power Company	June 26, 1981
	Washington Metro Area Transit Authority	758	Potomac Electric Power Company	December 15, 1981
	D.C. People's Counsel	785	Potomac Electric Power Company	September 21, 1982
	Washington Metro Area Transit Authority	759	Potomac Electric Power Company	March 29, 1984
	D.C. People's Counsel	685 Remand	Potomac Electric Power Company	June 10, 1985
	D.C. People's Counsel	905	Potomac Electric Power Company	August 20, 1991
	D.C. People's Counsel	912	Potomac Electric Power Company	May 7, 1992
	D.C. People's Counsel	834, III	Potomac Electric Power Company	May 22, 1992
	D.C. People's Counsel	917	Potomac Electric Power Company	September 24, 1992
	D.C. People's Counsel	922	Washington Gas Light Company	June 15, 1993
	D.C. People's Counsel	929	Potomac Electric Power Company	December 16, 1993
	D.C. People's Counsel	934	Washington Gas Light Company	Filed April 22, 1994
	D.C. People's Counsel	939	Potomac Electric Power Company	March 16, 1995
	D.C. People's Counsel	917	Potomac Electric Power Company	April 16, 1995
	D.C. People's Counsel	951	Potomac Electric Power Company	February 20, 1997
	D.C. People's Counsel	945	Potomac Electric Power Company	September 29, 1999
	D.C. People's Counsel	847	Washington Gas Light Company	June 27, 2001
	D.C. People's Counsel	989	Washington Gas Light Company	May 22, 2002
	D.C. People's Counsel	1016	Washington Gas Light Company	September 23, 2003
DE	Delaware PSC Staff	94-164	Artesian Water Company	Filed March 10, 1995
	Delaware PSC Staff	94-149	Wilmington Suburban Water Company	March 10, 1995
	Delaware PSC Staff	04-152	Tidewater Utilities Company	Filed July 26, 2004
FL	Florida Retail Federation	790593-EU	All Electric Utilities	March 5, 1981
	Florida Retail Federation	810002-EU	Florida Power and Light Company	July 23, 1981
	Florida Retail Federation	820097-EU	Florida Power and Light Company	September 22, 1982
	Florida Retail Federation	820097-EU	Florida Power and Light Company	April 11, 1983
	Florida Retail Federation	830012-EU	Tampa Electric Company	August 19, 1983
	Florida Retail Federation	830465-EI	Florida Power and Light Company	April 19, 1984
	Florida Retail Federation	830465-EI	Tampa Electric Company	(none)

State	Electric, Gas, Water Utility Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
GA	Georgia Retail Federation Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission Georgia Public Service Commission	3270-U 4007-U 4384-U 4755-U 4697-U 9355-U 14000-U 14518-U 14311-U 17066-U 18300-U 18638-U 19758-U 20298-U	Georgia Power Company Georgia Power Company All Electric Utilities Georgia Power Company All Utilities Georgia Power Company Georgia Power Company Savannah Electric & Power Company Atlanta Gas Light Company Georgia Power Company Georgia Power Company Atlanta Gas Light Company Savannah Electric & Power Company Atmos Energy Corp.	September 3, 1981 August 21, 1991 August 1, 1993 January 25, 1994 May 10, 1994 November 4, 1998 October 23, 2001 March 27, 2002 April 8, 2002 July 31, 2003 October 26, 2004 March 14, 2005 March 29, 2005 October 11, 2005	
HI	Public Utilities Department Hawaii Consumer Advocate	2793 4536	All Electric Utilities Hawaiian Electric Company	February 14, 1978 February 1, 1983	
IL	Illinois Retail Merchants Association ("IRMA")/ Chicago Bldg. Mgrs. Association ("CBMA") IRMA/CBMA IRMA/CBMA IRMA/CBMA IRMA/CBMA IRMA/CBMA IRMA/CBMA City of O'Fallon, IL	76-0698 76-0568 80-0546 82-0026 83-0537 87-0427 90-0169 02-0690	Commonwealth Edison All Electric Utilities Commonwealth Edison Commonwealth Edison Commonwealth Edison Commonwealth Edison Commonwealth Edison Illinois-American Water Company	June 22, 1977 (none) March 5, 1981 July 22, 1982 March 19, 1984 March/April 22, 1988 October 29, 1990 Filed Feb.5, Apr.11,2003	
IN	Indiana Retail Council Indiana Retail Council Indiana Retail Council	35780-S2 35780-S1 36318	N. Ind. Public Service co. Public Service of Indiana Public Service of Indiana	June 1, 1980 October 15, 1980 May 4, 1982	
KS	J.C. Penney Company	115,379-U	All Kansas Utilities	January 22, 1981	
KY	Seven Kentucky Retailers Attorney General of Kentucky Attorney General of Kentucky Attorney General of Kentucky	7310 2002-145 2003-252 2004-67	Louisville Gas & Electric Co. Columbia Gas of Kentucky Union Heat Light & Power Co. Delta Gas Company	April 25, 1979 Filed August 8, 2002 September 30, 2003 August 18, 2004	

CHARLES W. KING
Appearances before State Regulatory Agencies

State	Electric, Gas, Water Utility Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
MA	Coalition of Municipalities	20279	Western Massachusetts Electric	March 19, 1980
	Coalition of Municipalities	557/558	Western Massachusetts Electric	May 14, 1981
	Coalition of Municipalities	957	Western Massachusetts Electric	March 9, 1982
	Coalition of Municipalities	1300	Western Massachusetts Electric	January 1, 1983
	Coalition of Municipalities	85-270	Western Massachusetts Electric	March 26, 1986
MD	Maryland People's Counsel	6977	Washington Gas & Light Company	September 17, 1976
	Maryland People's Counsel	6814	Potomac Electric Power Company	September 1, 1977
	Maryland People's Counsel	6807	All Electric Utilities	(none)
	Maryland People's Counsel	6882	Baltimore Gas & Electric Company	September 28, 1976
	Maryland People's Counsel	6985	Baltimore Gas & Electric Company	December 20, 1976
	Maryland People's Counsel	7070	Baltimore Gas & Electric Company	April 18, 1978
	Maryland People's Counsel	7149	Potomac Electric Power Company	January 17, 1979
	Maryland People's Counsel	7163	All Electric Utilities	October 23, 1978
	Maryland People's Counsel	7236	Delmarva Power & Light Company	June 20, 1980
	Retail Merchants of Baltimore	7397	Baltimore Gas & Electric Company	September 8, 1980
	Maryland People's Counsel	7427	Delmarva Power & Light Company	December 2, 1981
	Maryland People's Counsel	7574	Baltimore Gas & Electric Company	February 18, 1982
	Maryland People's Counsel	7597	Potomac Electric Power Company	April 20, 1982
	Organization of Consumer Justice	7604	Potomac Electric Power Company	October 19, 1982
	Maryland People's Counsel	7588	Baltimore Gas & Electric Company	November 22, 1982
	Maryland People's Counsel	7663	Potomac Electric Power Company	April 12, 1983
	Retail Merchants of Baltimore	7685	Baltimore Gas & Electric Company	December 9, 1985
	Genstar Stone Products, et al.	7878	Potomac Electric Power Company	June 28/July 1986
	Industrial intervenors	7878	Potomac Electric Power Company	March 4, 1987
	Maryland People's Counsel	7983	Baltimore Gas & Electric Company	January 8, 2003
	Giant Foods, Inc.	8855	Baltimore Gas & Electric Company	September 29, 2005
	Maryland People's Counsel	9036	Baltimore Gas & Electric Company	April 16, 2007
	Maryland People's Counsel	9092	Potomac Electric Power Company	April 9, 2007
	Maryland People's Counsel	9093	Delmarva Power & Light Company	
MI	General Services Administration	U-10102	Detroit Edison Company	March 22, 1993
	Michigan Attorney General	U-11722	Detroit Edison Company	November 6, 1998
	Michigan Attorney General	U-11772	Consumers Energy/Detroit Edison	November 16, 1998
	Michigan Attorney General	U-11495	Detroit Edison Company	December 8, 1999
	Michigan Attorney General	U-11956	Consumer Energy/Detroit Edison	December 15, 1999
	Michigan Attorney General	U-12505	Consumers Energy Company	September 7, 2000
	Michigan Attorney General	U-12478	Detroit Edison Company	October 5, 2000
	Michigan Attorney General	U-12639	Consumers Energy/Detroit Edison	July 18, 2001
	Michigan Attorney General	U-13000	Consumers Energy Company	January 29, 2002
	Michigan Attorney General	U-13380	Consumers Energy Company	September 9, 2002
	Michigan Attorney General	U-13715	Consumers Energy Company	April 24, 2003
	Michigan Attorney General	U-13808	Detroit Edison Company	Dec 12, 2003; Jan 30, Mar 5, 04

CHARLES W. KING
Appearances before State Regulatory Agencies

State	Electric, Gas, Water Utility Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
MI (Cont'd)	Michigan Attorney General	U-12999	Consumers Energy Company	March 10, 2004	
	Michigan Attorney General	U-13898.9	Michigan Consolidated Gas Co.	August 23, 2004	
	Michigan Attorney General	U-14201	Detroit Edison Company	Filed December 5, 2004*	
	Michigan Attorney General	U-14274	Consumers Energy Company	Filed February 15, 2005	
	Michigan Attorney General	U-14148	Consumers Energy Company	Filed March 2, 25, 2005	
	Michigan Attorney General	U-14399	Detroit Edison Company	July 29, 2005	
	Michigan Attorney General	U-14428	Detroit Edison Company	September 7, 2005	
	Michigan Attorney General	U-14292	All Michigan Utilities	September 27, 2005	
	Michigan Attorney General	U-13808-R	Detroit Edison Company	November 7, 2005	
	Michigan Attorney General	U-14547	Consumers Energy Company	Nov. 7, 2005; Mar. 22, 2006	
MN	Michigan Attorney General	U-14701	Consumers Energy Company	March 21, 2006	
	Michigan Attorney General	U-14526	Consumers Energy Company	April 11, 2006	
	Michigan Attorney General	U-14561	All Gas Distribution Utilities	June 1, 2006	
	Michigan Attorney General	U-15002	Detroit Edison Company	December 8, 2006	
	Minnesota Retail Federation	EOO26R-77-611	Northern States Power	1979	
MO	Missouri Retailers Association	EO-78-161	Kansas City Power & Light Company	February 19, 1981	
	Missouri Public Counsel	ER-2006-0315	Empire District Electric Company	September 14, 2006	
NC	Missouri Public Counsel	GR-2007-0003	Ameren UE (Gas)	Filed December 15, 2006	
	Missouri Public Counsel	ER-2007-0002	Ameren UE (Electric)	March 22, 2007	
NC	North Carolina Merchants Association	E-100	All Electric Utilities	December 18, 1975	
ND	North Dakota Public Service Commission	PU-400-00-521	Xcel Energy, Inc.	April 20, 2001	
	North Dakota Public Service Commission	PU-399-01-186	Montana-Dakota Utilities (Electric)	February 25, 2002	
	North Dakota Public Service Commission	PU-399-02-183	Montana-Dakota Utilities (Gas)	October 7, 2002	
	North Dakota Public Service Commission	PU-399-02-183	Montana-Dakota Utilities (Gas Depr.)	Filed April 7, 2003	
	North Dakota Public Service Commission	PU-399-03-296	Montana-Dakota Utilities (Electric)	Filed October 15, 2003	
NH	North Dakota Public Service Commission	PU-04-97	Montana-Dakota Utilities (Gas)	Filed July 6, 2004	
	Business & Industry Association of N.H.	79-187-II	Public Service of N.H.	February 6, 1981	
	Business & Industry Association of N.H.	80-260	Public Service of N.H.	February 5, 1981	
NJ	Business & Industry Association of N.H.	82-333	Public Service of N.H.	November 2, 1983	
	N.J. Retail Merchants Association	803-151	All New Jersey Utilities	March 31, 1981	
	Department of Public Advocate	815-459	N.J. Natural Gas Company	(none)	
	Resorts International Hotel, Inc.	8011-827	Atlantic City Sewerage Co.	(none)	
	Dept. of Public Advocate	822-116	Atlantic City Electric Co.	August 11, 1982	
	Dept. of Public Advocate	355-87	Elizabethtown Gas	June 9, 1987	
	Dover Township Fire Chiefs	88-080967	Tom's River Water Company	February 22, 1989	

CHARLES W. KING
Appearances before State Regulatory Agencies

Electric, Gas, Water Utility Cases				
State	Client	Case		Date of Cross-Examination
		Case Number	Utility	
NY	N.Y. Council of Retail Merchants Metropolitan N.Y. Retail Council Metropolitan N.Y. Retail Council N.Y. Metro. Transit Authority	26806 27029 27136 27353	All Electric Utilities Consolidated Edison Company Long Island Lighting Company Consolidated Edison Company	February 3, 1976 (none) July 1, 1977 September 5, 1980
OH	Ohio Council of Retail Association Ohio Council of Retail Association	88-170-EL 83-1529-EL	Cleveland Elec. Illuminating Cincinnati Gas & Electric	(none) February 15, 1992
PA	Pennsylvania Retail Association Southeastern Pa. Transp. Authority Eastern Penn Energy Users Group Eastern Penn Energy Association Penn Business Utility User Group Pennsylvania Office of Consumer Advocate	76-PRMD-7 R-811626 R-822169 R-842651 R-850152 R-00016339	All Electric Utilities Philadelphia Electric Company Penn. Power & Light Company Penn. Power & Light Company Philadelphia Electric Company Pennsylvania-American Water Co.	September 7, 1977 December 11, 1981 March/April 1983 December 3, 1984 February 19, 1986 September 19, 2001
TX	Houston Retailers Association Houston Retailers Association Cities for Fair Utility Rates	5779 6765 8425/8431	Houston Lighting Company Houston Lighting Company Houston Lighting Company	October 19, 1984 September 25, 1986 April 25, 1989
UT	Div. Of Public Utilities Dept of Commerce Div. Of Public Utilities Dept of Commerce	98-2035-33 05-057-T01	Pacific Corp Questar Gas Company	Filed August 16, Sept 22, 1999 May 17, 2006
VA	Consumer Congress of Virginia Consumer Congress of Virginia Va. Business Committee on Energy Virginia Pipe Trades Council	19426 19960 PUE 7900012 PUE 8900051	Virginia Electric Power Company Virginia Electric Power Company Virginia Electric Power Company Old Dominion Electric Corp. &	July 1, 1975 September 19, 1978 February 25, 1981 October 31, 1989
WI	Wisconsin Merchants Federation	6630-ER-2	Wisconsin Electric Power Company	May 15, 1978

State	Telecommunications Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
AL	U.S. Department of Defense	24472	All Telephone Companies	June 14, 1995
AK	GCI Communications, Inc. GCI Communications, Inc.	U-97-82,U-97-143 U-05-46	Alaska Communications Systems Matanuska Telephone Association	Filed Feb 25, April 5, 2004 October 28, 2005
AZ	Arizona Burglar & Fire Alarm Association	9981-E- 1051-80-64	Mountain State Telephone	(none)
	Federal Executive Agencies U.S. Department of Defense	E-1051-88-146 T-01051B-99-0105	Mountain State Telephone US WEST Communications	(none) Filed July 26, Sept 8, 2000
CA	Western Burglar & Fire Alarm Association	59849	Pacific Telephone & Telegraph	March 25, 1981
	Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association Western Burglar & Fire Alarm Association California Cellular Resellers Federal Executive Agencies California Cellular Resellers Cellular Services, Inc. Federal Executive Agencies	5984cont. A83-01-22 A83-02-02 A82-11-07 A85-01-034 A87-01-02 A88-07-17019 A.88-11-1040 1.87-11-033 1.88-11-040 1.88-11-040 A92-05-004	Pacific Telephone & Telegraph Pacific Telephone & Telegraph Pacific Telephone & Telegraph General Telephone of California Pacific Telephone & Telegraph Pacific Telephone & Telegraph General Telephone of California Pac. Bell Tel. & GTE of CA. All Cellular Carriers All Telephone Companies All Cellular Carriers All Cellular Carriers Pacific Telephone & Telegraph	June 23, 1982 June 29, 1983 January 17, 1984 Jan. 18, Oct. 31, Nov 28, 1984 June 4, 1985, October 2, 1986 October 22, 1987 January 23, 1989 August 11, 1989 March 6-7, 1991 August 19, 1991 October 3, 1991 June 9, 1993
CO	U.S. Department of Defense	I&S 717	Mountain Bell Telephone Company	1972
	U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense Colorado Municipal League U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense AT&T	I&S 1700 Appl. I&S 1766 Appl 36883 I&S 891-O82T 905-544T 90A-665T 92M-039T 92S-229T 90A-665T 96S-331T	Mountain Bell Telephone Company Mountain Bell Telephone Company Mountain Bell Telephone Company Mountain Bell Telephone Company U.S. West Communications U.S. West Communications U.S. West Communications U.S. West Communications U.S. West Communications U.S. West Communications U.S. West Communications	(none) September 18, 1986 November 28, 1988 December 13, 1988 February 21, 1990 July 17, 1991 October 23, 1991 February 24-24, 1992 July 30-31, 1992 November 6, 1996 April 17, 1997

CHARLES W. KING
Appearances before State Regulatory Agencies

Telecommunications Cases				
State	Client	Case		Date of Cross-Examination
		Case Number	Utility	
CT	Connecticut Consumer Counsel	770526	Southern New England Telephone Co	November 10, 1977
	CT Cellular Resellers Assn.	89-12-05	Southern New England Telephone Co	(none)
	CT Cellular Resellers Coalition	94-03-27	Springwich Cellular/Bell Atlantic	May 16, June, 1994
	AT&T	AT&T/SNET Arbitration	Southern New England Telephone Co	Filed October 28, 1996
	Connecticut Consumer Counsel	96-04-07	Southern New England Telephone Co	February 10, 1998
	Connecticut Consumer Counsel	00-07-17	Southern New England Telephone Co	December 5, 2000
DC	D.C. People's Counsel	729	Chesapeake & Potomac Tel. Co.	May 13, 1980
	D.C. People's Counsel	798	Chesapeake & Potomac Tel. Co.	July 18, 1983
	General Services Administration	827	Chesapeake & Potomac Tel. Co.	May 7, 1985
	General Services Administration	854	Chesapeake & Potomac Tel. Co.	April 16, 1987
	General Services Administration	850	Chesapeake & Potomac Tel. Co.	October 7, 1991
	General Services Administration	926	Chesapeake & Potomac Tel. Co.	October 7, 1993
DE	Public Service Commission	Depr.Repre	Diamond State Telephone Co.	April 1, 1985
	Federal Executive Agencies	86-20	Diamond State Telephone Co.	July 31, 1987
	Public Service Commission	Depr.Repre	Diamond State Telephone Co.	March 8, 1988
FL	GTE Sprint Communications Company	720536-TP	All Telephone Companies	September 12, 1983
	Office of Public Counsel	Depr.Repre	Southern Bell	July 30, 1986
	Federal Executive Agencies	880069-TL	Southern Bell	July 21, 1988
	Federal Executive Agencies	880069-TL	Southern Bell	November 30, 1990
	Federal Executive Agencies	880069-TL	Southern Bell	February 11, 1992
GA	Georgia Attorney General	3893-U	Southern Bell Telephone Co.	January 8, 1990
	Federal Executive Agencies	3905-U	Southern Bell Telephone Co.	June 12, 1990
	Federal Executive Agencies	3987-U	Southern Bell Telephone Co.	February 13, 1992
	Georgia Public Service Commission	4018-U	Southern Bell Telephone Co.	Jan 14, Feb 10, 1993
HI	Hawaii Public Utility Commission	1871	Hawaiian Telephone Company	July 8, 1971
	Four Hawaii Counties	4588	Hawaiian Telephone Company	December 15, 1983
	Department of Defense	7579	Hawaiian Telephone Company	April 26, 1994
	Department of Defense	94-0093	Oceanic Communications	March 13, 1995
	Department of Defense	7702	All Communications Carriers	June 2, 1995
	Department of Defense	94-0298	GTE Hawaiian Telephone Company	May 7, 1996
	Department of Defense	7720	Verizon-Hawaii	November 15, 2000

State	Telecommunications Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
ID	U.S. Department of Energy U.S. Department of Energy	U-1000-63 U-1000-70	Mountain Bell Telephone Co. Mountain Bell Telephone Co.	May 16, 1983 March 6, 1984
IL	Illinois Alarm Companies Attorney General of Illinois GTE Sprint Communications Co. Federal Executive Agencies	79-0143 81-0478 83-0142 89-0033	Illinois Bell Telephone Illinois Bell Telephone All Telephone Companies Illinois Bell Telephone	September 26, 1979 December 28, 1981 August 4, 1983 June 12, 1989
KS	State Corporation Commission Federal Executive Agencies Federal Executive Agencies	Depr. Repr. 166.856-U 190, 492	Southwestern Bell Southwestern Bell All Telephone Companies	May 12-14, 1986 November 7, 1989 November 4, 1994
KY	Kentucky Cable Telecommunications Assn. Kentucky Cable Telecommunications Assn.	2000-414 2000-39	Blue Grass Energy Cooperative Cumberland Valley Electric, Inc.	January 11, 2001 January 11, 2001
MD	Maryland People's Counsel Maryland People's Counsel Maryland People's Counsel Maryland People's Counsel Federal Executive Agencies Federal Executive Agencies Federal Executive Agencies	6813 6881 7025 7467 7851 8106 8274	C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company C&P Telephone Company	1975 December 17, 1975 March 15, 1975 October 20, 1981 March 20, 1985 May 9, 1988 August 2, 1990
MI	Michigan Attorney General Michigan Attorney General	U-8911 U-9553	Michigan Bell Telephone Co. AT&T Communications/MCI	November 7, 1988 December 4, 1990
MN	GTE Sprint Communications Co. U.S. Department of Defense	83-102-HC 87-021-BC	All Telephone Companies Northwest Bell Telephone Co.	August 5, 1983 (none)

State	Telecommunications Cases				Date of Cross-Examination
	Client	Case		Utility	
		Case Number			
MO	GTE Sprint Communications Co. Federal Executive Agencies Federal Executive Agencies	TR83-253 TC-89-14 TO-89-56		Southwestern Bell Tel. Co. Southwestern Bell Tel. Co. Southwestern Bell Tel. Co.	September 5, 1983 (none) November 7, 1990
MS	Federal Executive Agencies	U-5453		South Central Bell Tel. Co.	May 15, 1990
NJ	Department of Public Advocate Department of Public Advocate Department of Public Advocate Department of Public Advocate Department of Public Advocate	Depr.Repr. 815-458 Depr.Repr. Depr.Repr. T092030358 TMO05080739		N.J. Bell Telephone Company N.J. Bell Telephone Company N.J. Bell Telephone Company N.J. Bell Telephone Company N.J. Bell Telephone Company United Telephone Co. of New Jersey	Mar-79 October 15, 1981 March 1, 1982 February 1, 1985 September 30, 1992 January 5,2006
NM	New Mexico Corporation Commission New Mexico Corporation Commission	1032 86-151-TC		Mountain Bell Telephone Co. General Telephone of Southwest	November 14, 1983 February 5, 1987
NV	Prime Cable of Las Vegas Prime Cable of Las Vegas	95-8034/8035 96-9035		Central Telephone - NV Sprint/Centel, Nevada Bell	Filed November 22, 1995 June 2, 1997
NY	Holmes Protection, Inc. Holmes Protection, Inc. 5 Alarm Companies GTE Sprint Communications Co.	27350 27469 27710 28425		New York Telephone Company New York Telephone Company New York Telephone Company All Telephone Companies	October 17, 1978 May 17, 1979 July 24, 1980 July 8, 1983
PA	City of Philadelphia	R-832316		Pennsylvania Bell Telephone	September 20, 1983
SC	Office of Consumer Advocate Office of Consumer Advocate Office of Consumer Advocate Office of Consumer Advocate Office of Consumer Advocate	Depr.Repr. 86-511-C 86-541-C Depr.Repr. 89-180-C		Southern Bell Southern Bell General Telephone of South Southern Bell ALL TEL of South Carolina	July 1, 1986 December 11, 1986 April 8, 1987 July 10, 1989 September 26, 1989

CHARLES W. KING
Appearances before State Regulatory Agencies

State	Telecommunications Cases			Date of Cross-Examination
	Client	Case		
		Case Number	Utility	
TX	U.S. Department of Defense	8585/8218	Southwestern Bell Telephone Co.	(none)
VA	U.S. Dept. Of Defense, GSA, et Federal Executive Agencies	19696 PUC 890014	C&P Telephone Company All Telephone Companies	October 6, 1976 February 13, 1989
VI	V.I. Department of Commerce V.I. Public Service Commission	205 341	Virgin Islands Telephone Co. Virgin Islands Telephone Co.	April 29, 1980 March 20, 1991
WA	U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense U.S. Department of Defense WA Attorney General/TRACER U.S. Department of Defense U.S. Department of Defense WA Attorney General/TRACER WA Attorney General/TRACER U.S. Department of Defense WA Attorney General/WeBTEC/AARP WA Attorney General WA Attorney General	U-72-39 U-87-796-T U-88-20524 U-89-2698-F UT-940641 UT-941464 UT-951425 UT-961632 UT-021120 UT-040788 UT-040520 UT-050814	Pacific Northwest Bell Pacific Northwest Bell Pacific Northwest Bell US West Communications US West Communications US West Communications US West Communications GTE Northwest, Inc Qwest Communications Verizon Northwest, Inc. Verizon Northwest, Inc. Verizon - MCI Merger	1973 December 20, 1983 November 8, 1988 November 28, 1989 Filed October 14, 1994 June 22, 1995 January 22, 1996 Filed June 23, 1997 July 29, 1997 May 22, 2003 August 12, 2004 February 2, 2005 November 2, 2005
WI	GTE Sprint Wisconsin Consumers Utility Board Wisconsin Consumers Utility Board	6720-TR-38 2055-TR-102 5846-TR-102	All Telephone Companies CenturyTel of Central Wisconsin Telephone USA, LLC	October 20, 1983 June 26, 2002 June 26, 2002

Federal Communications Commission				
Client	Docket	Subject	Date of Cross-Examination	
Department of Defense Airline Parties Airline Parties National Data Corporation Press Wire Services Aeronautical Radio Department of Defense State of Hawaii International Record Carriers ITT World Communications Aeronautical Radio MCI Ind. Data Com. Mfg. Assn. Tymnet, Inc. Adelphia Jones Intercable, et. al. Adelphia Jones Intercable, et. al. Adelphia Jones Intercable, et. al.	16020 16258 18128 19989 19919 20814 20690 21263 CC78-97 CC84-633 CC78-72 CC84-800 CC85-26 ENF84-22 Bell Atlantic Bell Atlantic Bell Atlantic	Consat Rate of Return Bell System Rates TELPAC WATS Private Line Rates Private Line Rates 1,544 Mbps Service Interstate Separation Telex/TWX Rates Rate of Return Access Line Charges Rate of Return AT&T Accounting Plan Packet Switching Costs Video Dialtone Video Dialtone Video Dialtone	1973 July 22, 1968 3/22, 10/15 1971, Feb. 22, 1972 (none) (none) October 5, 1978 January 30, 1979 February 7, 1979 March 6, 1980 (none) (none) (none) (none) (none) Filed 7/29/94 Filed 8/23/94 Filed 2/21/95	
Nuclear Regulatory Commission				
Fauquier League for Environment Protection	50-328 50-329	Va. Electric Power Co.	1976	
Postal Rate Commission				
Association of Third Class Mail Users Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Warshawsky & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company Dow Jones & Company	R71-1 R72-1 R74-1 MC76-2 MC79-3 R80-1 C82-1 R84-1 R87-1 R90-1 MC91-1 MC91-3	Rates Rates Rates Rate Structure Rate Structure Rates Rate Structure Postal Costs Rate Structure Costs Rate Structure Costs Pre-barcoding Discounts Palletization Discounts	1970 1972 September 13, 1974 January 6, 1979 September 12, 1979 November 25, 1980 (none) June 14, 1984 November 2, 1987 Sept 12, Oct 10, 1990 November 19, 1991 March 2, 1992	

CHARLES W. KING
Appearances before Federal Regulatory Agencies

Client	Docket	Subject	Date of Cross-Examination
U.S. Congress			
National Retail Merchants Association National Wireless Resellers Association	House/Senate Hearings House Commerce Committee	Electric Rate Reform Legislation Interconnection & Resale of Wireless Services	1976, 1977 & 1979 October 12, 1995
Federal Maritime Commission			
State of Hawaii Foss Alaska Line Palmetto Shipping and Stevedoring	71-18 79-54 85-20	Ocean Shipping Rates Barge Rate Increase Vessel Charge Liability	October-71 July 1979 October 27, 1986
Interstate Commerce Commission - Surface Transportation Board			
Western Coal Traffic League Western Coal Traffic League Western Coal Traffic League Arkansas Power & Light Co. Central Illinois Light Co. Western Coal Traffic League Snively King Majors O'Connor & Lee, Inc.	Ex Parte 349 Ex Parte 357 Ex Parte 375 (Sub1) 37276 37450 Ex Parte 347 Ex Parte 664	R.R. Rate Increase R.R. Rate Increase R.R. Rate Increase Cost of Capital Cost of Capital Costing Methods Cost of Capital	May-76 Oct-78 June 1, 1980 (none) March 10, 1981 (none) December 8, 2006
Civil Aeronautics Board			
Thomas Cook, Inc.	36595	Air Fare Deregulation	(none)
Copyright Royalty Tribunal			
Public Broadcasting Service	88-2-86CD	Television Valuation	(none)
Federal Energy Regulatory Commission			
Exxon USA	OR89-2-000	Pipeline Quality Bank	October 18, 1990
Canadian Transport Commission			
Rail Costing Inquiry, 1967-1969 Telecommunications Costing Inquiry, 1972-1975			
Surface Transportation Board			
Williams Energy Services, Inc	Ex Parte 582, Sub 1	Rail Merger Guidelines	April 5, 2001

ATTACHMENT F

Snavely King Majoros O'Connor & Lee, Inc.
Economic & Management Consultants

Terry Buckner
Consumer Advocate Division
Office of the Attorney General
Terry.buckner@state.tn.us
615-741-8727

Re: Depreciation Filing of Atmos Energy Corp.

Dear Mr. Buckner:

This is in response to your request for a proposal to assist your office in evaluating the depreciation study being filed by Atmos Energy Corp. for the plant in its Tennessee service territory.

Our understanding is that this filing is part of a formal proceeding before the Tennessee Regulatory Authority. Accordingly, our work program reflects the requirement to analyze Atmos's depreciation study, recommend appropriate modifications to its depreciation and removal cost rates, prepare testimony, and respond to cross-examination in a hearing before the Authority in Nashville.

The attached budget lists the seven specific tasks required for this effort. It also identifies the hours that we estimate will be required for these tasks, broken down between Company principal, either myself or Michael Majoros, and our staff. The hourly billing rate for principals is \$150. We show the staff rate as \$95, but that is an approximate average. The actual billing will be at the rates listed in the note at the bottom of the page.

The total fee budget is \$22,630. With out-of-pocket expenses, principally for a trip to Nashville, the total project budget is \$23,070. We understand that this would be a contract ceiling. Our actual billings will be for time and expenses up to that amount.

For your information, I am attaching two depreciation testimonies with their exhibits. One is my testimony in a recent Maryland case and the other is Mike Majoros' testimony involving Atmos Energy in Kentucky.

Thank you very much for this opportunity to submit our proposal.

Sincerely,

Charles W. King

Charles W. King
President

BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

In re: Petition to Open an Investigation to Determine)
Whether Atmos Energy Corp. Should be Required by)
the TRA to Appear and Show Cause That Atmos)
Energy Corp. Is Not Overearning in Violation of)
Tennessee Law and That it Is Charging Rates That Are)
Just and Reasonable)

Docket No. 07-00105

AGREEMENT TO COMPLY WITH PROTECTIVE ORDER

I have reviewed the Protective Order entered in the above captioned matter and agree to abide and be bound by its terms. I understand that unauthorized disclosure of documents labeled "CONFIDENTIAL" or "PROTECTED SECURITY MATERIALS" will be a violation of the Order.

June 26, 2007
DATE

Charles W. King
NAME

STATE OF Washington

COUNTY OF District of Columbia

Personally appeared before me, Charles W. King, ~~a Notary Public,~~
with whom I am personally acquainted, who acknowledged
that he executed the within instrument for the purposes therein contained.

WITNESS my hand, at office, this 27th day of June, 2007.

Angel F. Lina
NOTARY PUBLIC

My Commission Expires: March 14, 2011

prepared on behalf of the Consumer Advocate in this case will be provided to Atmos when the pre-filed testimony is submitted, along with a copy of or reference to the documents and exhibits relied upon by each witness submitting testimony. Potentially, Dr. Stephen Brown, Economist; Daniel McCormac, Coordinator of Analysts; Terry Buckner, Regulatory Analyst; and Michael Chrysler, Regulatory Analyst; all of whom are employed by the Office of the Attorney General, may offer testimony in this matter.

In addition, the Consumer Advocate has consulted with an expert on matters of asset depreciation. Rule 26 of the Tennessee Rules of Civil Procedure grants protection from the disclosure of the identity, known facts, or opinions held by an expert that a party has consulted. Without waiving the protections of Rule 26 and other privileges, the Consumer Advocate will disclose that the depreciation consultant is Snavelly, King, Majoros, O'Conner & Lee, Inc., 1111 14th Street, NW, Suite 300, Washington, DC 20005. It has not yet been determined whether a representative of Snavelly-King will be employed as an expert witness in this matter and testify in this docket. However, if a representative of Snavelly-King is employed as an expert witness, the representative will likely be Charles W. King.

REQUEST NO. 1(a):

- (a) Identify the field in which the witness is to be offered as an expert.

RESPONSE NO. 1(a):

See Response No. 1, above. Material that is responsive to this request will be provided by the Consumer Advocate when it submits its pre-filed testimony in this case.

REQUEST NO. 1(b):

- (b) Provide complete background information, including the witness's current employer, as well as his or her educational, professional and employment history, and qualifications within the field in which the witness is expected to testify.

RESPONSE NO. 1(b):

See Response No. 1, above. To the extent available, the requested material is provided in Attachments A through E.

REQUEST NO. 1(c):

- (c) Identify all publications written or presentations presented in whole or in part by the witness, including either a copy of all such publications and presentations or a reference to where such publications and presentations may be publicly obtained.

RESPONSE NO. 1(c):

See Response No. 1, above. To the extent available, the requested material is provided in Attachments A through E.

REQUEST NO. 1(d):

- (d) Provide the grounds (including without limitation any factual bases) for the opinions to which the witness is expected to testify, and provide a summary of the grounds for each such opinion.

OBJECTION AND RESPONSE NO. 1(d):

The Consumer Advocate objects to this request on the grounds that it is overly broad and unlikely to lead to the discovery of admissible evidence. Furthermore, this request may seek the production of documents that are protected by the Work Product Doctrine.

This request may encompass documents created or assembled by or on behalf of the Consumer Advocate's attorneys in anticipation of litigation, which are protected from disclosure under the Work Product Doctrine. Tenn. R. Civ. P. 26.02(3).

Consistent with these objections, and without waiving them, the Consumer Advocate responds as follows:

See Response No. 1, above. The bases for the opinions to which the witness is expected to testify will be provided in the pre-filed testimony of each witness. Additionally, copies of or references to the material relied upon by the Consumer Advocate's witnesses will be produced when the Consumer Advocate submits its pre-filed testimony in this case.

REQUEST NO. 1(e):

- (e) Identify any matter in which the expert has testified (through deposition or otherwise) by specifying the name, docket number and forum of each case, the dates of the prior testimony and the subject of the prior testimony, and identify the transcripts of any such testimony.

RESPONSE NO. 1(e):

See Response No. 1, above. To the extent available, the requested material is provided in Attachments A through E.

REQUEST NO. 1(f):

- (f) Identify the terms of the retention or engagement of each expert including but not limited to the terms of any retention or engagement letters or agreements relating to his/her engagement, testimony, and opinions as well as the compensation to be paid for the testimony and opinions.

RESPONSE NO. 1(f):

See Response No. 1, above. Dr. Stephen Brown, Daniel McCormac, Terry Buckner, and Michael Chrysler are full-time employees of the Office of the Attorney General. The requested material for the depreciation consultant is provided in Attachment F.

REQUEST NO. 1(g):

- (g) Identify any exhibits to be used as a summary of or support for the testimony or opinions provided by the expert.

RESPONSE NO. 1(g):

See Response No. 1, above. Material that is responsive to this request will be provided by the Consumer Advocate when it submits its pre-filed testimony in this case to the extent that such material is available. If demonstrative exhibits are prepared for the hearing in this matter, the Consumer Advocate will provide them to Atmos in a timely manner after their preparation.

REQUEST NO. 1(h):

- (h) Please produce copies of all documents, summaries, charts, trade articles, journals, treatises, publications, workpapers, file notes, chart notes, tests, test results, interview notes, and consultation notes provided to, reviewed by, utilized by, relied upon, created by, or produced by any proposed expert witness in evaluating, reaching conclusions or formulating an opinion in this matter.

OBJECTION AND RESPONSE NO. 1(h):

The Consumer Advocate objects to this request on the grounds that it is overly broad, unduly burdensome, and unlikely to lead to the discovery of admissible evidence. Furthermore, this request may seek the production of documents that are protected by the Work Product Doctrine.

The overall breadth of the request constitutes an undue burden upon the Consumer Advocate. The Consumer Advocate does not track or maintain copies of all documents that its witnesses create

or review in connection with this matter. Additionally, this request may encompass documents created or assembled by or on behalf of the Consumer Advocate's attorneys in anticipation of litigation, which are protected from disclosure under the Work Product Doctrine. Tenn. R. Civ. P. 26.02(3).

Consistent with these objections, and without waiving them, the Consumer Advocate responds as follows:

See Response No. 1, above. Copies of or references to the material relied upon by the Consumer Advocate's witnesses will be produced when the Consumer Advocate submits its pre-filed testimony in this case.

REQUEST NO. 2:

2. Please identify the name and location of all persons having knowledge of discoverable matters in this case.

RESPONSE NO. 2:

See Response No. 1, above.

REQUEST NO. 3:

3. Please produce copies of all hearing exhibits that you plan to introduce, use, or reference at the hearing on the merits in this docket.

RESPONSE NO. 3:

See Response No. 1, above. Material that is responsive to this request will be provided by the Consumer Advocate when it submits its pre-filed testimony in this case to the extent that such material is available. If demonstrative exhibits are prepared for the hearing in this matter, the Consumer Advocate will provide them to Atmos in a timely manner after their preparation.

The Consumer Advocate reserves the right to use as hearing exhibits any documents in the record of this case and any documents in the record of any other docket of the TRA, including but not limited to prior rate cases involving this company.

REQUEST NO. 4:

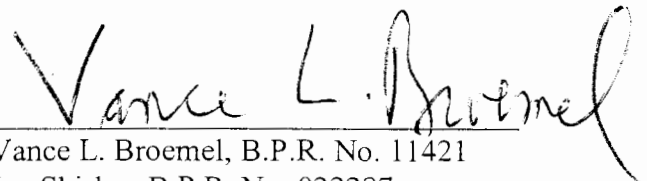
4. Please provide all Excel (or other data files) containing the information provided in response to these request items.

RESPONSE NO. 4:

No Excel or other data files have been produced in response to these request items at this time. Any Excel or other data files relied upon by the Consumer Advocate's witnesses will be produced when the Consumer Advocate submits its pre-filed testimony in this case.

Respectfully submitted,

Robert E. Cooper, Jr.
Attorney General and Reporter
State of Tennessee



Vance L. Broemel, B.P.R. No. 11421
Joe Shirley, B.P.R. No. 022287
Office of the Attorney General
Consumer Advocate and Protection Division
P.O. Box 20207
Nashville, TN 37202
(615) 741-8733

July 6th, 2007

#108767

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was served via U.S. Mail or facsimile upon:

Patricia Childers
Vice President, Rates & Regulatory Affairs
Mid-States Division
Atmos Energy Corporation
810 Crescent Centre Drive, Suite 600
Franklin, Tennessee 37067-6226
Telephone: (615) 771-78332
Facsimile: (615) 771-8301

Douglas C. Walther
Associate General Counsel
Atmos Energy Corporation
5430 LBJ Freeway, Suite 1800
Dallas, Texas 75240
Telephone: (972) 855-3102
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William T. Ramsey
Neal & Harwell, PLC
One Nashville Place, Suite 2000
150 Fourth Avenue North
Nashville, Tennessee 37219
Telephone: (615) 244-1713
Facsimile: (615) 726-0573

Henry Walker
Boult Cummings Conners & Berry, PLC
1600 Division Street, Suite 700
P.O. Box 340025
Nashville, Tennessee 37203

this the 6th day of July, 2007.


Vance Broemel
Senior Counsel

108767

ATTACHMENT A

Steve Brown, Economist

B. A. in History, Colorado State University

Ph.D. and M.A. in International Relations with a specialty in International Economics. University of Denver

M.S. in Regulatory Economics, University of Wyoming

Twenty-eight years of experience with the Public Utility industry:

1979 - 1982	Tri-State Generation and Transmission Association - Power Requirements Supervisor & Rate Specialist
1982 - 1984	Arizona Electric Cooperative - Rate Analyst
1984 - 1986	Houston Lighting & Power - Supervisor of Rate Design
1986 - 1995	Iowa Utilities Board - Chief of the Bureau of Energy Efficiency- Auditing, Research & Utilities Specialist
1995 - Present	Office of the Attorney General for the State of Tennessee - Consumer Advocate and Protection Division - Economist

Dockets & Testimony

Dr. Brown has provided oral and written testimony in numerous rate proceedings before the TPSC and the Tennessee Regulatory Authority, including the following dockets and/or companies, many of which are available on the TRA website. Docket captions have been summarized.

TRA # 06-00290 Petition of Tennessee American Water to Change and Increase Rates

Testimony Address: <http://www.state.tn.us/tra/orders/2006/0600290by.pdf>

Supp. Testimony Address: <http://www.state.tn.us/tra/orders/2006/0600290fm.pdf>

TRA # 06-00175 Petition of Chattanooga Gas Company to Change and Increase Rates

Testimony Address: <http://www.state.tn.us/tra/orders/2006/0600175jn.pdf>

TRA # 05-00258 Petition of the Consumer Advocate to Open an Investigation and Require ATMOS to Show Cause that the Company is not over-earning.

Testimony Address: <http://www.state.tn.us/tra/orders/2005/0500258cd.pdf>

Rebuttal Testimony: <http://www.state.tn.us/tra/orders/2005/0500258hs.pdf>

TRA# 04-00288 Petition of Tennessee American Water Co. to adjust rates

Testimony Address: <http://www.state.tn.us/tra/orders/2004/0400288bk.pdf>

TRA # 04-00034 Petition of Chattanooga Gas to Adjust Rates

Testimony Address: <http://www.state.tn.us/tra/orders/2004/0400034dm.pdf>

TRA# 03-00491 F.C.C. T.R.O. Review

Testimony Address: <http://www.state.tn.us/tra/orders/2003/0300491ib.pdf>

Rebuttal Address: <http://www.state.tn.us/tra/orders/2003/0300491kn.pdf>

TRA# 03-00391 Petition of BellSouth Telecommunications for Exemption of Certain Services

Testimony Address: <http://www.state.tn.us/tra/orders/2003/0300391bz.pdf>

TRA# 03-00313 Petition of Nashville Gas to Adjust Rates

Testimony Address: <http://www.state.tn.us/tra/orders/2003/0300313z.pdf>

TRA# 03-00118 Petition of Tennessee American Water to Adjust Rates

Testimony Address: <http://www.state.tn.us/tra/orders/2003/0300118bm.pdf>

Rebuttal Address: <http://www.state.tn.us/tra/orders/2003/0300118ca.pdf>

TRA# 01-00704 Audit of Atmos/U.C.G. IPA

Testimony Address: <http://www.state.tn.us/tra/orders/2001/0100704cp.pdf>

TRA# 98-00559 BellSouth, C.S.A. Docket

(Testimony is currently unavailable)

TRA# 97-01364 United Cites Gas / Establishment of PBR

(Testimony is currently unavailable)

TRA# 97-01262 Permanent Prices

(Testimony is currently unavailable)

TRA# 97-00982 Petition of Chattanooga Gas to Revise Tariff

Hard Copy Attached

Doc#79072

Before the

TENNESSEE REGULATORY AUTHORITY

IN RE:

PETITION OF CHATTANOOGA GAS COMPANY TO PLACE INTO EFFECT
A REVISED NATURAL GAS TARIFF

DOCKET NO. 97-00982

DIRECT TESTIMONY
OF
STEVE BROWN

TABLE OF CONTENTS

SUBJECT	PAGE
INTRODUCTION	1
OPINION ON EQUITY RATE OF RETURN.....	3
AGL IS THE APPROPRIATE COMPANY FOR COMPARISON....	3
COMPARABLE COMPANIES	6
TESTS OF RECOMMENDED EQUITY RETURN	8
DISCUSSION OF MONTHLY COMPOUNDING	10
MORE EVIDENCE THAT AGL IS THE APPROPRIATE COMPANY FOR COMPARISON	16
DERIVATION OF DR. BROWN'S EQUITY RETURN: DCF ANALYSIS	18
DERIVATION OF EQUITY RETURN: RISK PREMIUM ANALYSIS	20
RISK PREMIUM MODEL: CURRENT COST OF DEBT	23
RISK PREMIUM MODEL: MARKET RETURN TO COMMON EQUITY	25
RISK PREMIUM MODEL: RISKFREE RATE	33
RISK PREMIUM MODEL: THE BETA	37
THE APPROPRIATE RETURN OF 10.55% COMPENSATES FOR MONTHLY COMPOUNDING	40

TABLE OF CONTENTS (Cont.)

SUBJECT	PAGE
CAPITAL STRUCTURE AND OVERALL RATE OF RETURN ...	43
ANALYSIS OF METHODS EMPLOYED BY THE COMPANY'S COST OF CAPITAL WITNESS	45
SMALL COMPANY APPROACH IS IRRATIONAL	46
RETURNS OF 12.5% AND 12.17% ARE BASED ON LARGE COMPANY DATA, MISUSE OF DATA AND IRREGULAR, UNSUPPORTED PROCEDURES	52
DCF ANALYSIS IS BIASED UPWARDS	63
RANGE OF 11.5% TO 12.5% IS IRRATIONAL	64

INTRODUCTION

1
2
3 Q. Please state your name.

4
5 A. Stephen N. Brown.

6
7 Q. Where do you work and what is your job title?

8
9 A. I am a Senior Economist in the Consumer
10 Advocate Division, Office of the Attorney
11 General.

12
13 Q. What are your responsibilities as Senior
14 Economist?

15
16 A. I review companies' petitions for rate changes
17 and follow the economic conditions that affect
18 the companies.

19
20 Q. What experience do you have regarding
21 utilities?

22
23 A. From 1986 to 1995 I was employed by the Iowa
24 Utilities Board as Chief of the Bureau of
25 Energy Efficiency, Auditing and Research, and
26 Utility Specialist and State Liaison Officer to
27 the U.S. Nuclear Regulatory Commission. From
28 1984 to 1986 I worked for Houston Lighting &
29 Power as Supervisor of Rate Design. From 1982
30 to 1984 I worked for Arizona Electric Power
31 Cooperative as a Rate Analyst. From 1979 to
32 1982 I worked for Tri-State Generation and
33 Transmission Association as Power Requirements
34 Supervisor and Rate Specialist. From 1979
35 through 1995 my work spanned many issues
36 including cost of service studies, rate design
37 issues, telecommunications issues and matters
38 related to the disposal of nuclear waste.
39

1 Q. What is your educational background?

2
3 A. I have an M.S. in Regulatory Economics from the
4 University of Wyoming, an M.A. and Ph.D. in
5 International Relations with a specialty in
6 International Economics from the University of
7 Denver, and a B.A. from Colorado State
8 University.
9

10 Q. Dr. Brown, have you authored any articles
11 relating to your profession?
12

13 A. Yes, my articles have appeared in Public
14 Utilities Fortnightly and the Electricity
15 Journal.
16

17 Q. Are you and have you been a member of any
18 professional organizations, Dr. Brown?
19

20 A. Yes, I am a past member of the NARUC Staff
21 Committee on Management Analysis, a past
22 trustee of and a member of the Board for the
23 Automatic Meter Reading Association, and a
24 current member of the National Association of
25 Business Economists.
26

27 Q. Have you studied mathematics and statistics as
28 part of your education?
29

30 A. Yes.
31

32 Q. Dr. Brown, do you use mathematics and
33 statistics in combination with economics as
34 part of your profession?
35

36 A. Yes.
37

38 Q. What were you asked to do with respect to this

1 **case?**

2
3 A. I was asked to form an opinion on the
4 appropriate market-based common equity return,
5 the appropriate overall cost of capital and the
6 appropriate capital structure for Atlanta Gas
7 Light (AGL) Company's wholly owned subsidiary in
8 Tennessee, Chattanooga Gas (CG) Company, as well
9 as to evaluate and assist in the evaluation of
10 the rate of return proposed by other witnesses
11 in this docket.

12
13 OPINION ON EQUITY RETURN

14
15 **Q. In your opinion what rate of equity return is**
16 **just and reasonable?**

17
18 A. In my opinion an equity return of 10.55% is
19 just and reasonable.

20
21 **Q. Dr. Brown, what did you do to identify this**
22 **just and reasonable return?**

23
24 A. I examined a group of natural gas companies
25 comparable to AGL.

26
27 AGL IS THE APPROPRIATE COMPANY FOR COMPARISON

28
29 **Q. Why did you consider AGL the appropriate**
30 **company for deriving the equity return?**

31
32 A. CG's common equity is owned completely by AGL
33 and is not publicly traded or available over
34 the counter. Investors who desire a common
35 equity interest in CG have only one way to
36 obtain that interest--acquire common stock in
37 AGL Resources, whose financial fate is
38 determined by its prime subsidiary, AGL.

These facts alone suggest that AGL is central to the equity analysis. Also, in this docket AGL's management is well-represented. The company's witnesses -- Messrs. Thompson, Hinesley, and Overcast and Lisa Wooten -- are employed by AGL directly and none of them ever worked for CG directly. This is ample evidence that AGL management strongly directs CG's activities thus making AGL rather than CG the focus of equity analysis.

The direct involvement of AGL's management in this docket clearly indicates that CG's operations are completely intermingled with AGL's, to the point that CG is an operating company under AGL's management in much the same way that Savannah Gas is an operating company under AGL. When AGL has a rate case in Georgia, Savannah Gas is not singled out as a stand-alone investment of funds which forms the basis for a rate of return. Likewise, CG is not a stand-alone investment that forms the basis for a rate of return. The company's cost-of-capital witness, Dr. Andrews, concedes this point very early in his testimony at page 4 lines 12-13, where he says "I undertake the analysis of CGC as if it were [emphasis added by Dr. Brown] a stand-alone investment of funds." To me, the wording "as if it were" means one of two things: either CG is not in fact a stand-alone investment or he does not know if it is a stand-alone investment.

Finally, Dr. Andrews, at page 48 lines 6-8 of his direct testimony, suggests the capital structure of AGL Resources be used to compute CG's weighted cost of capital. These aspects of the rate filing make it appropriate to

1 determine the cost of capital by using AGL and
2 companies that are comparable to AGL.
3

4 **Q. Does Dr. Andrews base his cost-of-capital**
5 **analysis on AGL and companies comparable to**
6 **AGL?**
7

8 A. No, but his recommended return includes a
9 premium meant to compensate AGL Resources.
10

11 **Q. What companies form the basis for Dr. Andrews'**
12 **cost-of-equity analysis?**
13

14 A. He selects 22 "small" companies that have
15 actively traded stock, that issue bonds and
16 stocks, and which complete and file regular
17 reports with the Securities and Exchange
18 Commission. In contrast to CG, which is a
19 subsidiary of AGL, many of the 22 companies are
20 parent companies themselves with subsidiaries
21 underneath them. Several of the 22 companies
22 also operate in multi-state jurisdictions.
23

24 **Q. In your opinion do these "small" companies are**
25 **a rational basis for a cost-of-equity analysis**
26 **in this docket?**
27

28 A. No, I do not. On their face the 22 companies
29 markedly differ from CG, and there is no
30 objective basis for adjusting them so that they
31 would somehow be comparable to CG. Because I
32 focus on AGL, my cost-of-equity analysis uses a
33 completely different set of companies than Dr.
34 Andrews' analysis. A cost-of-equity analysis
35 starts with the selection of comparable
36 companies. To the extent the parties in this
37 docket disagree about the starting point of an
38 analysis, the TRA's job of assessing each

1 analysis becomes more difficult. However, I
2 have other sound and objective reasons for
3 disagreeing with Dr. Andrews' analysis and
4 results, as I will discuss at a later point in
5 my testimony.

6
7 COMPARABLE COMPANIES SELECTED BY DR. BROWN
8

9 **Q. Dr. Brown, what comparable companies did you**
10 **use in your analysis?**

11
12 **A.** I selected a group of companies composed of AGL
13 Resources, Bay State Gas Company, Brooklyn
14 Union Gas Company, Indiana Energy, Laclede Gas,
15 Northwest Natural Gas, Peoples Energy, and
16 Washington Gas Light Company. Like AGL, all of
17 these companies have subsidiaries.
18

19 **Q. What evidence do you offer to substantiate your**
20 **assertion that AGL is comparable to the other**
21 **eight companies?**

22
23 **A.** The proof of comparability appears in Schedule
24 1. The top portion is titled "Market
25 Statistics" and the bottom portion is titled
26 "Financial Behavior." The market statistics
27 show the strong similarity of the companies.
28 For example, as of December 1996 the ratios of
29 the market price to the book value are similar,
30 and so are the equity ratios, dividend yields,
31 the value of the holdings per shareholder and
32 the average number of years the stock is held.
33 However, the market values have a large spread.
34 The smallest value, \$343 million, is about only
35 one-fourth of the largest market value.
36

37 **Q. Dr. Brown, is the difference in market values**
38 **of the comparables you selected meaningful?**

1
2 A. No. My examination of the companies shows that
3 they exhibit similar financial behavior, as
4 indicated by the way they responded to the
5 publication *Value Line's* criticism of the gas
6 distribution industry. That criticism is quoted
7 in Schedule 1. In early 1995 *Value Line* warned
8 investors to be wary of gas companies that paid
9 out more than 80% of their earnings to
10 dividends. Prior to *Value Line's* warning many
11 payout ratios exceeded 80%. From 1995 to 1996,
12 however, every company lowered its payout ratio
13 to levels below 80%. This deliberate response
14 by all the companies makes it clear that they
15 have comparable financial behavior.
16

17 Q. Is your opinion of the equity return different
18 from the equity return recommended by Dr.
19 Andrews?
20

21 A. Yes, he recommends a higher, speculative range
22 of 11.5% to 12.5% and prefers 12.25%, a much
23 higher, speculative rate.
24

25 Q. Upon what do you base your equity return
26 opinion?
27

28 A. I base my opinion on my analysis of AGL's
29 market-based cost of common equity, which is
30 supported by my analysis of comparable
31 companies.
32

33 Q. In your opinion what rate of equity return
34 should the Tennessee Regulatory Authority allow
35 in this docket?
36

37 A. My opinion is that the Tennessee Regulatory
38 Authority (TRA) adopt the equity return of

1 10.55%.

2
3
4 TESTS OF RECOMMENDED EQUITY RETURN

5
6 **Q. Dr. Brown, did you compare your equity return**
7 **to those of independent sources?**

8
9 **A.** Yes. Chart One summarizes the tests I made. I
10 compared my results to the information
11 published by Merrill Lynch regarding the
12 required rates of return for gas distribution
13 companies in general. I also compared my
14 results with the equity returns recently
15 granted by the Illinois Commerce Commission and
16 the Virginia State Corporation Commission to
17 United Cities, a company currently under the
18 TRA's jurisdiction and one that is included in
19 Dr. Andrews' analysis. The Merrill Lynch
20 returns are shown in Schedule 2. Press releases
21 announcing the Illinois and Virginia decisions
22 are attached as Schedules 3 and 4 respectively.
23

24 **Q. What was your reason for using Merrill Lynch's**
25 **data?**

26
27 **A.** Merrill Lynch's data reflects the marketplace
28 for gas distribution companies, and I have used
29 their data as a basis of comparison in prior
30 rate cases. From January 1995 through May 1997
31 Merrill Lynch's equity-return estimates have
32 ranged from a high of 11% to a low of about 9%.
33 My recommendation of 10.55% approximates
34 Merrill Lynch's upper limit of recent equity
35 returns for the natural gas distribution
36 industry.
37

38 **Q. What was your reason for comparing the recent**
39 **equity awards by two state commissions?**

1
2 A. My reason for comparison was to consider
3 independent sources. The comparison merely
4 demonstrates that my recommended return is
5 consistent with recent regulatory decisions
6 regarding equity returns in other
7 jurisdictions.
8

9 Q. Did you compare the data from Merrill Lynch and
10 from the various states to Dr. Andrews'
11 recommended return to equity?
12

13 A. Yes. Dr. Andrews' recommended return
14 substantially exceeds any reasonable return for
15 the industry, and therefore is more than just
16 and reasonable.
17

18 Q. Dr. Brown, is the return you are presenting a
19 fair return?
20

21 A. Yes. It is a fair return because it compensates
22 the company for ordinary financial risks it is
23 taking to be in the gas distribution business.
24

25 Q. What are the sources of ordinary financial risk
26 to the company?
27

28 A. The major risk is that the company's expenses
29 would increase faster than its revenues.
30 However, in this case that risk is negligible.
31 The company's rate base, expenses, and sales
32 are based on projected amounts for a 12-month
33 period ending September 1998. These factors are
34 the basis for the prices that come out of this
35 docket. However, the company's prices are
36 likely to be applied almost a full year before
37 the projections are realized.
38

1 For there to be any risk, the company's
2 projected expenses would have to be far less
3 than what actually occurs, or the company's
4 projected sales of gas would have to very
5 different from the actual sales. I know of no
6 substantial evidence suggesting that the
7 company's forecasts will create a financial
8 hardship.
9

10
11 **Q. Dr. Brown, is your rate of return sufficiently**
12 **high to allow the company to attract capital**
13 **and to maintain creditworthiness?**
14

15 A. Yes. An annual return of 10.55% is certainly
16 high enough to attract capital and to maintain
17 creditworthiness. The rate-of-return principles
18 of capital attraction and maintenance of credit
19 were set in the *Bluefield* decision, and the
20 rate of return I recommend considers these
21 factors.
22

23 Also, 10.55% is an understatement of the amount
24 that the company actually has an opportunity to
25 earn because the actual annual return is
26 achieved through monthly compounding, which
27 raise the return by approximately one-half a
28 percent to 11%.
29

30 DISCUSSION OF MONTHLY COMPOUNDING
31

32 **Q. Is the monthly compounding process typical of**
33 **the financial world?**
34

35 A. Yes.
36

37 **Q. Do monthly earnings have to be constant for**
38 **monthly compounding to operate?**

1
2 A. No. Schedule 6 shows that compounding occurs
3 with income-losses and with income-gains. The
4 Schedule is based on the actual monthly income
5 and losses of AGL for the fiscal year 1996. The
6 far right-hand column clearly shows that
7 monthly compounding of \$1 at an allowed annual
8 return of 10.55% leads to an effective return
9 of 11.0%. With regard to column (6), at the
10 bottom, the total return is shown as 11.02
11 cents. The total return would equal 10.55 cents
12 only if the monthly return in column (6) is not
13 added into the cumulative balances in columns
14 (5) and (7), i.e., the cumulative balance would
15 have to be \$1 throughout the entire year. But
16 this is not how financial processes work -
17 cumulative balances are maintained on a monthly
18 basis and changes to the balances are recorded
19 monthly - not just annually.
20

21 Q. Dr. Brown, are you this docket's only cost-of-
22 capital witness who believes that compounding
23 is a typical financial process?
24

25 A. No. Dr. Andrews has made several statements
26 indicating his opinion that compounding is a
27 typical financial process:
28
29

- 30 1. Dr. Andrews, in his direct
31 testimony page 27, line 5 says
32 that "financial processes
33 occur continuously."
34 Therefore, his discounted cash
35 flow (DCF) analysis is
36 predicated on dividends
37 continuously compounding,
38 indicated at page 26 line 18
39 of his testimony, a situation

1 where compounding goes on
2 moment-by-moment, a far more
3 rapid rate of compounding than
4 a monthly rate.
5

6 2. Dr. Andrews' direct testimony,
7 page 28, lines 15-17, suggests
8 that compounding a return of
9 9.53% leads to an effective
10 return of 10%, clearly
11 indicating that compounding
12 adds approximately one-half
13 percent to the return. This is
14 the same point that I have
15 made about compounding.
16

17 3. Dr. Andrews was cross-examined
18 in Docket 95-02116 and stated
19 that "Financial processes
20 occur smoothly and
21 continuously. They go -- if
22 this makes the point for you -
23 - minute by minute, hour by
24 hour, day by day and they are
25 not interruptible." His
26 statement occurs at page 8,
27 lines 20-23 of the transcript.
28 A copy of the transcript's
29 cover page and page 8 of the
30 transcript are attached to my
31 testimony as Schedule 7, pages
32 1 and 2 respectively.
33

34 4. His statements under cross-
35 examination are consistent
36 with his direct testimony page
37 28 lines 10-11, where the
38 question is asked if there is
39 "complete equivalency between

1 the continuous" rate, such as
2 9.53%, and a so-called
3 "finite" rate, such as 10%. He
4 answers "Yes."

- 5
6 5. His responses in his
7 deposition of September 9 are
8 also consistent with his
9 testimony. For example, at
10 page 58 line 16 of the
11 deposition he was asked how
12 often compounding occurred:
13

14 "Q. Right, and it
15 doesn't even have to
16 be a series of years,
17 it can be series of
18 months, can't it?"
19

20 To which Dr. Andrews
21 responded:
22

23 "A. It could be done
24 months, weeks, days."
25

26 He was also asked in the
27 deposition, at page 59 line
28 10, whether he concurred that
29 compounding is typical of
30 financial processes:
31

32 "Q. ...compounding is
33 essentially accepted
34 by all of our
35 financial markets?"
36

37 To which he responded:
38

39 "A. Sure."

1
2 **Q. What does the term "compounding" mean?**
3

4 A. The term compounding refers to a process that
5 begins with a certain financial resource,
6 generally called the base or the principal, and
7 then the changes in that are added back into
8 the base or the principal to create a new
9 balance. The changes can be either positive or
10 negative, meaning that the principal is either
11 growing or declining.
12

13 Two things affect compounding.
14

15 The time-frame of compounding -- how
16 quickly is the change added back to
17 the base? It could occur once a
18 decade, once a year, once a month,
19 every day or every second.
20

21 The size of the change during the time
22 frame -- does the base change by 1% a
23 month each month or does it change by
24 2% in some months and 3% in other
25 months?
26

27 The financial community puts these concepts
28 together to say things like "your investment is
29 growing at a rate of 10% per year this year,
30 but last year it lost money at annual rate of
31 3%." Therefore, compounding describes financial
32 gains as well as financial losses and does not
33 have to occur at the same rate from one moment
34 to the next.
35

36 **Q. Is compounding process related to concept of**
37 **working capital?**
38

39 A. No. Working capital encompasses only the funds

1 needed by the company to meet its current
2 liability, i.e., the company has to have the
3 funds available to meet its demands for cash
4 flows.
5

6 **Q. Why are you referring to working capital?**
7

8 A. I raise it now to assure the TRA does not view
9 monthly compounding as akin to working capital,
10 where positive and negative cashflows are
11 balanced by short-term lending and short-term
12 borrowing.
13

14 **Q. Is monthly compounding an accurate description**
15 **of how a distribution company accumulates**
16 **annual return even when the company experiences**
17 **seasonal variations in sales, revenues and**
18 **expenses?**
19

20 A. Yes. The returns in the months when sales are
21 high balance the returns in the months when
22 sale are low. This is true whether the annual
23 return is viewed as a sum of compounded monthly
24 returns or as just the sum of twelve monthly
25 returns that are not compounded. However,
26 monthly compounding reflects the true nature of
27 financial transactions. Revenues flow in every
28 working day and are available for immediate
29 reinvestment. The company's stocks and bonds
30 can be bought and sold every working day of the
31 year. The best indication that the compounding
32 process underlies the company's financial
33 transactions is the company's late fee, which
34 is applied to consumers' monthly bills if they
35 are not paid by the past due date. The late fee
36 truly shows that "time is money." The quicker
37 the company has the money, the quicker it can
38 be invested to achieve additional returns. This
39 is a perfect fit with the monthly compounding

1 cycle that typifies financial transactions in
2 our economy. If monthly compounding were not
3 how a gas company accumulated its annual
4 return, there would be no economic basis for
5 charging a late fee.

6
7 **Q. When Dr. Andrews' recommended equity return of**
8 **12.25% is compounded monthly, what return is**
9 **the company being given an opportunity to earn?**

10
11 **A. The company is being given an opportunity to**
12 **earn about 12.8%**

13
14 MORE EVIDENCE THAT AGL IS THE APPROPRIATE
15 COMPANY FOR COMPARISON

16
17 **Q. If Dr. Andrews' recommended return of 12.25% a**
18 **just and reasonable return?**

19
20 **A. No. His preference for 12.25% is meant to**
21 **compensate AGL Resources (the parent of AGL)**
22 **for the premium the company paid when it**
23 **purchased CG. At page 3, lines 5-8 of his**
24 **testimony Dr. Andrews states. "The point**
25 **estimate is slightly off center in an upward**
26 **direction in recognition of AGL Resources'**
27 **long-run inability to earn on a rate base that**
28 **includes the acquisition premium it paid as**
29 **part of the price for CGC."**

30
31 **Q. What inferences do you make from Dr. Andrews'**
32 **statement?**

33
34 **A. The statement confirms that this rate case is**
35 **about AGL's return and that AGL and companies**
36 **comparable to AGL should form the basis for an**
37 **equity analysis. Dr. Andrews' statement also**
38 **contradicts his later statement at page 4 lines**

1 9-10 where he states: "the source of an
2 investment's financing does not dictate its
3 fair rate of return." His recommendation of
4 12.25% clearly aims at achieving a return for
5 AGL, the owner of CG.
6

7 **Q. Is Dr. Andrews choice of 12.25% as his**
8 **preferred return consistent with his statement:**
9 **"I treat CGC as if it were a stand-alone**
10 **investment of funds?"**
11

12 **A. No. If CG were a stand-alone investment there**
13 **would be no reason for Dr. Andrews to consider**
14 **the acquisition premium as a factor or**
15 **justification for choosing 12.25%. This**
16 **justification is Dr. Andrews' tacit recognition**
17 **that CG is not a stand-alone investment.**
18

19 **Q. How does Dr. Andrews' supposition of CG as a**
20 **"stand-alone" investment compare with the**
21 **testimony of other witnesses for AGL?**
22

23 **A. His supposition is contrary to the facts**
24 **presented by Mr. Thompson, whose direct**
25 **testimony, pages 11 through 22, describes the**
26 **various support services that AGL provides to**
27 **CG. For example, at page 17 line 6 Mr. Thompson**
28 **lists several functions provided by AGL. At**
29 **page 16 lines 4-15 Mr. Thompson indicates that**
30 **AGL's Treasury and Corporate Accounting**
31 **departments handle many transactions for CG. At**
32 **lines 7-8 he says, "All checks for Chattanooga**
33 **Gas Company are written by AGL." At page 13**
34 **line 11 he describes the various departments**
35 **that have been eliminated at CG.**
36

37 **Q. Do you agree with Dr. Andrews' testimony, at**
38 **page 6 line 8, that CG has "sharply expanded**

1 **demands for financing."**

2
3 A. No. His statement is contradicted by the
4 capital structure information the company
5 supplied in this docket and in its prior rate
6 case. In docket 95-02116, the company submitted
7 a capital structure of \$96.846 million. That
8 structure is attached to my testimony as
9 Schedule 8. In the current docket the company
10 submitted a capital structure of \$95.843
11 million, shown in the company's filing as
12 Exhibit 5 Schedule 9. AGL is withdrawing its
13 investment from Tennessee rather than suffering
14 from a sharply expanded demand for financing

15
16 **Q. What is the implication of the \$1 million**
17 **decline regarding CG as a "stand-alone**
18 **investment?"**

19
20 A. If a stand-alone company's capital dropped by
21 \$1 million, there would be an accounting trail,
22 but in this instance there is no trail at all
23 for CG. Therefore, the \$1 million difference
24 has to be the result of AGL's decisions and way
25 it adds and subtracts funds to its Tennessee
26 operations.

27
28 DERIVATION OF DR. BROWN'S EQUITY RETURN:
29 DCF ANALYSIS

30
31 **Q. Did you perform an analysis to determine what**
32 **the return to equity should be for AGL's wholly**
33 **owned subsidiary?**

34
35 A. Yes. I performed two analyses: one based on the
36 Discounted Cash Flow (DCF) model and another
37 based on the risk premium model.
38

1 **Q. What is the Discounted Cash Flow model?**

2
3 A. The DCF model is a standard way that investors
4 evaluate their potential returns. The model
5 defines the cost of common equity as the
6 dividend yield plus the dividend's expected
7 growth rate.
8

9 **Q. What is the advantage of using the DCF model?**

10
11 A. It does exactly what every investor does. It
12 pays close attention to the company's dividend
13 per share of common stock and to the company's
14 ability to raise or lower the dividend and the
15 dividend yield.
16

17 **Q. What is the dividend yield?**

18
19 A. Dividend yield is measured as the company's
20 annual dividend divided by the price for the
21 company's stock. I've used the average dividend
22 yield of the comparable companies as a proxy
23 for AGL's dividend yield. The calculations are
24 shown in my Schedule 9. In this instance the
25 calculated dividend yield is 5.17%.
26

27 **Q. What did you use to measure dividend growth?**

28
29 A. Since AGL's current dividend growth rate is
30 barely above zero, I used the growth rate
31 derived from Value Line's projection of AGL's
32 dividend in the year 2000, which suggests a
33 growth rate of 5.23% in the near future. Thus
34 my estimated DCF equity return is 10.40%, shown
35 in Schedule 9.
36

37 **Q. Does the DCF Model account for capital gains**
38 **that may occur when an investor sells stock?**
39

- 1 A. No. The DCF model avoids entanglement with
2 either capital gain or capital loss because the
3 model is tied directly to dividend yield and
4 dividend growth. In addition, losses and gains
5 are a matter of the investor timing the stock's
6 purchase and sale. The DCF model neither
7 protects investors from risk nor penalizes them
8 for what happens in the stock market.
9

10
11
12 DERIVATION OF EQUITY RETURN:
13 RISK PREMIUM ANALYSIS
14

- 15
16 Q. In addition to your DCF model, did you use
17 another method to determine the market based
18 cost of common equity?
19

- 20 A. Yes. I used the risk premium method which
21 defines the cost of equity as the market's
22 current debt yield plus an estimated risk
23 premium. For example, a current debt yield of
24 7% plus an estimated market wide risk premium
25 of 3% produces an estimated common equity cost
26 of 10%.
27

- 28 Q. Is a risk premium analysis different from a DCF
29 analysis?
30

- 31 A. Yes, the two analyses are completely different.
32 For example, dividend growth and dividend yield
33 are crucial to the DCF analysis, but they have
34 no role whatsoever in a risk premium analysis.
35

- 36 Q. What is the rationale of risk premium analysis?
37

- 38 A. Investors require extra payments to assume

additional risk. Economists call this extra payment a risk premium. Equity investments are riskier than debt because equity investments occasionally lose money, thus equity investors require a risk premium or a higher return than debt. For example, equity holders are last in line for the distribution of earnings and also last in line for distribution of liquidation proceeds. In both cases the debt holders are paid first. Any funds left are distributed to the equity holders. Therefore, the cost of equity is the debt yield plus a risk premium for the company.

Q. How did you derive your risk premium model?

A. The model is derived as follows:

$$K_e = R_f + (R_m - R_f) * B_e \quad (1)$$

where

K_e is the cost of equity

R_m is the market rate of return

R_f is the risk free rate of return

B_e is the beta for common stock

and

$$K_d = R_f + (R_m - R_f) * B_d \quad (2)$$

where

K_d is the cost of debt

R_m and R_f are defined above

B_d is the beta for debt

Subtract equation (2) from equation (1) and the result is

$$K_e = K_d + (R_m - R_f) * (B_e - B_d)$$

I treat the beta for debt, B_d , as if it were zero. Since B_d is zero, this raises the cost of common equity that can be derived from this model. Since B_d is zero, the final result is

$$K_e = K_d + (R_m - R_f) * (B_e) \quad (3)$$

Q. What is the procedure for deriving the cost of equity from this risk premium model?

A. The procedure has six steps:

1. Estimate the market's current cost of debt - K_d .
2. Estimate market-wide rate of return for common equity - R_m .
3. Estimate the market-wide risk-free investment - R_f .
4. Take the difference between steps 2 and 3
5. Multiply the difference by a so-called "Beta" - B_e .
6. Add the result of step 5 to the debt cost in step 1. The result is the estimated cost

of equity from the risk
premium model

RISK PREMIUM MODEL: CURRENT COST OF DEBT

Q. What do you use as the current cost of debt - K_d ?

A. Since AGL's bonds retain an A rating, I use the monthly average of A-rated bonds for May 1996 through April 1997. Those are shown in Schedule 10 and represent the current trend in capital cost for debt issues of A-rated utility bonds.

Q. What is the value of the K_d ?

A. The value of K_d is 7.95%.

Q. Are the A-rated bonds long-term bonds?

A. Not necessarily. For example, the source for this information is the Federal Reserve Board which says these bonds have a maturity of 30 years but call-protection for only 5 years, i.e., after 5 years and depending on the issuing company's discretion, the bonds can be repurchased from the investor.

Q. Is it typical for companies to have call provisions in their bonds?

A. Yes.

Q. What is the purpose of a call provision?

1 A. It gives the company control and flexibility
2 regarding the disposition of its funds and
3 transfers the risk of interest rate changes
4 from the company to the investor. For example,
5 if a company issues bonds at 10% and six years
6 later interest rates drop to 7%, the company
7 has the option of "calling" the bond from the
8 investor, who then has to find an alternative
9 use for the funds. Continuing with this
10 example, if the company issues bonds at 7% and
11 six years later interest rates rise to 10%, the
12 company has no need to repurchase the bond from
13 the investor, who has the choice of either
14 holding the bond or taking a loss in principal
15 if it is sold.

16
17 **Q. Why do you use the A rates as a measure of debt**
18 **cost instead of AGL's embedded debt cost?**

19
20 A. Risk premium analysis is based on market wide
21 indicators of current debt cost instead of a
22 company-specific embedded cost. Using a
23 company-specific embedded cost would mean that
24 the company with the highest debt cost would
25 also receive the highest return to equity.
26 Conversely, the company with the lowest debt
27 cost would receive the lowest return to equity.
28 Thus using a company-specific debt cost to
29 establish a risk premium would introduce
30 incentives for companies to raise their debt
31 cost as much as possible. That is unreasonable
32 logic and unreasonable financial management.
33 Fortunately, the markets don't work that way. A
34 company's return to equity is not guaranteed to
35 be a certain amount higher than the company's
36 debt cost.

37
38 **Q. Why do you use the A bond rates as a measure of**
39 **debt cost instead of the average debt cost of**

1 the comparable companies?

- 2
- 3 A. The company average would not necessarily
- 4 reflect current market rates for bonds rated as
- 5 A, the current rating for AGL's bonds.
- 6

7

8

9 RISK PREMIUM MODEL: MARKET RETURN TO COMMON EQUITY

10

11

12 Q. What do you use to estimate R_m , market-wide

13 rate of return for common equity?

14

- 15 A. I use 10.7%, the compound annual growth rate
- 16 for large company stocks from the period 1925-
- 17 through 1996. This figure is taken from
- 18 Ibbotson Associates 1997 Yearbook- Stocks
- 19 Bonds, Bills and Inflation (SBBI-1997) page
- 20 118.
- 21

22 Q. Why are using large company stocks?

23

- 24 A. The comparable companies that I use in my
- 25 analysis fit into the large company category,
- 26 defined in SBBI-1997 page 136 as any company
- 27 exceeding \$197.4 million in market value as of
- 28 September 1996. The smallest market value for
- 29 my comparable companies is \$343 million.
- 30

31 Q. Why are you using historical data to estimate

32 the risk premium?

33

- 34 A. Historical data provides a way to smooth out
- 35 the wild fluctuations in the risk premium,
- 36 which is the difference between the risk-free
- 37 return and market return to common equity.
- 38 Since return to debt is fairly stable, the

1 fluctuations are caused by the wide swings in
2 the return to equity. For example, if the
3 return to common equity is large in one year,
4 so is the premium, if the return is small the
5 next year, the premium will be negative.
6

7 **Q. Why are you using the years from 1925 through**
8 **1996 to measure the risk premium?**
9

10 A. Ibbotson provides historical information on the
11 risk premium from 1925 through 1996, and these
12 years represent the entire term for which
13 information is available. Using the entire data
14 avoids any element of subjectivity that may
15 influence the selection of only a portion of
16 the data. Neither Ibbotson nor anyone else I
17 know of recommends using just a portion of the
18 data. SBBI-1997 discusses this issue at pages
19 152-153: "A proper estimate of the expected
20 risk premium requires a long data series, long
21 enough to give a reliable average without being
22 unduly influenced by very good and very good
23 and very poor short term returns ... More
24 generally, the 71 year period starting with
25 1926 is representative of what can happen.
26 SBBI-97 also warns: "Some analysts calculate
27 the expected equity risk premium over a
28 shorter, more recent time period...this view is
29 suspect."
30

31 **Q. Why are you using 10.7% as the estimate of the**
32 **market-wide rate of return to common equity?**
33

34 A. I use that figure because it represents normal
35 performance in the market. I have two reasons
36 for saying so.
37

38 The first reason is a plain and simple one:
39 10.7% is the actual compound rate of growth in

1 the value of large companies' common stocks.
2 SBBI-1997, at page 49 states: "One dollar
3 invested in large company stocks at year end
4 1925, with dividends reinvested, grew to
5 \$1370.95 by year end 1996; this represents a
6 compound annual growth rate of 10.7 percent."
7 The year-by-year change in the large companies'
8 value is shown in Schedule 11 column (2).
9

10 The second reason is also simple. Not all large
11 companies' stocks have advanced at a compound
12 rate 10.7%. Some companies have earned more
13 than 10.7% and others have earned less. In the
14 71 year period covered by data, there are
15 literally millions of possible outcomes. But
16 out of the millions of possibilities, the
17 number of possibilities below 10.7% are exactly
18 equal to the number of possibilities above
19 10.7%. Thus 10.7% is the exact middle of all
20 the possibilities that could have occurred.
21 This idea may be expressed another way: there
22 is a 50% chance that the compound return will
23 be 10.7% and a 50% chance that a \$1 investment
24 in 1925 would be worth \$1370.95 in 1996.
25 Returns higher than 10.7% have a smaller chance
26 of being achieved.
27

28
29 Schedule 12 and Charts 2 and 3 show the exact
30 odds of achieving 10.7% versus the other
31 possibilities.
32

33 **Q. How did you derive Schedule 12?**

34
35 **A.** I have provided the mathematical details in
36 Appendix A. But the heart of the concept is
37 simple. A \$1 investment today has two possible
38 outcomes next year -- a gain or a loss. But in
39 the year after next, there are four

possibilities because each possibility in the first year has two possibilities in the second year. The number of possibilities doubles each year. Thus an investment that begins with \$1 has 8 possible values three years later, 16 possible values four years later and so forth. The SBBI-97 data on large companies covers seventy one years and literally millions of possibilities. But the odds of each possibility can be easily calculated. I have done that in Schedule 12.

Q. Why have you highlighted certain portions of Schedule 12 and Charts 2 and 3?

A. I highlighted those portions to show the ties of the schedule and the charts back to Schedule 11 and to emphasize the difference between the actual rate of 10.7%, which appears at the bottom of column (2) in Schedule 11 and the figure of 12.7%, which appears at the bottom of column (3), the so-called average of the returns, which I describe as a "biased average."

Q. Why do you consider the average to be biased?

A. The average is biased in the sense that it overstates market returns and leads unwary investors into the mistaken notion that an "average" return has a 50% chance of being achieved, when it does not. The growth rate of 12.7% means that a \$1 investment in 1925 is now worth \$4768 instead of \$1371. Thus the rate of 12.7% is biased.

1 The bias is created in a very simple way: No
2 one can ever lose more than 100% of their
3 investment, i.e., 100% is the mathematical
4 limit for losses. However, there is no
5 mathematical limit for an investment's gain.
6 Therefore, when percentage gains are combined
7 with percentage losses the resulting average is
8 mathematically biased to overstate the true
9 gain in value. An excellent example is provided
10 by Roger Ibbotson, the principal of Ibbotson
11 Associates and the author of SBBI-97. In the
12 July-August 1979 issue of Financial Analysts
13 Journal, at page 44, he wrote::

14
15 "Suppose that \$1.00 were invested in a
16 common stock portfolio that
17 experienced 100 percent price
18 appreciation in the first year and 50
19 percent depreciation in the succeeding
20 year. At the end of the first year the
21 portfolio would be worth \$2.00; at the
22 end of the second year the portfolio
23 would be \$1.00. The [average]...return
24 on the portfolio would be 25 percent
25 ..."

26
27 By adding a gain of +100% to a loss of -50%,
28 the net is +50% and the average is 25%. Since
29 the portfolio's value is again \$1.00, the
30 actual return is obviously zero, not 25%. Thus,
31 the "average return" is clearly a biased and
32 misleading estimate of the return to equity.
33 This example also shows that the actual return
34 is computed by comparing numbers that represent
35 actual values rather than by averaging numbers
36 expressed as rates of return.

37
38 Q. Is there any situation in which the average
39 return is not biased?

1
2 A. Yes. If the market always gains, then the
3 average is not biased. In this situation the
4 average return and the actual return are
5 identical. A divergence between the actual
6 return and the average return indicates that
7 losses have occurred. The greater the
8 divergence, the greater the losses in the
9 market.

10
11 Q. Is 10.7% derived by comparing two actual
12 values?

13
14 A. Yes, it is derived by comparing the market
15 value of large companies' common stock in 1925
16 with the their value in 1996, which I show in
17 Schedule 11.

18
19 Q. Is 12.7%, the biased average in your terms,
20 derived by averaging numbers expressed as rates
21 of return?

22
23 A. Yes, it is derived by averaging all the rates
24 of return from 1925 through 1996.

25
26 Q. Does the figure 12.7% result from the
27 mathematical bias you described?

28
29 A. Yes because there have been several years where
30 the market lost value. This is indicated in
31 Schedule 11 column (2) when the value for an
32 earlier year is greater than the value of a
33 later year. For example, the market index fell
34 from 534.46 in 1989 to 517.5 in 1990.

35
36 Q. What are the odds of a company achieving at
37 least a 12.7% return?
38

1 A. The odds are less than 1 in 5 or less than 20%,
2 indicating the return represents superior
3 performance rather than normal performance.
4

5 **Q. What are the odds of a company achieving at**
6 **least a 10.7% return?**
7

8 A. The odds are 1 in 2 or 50%, indicating that the
9 return represents normal performance.
10

11 **Q. Why have you made the effort to explain the**
12 **differences underlying 10.7% and 12.7%?**
13

14 A. Market returns vary widely over time, and when
15 people are confronted with extremes the first
16 step in clarifying the situation is to take an
17 average. But with regard to a rate of return,
18 it is a mistake to assume that an average is
19 the mid-point between the extremes and that the
20 average represents a typical value. I want to,
21 make this fact clear. In addition, I have not
22 seen any direct testimony presented to the TRA
23 or its predecessor agency where the differences
24 are explained in terms of probability. Without
25 a probability analysis the difference between
26 10.7% and 12.7% may seem tiny and unimportant.
27 However, when the probability of achieving
28 12.7% is considered, it is clear that 12.7% is
29 a return representing superior performance in
30 the market rather than normal performance. Thus
31 12.7% is not a rational basis to set a risk
32 premium rate.
33

34 **Q. Is it reasonable to describe the risk premium**
35 **in terms of a probability analysis?**
36

37 A. Yes. SBBI-97 at page 155 states: "in the
38 investment markets...returns are described by a
39 probability distribution..."

1 Q. Is the return of 10.7% certain to be achieved?

2
3 A. No, there is a 50% chance that it will not be
4 achieved.
5

6 Q. Is there disagreement about whether a risk
7 premium should be derived from 10.7% or 12.7%?
8

9 A. Yes. The disagreement is generally discussed in
10 terms of a debate about the merits of using the
11 "geometric mean" of market returns versus using
12 the "arithmetic mean" of market returns. The
13 10.7% figure is the geometric mean of large
14 companies' historical returns, and 12.7% is the
15 arithmetic mean.
16

17 Q. Are you using the geometric mean or the
18 arithmetic mean in your risk premium analysis?
19

20 A. I use the geometric mean, but I prefer the
21 phrase "actual return." I prefer to call the
22 arithmetic return the "average return."
23

24 Q. Do you have support for your choice of the
25 geometric mean over the arithmetic mean?
26

27 A. Yes. In addition to the all the reasons I have
28 already described for using the geometric mean,
29 it is also preferred by scholars in statistics
30 and finance as well as professional investment
31 firms. In 1990, Thomas Copeland, et. al.
32 published Valuation: Measuring and Managing the
33 Value of Companies. At page 193 they state:
34 "Our opinion is that the best forecast of the
35 risk premium is its long run geometric
36 average." Irving Fisher, considered to be one
37 of the world's greatest statisticians, wrote a
38 book called The Making of Index Numbers. In the

1 1967 edition of the book at pages 29 and 30
 2 Fisher says, "The simple arithmetic average
 3 produces one of the very worst index numbers.
 4 And if this book has no other effect than to
 5 lead to the total abandonment of the simple
 6 arithmetic type of index number, it will have
 7 served a useful purpose." In 1981 Richard
 8 Stevenson and Edward Jennings published,
 9 Fundamentals of Investment 2nd ed.. At page 272
 10 they say, "Why not simply average the rates of
 11 return? Indeed, in certain instances, such a
 12 procedure would be satisfactory. However, such
 13 an average would generally be meaningless." On
 14 March 13, 1990 at page C1 the Wall Street
 15 Journal ran the following story, "When Figuring
 16 the Rate of Return Don't Be Confused By The
 17 Sales Hype." The story compares the average
 18 return with the so-called compound return,
 19 another common name for the geometric return.
 20 The WSJ story says the compound return is "more
 21 widely used by investment firms."

22
 23 There is plenty of support for using the actual
 24 market return (the geometric mean) in the risk
 25 premium model.
 26

27 **Q. What portions of the risk premium model have**
 28 **you identified thus far?**

29
 30 **A.** I have identified the debt and equity portions.
 31 In terms of the model -- $K_e = K_d + (R_m - R_f) * (B_e)$
 32 --I thus far identified K_d as 7.95% and R_m as
 33 10.7%. I still have to identify R_f , the risk
 34 free return and B_e , the beta.
 35
 36

37 RISK PREMIUM MODEL: RISKFREE RATE
 38
 39

1 Q. What represents the market-wide risk-free
2 investment, R_f ?

3
4 A. In this case I am using the three-month U.S.
5 Treasury bills. I will show that the three-
6 month rate is based on a long term perspective
7 of the riskless rate and that it is a better
8 concept to use in this case than a long-term
9 bond.

10
11 Q. What is the market-wide risk free rate of
12 return, R_f , based on three-month bills?

13
14 A. The risk free rate is 3.7%, which is the
15 compound annual growth rate in the value of the
16 three-month treasury bills from 1926 to 1996.
17 Schedule 13 shows the 71 year history for
18 returns to Treasury bills, and in the entire
19 time there is no loss. The compound rate of
20 3.7% is the center of all possible outcomes
21 from a \$1 investment in three-month bills in
22 1925. The average rate is 3.8%. It is slightly
23 higher than the actual rate because there were
24 no gains in several years. The three-month rate
25 is the best measure of a riskless rate.

26
27 Q. Why is the three-month treasury bill the best
28 measure of a riskless rate?

29
30 A. There are three reasons:

31
32 1. The three-month bill is a debt
33 instrument. This fits with the risk
34 premium's basic premise: the return to
35 debt is less than the equity return
36 and equity return is determined by
37 referencing debt.

38
39 2. Of all the other debt instruments

1 measures that could be used -- long-
2 term corporate bonds, long-term
3 government bonds, the income portion
4 of long-term government bonds and
5 intermediate term government bonds --
6 the three-month bill provides the
7 lowest rate. This is consistent with
8 the financial concept that a risk free
9 rate should be lower than rates that
10 reflect risk.
11

- 12 3. A three-month bill is free from losses
13 but the other debt instruments are
14 not, i.e., they are riskier forms of
15 investment than the three-month bill,
16 which is why their rates are higher.
17 Schedule 14 shows the actual return
18 and the average return 1925 to 1996
19 for each of the debt instruments. For
20 each kind of debt, the difference
21 between columns (2) and (3) indicates
22 the degree to which the losses occur
23 in that particular debt market. Of all
24 the debt instruments, the three-month
25 bill is the safest. Investors are
26 absolutely certain of what cash flows
27 will be received and when they will be
28 received. Unlike the other debt
29 instruments, the three-month bill
30 carries no risk of default or loss of
31 principal.
32

33 Q. Is there a contradiction between using the
34 three-month bill as the risk free rate while
35 you are using the cost of A rated bonds in your
36 model?
37

38 A. No. I have already said those bonds are not
39 necessarily long-term notes. They have call

1 provisions that transfer the risk of interest
2 rate changes from the company to the investor.
3 The three-month bill allows the investor to do
4 the same thing the company does: avoid the risk
5 of interest-rate changes.
6

7 **Q. Is there a way to avoid the risk of losing**
8 **principal and still use long term bonds?**
9

10 A. No. SBBI-97 at page 151 suggests that long-term
11 bonds have so-called "income returns." This
12 return is the income an investor would receive
13 if the bond were purchased and held to maturity
14 rather than selling it. SBBI-97 considers the
15 income return to be the "riskless portion" of
16 an investment in long term bonds. I disagree
17 with this concept because it is irrational.
18

19 **Q. Why is the concept irrational?**
20

21 A. It is irrational because it assumes an investor
22 can divide a long term bond into a riskless
23 portion and a risky portion. This separation
24 is not credible because a bond is not severable
25 into distinct portions. The purchase of a long
26 term bond always carries the risk that changes
27 in interest rates will cause a change in the
28 bond's value. The concept of "income returns"
29 also suggests that once a long term bond is
30 purchased, the investor will take no action
31 until the bond matures and do nothing in the
32 face of interest rate changes. This behavior is
33 just the opposite of the behavior assumed in a
34 call provision, which gives the issuer the
35 flexibility to act when interest rates change.
36 It is irrational to assume that the issuer of a
37 bond is free to respond to interest rate
38 changes but that the bond's buyer is not.
39

1 Q. What portions of the risk premium model have
2 you identified thus far?

3
4 A. In terms of the model -- $K_e = K_d + (R_m - R_f) * (B_e)$
5 -- I have identified K_d as 7.95%, R_m as 10.7%
6 and R_f as 3.7%. The term $(R_m - R_f)$ is equal to 7%.
7 This amount would be smaller, as would my
8 recommended rate of return, if I were to use
9 any debt instrument other than the three-month
10 bill. For example, if I were to use long-term
11 government bonds, the term $(R_m - R_f)$ would be
12 $(10.7\% - 5.1\%)$, which equals 5.6%. This lowers
13 the risk premium equity return by 1.4%, which
14 is the difference between 7% and 5.6%. I still
15 have to identify B_e , the beta.
16
17

18 RISK PREMIUM MODEL: THE BETA
19
20

21 Q. What does beta measure?

22
23 A. Beta measures how an individual company's
24 market value changes relative to the change in
25 the value of the entire market. For example, if
26 a company's market value increases from \$10 to
27 \$11, then the company's value increases by 10%.
28 If the entire market's value increased from
29 \$1000 to \$1200, then the entire market's value
30 increases by 20%. The beta is calculated as .5,
31 which is the ratio of 10% divided by 20%.
32

33 The market itself has a beta of 1. If the
34 company's beta is one, then the company risk
35 premium is the same as the market-wide risk
36 premium. Thus if a company's beta is less than
37 1, then the company is judged less risky than
38 the market. Beta is also used to compare the
39 relative riskiness. For example, a beta of 0.4

1 is less risky than a beta of 0.6.

2
3 **Q. Did you calculate betas for AGL and the**
4 **comparable companies?**

5
6 A. Yes, and I also calculated the betas' accuracy.
7 The betas and their tests of statistical
8 accuracy, the T-statistic, appear in Schedule
9 15, pages 1 and 2 respectively. The average
10 beta shown at the bottom of page 1 Schedule 15
11 is transferred to Schedule 16, which provides
12 results of the risk premium analysis.
13

14 **Q. What is the beta's value in your model?**

15
16 A. The value is .458 and is shown in Schedule 16
17 at the bottom of column (b).
18

19 **Q. What is the estimated equity rate of return**
20 **that is derived from your risk premium model?**

21
22 A. The model gives a value of 11.14%. In terms of
23 the model -- $K_e = K_d + (R_m - R_f) * (B_e)$ -- the
24 equity return is $11.14\% = 7.95 + (10.7\% -$
25 $3.7\%) * .458$.
26

27 **Q. Do you use all the betas in Schedule 15 to**
28 **develop the figure of .458?**

29
30 A. Yes. I used the average betas that have an average
31 T-statistic greater than 1.
32

33 **Q. Why did you use the T-statistic and T-statistic**
34 **greater than 1?**

35
36 A. In general, the T-statistic indicates how well
37 a summary number represents the group from
38 which the summary number comes. In this case

1 the summary number is a beta, which few people
2 are familiar with. But the T-statistic can also
3 be explained in terms of an average, a summary
4 number which everyone uses almost everyday.
5

6 For example, I may know that a certain group of
7 people are, on average, 40 years old. But the
8 average is just a short-hand description of the
9 group. The average alone does not indicate
10 anything about the group's composition. The
11 group could be composed of children younger
12 than 10 and elderly people over 70. The group
13 as a whole just happens to have an average age
14 of 40 even though 40 is not at all
15 representative of anyone in the group. In this
16 case the T-statistic is likely be low, about 1
17 or less. On the other hand the group could be
18 composed of people between 36 and 42, who as a
19 group, just happen to have an average age of
20 40, but in this case 40 is fairly
21 representative of anyone in the group. In this
22 case the T-statistic is likely to be high,
23 about 2 or more. The higher the T-statistic,
24 the more likely it is that a group's summary
25 number or average is a good representation of
26 the parts that make up the group. Statisticians
27 express the same idea by saying "the beta is
28 statistically different from zero."
29

30 **Q. What is the economic significance of the betas'**
31 **values you found?**
32

33 A. All the values are far less than 1, which means
34 that AGL and the comparable companies are far
35 less risky investments than the market as a
36 whole. In addition, the values do not vary much
37 for any particular company, which means that
38 investors do not perceive any substantial
39 change in risk for these companies.

1
2 **Q. How did you derive the betas?**
3

4 A. I used the monthly percentage change in the S&P
5 500 index to represent the market-wide return
6 and the monthly percentage change in the
7 company's stock price to represent the
8 company's return. The change is calculated as:
9 Price at the end of the month divided by price
10 at the beginning of the month -- the result is
11 converted to a natural logarithm and then the
12 beta is calculated.
13

14 **Q. Did you compare your betas to those estimated**
15 **by anyone else?**
16

17 A. Yes. My betas are larger than those estimated
18 by Dr. Andrews for his companies, shown at
19 Schedule 9 of his direct testimony. The average
20 for his betas is .27. This figure includes 5
21 negative betas. When Dr. Andrews implements his
22 model he excludes the negative betas and raises
23 his average to .41, which is still lower than
24 the average of my betas, .458.
25

26 **Q. Is the value of .458 a reasonable value?**
27

28 A. Yes.
29

30 THE APPROPRIATE RETURN OF 10.55%
31 COMPENSATES FOR MONTHLY COMPOUNDING
32

33 **Q. What is the range of annual equity returns that**
34 **you have established?**
35

36 A. I have established a range of 10.4% to 11.14%.
37

38 **Q. In your opinion, within the range of 10.4% to**

1 **11.14% what value is appropriate?**

2
3 A. In my opinion the appropriate annual value is
4 10.55% because this compensates for monthly
5 compounding that creates annual returns. Even
6 though the range's mid point is about 10.8%,
7 this can be converted into a return of 11.3%,
8 an amount well-beyond my upper limit of 11.14%.

9
10 **Q. Are there other experts who believe that annual**
11 **returns are achieved by compounding monthly**
12 **returns?**

13
14 A. Yes. This financial principle pervades the data
15 in SBBI-97, Ibbotson's 1997 Yearbook. For
16 example, my Schedule 12, column (3) for the
17 year 1996 shows a value of .2307 or 23.07%. My
18 Schedule 17 shows exactly how .2307 is derived.
19 This process is exactly the same as the one
20 shown in my Schedule 6. Monthly compounding is
21 the basis for all the annual returns shown in
22 Dr. Andrew's Schedule 10 and my Schedule 11.
23 But this is normal because SBBI-97 at page 49
24 explicitly says: "Annual total returns...for
25 each asset class are formed by compounding the
26 monthly returns." Thus in my Schedule 12,
27 column (2) for the year 1996, the amount of
28 1370.95 equals 1.2307×1113.92 , or stated in
29 words:

30
31 Annual Return This Year Equals:
32 12 Most Recent Monthly Returns Multiplied
33 Together, Which Are Then Multiplied by
34 Annual Return Last Year.

35
36 Returning to Schedule 17, it is important to
37 notice that .2307 is larger than the sum of the
38 monthly returns in column (2). If those returns
39 were added together they would sum to only

1 .2148. This is further proof that annual
2 returns are actually achieved by multiplying
3 monthly returns together, i.e., monthly
4 compounding. This also substantiates the
5 findings in my Schedule 6, where an allowed
6 annual return of 10.55% is subdivided into
7 monthly returns that actually yield 11.0% over
8 a 12 month period.
9

10 **Q. Isn't it true that monthly compounding**
11 **introduces an upward bias to a prospective**
12 **annual rate of return?**
13

14 **A.** Yes, and here is how the bias occurs. Lets say
15 that TRA surveillance form 3.03 line 27 for a
16 month shows an annual return of 11% for a
17 certain company. If there is agreement that
18 annual returns are formed by monthly
19 compounding, then we know that the sum of the
20 monthly returns is 10.55%, but when the returns
21 are multiplied together the annual return is
22 11%. Now suppose that the company files a rate
23 case and asks for an 11.5% return. If the
24 proposed rate of return were subdivided on a
25 monthly basis, the sum of the proposed monthly
26 returns should be 11% to ensure that when they
27 are compounded monthly, the result does not
28 exceed 11.5%. If the monthly returns sum to
29 11.5%, then in effect, the allowed rate of
30 return is 12%.
31

32 Another way to understand the compounding
33 effect is to consider how the test year rate
34 base is calculated. The rate base is actually
35 an average of the rate base at the beginning of
36 the test year and the rate base at the end of
37 the test year. Thus the value of rate base
38 already includes 6 months of reinvested
39 earnings. Therefore, when a rate of return is

1 applied to the rate base, the company is
2 actually earning on its earnings. This is
3 another way to achieve monthly compounding. If
4 this aspect were implemented in terms of
5 Schedule 6, the beginning balance would not be
6 \$1 but about \$1.06.
7

8 **Q. Is there any document in this docket where a**
9 **proposed annual return is subdivided on a**
10 **monthly basis?**
11

12 **A. The only one I know of is my Schedule 6.**
13

14 **Q. What equity return do you recommend in this**
15 **case?**
16

17 **A. I recommend a rate of 10.55%, an amount between**
18 **my DCF rate of 10.4% and 11.14%, the risk**
19 **premium rate. I choose 10.55% because I know**
20 **that monthly compounding gives the company the**
21 **opportunity to earn a higher return. I also**
22 **choose 10.55% because I know that the rate base**
23 **already includes 6 months of reinvested**
24 **earnings before the rate of return is applied**
25 **to the rate base, thus giving the company**
26 **another opportunity to earn a higher return**
27

28 **Q. What compounded return can the company earn**
29 **with an annual rate of 10.55%?**
30

31 **A. The monthly compounding process gives the**
32 **company an opportunity to earn approximately**
33 **11.0%.**
34

35 CAPITAL STRUCTURE AND OVERALL RATE OF RETURN
36

37 **Q. What are your findings regarding capital**
38 **structure?**

A. The capital structure in this case appears in the company's filing as Exhibit 5, Schedule 9. Since the amounts in that schedule are derived from AGL's capital structure, CA data request 42 asked the company to provide support for the calculations. The company's response is attached to my testimony as Schedule 18. None of the projected balances in that document are explained or supported by the company. For example, the preferred stock balance in 1997 is \$58.4 but the projected balance in 1998 is \$70 million. Despite this hefty increase, no explanation is provided. Continuing with this example, AGL's long term debt is shown as \$659.5 million in 1997 and 1998. However, the company's response to CA data request 24 showed a balance of \$584.5 million as of April 1997. This is an unexplained difference of \$75 million. In addition, the new debt's interest rate is not provided. Also, according to the company's response to CA data request 23, all long term debt and preferred stock is held by AGL instead of its parent holding company, AGL Resources. Therefore, the \$75 million cannot be attributed to debt issues by the holding company. Finally, AGL's response to data request 42 does not show how the amount of the CG capital structure, \$95.8 million, is derived. Instead, the response shows how \$95.8 is allocated to the different aspects of the capital structure.

In sum, the amounts shown in Schedule 18 are different than what I expected, but I do not believe the differences are material to my analysis, which relies on the portions and the estimated costs. However, my recommended overall return is neither an endorsement nor an

1 acceptance of the rate base that will be
2 applied to the overall return. To the extent
3 that the projections in Schedule 18 are not
4 supported, the company's filed rate base is
5 questionable.
6

7 **Q. What weighted overall capital cost do you**
8 **recommend?**
9

10 A. In my opinion a cost of 8.85% before
11 compounding, shown in Schedule 19.
12

13 **Q. What compounded overall return can the company**
14 **earn with an annual rate of 8.85%.**
15

16 A. The company has an opportunity to earn about
17 9.3%.
18
19
20

21 ANALYSIS OF METHODS EMPLOYED BY
22 THE COMPANY'S COST OF CAPITAL WITNESS
23

24 **Q. You have stated that you disagree with Dr.**
25 **Andrews' analysis, can you explain your**
26 **reasons?**
27

28 A. Yes. At page 4 lines 22-23 of his direct
29 testimony he states: "I measure the costs of
30 equity capital of ...small publicly held gas
31 distributing companies and impute their cost of
32 equity to CGC." I have already pointed out an
33 obvious difference between these companies and
34 CG -- they are independent financial entities
35 who have actively traded stock while CG has no
36 actively traded stock because it is a wholly
37 owned subsidiary of AGL. This alone suggests
38 that his analysis is inappropriate. However,
39 after scrutinizing his testimony and his data

sources, I conclude that his equity returns -- 14.39%, 14.38%, 14.23% , 12.5%, 12.17% and 11.06% shown at page 47 of his testimony -- are based on an irrational analysis.

SMALL COMPANY APPROACH IS IRRATIONAL

Q. Why is the analysis irrational?

A. The small company data base that he uses does not represent the performance of small companies. Instead, the data base represents the performance of one particular mutual fund out of more than 200 funds that specialize in buying and selling small company stocks. The particular mutual fund used by SBBI-97, the very same one that Dr. Andrews uses, is named the Dimensional Fund Advisors 9-10 Small Company Mutual Fund (DFA 9-10 fund). SBBI-97 at page 51 says; "...the small company stock returns series is the total return achieved by the Dimensional Fund Advisors (DFA) Small Company 9-10 Fund."

However, the fund requires an initial purchase of \$2 million dollars. This is well beyond the means of stockholders who own the companies used by Dr. Andrews. The fund also has a highly unusual ownership concentration, one that is certainly not representative of a gas distribution utility. In 1996 the fund had assets of \$1.18 billion with over \$625 million held by five owners that are actually pension funds:

	OWNERSHIP PERCENTAGE
OWNER	

1	Charles Schwab & Company Inc.	31.44%
2	State Farm Insurance	10.76%
3	Pepsico Inc. Master Trust	8.87%
4	Owens-Illinois	5.48%
5	National Electrical Benefit Fund	5.26%

6
7 This ownership pattern and the \$2 million
8 minimum investment clearly indicates that the
9 so-called "returns to small companies" are
10 actually returns to well-financed pension
11 groups rather than being a return that is
12 accessible to ordinary investors. There would
13 be no incentive for anyone to make a \$2 million
14 minimum investment and buy into the DFA 9-10
15 fund if such returns were accessible to
16 ordinary investors. Also, these returns are
17 derived from the capital gains made by the
18 constant buying and selling of stock, a far
19 different process than the way in which a gas
20 distribution company makes money.

21
22 However, even the returns themselves are open
23 to question because the methods used to
24 calculate the fund's return are not equivalent
25 to the return-on-assets concept used in utility
26 regulation. In 1996 the fund's return on assets
27 was 8.75%. Dr. Andrews' Schedule 6, page 1,
28 the far-left column titled "Small Company
29 Stocks" shows the return as 17.62%. He uses
30 this amount and the remaining figures in that
31 column to develop the return differentials of
32 9.16%, 7.57% and 6.86% shown on the right side
33 of the schedule. Those amounts are repeated in
34 Schedule 6 page 2 and in his direct testimony,
35 at the bottom of page 45 under the column
36 titled "Equity Diff" and lead to a huge cost of
37 equity, 14.3%.

38
39 These figures are not credible, not only for the

reasons I have just discussed, but also for the overlapping directorates of the DFA 9-10 fund and SBBI-97. Mr. Robert G. Ibbotson is the Chairman and President of Ibbotson Associates, and the publisher and author of SBBI-97. He is also on the Board of Directors of the DFA 9-10 fund. This strongly implies that the small company data used in SBBI-97 is not derived from an independent source and that the data may overstate the actual returns. This possibility is already substantiated by the difference between 8.75%, the return on assets, and the so called return of 17.62% used by Dr. Andrews. Mr. Ibbotson's dual role is indicated in the Statement of Additional Information published March 28, 1997, as a supplement to a prospectus issued the same date by DFA Investment Dimensions Group, Inc.

These factors demonstrate the extraordinary weakness in the small company analogy that Dr. Andrews uses to estimate the cost of equity. But there is another contradiction in the data: in 1994 only 9 of Dr. Andrew's companies were owned by the fund, in 1995 and 1996 only 11 of the companies were owned by the fund. Thus half of Dr. Andrews' companies are not considered "small" by the fund itself.

Taken as whole these factors make it plain that the small company analogy is an irrational approach to setting the equity return in this docket. In my opinion the TRA should disregard the results of Dr. Andrews' small company analysis, shown in his direct testimony at the bottom of page 45.

Q. What are sources of data that support the assertions you have made?

1 A. My data is taken from four different sources:

- 2
- 3 1. DFA Investment Dimensions Group Annual
- 4 Reports for the Years Ended November
- 5 30, 1996 and November 30, 1994 and
- 6 DFA's SEC10K filing for 1995.
- 7
- 8 2. Statement of Additional Information,
- 9 Supplement to DFA's Investment
- 10 Dimensions Group, Inc. Prospectus of
- 11 March 28, 1997.
- 12
- 13 3. Morningstar, Inc.'s Reports on Mutual
- 14 Funds, as of May 31, 1997.
- 15
- 16 4. SEC Form 10Ks and 10Ka-1 for Dr. Andrews'
- 17 companies and the DFA Group.
- 18

19 **Q. What is Morningstar Inc.?**

20

21 A. Morningstar is a software and data base firm that

22 maintains records on over 8000 mutual funds and

23 tracks their performance. The company is located in

24 Chicago.

25

26 **Q. What schedules have you set up from this data?**

27

28 A. Schedule 20 is a summary of Morningstar's

29 reports on 230 mutual funds that specialize in

30 buying and selling small company stocks. About

31 30 concentrate on foreign stocks and the

32 remainder focus on domestic stocks. The funds

33 are arranged in descending order according to

34 the amount of the initial minimum investment.

35 The funds managed by the DFA group are among

36 the most expensive funds to purchase. Nearly

37 all of DFA's funds require \$2 million minimum

38 investment. For all 230 funds taken as a group,

39 there is a systematic difference between the

1 rate of return on assets and the 1996 return as
2 reported by the funds. The return on assets is
3 much lower than the other so-called return.

4
5 This discrepancy was so large that I was
6 compelled to cross-check the accuracy of the
7 Morningstar report on the DFA 9-10 fund against
8 the data in the DFA 1996 annual report. The
9 Morningstar report is Schedule 21 and the DFA
10 report on the fund is Schedule 22. Although the
11 data is not identical they are close enough to
12 be substantially the same. For example,
13 Morningstar reports assets of \$1107 billion and
14 the DFA annual report shows assets of \$1181
15 billion. In Schedule 21 I have highlighted the
16 portfolio statistics showing an exact match
17 between Morningstar's data and DFA's. This
18 suggests that Morningstar's calculation of a
19 return on assets is credible even though the
20 DFA report does not provide this measure. Also,
21 the DFA report, the line titled "Net Gain
22 (Losses) on Securities (Realized and
23 Unrealized)" represents capital gains and
24 losses by the fund. Clearly, the fund is
25 completely dependent on capital gains to make a
26 return, unlike a gas distribution company that
27 sells a product and a service. This, too, makes
28 the fund an unreasonable basis to develop
29 returns for a gas distribution company.

30
31 Schedule 23 shows DFA's Statement of Additional
32 Information, the cover page and pages 20-22.
33 The fund's method of calculating a return is
34 shown from Schedule 23 page 3, at the bottom,
35 to the schedule's page 4 at the top. The
36 description is vague and not articulated
37 through any readily understood example. This
38 sharply contrasts with the way all parties
39 calculate the return on assets that a gas

1 distribution utility receives. Therefore,
2 returns to mutual funds, such as the amounts in
3 Dr. Andrews' Schedule 6, page 1, the far-left
4 column titled "Small Company Stocks," cannot be
5 used to estimate the return-on-assets that is
6 granted to a gas distribution company.
7

8 Schedule 24 shows DFA's Statement of Additional
9 Information, pages 10, 11 and 15, which
10 respectively list the company directors and the
11 major owners of the fund. Mr. Ibbotson's name
12 appears at the second page, the third listing
13 from the top. This confirms that the DFA 9-10
14 fund and SBBI-97 have overlapping directorates.
15 Page 15 confirms the ownership pattern of the
16 fund.
17

18 **Q. How do you know that investors in Dr. Andrews'**
19 **22 small companies would be unable to buy into**
20 **the DFA fund?**
21

22 A. My opinion is based on the data I gathered
23 about Dr. Andrews' companies. Schedule 25
24 column (6) shows the average value of the
25 holdings per shareholder for Dr. Andrews'
26 companies. The maximum value is \$53,171 and the
27 average value is \$28,195. The DFA fund's
28 initial investment is \$2 million, about 50 to
29 100 times larger than the values shown in
30 column (6). It is impossible for stockholders
31 of Dr. Andrews' companies to buy into the DFA
32 fund.
33

34 **Q. How do you know that the DFA fund included only**
35 **half of Dr. Andrews' small companies?**
36

37 A. I acquired DFA's annual reports for 1994 and
38 1996 and the company's SEC 10K filing for 1995.
39 Those reports list the companies in the fund.

1 Schedule 26 shows the results.

2
3 **Q. Is it your opinion that Dr. Andrews actually**
4 **used the 22 "small publicly held companies" to**
5 **estimate the equity returns of 14.3%?**
6

7 **A.** No, Dr. Andrews did not use those companies.
8 In my opinion he used the concept of "small
9 companies" to make a link with the purported
10 returns of the DFA fund, which is the real
11 source of the huge equity-return estimates that
12 appear in his direct testimony at the bottom of
13 page 45. Also, nine of Dr. Andrews' companies
14 do not fit the definition of a small company
15 that is given by SBBI-97 at page 136: A small
16 company is one with a market value less than
17 \$197.4 million as of September 1996. My
18 Schedule 25 shows 9 of Dr. Andrews' companies
19 exceeding that value on April 30, 1997. This
20 strongly suggests that Dr. Andrews' companies
21 are composed of two dissimilar groups that are
22 viewed differently by the market.
23

24 RETURNS OF 12.5% AND 12.17% ARE BASED ON LARGE COMPANY
25 DATA, MISUSE OF DATA AND IRREGULAR, UNSUPPORTED
26 PROCEDURES
27

28 **Q. Are Dr. Andrews' other returns derived from**
29 **the small company concept and the DFA fund?**
30

31 **A.** No. He uses large companies to derive the
32 returns of 12.5% and 12.17%. The returns appear
33 in his testimony at page 44 lines 21-22 and at
34 page 45 lines 1-2 and are derived from his
35 Schedule 10. The schedule's left side has a
36 column titled "Common Stock Total Returns."
37 This name is wrong. In his note at the bottom
38 of the schedule he says data for the years

1 1987-1995 is drawn from "Exhibit A-1" of
2 Ibbotson's 1996 yearbook. The correct name is
3 "Table A-1 Large Company Stocks: Total
4 Returns." A portion of the table from the 1996
5 yearbook is attached to my testimony as
6 Schedule 27. Note the title of column (3) in my
7 Schedule 11 and the exact match between the
8 amounts in column (3) from 1988-1996 and the
9 amounts listed in Dr. Andrews' so-called
10 "Common Stock Total Returns."
11

12 Contrary to his assertion, "I measure the costs
13 of equity capital of ... small publicly held
14 gas distributing companies," Dr. Andrews uses
15 large companies without acknowledging the fact
16 nor explaining why he has done so. This
17 undermines his entire analysis, making it an
18 irrational basis to determine a return to
19 equity.
20

21 **Q. Does Dr. Andrews use the data correctly?**
22

23 A. No. He limits Schedule 10 to a history of 10
24 years instead of a 71 year history recommended
25 by SBBI-97.
26

27 **Q. Are you suggesting that every recommendation of**
28 **SBBI-97 has to be followed?**
29

30 A. No. Although SBBI-97 is a useful tool and an
31 authoritative source for some aspects of
32 developing a rate of return, its authors are
33 fallible, as I have already demonstrated with
34 regard to the small company issue. However, it
35 is contradictory to invoke an authoritative
36 source to justify one position and then depart
37 from the source's recommendations in other
38 positions without explaining the reasons for
39 the departure.

Dr. Andrews has departed from the standard practice of using a 71 year history to derive the risk premium differential. His direct testimony offers neither a justification nor an explanation of his reasoning. In their absence, his choice of a 10 year history appears arbitrary and calculated to increase the estimated cost of equity.

For example, his Schedule 10, the line titled "Averages" shows that: $.1604 - .0778 = .0826$. These values appear in his direct testimony at page 44 line 21:

$$K_e = .0133 + .0778 + (.41) * (.1604 - .0778)$$

$$K_e = .125 = 12.5\%$$

However, if Dr. Andrews had taken the data for the 71 year period, as the source recommends, the averages would be different than what he shows in Schedule 10.

The figure of 16.04% would decrease to 12.7%, which is the average return to large companies and which is shown in my Schedule 11 at the bottom of column 3. The figure of 7.78% would decline to 5.2%, which is shown in my Schedule 14 in the line titled "Income Portion of Long-Term Government Bonds" and under the column titled "Biased Average." If these new figures were applied to his equation at page 44 line 21, the new result would be:

$$K_e = .0133 + .052 + (.41) * (.127 - .052)$$

$$K_e = .0961 = 9.61\%$$

A similar result occurs in the equation at line 1 of page 45 of his direct testimony, where the

1 new value would be 9.31%.

2
3 The use of a 10 year history is vital to Dr.
4 Andrews' results. However, the exact reason he
5 chose this period is not discussed in his
6 testimony. Therefore, I recommend that the TRA
7 disregard the estimates of 12.5% and 12.17%
8 because they are arbitrary and unreasonable.

9
10 In fact, his formulation of the risk premium
11 model is irrational.

12
13 **Q. Why is his risk premium model irrational?**

14
15 A. Dr. Andrews' model is irrational because it is
16 not tied to the debt markets faced by AGL, the
17 "A" rated bond market, despite his lengthy
18 discussion of AGL's debt quality at page 18 of
19 his testimony. The only place in his analysis
20 where he uses "A" rated corporate debt is in a
21 DCF analysis appearing in his testimony at page
22 46 lines 16-17, which shows returns of 8.98%
23 and 9.35%. These figures are repeated at page
24 47 lines 7-8, where he describes these numbers
25 as "DCF Over Various Debt Instruments."

26
27 This portion of his testimony contradicts a
28 statement in his deposition of September 9. In
29 that deposition, from page 43 line 24 to page
30 44 line 3, he states: "One of the lines of
31 analysis that I pursue is the equity over debt
32 cost approach, risk premium approach; and I
33 used some of the costs of the debt that Atlanta
34 Gas had outstanding and found differentials of
35 equity cost over that." However, Dr. Andrews
36 has not used AGL's debt or "A" rated bonds in
37 any risk premium analysis, but only in the DCF
38 analysis he describes at pages 46 and 47 line 7
39 of his testimony. His highest set of returns --

14.23%, 14.38% and 14.39% derived from his small company analogy, and his second highest set of returns -- 12.5% and 12.17% -- are completely unrelated to the "A" bond market or to AGL's debt.

Q. Is your risk premium model rational?

A. Yes. My risk premium model is based on the general principle that equity returns have to be compared to and exceed corporate debt. In this particular case the debt in question is the "A" bond market. If I expressed the principle instead of the numbers, the model would be:

$$K_e = \text{Current Cost of A Rated Utility Bonds} + (R_m - R_f) * (B_e)$$

Dr. Andrews' model does not begin with corporate debt. Instead, his model begins with the concept of "Long-Term U.S. Govt. Bonds Income Component Returns." If I expressed his idea instead of the numbers, his model would look like:

$$K_e = 1.33\% + \text{Long-Term U.S. Govt. Bonds Income Component Returns} + (R_m - R_f) * (B_e)$$

Therefore, Dr. Andrews' model is based on the idea that equity returns have to be compared to and exceed the returns of long term government bonds instead of corporate debt. This is an irrational basis to begin an analysis because returns to government bonds are always lower than returns to corporate bonds. My Schedule 14 clearly shows that corporate bonds outperform government bonds. Therefore, Dr. Andrews' model

1 has a starting point that is bound to be lower
2 than the starting point in my model. However,
3 he raises the starting point of his model by
4 resorting to a figure of 1.33%. This amount is
5 not related to debt, corporate or government;
6 nor is it related to equity returns of either
7 large or small companies.

8
9 **Q. What does the 1.33% relate to?**

10
11 A. The figure is not related to anything because
12 it is a nonsense-number.

13
14 **Q. How is 1.33% a nonsense-number?**

15
16 A. Dr. Andrews explains the derivation of 1.33% in
17 his direct testimony, page 44 lines 13-14. The
18 derivation is irrational for two reasons:

- 19
20 1. Dr. Andrews is dealing with numbers
21 that cannot be treated as if they are
22 "per day, per week, per month or per
23 year" numbers. Just as the assertion -
24 - "You are 6 feet tall per month, so
25 in 12 months you will be $6 \times 12 = 72$ feet
26 tall per year" -- is nonsense, so too
27 is Dr. Andrews' number of 1.33%.

28
29 This point becomes clear by examining
30 his derivation of 1.33%. In his
31 Schedule 9 under the "Alpha" column,
32 there is a number, .0011, which is the
33 average of the alphas that have a
34 positive beta. Thus .0011 is the basis
35 for deriving .0133 by the formula at
36 page 44 lines 12-13 of Dr. Andrews'
37 direct testimony:

38
39
$$.0133 = (1 + .0011)^{12} - 1$$

Although he does not say that he is deriving his alphas from five years of monthly data, he is. At page 42 lines 6-12 of his testimony Dr. Andrews explains that he derives his betas with five years of monthly data, but every time a statistical regression produces a beta an alpha is created too. This is why his work and mine both have alphas as well as betas.

He treats the value .0011 as if it were a monthly value that can be compounded into an annual figure. This is why he uses 12 in his formula:

$$.0133 = (1 + .0011)^{12} - 1$$

The alphas and betas are derived from the same data and the same months. If the alpha is a monthly rate, isn't the beta a monthly rate, too? If the beta is not a monthly rate, how can the alpha be a monthly rate? If his beta of .41 were compounded monthly the result would be:

$$60.75 = (1 + .41)^{12} - 1$$

If this value were placed into Dr. Andrews' original formula the cost of equity would be:

$$K_e = .0133 + .0778 + (60.75) * (.1604 - .0778)$$

$$K_e = 5.10 = 510\%$$

60.75 is produced in exactly the same way as Dr. Andrews' produced .0133. If

60.75 is dismissed as incredible or fictitious, then its counterpart, the "annualized" alpha, is an unreasonable number and .0133 should be rejected, too. Both numbers are unreasonable. It is irrational for Dr. Andrews to treat the alpha as a monthly figure that can be compounded to an annual one. His treatment further suggests that the alpha can be compounded according to the time frame of the data used, i.e., if the alpha and beta are derived from monthly data then the alpha can be compounded monthly, but if the data is weekly, then the alpha can be compounded weekly. This too is irrational.

For example, if I took the weight of 22 people each month for 60 months and then took an average, I can say "based on monthly data the average weight per person is 150 pounds" but it would be wrong to say "because I collected my data on a monthly basis each person weighs 150 pounds per month and 1800 pounds per year." This is the exact logic that Dr. Andrews employs. The difference between this example and Dr. Andrews' irrational procedure is the size of the numbers.

If the beta is .41, as in Dr. Andrews' results, then the value of the company's stock changes 41 cents per \$1 change in the market's value, whether the market's change is measured over a day, a week, a month or a year -- .41 is not compounded to

a higher figure nor reduced to a lower one. The same logic applies to the alpha.

In my opinion the TRA should disregard Dr. Andrews' figure of 1.33% because it is irrational.

2. Dr. Andrews' direct testimony does not provide any tests of statistical accuracy for the alphas in his Schedule 9. In the absence of this data, my opinion is that the alpha should be presumed to be zero.

Earlier I said that every time a statistical regression produces a beta a so-called "alpha" is created too. Since his overall positive beta is .41 while mine is .458, I expected this similarity to be carried through to the alphas, and it is. The values of his alphas are very close to zero, just as they are in my analysis, at Schedule 15 page 3. However, page 4 of Schedule 15 shows the alphas' statistical measures of accuracy, the T-statistics. They are tiny, meaning the alphas are no different than zero.

The typical pattern of alphas, betas and their statistical accuracy are provided in the table below.

Betas	Alphas
Positive Values	Very Close to Zero- May Be Positive or Negative

1	High T-Statistics Indicate	Low T-Statistics Indicate
2	Accuracy	Inaccuracy

3
4
5 Schedule 15 fits this pattern. Dr.
6 Andrews' data should show the same
7 pattern, at least for his positive
8 betas.
9

10 When the alphas are no different than
11 zero, they do not add anything to the
12 cost of equity, and there is no need
13 to use the alphas. In this case the
14 formula looks like:

15
16
$$0 = (1 + .0000)^{12} - 1$$

17

18 The alpha is zero. This is why alphas
19 are thought of as having no value and
20 no meaningful economic interpretation
21 and why they never appear with betas.
22

23 I do not know of any financial
24 publication that provides betas and
25 alphas nor do I know of any model that
26 treats the alphas the way Dr. Andrews
27 does.
28

29 **Q. Did you ask Dr. Andrews to provide the tests of**
30 **statistical significance for the alphas and**
31 **betas that he calculated?**
32

33 **A. Yes. He did not supply them, consequently his**
34 **conclusions are not supported by material and**
35 **substantial evidence. His response is attached**
36 **to my testimony as Schedule 28.**
37

38 **Q. Do you have any comment regarding his response?**

1
2 A. Yes. Since Dr. Andrews has not provided the
3 tests of statistical significance, I am even
4 more concerned that his alphas are really no
5 different than zero. In my analysis the alphas
6 are zero and they are not statistically
7 significant. Also, it is contradictory for Dr.
8 Andrews to calculate sums and averages for the
9 betas and alphas, as he does in his Schedule 9,
10 and then state in his response: "Tests of
11 significance, such as T-statistics from the
12 regressions related to individual stocks cannot
13 be summed or averaged across the composite." I
14 have done exactly that in my analysis. In fact,
15 its results are appropriate.
16

17 **Q. Why are your results appropriate?**
18

19 A. All my betas are positive. They are estimated
20 over twelve contiguous 60 month periods, with
21 the first period ending in May 1996 and the
22 last one ending in April 1997. This procedure
23 captures any change in how the company's beta
24 value is responding to the market. I provide
25 tests of statistical significance, and the
26 tests are reasonable. The alphas are zero,
27 their tests of statistical significance
28 indicate the true values are zero, and they
29 play no role at all in my return. All of these
30 factors taken together reinforce the
31 implications of my Schedule 1, which
32 demonstrates the comparability of my group of
33 companies.
34

35 In comparison, Dr. Andrews' analysis has 5
36 negative betas, which he dismisses as
37 "analytically indefensible" at page 43 line 18
38 of his direct testimony. Dr. Andrews does not
39 explain why the results are "indefensible," but

1 it is clear that if he did not exclude the
2 negative values, his estimated return of 12.5%
3 would be lower. Therefore, the negative betas
4 appear to be indefensible because they would
5 lower the company's return. He relies on the
6 alpha to raise his estimated returns and
7 performs an irrational procedure to boost an
8 estimated return by 1.33%. In addition, he
9 does not provide tests of statistical
10 significance, even when asked to do so. Taken
11 together, these factors indicate that Dr.
12 Andrews' companies do not form a comparable
13 group that is a rational basis for estimating a
14 rate of return. These factors further reinforce
15 what my Schedules 25 and 26 already suggest --
16 his companies are composed of two dissimilar
17 groups that cannot be a rational basis to set a
18 rate of return in this docket.
19

20 **Q. What is your opinion regarding Dr. Andrews'**
21 **statistical analysis is shown in Schedule 9 of**
22 **his testimony?**
23

24 **A.** In my opinion the TRA should disregard the
25 conclusory analysis because it is arbitrary,
26 irrational and unsupported by material and
27 substantial evidence. Therefore, his analysis
28 cannot constitute a basis for a decision.
29
30

31 DCF ANALYSIS IS BIASED UPWARDS
32

33 **Q. What is your opinion of Dr. Andrews' DCF**
34 **analysis?**
35

36 **A.** His DCF recommendation of 11.06% is derived
37 from Schedule 8, page 2, of his testimony. My
38 opinion is that his result is biased upward by
39 approximately 2% because his rate of 11.06% is

1 based on only 4 companies instead 21. He
 2 ignores the results of the 17 other companies
 3 that he considers as comparables. Therefore,
 4 his recommendation of 11.06% is not
 5 representative of the group that he has
 6 designated as comparables. On the other hand,
 7 if his companies are composed of two groups not
 8 comparable to each other, then his decision to
 9 ignore some would be rational. However, if this
 10 is why he has ignored 17 companies, then this
 11 makes all his other analyses irrational, too.
 12 For example, of the 17 companies ignored in
 13 Schedule 8, 12 of them are used in his Schedule
 14 9 to derive the returns of 12.5% and 12.17%. On
 15 its face this is clearly an irrational
 16 procedure, and Dr. Andrews offers no
 17 explanation. It is my opinion that the TRA
 18 should disregard his recommended DCF rate
 19 because it is biased and not supported by
 20 material and substantial evidence.

21
 22
 23 RANGE OF 11.5% TO 12.5% IS IRRATIONAL
 24

25 **Q. Do you have any concluding opinions regarding**
 26 **the equity returns suggested by the company's**
 27 **cost-of-capital witness?**
 28

29 **A.** Yes. In his direct testimony, at page 47 lines
 30 14 and 23, Dr. Andrews concludes his analysis
 31 by recommending a range of 11.5% to 12.5%. Dr.
 32 Andrews suggests this is a reasonable range
 33 because he has found returns that are well
 34 above the range. At page 47 lines 18-22 Dr.
 35 Andrews says "The Small Stock equity risk
 36 premiums...over 14%...cannot be dismissed."
 37

38 The "small company" premiums can and should be
 39 dismissed because:

1 They are based on 1 mutual fund out of
2 200;

3
4 The fund has a minimum investment
5 requirement of \$2 million;

6
7 The stockholders of Dr. Andrews'
8 companies cannot afford to buy into
9 such a fund;

10
11 The directorates of the Ibbotson
12 Associates and the DFA 9-10 fund
13 overlap - suggesting that the funds'
14 return is not calculated by an
15 independent source;

16
17 The fund's return on assets is only
18 8.75%, an amount provided by
19 Morningstar Inc., a source that is
20 independent of Ibbotson Associates and
21 DFA Investment Dimensions Group - the
22 manger of the DFA 9-10 fund;

23
24 The difference between the fund's
25 return on assets and its so-called
26 annual return means that a mutual
27 fund's return cannot and should not be
28 used to grant a utility's return on
29 assets;

30
31 The fund relies exclusively on capital
32 gains as the source of its return.

33
34 The small-company fund approach is an unfit and
35 irrational method to develop a rate of return
36 that must be supported by ratepayers.

37
38 The returns of 12.5% and 12.17%, both are
39 predicated on data that is specific to large

1 companies - not small ones. This invalidates
2 both returns because Dr. Andrews' analysis is
3 based on "small publicly held" companies. Also,
4 I have pointed to several places in the
5 derivation of 12.5% and 12.17%, where Dr.
6 Andrews is silent about the logic that led him
7 to perform crucial procedures or where the
8 procedure is irrational. Considering all these
9 factors, Dr. Andrews' recommended range of
10 11.5% to 12.5% emerges as irrational.
11

12 **Q. What is your opinion regarding Dr. Andrews'**
13 **returns of 14.39%, 14.38%, 14.23%, 12.5%,**
14 **12.17% and 11.06%?**
15

16 A. In my opinion, the returns of 14.39%, 14.38%,
17 14.23%, 12.5%, 12.17% and 11.06% are
18 unsubstantiated, speculative and more than just
19 and reasonable. They cannot be a basis for the
20 TRA to set the equity return in this docket.
21

22 **Q. How is your testimony different from that of**
23 **the company's cost-of-capital witness?**
24

25 A. In my opinion my testimony is different because
26 I have used reasonable methods and achieved
27 reasonable results. I have explained my methods
28 in pain-staking detail, giving all parties an
29 accurate and true description of all the
30 factors and sources I considered when forming
31 my opinion on the rate of return. Therefore,
32 the equity return of 10.55% is neither
33 confiscation nor extortion and is equitable to
34 ratepayers and the company alike.
35

36 **Q. Does this conclude your direct testimony?**
37

38 A. Yes.

Proof of Comparability

Market Statistics

NAME	Ratio of Market Price to Book Price		Equity Ratio		Dividend Yield		Value of Holdings Per Share		Average Number Of Years Stock Is Held By Investor	Market Value 4/30/97 \$(Millions)
	1996	1996	Dec	Dec	Dec	Dec	4/30/97	Holder	Investor	4/30/97
AGL RESOURCES INC	180%	48.9%	5.40%	\$63.334	3.36	1061				
BAY ST GAS CO	150%	53.1%	5.61%	\$30.949	3.86	343				
BROOKLYN UN GAS CO	149%	55.8%	5.05%	\$42.951	2.26	1352				
INDIANA ENERGY INC	184%	62.5%	4.49%	\$58.122	4.25	548				
LACLEDE GAS CO	161%	57.1%	5.45%	\$35.410	3.98	388				
NORTHWEST NAT GAS CO	159%	52.5%	5.05%	\$44.355	2.98	545				
PEOPLES ENERGY CORP	171%	56.4%	5.42%	\$34.172	2.21	1167				
PIEDMONT NAT GAS INC	178%	49.7%	4.84%	\$37.664	3.37	687				
WASHINGTON GAS LT CO	174%	59.4%	5.19%	\$45.226	2.98	972				
AVERAGE	166%	55.0%	5.50%	\$42.958	2.94	792				

Financial Behavior

Value Line March 31, 1995
 "We advise staying with top quality stocks with payout ratios below 80%. We'd be wary of payout ratios above 80%."

Companies Respond In Similar Way To Concerns Of The Financial Community

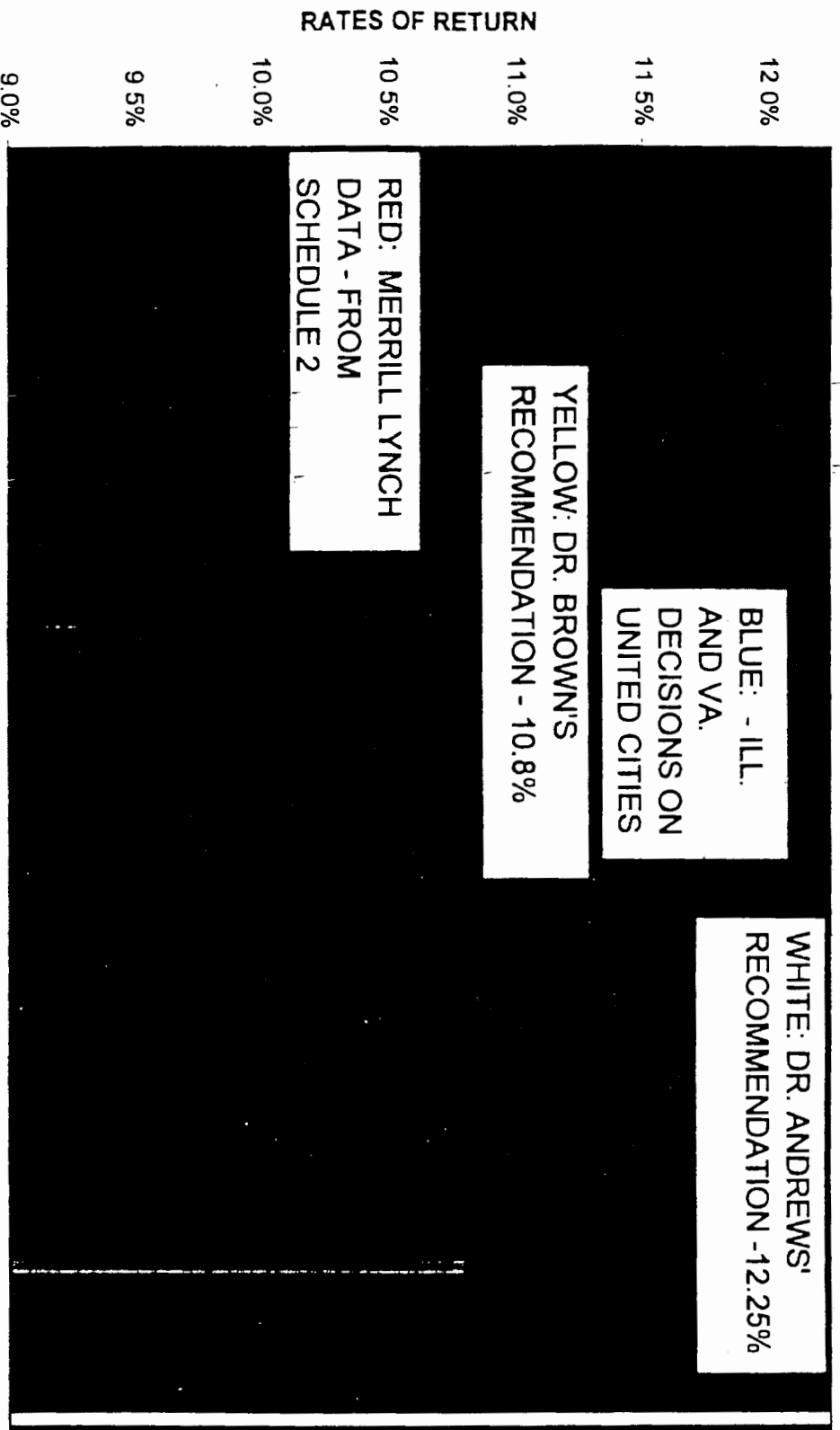
Dividends Payout Ratios As a Percent of Earnings

	1991	1992	1993	1994	1995	1996
AGL RESOURCES INC	98.1%	91.2%	96.3%	88.9%	78.2%	77.4%
BAY ST GAS CO	99.2%	96.5%	80.0%	77.8%	86.5%	76.0%
BROOKLYN UN GAS CO	87.6%	95.6%	76.3%	73.0%	73.2%	72.4%
INDIANA ENERGY INC	82.9%	82.8%	77.3%	66.7%	73.3%	59.4%
LACLEDE GAS CO	93.8%	102.6%	75.8%	85.9%	97.6%	67.4%
NORTHWEST NAT GAS CO	167.3%	155.0%	67.0%	72.1%	73.1%	60.9%
PEOPLES ENERGY CORP	83.4%	85.4%	84.4%	84.5%	101.1%	61.8%
PIEDMONT NAT GAS INC	97.8%	65.0%	65.5%	74.8%	73.8%	68.9%
WASHINGTON GAS LT CO	92.1%	84.3%	83.2%	78.2%	77.2%	61.6%
AVERAGE	97.9%	97.9%	80.7%	80.1%	83.3%	66.7%

Chart 1

ESTIMATIONS OF REQUIRED RATES OF RETURN TO EQUITY FOR AGL'S SUBSIDIARY - CHATTANOOGA GAS

Docket No 97-00982
Exhibit CA-SNB
Direct Testimony
Chart 1 of 3



Merrill Lynch Data

Docket No 97-00982
Exhibit CA-SNB
Direct Testimony
Schedule 2
Page 1 of 1

MONTH	DCF RATE	RISK PREMIUM RATE	MAXIMUM OF THE TWO RATES
Jan-95	11.0%	10.4%	11.0%
Feb-95	10.6%	10.3%	10.6%
Mar-95	10.3%	10.2%	10.3%
Apr-95	10.2%	10.1%	10.2%
May-95	10.1%	10.0%	10.1%
Jun-95	10.1%	9.5%	10.1%
Jul-95	10.3%	9.3%	10.3%
Aug-95	10.5%	9.4%	10.5%
Sep-95	10.3%	9.3%	10.3%
Oct-95	10.3%	9.4%	10.3%
Nov-95	9.4%	9.6%	9.6%
Dec-95	9.8%	9.6%	9.8%
Jan-96	8.8%	9.2%	9.2%
Feb-96	8.8%	9.3%	9.3%
Mar-96	9.1%	8.3%	9.3%
Apr-96	9.9%	9.7%	9.9%
May-96	9.9%	9.6%	9.9%
Jun-96	10.0%	9.8%	10.0%
Jul-96	9.7%	9.7%	9.7%
Aug-96	10.0%	9.7%	10.0%
Sep-96	9.6%	9.9%	9.9%
Oct-96	9.6%	9.7%	9.7%
Nov-96	9.5%	9.5%	9.5%
Dec-96	10.4%	9.4%	10.4%
Jan-97	10.2%	10.6%	10.6%
Feb-97	10.2%	10.0%	10.2%
Mar-97	10.5%	10.1%	10.5%
Apr-97	10.5%	10.3%	10.5%
May-97	10.5%	10.1%	10.5%

Source Merrill Lynch Quantitative Profiles [Published Monthly]
January 1995 through May 1997 Issues, page 11



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Exhibit CA-SNB____
Direct Testimony____
Schedule 3____
Page 1 of 1____

i wish communication

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United Cities granted rate increase in Illinois

03:24 p.m. Jun 26, 1997 Eastern

BRENTWOOD, Tenn.--(BUSINESS WIRE)--June 26, 1997--United Cities Gas Co. (NASDAQ:UCIT), a multistate distributor of natural and propane gas, announced today that the Illinois Commerce Commission has granted the company a rate increase of \$428,000 in annual revenues.

An overall rate increase of 2.09 percent was granted for approximately 23,000 customers in or near Harrisburg, Metropolis, Vandalia, Virden and Salem, Ill. The rate increase provides United Cities with a 9.85 percent return on rate base and a 10.94 percent return on common equity. The increase is the result of an application filed before the Commission in November 1996.

The net rate increase is part of an agreement reached by United Cities, Atmos Energy Corporation and the Commission in approving the merger of United Cities and Atmos. In addition, the rate increase will be followed by a three year rate moratorium.

United Cities Gas Company distributes natural and propane gas to approximately 350,000 customers in 10 states. The company is also engaged in other energy-related businesses (See also <http://www.businesswire.com>)

Copyright 1997 Business Wire

03:24 p.m. Jun 26, 1997 Eastern - 0 fAAu bAp Byya0

United Cities granted rate increase in Virginia
05 03 p m Jun 02 1997 Eastern

BRENTWOOD Tenn --(BUSINESS WIRE)--June 2 1997--United Cities Gas Co
NASDAQ UCIT) a multistate distributor of natural and propane gas announced today that the
Virginia State Corporation Commission has granted the company a rate increase of \$102 838 in
annual revenues by order dated May 27 1997

An overall rate increase of less than one percent was granted for approximately 18 000 current
regulated customers. The rate increase provides United Cities with a 10 percent return on rate
base and an 11 percent return on common equity. The increase is the result of an application filed
before the Commission in April 1995.

Due to the Commission's decision, money over-collected from customers since Sept. 28, 1995,
when United Cities began charging interim rates based on its original 3 percent rate increase
request, will be credited to customers' accounts with interest. The credit amount for customers will
vary according to their gas usage during the period interim rates were in effect.

United Cities' last rate increase in Virginia was granted in 1989. Since that time, rate reductions
were implemented in both 1991 and 1994.

United Cities Gas Company distributes natural and propane gas to approximately 350,000
customers in 10 states. The company is also engaged in other energy-related businesses. (See
also <http://www.businesswire.com>)

Copyright 1997 Business Wire

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Effect of Monthly Compounding

	Monthly Net Income for Atlanta Gas- FY 1996 *	Monthly Income as a Percentage of Annual Income	Pattern of Monthly Return Based on Monthly Pattern of Income	Cumulative Equity Balance at Start of Month	Monthly Return on Equity	Cumulative Month End Equity Balance
			[col (3) X Allowed Annual Return of 10.55%]		[col (4) X col (5)]	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Oct-95	3,272	4 1%	0 43%	\$1,000	\$0 0043	\$1 004
Nov-95	9,492	11 8%	1 24%	\$1,004	\$0 0125	\$1 017
Dec-95	17,476	21 7%	2 29%	\$1,017	\$0 0232	\$1 040
Jan-96	18,120	22.5%	2 37%	\$1,040	\$0 0247	\$1 065
Feb-96	14,495	18.0%	1.90%	\$1 065	\$0 0202	\$1 085
Mar-96	13,797	17.1%	1 80%	\$1,085	\$0 0196	\$1 104
Apr-96	5,232	6 5%	0 68%	\$1 104	\$0.0076	\$1 112
May-96	0,836	1 0%	0 11%	\$1 112	\$0.0012	\$1 113
Jun-96	-1,122	-1.4%	-0.15%	\$1,113	-\$0 0016	\$1 112
Jul-96	2,226	2 8%	0.29%	\$1,112	\$0 0032	\$1 115
Aug-96	-0,253	-0.3%	-0.03%	\$1,115	-\$0 0004	\$1 114
Sep-96	-2,918	-3 6%	-0.38%	\$1 114	-\$0.0043	\$1.110
Total	80,653	100 0%	10.55%		\$0 1102	

*From CA Data Request 39

BEFORE THE TENNESSEE PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

Docket No. 9502116

CHATTANOOGA GAS COMPANY

Tuesday, September 26, 1995
Hamilton County Board of Education
Chattanooga, Tennessee 37402

CROSS EXAMINATION OF DR. VICTOR L. ANDREWS

APPEARANCES:

COMMISSION MEMBERS:

Keith Bissell, Chairman,
Steve Hewlett and Sara Kyle

FOR THE CHATTANOOGA GAS COMPANY:

William L. Taylor, Jr., Esq., of
Spears, Moore, Rebman & Williams
Eight Floor Blue Cross Building
Chattanooga, Tennessee 37401

L. Craig Dowdy, Esq., of
Long, Aldridge & Norman
One Peachtree Center, Suite 5300
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Atlanta, Georgia 30308

FOR THE CONSUMER ADVOCATE:

L. Vincent Williams, Esq.
Consumer Advocate
1504 Parkway Towers
404 James Robertson Parkway
Nashville, Tennessee 37243-0500

Steven A. Hart, Esq.,
Special Counsel
450 James Robertson Parkway
Nashville, Tennessee 37243-0485

COPY

1 dividends --

2 A Where are we?

3 Q I'm sorry, I've got the wrong page citations
4 here. You can tell me whether you remember saying this
5 or not. I can't find it through your testimony right
6 now. In the case of public utilities dividends paid
7 are constant for certain periods and are increased at
8 irregular intervals even though financial processes
9 underlying their movement may be progressing much more
10 smoothly and constantly; does that sound correct?

11 A I think I would say smoothly and
12 continuously, but whatever, but yes, that is true.

13 Q Do you agree --

14 A It's true as a general rule.

15 Q So you would agree that a public utility and
16 natural gas public utility, their financial activity is
17 basically smooth and continuous?

18 A Well, what I said, I think if we had the
19 complete quotation would be that earnings and cash
20 flows progress smoothly and continuously. Financial
21 processes occur smoothly and continuously. They go --
22 if this makes the point for you -- minute by minute,
23 hour by hour, day by day and they're not interruptable.

24 Q Just to clarify for the record we found the
25 first segment that we didn't really dispute. It starts

**CAPITAL STRUCTURE SUBMITTED IN DOCKET 95-02116
AS EXHIBIT 3 SCHEDULE 9**

Docket No 97-00982
Exhibit CA-SNB____
Direct Testimony____
Schedule 8____
Page 1 of 1____

CHATTANOOGA GAS COMPANY
Cost of Capital
For the 12 Months Ending September 30 1996

Line No		Amount	Ratio	Cost	Weighted Cost
1	Short Term Debt	5 190 953	5 36%	8 00%	0 43%
2	Long Term Debt	43 096 531	44 50%	7 96%	3 54%
3	Preferred Stock	4 183 753	4 32%	7 56%	0 33%
4	Common Stock Equity	44 374 900	45 82%	12 50%	5 73%
5	Total	96 846 137	100 00%		10 03%
		*****	*****		*****

UCR Recommended Return

Uocket No 9/00982
 Exhibit CA-SNB
 Direct Testimony
 Schedule 9
 Page 1 of 1

DCF SUGGESTED RATE OF RETURN

Company	12/96 Annual Dividend	Average Daily closing Price: 5/1/96 - 4/30/97	Annual Dividend Yield
Atlanta Gas	\$1.06	\$19.63	5.40%
Bay State	\$1.52	\$27.08	5.61%
Brooklyn Union	\$1.42	\$28.14	5.05%
Indiana Energy	\$1.11	\$24.70	4.49%
LaCie	\$1.26	\$23.11	5.45%
Northwest Natural	\$1.20	\$23.77	5.05%
Peoples	\$1.83	\$33.79	5.42%
Piedmont	\$1.15	\$23.76	4.84%
Washington Gas Light	\$1.14	\$21.94	5.19%
Average Div. Yield 5.17%			
Actual	Year of AGI Dividend		
Value-Line Projection	1996		
	2000		
		\$1.06	
		\$1.30	

AGL DIVIDEND GROWTH RATE 5.23%

DCF Suggested Rate of Return 10.40%

History of A Rated Bonds

1982		1983		1984		1985		1986		1987	
Jan 82	8.72%	Jan 83	8.13%	Jan 84	7.24%	Jan 85	8.75%	Jan 86	7.06%	Jan 87	7.93%
Feb	8.63%	Feb	7.60%	Feb	7.45%	Feb	8.55%	Feb	7.31%	Feb	7.61%
Mar	8.69%	Mar	7.61%	Mar	7.82%	Mar	8.40%	Mar	7.75%	Mar	8.06%
Apr	8.67%	Apr	7.66%	Apr	8.20%	Apr	8.31%	Apr	7.80%	Apr	8.23%
May	8.81%	May	7.75%	May	8.37%	May	7.71%	May	8.20%	May	
Jun	8.70%	Jun	7.58%	Jun	8.30%	Jun	7.60%	Jun	8.13%	Jun	
Jul	8.64%	Jul	7.43%	Jul	8.45%	Jul	7.72%	Jul	8.07%	Jul	
Aug	8.65%	Aug	7.16%	Aug	8.36%	Aug	7.64%	Aug	7.67%	Aug	
Sep	8.62%	Sep	6.94%	Sep	8.62%	Sep	7.55%	Sep	8.06%	Sep	
Oct	8.64%	Oct	6.91%	Oct	8.60%	Oct	7.38%	Oct	7.83%	Oct	
Nov	8.58%	Nov	7.25%	Nov	8.95%	Nov	7.30%	Nov	7.54%	Nov	
Dec	8.37%	Dec	7.28%	Dec	8.78%	Dec	7.10%	Dec	7.63%	Dec	
Average	8.727%	Average	7.459%	Average	8.278%	Average	7.562%	Average	7.782%	Average	8.01%

Sources: Federal Reserve Bulletin, Table A-26; Subtable 1.35, line 36

Federal Reserve Publications H15(518) and G13(415)

Average Most Recent
 12 Months
 7.948%

Investment Data for Large Companies: 1925-1996

YEAR	Year-To-Year Percentage Change In	
	Large Company Total Return Index For Year	Large Company Total Return Index
(1)	(2)	(3)
1925	1.00	
1926	1.12	11.60%
1927	1.54	37.54%
1928	2.20	43.58%
1929	2.02	-8.44%
1930	1.52	-24.88%
1931	0.86	-43.34%
1932	0.79	-8.15%
1933	1.21	53.87%
.....		
1988	406.46	16.81%
1989	534.46	31.49%
1990	517.50	-3.17%
1991	675.59	30.55%
1992	727.41	7.67%
1993	800.08	9.99%
1994	810.54	1.31%
1995	1113.92	37.43%
1996	1370.95	23.07%

If \$1 Were Invested in 1925 and the Investment Grew by 10.7% Every Year, the Result Would Be \$1370.95.

The Average Return, 12.7%, Says the Wealth Accumulated Since 1925 should be \$4768. This is Inaccurate.

ACTUAL RETURN 10.7% 12.7% BIASED RETURN

*Source: Ibbotson Associates 1997 Yearbook:
Column (2) - From Table B-1
Column (3) - From Table A-1

The Table Below Shows The Odds In 1996 Of Achieving The Actual Return
And The Biased Average Return From A \$1 Investment In 1925 In A Large Company

	NUMBER OF POSSIBILITIES	ALL POSSIBLE VALUES OF INVESTMENT	ALL POSSIBLE RETURNS	ODDS OF ACHIEVING A RETURN EXACTLY EQUAL TO THE RETURN IN COLUMN (3)	ODDS OF ACHIEVING A RETURN LESS THAN THE RETURN IN COLUMN (3)	ODDS OF ACHIEVING A RETURN MORE THAN THE RETURN IN COLUMN (3)
	(1)	(2)	(3)	(4)	(5)	(6)
	1 0E+0	\$0 00	-8.3%	0%	0%	100%
	71 0E+0	\$0 00	-7.8%	0%	0%	100%
	2 5E+3	\$0 00	-7.3%	0%	0%	100%
	57 2E+3	\$0 01	-6.8%	0%	0%	100%
	46 2E+18	\$82	6.4%	2%	3%	95%
	68 5E+18	\$119	7.0%	3%	5%	92%
	95 8E+18	\$173	7.5%	4%	8%	88%
	126 8E+18	\$253	8.1%	5%	12%	83%
	158 5E+18	\$368	8.7%	7%	17%	76%
	187 3E+18	\$536	9.3%	8%	24%	68%
	209 3E+18	\$780	9.8%	9%	32%	59%
	221 3E+18	\$1,136	10.4%	9%	41%	50%
ACTUAL RETURN		\$1,370.95	10.7%			
	221 3E+18	\$1,654	11.0%	9%	50%	50%
	209 3E+18	\$2,409	11.6%	9%	59%	41%
	187 3E+18	\$3,508	12.2%	8%	68%	32%
BIASED AVERAGE		\$4,768.40	12.7%			
	158 5E+18	\$5,109	12.8%	7%	75%	18%
	126 8E+18	\$7,440	13.4%	7%	76%	17%
	95 8E+18	\$10,835	14.0%	5%	83%	12%
	68 5E+18	\$15,778	14.6%	4%	88%	8%
	46 2E+18	\$22,977	15.2%	3%	92%	5%
	29 4E+18	\$33,460	15.8%	2%	95%	3%
	17 6E+18	\$48,727	16.4%	1%	97%	2%
	10 0E+18	\$70,859	17.0%	1%	98%	1%
	1 0E+0	\$854,908.330	33.6%	0%	99%	0%

Chart 2

THE CUMULATIVE PROBABILITY DISTRIBUTION FOR IBBOTSON'S RETURNS TO LARGE COMPANY STOCKS

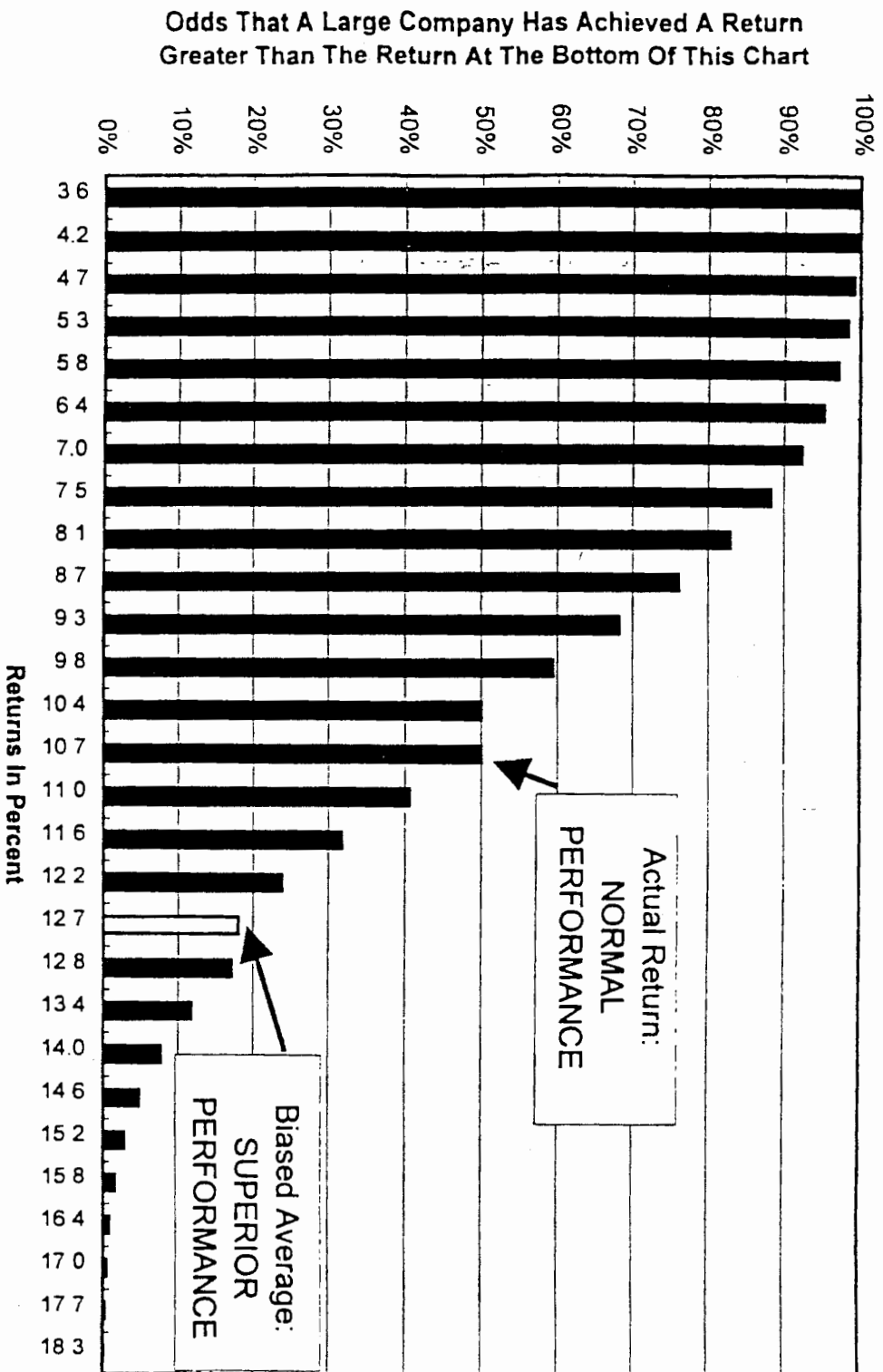
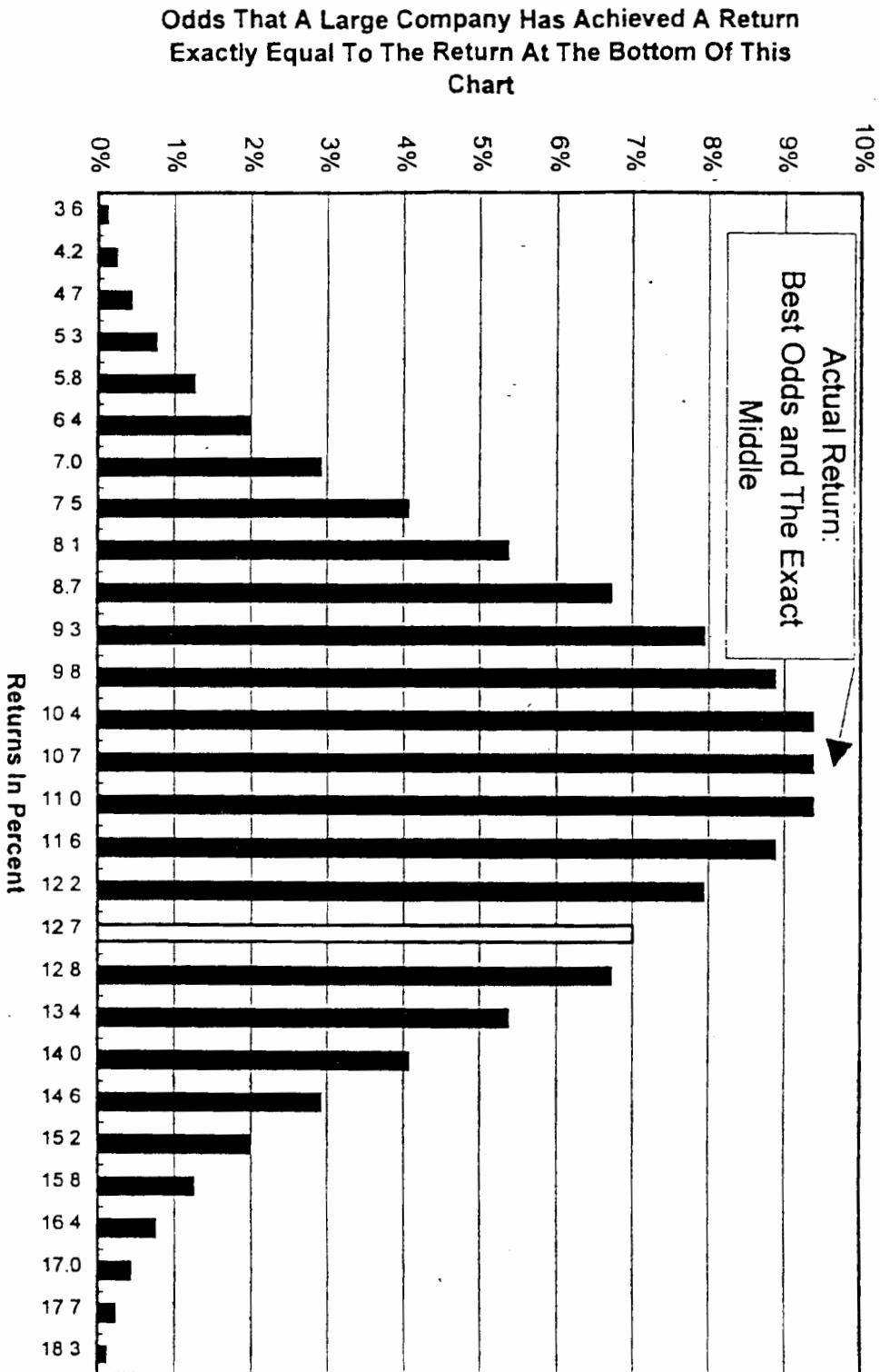


Chart 3

THE PROBABILITY DISTRIBUTION FOR IBBOTSON'S RETURNS TO LARGE COMPANY STOCKS



YEAR	T-Bill Total Return Index For Year	Year-To-Year Percentage Change In		YEAR	T-Bill Total Return Index For Year	Year-To-Year Percentage Change In	
		T-Bill Total Return Index	T-Bill Total Return Index			T-Bill Total Return Index	T-Bill Total Return Index
(1)	(2)	(3)	(3)	(4)	(5)	(6)	(6)
1925	1 00000			1961	1 60400	2 10%	
1926	1 03300	3 30%		1962	1 64800	2 74%	
1927	1 06500	3 10%		1963	1 70000	3 16%	
1928	1 10300	3 57%		1964	1 76000	3 53%	
1929	1 15500	4 71%		1965	1 82900	3 92%	
1930	1 18300	2 42%		1966	1 91600	4 76%	
1931	1 19600	1 10%		1967	1 99700	4 23%	
1932	1 20700	0 92%		1968	2 10100	5 21%	
1933	1 21100	0 33%		1969	2 23900	6 57%	
1934	1 21300	0 17%		1970	2 38500	6 52%	
1935	1 21500	0 16%		1971	2 49000	4 40%	
1936	1 21700	0 16%		1972	2 58500	3 82%	
1937	1 22100	0 33%		1973	2 76400	6 92%	
1938	1 22100	0 00%		1974	2 98600	8 03%	
1939	1 22100	0 00%		1975	3 15900	5 79%	
1940	1 22100	0 00%		1976	3 31900	5 06%	
1941	1 22200	0 08%		1977	3 48900	5 12%	
1942	1 22500	0 25%		1978	3 74000	7 19%	
1943	1 22900	0 33%		1979	4 12800	10 37%	
1944	1 23300	0 33%		1980	4 59200	11 24%	
1945	1 23700	0 32%		1981	5 26700	14 70%	
1946	1 24200	0 40%		1982	5 82200	10 54%	
1947	1 24800	0 48%		1983	6 33500	8 81%	
1948	1 25800	0 80%		1984	6 95900	9 85%	
1949	1 27200	1 11%		1985	7 49600	7 72%	
1950	1 28700	1 18%		1986	7 95800	6 16%	
1951	1 30600	1 48%		1987	8 39300	5 47%	
1952	1 32800	1 68%		1988	8 92600	6 35%	
1953	1 35200	1 81%		1989	9 67300	8 37%	
1954	1 36400	0 89%		1990	10 42900	7 82%	
1955	1 38500	1 54%		1991	11 01200	5 59%	
1956	1 41900	2 45%		1992	11 39800	3 51%	
1957	1 46400	3 17%		1993	11 72800	2 90%	
1958	1 48600	1 50%		1994	12 18600	3 91%	
1959	1 53000	2 96%		1995	12 87000	5 61%	
1960	1 57100	2 88%		1996	13 54000	5 21%	

Actual Return	3 74%	3 79%	Average Return

*Source Ibbotson Associates 1997 Yearbook
Column (2) - From Table B-5
Column (3) - From Table A-14
Column (5) - From Table B-5
Column (6) - From Table A-14

Debt Instruments: Actual and Average Returns

Docket No 97-00982
 Exhibit CA-SNB
 Direct Testimony
 Schedule 14
 Page 1 of 1

Returns of Debt Instruments 1925-1996

	Actual	Biased Average
Long-Term Corporate Bonds	5.60%	6.00%
Long-Term Government Bonds	5.10%	5.40%
Income Portion of Long-Term Government Bonds	5.10%	5.20%
Intermediate Term Government Bonds	5.20%	5.40%
U.S. Treasury Bills	3.70%	3.80%

Source: Ibbotson Associates 1997 Yearbook Page 118

Risk Premium Results

DocId: 367 000002
 Exhibit CA S-NB
 Direct Testimony
 Schedule 15
 Page 1 of 4

RISK PREMIUM ANALYSIS BETAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

BETA FOR 60 MONTH PERIOD ENDING	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-96	0.532	0.448	0.490	0.087	0.169	0.289	0.764	0.441	0.388	0.401
Jun-96	0.568	0.397	0.456	0.075	0.170	0.188	0.756	0.430	0.392	0.382
Jul-96	0.584	0.422	0.539	0.171	0.141	0.168	0.785	0.300	0.474	0.398
Aug-96	0.590	0.422	0.561	0.178	0.154	0.168	0.806	0.308	0.470	0.406
Sep-96	0.518	0.418	0.618	0.170	0.205	0.158	0.781	0.328	0.438	0.404
Oct-96	0.545	0.428	0.623	0.171	0.189	0.185	0.785	0.328	0.440	0.411
Nov-96	0.520	0.428	0.703	0.272	0.198	0.100	0.773	0.333	0.515	0.427
Dec-96	0.517	0.521	0.866	0.450	0.323	0.287	0.877	0.437	0.478	0.540
Jan-97	0.433	0.397	0.731	0.481	0.364	0.358	0.915	0.422	0.417	0.502
Feb-97	0.439	0.395	0.735	0.475	0.368	0.361	0.912	0.425	0.418	0.503
Mar-97	0.488	0.386	0.717	0.503	0.427	0.311	0.886	0.404	0.347	0.497
Apr-97	0.506	0.383	0.677	0.464	0.463	0.318	0.858	0.394	0.342	0.490
AV RECENT 12 MTHS	0.520	0.420	0.677	0.333	0.283	0.241	0.848	0.388	0.434	0.458

Risk Premium Results

Doc# 81 02082
 Exhibit CA S&B
 Direct Testimony
 Schedule 15
 Page 2 of 4

RISK PREMIUM ANALYSIS T-STATISTICS OF BETAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

T-STATISTIC OF BETA FOR 60 MONTH PERIOD ENDING	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-96	2.569	2.402	2.305	0.361	0.930	1.483	3.222	2.276	1.875	1.934
Jun-96	2.608	2.039	2.073	0.276	0.897	0.988	3.064	2.110	1.781	1.761
Jul-96	2.738	2.203	2.463	0.625	0.764	0.874	3.231	1.468	2.180	1.836
Aug-96	2.712	2.200	2.525	0.652	0.831	0.871	3.261	1.496	2.152	1.856
Sep-96	2.355	2.213	2.835	0.636	1.129	0.828	3.184	1.678	2.033	1.888
Oct-96	2.428	2.280	3.005	0.644	1.036	0.858	3.223	1.688	2.044	1.923
Nov-96	2.321	2.284	3.417	1.069	1.094	0.522	3.189	1.720	2.413	2.003
Dec-96	2.113	2.558	3.935	1.656	1.670	1.406	3.747	2.035	2.047	2.352
Jan-97	1.813	1.870	3.442	1.820	2.025	1.821	3.525	2.006	1.788	2.236
Feb-97	1.842	1.859	3.438	1.791	2.035	1.829	3.515	2.016	1.804	2.238
Mar-97	2.087	1.880	3.435	1.934	2.362	1.612	3.482	1.975	1.535	2.256
Apr-97	2.208	1.929	3.286	1.810	2.591	1.761	3.435	1.970	1.544	2.282

AV RECENT 12 MTHS	2.316	2.129	3.188	1.264	1.554	1.248	3.379	1.805	1.953	2.093

Risk Premium Results

DocId: 31 00982
 Entered CA SHB
 Direct Testimony
 Schedule 15
 Page 3 of 4

RISK PREMIUM ANALYSIS ALPHAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

ALPHA FOR 60 MONTH PERIOD ENDING	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-95	-0.003	0.000	0.001	0.007	0.004	0.000	-0.003	0.002	0.004	0.001
Jun-95	-0.003	0.002	0.002	0.009	0.003	0.003	-0.002	0.003	0.005	0.002
Jul-95	-0.003	0.001	0.000	0.005	0.003	0.002	-0.003	0.005	0.002	0.001
Aug-95	-0.002	0.001	0.002	0.006	0.004	0.002	-0.002	0.005	0.002	0.002
Sep-95	-0.003	-0.001	-0.001	0.004	0.003	0.001	-0.003	0.003	0.002	0.001
Oct-95	-0.002	-0.001	-0.001	0.004	0.002	0.001	-0.003	0.003	0.002	0.001
Nov-95	-0.003	-0.001	-0.002	0.001	0.002	0.002	-0.004	0.003	0.001	0.000
Dec-95	-0.002	-0.001	-0.003	0.000	0.002	0.001	-0.005	0.001	0.001	-0.001
Jan-96	-0.001	-0.002	-0.001	-0.001	0.000	0.000	-0.006	0.002	0.000	-0.001
Feb-96	-0.001	-0.002	-0.002	0.000	-0.001	-0.001	-0.006	0.001	0.000	-0.001
Mar-96	-0.003	-0.002	-0.001	0.000	-0.002	0.000	-0.005	0.002	0.002	-0.001
Apr-96	-0.002	-0.001	-0.001	0.000	-0.001	0.002	-0.005	0.002	0.002	-0.001
AV RECENT 12 MTHS	-0.002	-0.001	-0.001	0.003	0.002	0.001	-0.004	0.003	0.002	0.000

Risk Premium Results

Docket No 87-00987
 Exhibit CA SNB
 Direct Testimony
 Schedule 15
 Page 4 of 4

RISK PREMIUM ANALYSIS T-STATISTICS OF ALPHAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500

T-STATISTIC OF ALPHA FOR 60 MONTH PERIOD ENDING	T-STATISTICS OF ALPHAS - FOR AGL AND COMPARABLE COMPANIES REGRESSED AGAINST S&P 500									
	ATLANTA GAS LIGHT (ATG)	BAY ST GAS CO	BROOKLYN UN GAS CO	INDIANA ENERGY INC	LACLEDE GAS CO	NORTHWEST NAT GAS CO	PEOPLES ENERGY CORP	WASHINGTON GAS LT CO	PIEDMONT NATURAL GAS CO	AVERAGE FOR GROUP
May-96	-0.432	-0.034	0.131	0.905	0.697	0.063	-0.447	0.337	0.577	0.200
Jun-96	-0.408	0.306	0.289	1.180	0.615	0.488	-0.324	0.508	0.705	0.373
Jul-96	-0.410	0.156	0.032	0.845	0.632	0.324	-0.486	0.822	0.335	0.228
Aug-96	-0.323	0.154	0.256	0.702	0.765	0.322	-0.287	0.902	0.302	0.313
Sep-96	-0.453	-0.118	-0.100	0.447	0.620	0.172	-0.381	0.466	0.346	0.111
Oct-96	-0.355	-0.111	-0.206	0.531	0.428	0.189	-0.437	0.473	0.360	0.097
Nov-96	-0.399	-0.096	-0.360	0.068	0.407	0.396	-0.487	0.438	0.215	0.019
Dec-96	-0.358	-0.216	-0.500	0.063	0.421	0.181	-0.717	0.152	0.082	-0.099
Jan-97	-0.191	-0.333	-0.207	-0.141	-0.050	-0.074	-0.822	0.270	0.067	-0.164
Feb-97	-0.189	-0.368	-0.310	0.036	-0.098	-0.165	-0.738	0.171	0.014	-0.183
Mar-97	-0.378	-0.290	-0.208	-0.040	-0.293	0.076	-0.659	0.309	0.313	-0.130
Apr-97	-0.344	-0.189	-0.229	-0.059	-0.269	0.276	-0.885	0.267	0.333	-0.100
AV RECENT 12 MONTHS	-0.355	-0.095	-0.117	0.361	0.325	0.189	-0.540	0.426	0.304	0.055

Risk Premium Suggested Rate Of Return

COMPANY	Debt Yield (a)	Beta (b)	Market Risk Premium = 10.7% - 3.7% (c)	Company Risk Premium (d)=(b)X(c)	Company Equity Cost (e)=(a)+(d)
AGL RESOURCES INC (HLDG CO)	7.95%	0.520	6.97%	3.62%	11.57%
BAY ST GAS CO	7.95%	0.420	6.97%	2.93%	10.88%
BROOKLYN UN GAS CO	7.95%	0.677	6.97%	4.72%	12.67%
INDIANA ENERGY INC	7.95%	0.333	6.97%	2.32%	10.27%
LACLEDE GAS CO	7.95%	0.283	6.97%	1.98%	9.92%
NORTHWEST NAT GAS CO	7.95%	0.241	6.97%	1.68%	9.63%
PEOPLES ENERGY CORP	7.95%	0.848	6.97%	5.91%	13.86%
WASHINGTON GAS LT CO	7.95%	0.368	6.97%	2.57%	10.51%
PIEDMONT NATURAL GAS CO	7.95%	0.434	6.97%	3.02%	10.97%
** Av of Comparable Cos	7.95%	0.458	6.97%	0.032	11.14%

**Average Includes All Betas for All Companies Because the Average T-Statistics Are Greater Than 1 T-Statistics Are Shown in The Prior Schedule

Risk Premium Suggested Rate Of Return

11.14%

Any model Relying on Ibbotson's Data Uses Monthly Compounding

Ibbotson's Annual Returns Are Based on Monthly Compounding

ROW	Monthly				
	Month	Monthly Return	Relative to the Value "1"	Cumulative Return in the Year Relative to the Value "1"	Cumulative Return in the Year
	(1)	(2)*	(3)	(4)	(5)
				col (3) x prior entry in col (3)	

			100.00%		
1	1/1/96	3.44%	103.44%	103.44%	3.44%
2	2/1/96	0.96%	100.96%	104.43%	4.43%
3	3/1/96	0.96%	100.96%	105.44%	5.44%
4	4/1/96	1.47%	101.47%	106.99%	6.99%
5	5/1/96	2.58%	102.58%	109.75%	9.75%
6	6/1/96	0.41%	100.41%	110.20%	10.20%
7	7/1/96	-4.45%	95.55%	105.29%	5.29%
8	8/1/96	2.12%	102.12%	107.52%	7.52%
9	9/1/96	5.62%	105.62%	113.57%	13.57%
10	10/1/96	2.74%	102.74%	116.68%	16.68%
11	11/1/96	7.59%	107.59%	125.53%	25.53%
12	12/1/96	-1.96%	98.04%	123.07%	23.07%

*Source: Ibbotson Associates 1997 Yearbook Page 181, Table A-1 for 1996

CHATTANOOGA GAS COMPANY

Office of the Consumer Advocate Interrogatory/Data Request - June 4, 1997

Item 42

42. Q. With regard to Exhibit 5 Schedule 9 of the company's filing, show the calculations and provide the data used to develop the figures shown under the column headings "Amount", "Ratio" and "Cost".

A. See attached documentation.

AGL Resources
 Projected Capitalization Ratios

	1997	1998	Average	Ratio
Short Term Debt	69,620	81,537	75,579	5.28%
Long Term Debt	659,500	659,500	659,500	46.07%
Preferred Stock	58,469	70,090	64,280	4.49%
Common Stock Equity	619,302	644,902	632,102	44.16%
	1,406,891	1,456,029	1,431,461	100.00%

Chattanooga Gas Company
 Test Year Projected Capitalization

	Ratio	Amount
Short Term Debt	5.28%	5,060,518
Long Term Debt	46.07%	44,154,838
Preferred Stock	4.49%	4,303,357
Common Stock Equity	44.16%	42,324,333
	100.00%	95,843,144

AGL Resources
 Projected Cost of Capital Components

Long Term Debt	
Projected Balance	659,500,000
Less: Unamortized Loss on Repurchase	1,585,136
Less: Unamortized Debt Discount & Expense	3,702,500
Net Projected Balance	654,212,364
Projected Interest Cost	50,730,000
Projected Cost Rate	7.75%
Short Term Debt	
Projected Average Monthly Balance	49,900,000
Projected Interest Cost	2,892,000
Projected Cost Rate	5.80%
Preferred Stock	
Projected Balance	64,280,000
Projected Dividend Accrual	4,525,000
Projected Cost Rate	7.04%
Common Stock Equity	
Projected Cost Rate	12.25%
See Cost of Equity Testimony & Exhibits	

Recommended Over All Return

	Ratio	Cost	Weighted Cost
1 Short-Term Debt	5.28%	5.80%	0.31%
2 Long-Term Debt	46.07%	7.75%	3.57%
3 Preferred Stock	4.49%	7.04%	0.32%
4 Common Equity	44.16%	10.55%	4.66%
5 Total	100.00%		8.85%

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
Standish Small Cap Equity	Small Company	SDSCX	\$Closed	9.51	17.36
T Rowe Price Small-Cap Val	Small Company	PRSVX	\$Closed	10.36	24.61
MAS Small Cap Value	Small Company	MPSCX	\$Closed	9.47	35.15
Montgomery Small Cap R	Small Company	MNSCX	\$Closed	12.11	18.69
MFS Aggr Small Cap Eq A	Small Company	MASCX	\$Closed	14.24	15.45
Artisan Small Cap	Small Company	ARTSX	\$Closed	10.68	11.86
Pioneer Small Company A	Small Company	PSCFX	\$Closed	5.07	24.15
Pioneer Small Company B	Small Company	PBSCX	\$Closed	5.07	23.21
Pioneer Small Company C	Small Company	PCSCX	\$Closed	5.07	n/a
PIMCo Small Cap Growth Instl	Small Company	PSCIX	\$Closed	11.07	16.83
GMO Small Cap Value III	Growth	GMSVX	\$35,000,000	0	20.16
UAM ICM Small Company	Small Company	ICSCX	\$5,000,000	8.89	23.01
Benchmark Small Co Index A	Small Company	BSCAX	\$5,000,000	9.37	15.97
Bear Stearns Small Cap Val Y	Small Company	BSVYX	\$2,500,000	7.57	15.87
DFA United Kingdom Small Co	Europe Stock	DFUKX	\$2,000,000	19.98	29.81
DFA U.S. Small Cap Value	Small Company	DFSVX	\$2,000,000	7.01	22.33
DFA Japanese Small Company	Pacific Stock	DFJSX	\$2,000,000	4.35	-22.78
DFA Pacific Rim Small Company	Pacific Stock	DFRSX	\$2,000,000	25.72	14.36
DFA Continental Small Company	Europe Stock	DFCSX	\$2,000,000	14.28	14.32
DFA U.S. 6-10 Small Company	Small Company	DFSTX	\$2,000,000	9.11	17.68
DFA U.S. 9-10 Small Company	Small Company	DFSCX	\$2,000,000	8.75	17.65
DFA Intl Small Cap Value	Foreign Stock	DISVX	\$2,000,000	10.57	0.95
Lazard Small Cap Instl	Small Company	LZSCX	\$1,000,000	8.3	23.93
JPM Instl U.S. Small Company	Small Company	JUSSX	\$1,000,000	9.6	20.84
Crabbe Huson Small Cap Instl	Small Company	CHISX	\$1,000,000	3.97	n/a
Lazard Intl Small Cap Instl	Foreign Stock	LZISX	\$1,000,000	16.2	15.65
ITT Hartford Small Company Y	Small Company	n/a	\$1,000,000	0	n/a
Enterprise Small Co Value Y	Small Company	EIGYX	\$1,000,000	7.81	11.83
Munder Small Company Grth Y	Small Company	MULYX	\$500,000	11.25	37.17
Compass Small Cap Grth Instl	Small Company	PSGIX	\$500,000	11.64	31.58
Compass Small Cap Val Instl	Small Company	PNSEX	\$500,000	8.25	19.87
Nations Small Cap Gr Prim A	Small Company	PSCPX	\$500,000	9.34	20.72
TCW Galileo Small Cap Growth	Small Company	n/a	\$250,000	10.8	17.54
Emerald Small Cap Instl	Small Company	EMSCX	\$250,000	10.14	10.69
Hancock Small Cap Equity	Small Company	n/a	\$250,000	12.49	13.48
PIMCo Small Cap Value Instl	Small Company	PSVIX	\$200,000	9.19	27.72
PIMCo Small Cap Value Admin	Small Company	n/a	\$200,000	9.19	27.37
PIMCo Small Cap Growth Admin	Small Company	n/a	\$200,000	11.41	16.71
JPM Pierpont U.S. Small Co	Small Company	PPCAX	\$100,000	9.63	20.75
Parkstone Small Cap Instl	Small Company	PKSCX	\$100,000	11.45	27.7

Data on mutual funds specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
Standish Small Cap Tax-Sen	Small Company	SDCEX	\$100,000	11.06	21.23
Turner Small Cap Equity	Small Company	TSCEX	\$100,000	11.24	28.85
Avesta Small Capitalization	Small Company	n/a	\$100,000	10.78	30.95
Berger Small Cap Value Instl	Small Company	OMNIX	\$100,000	8.28	25.6
Kent Small Co Growth Instl	Small Company	KNEEX	\$100,000	8.95	19.61
SEI Instl Small Cap Growth A	Small Company	SSCGX	\$100,000	10.96	19.14
SEI Instl Small Cap Growth A	Small Company	SSCGX	\$100,000	10.96	19.14
59 Wall St Small Company	Small Company	FNSMX	\$100,000	10.42	19.12
SEI Instl Small Cap Value A	Small Company	SESIX	\$100,000	8	22.13
DLB Global Small Cap	World Stock	DLBSX	\$100,000	15.07	9.85
Pictet Intl Small Companies	Foreign Stock	PTSCX	\$100,000	14.65	n/a
Rainier-Small/Mid Cap Equity	Growth	RIMSX	\$25,000	9.37	22.56
Glennmede Small Cap Equity	Small Company	GTCSX	\$25,000	9.33	25.1
Target Small Cap Value	Small Company	TASVX	\$25,000	9.17	21.84
Target Small Cap Growth	Small Company	TASGX	\$25,000	12.36	18.88
Schroder Small Cap	Small Company	WSCVX	\$25,000	8.92	23.91
UAM FMA Small Company	Small Company	FMACX	\$25,000	8.52	26.2
Quaker Small-Cap Value	Small Company	n/a	\$25,000	0	n/a
Holchis & Wiley Small Cap	Small Company	HWSCX	\$10,000	9.34	14.27
Longleaf Partners Small-Cap	Small Company	LLSCX	\$10,000	8.12	30.64
LKCM Small Cap Equity	Small Company	LKSCX	\$10,000	8.61	26.95
LKCM Small Cap Equity	Small Company	LKSCX	\$10,000	8.61	26.95
CRM Small Cap Value	Small Company	CRMSX	\$10,000	5.46	38.95
RCM Small Cap	Small Company	n/a	\$10,000	9.71	34.41
Brazos/JMIC Small Cap Growth	Small Company	BJSCX	\$10,000	0	n/a
Stratton Small-Cap Yield	Small Company	STSCX	\$5,000	9.7	14.97
Compass Small Cap Grth Svc	Small Company	PCGEX	\$5,000	11.64	31.39
Compass Small Cap Val Svc	Small Company	PSESX	\$5,000	8.25	19.56
Prudential Small Companies C	Small Company	n/a	\$5,000	9.09	22.97
Tocqueville Small Cap Val A	Small Company	TSCVX	\$5,000	9.78	25.03
PBHG Strategic Small Co PBHG	Small Company	PSSCX	\$5,000	0	n/a
Vanguard Index Small Cap SIK	Small Company	NAESX	\$3,000	9.32	18.12
Galaxy II Small Co Index Ret	Small Company	ISCIIX	\$2,500	10.27	19.66
Vista Small Cap Equity A	Small Company	VSEAX	\$2,500	10.4	28.8
Vista Small Cap Equity B	Small Company	VSEBX	\$2,500	10.4	27.93
T Rowe Price Small Cap SIK	Small Company	OTCFX	\$2,500	10.41	21.05
Dreyfus Small Company Value	Small Company	DSCVX	\$2,500	7.65	34.15
Galaxy Small Co Equity Ret A	Small Company	GASEX	\$2,500	11.05	20.84
BT Investment Small Cap	Small Company	BTSCX	\$2,500	11.18	6.9
Scudder Small Company Value	Small Company	SCSUX	\$2,500	8.61	23.84

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
Warburg Pincus Small Val Com	Small Company	WPSVX	\$2,500	8.52	56.2
Galaxy Small Cap Value Ret A	Small Company	SSCEX	\$2,500	9.21	26.84
Fidelity Small Cap Stock	Small Company	FDSCX	\$2,500	11.18	13.63
Northern Small Cap	Small Company	NOSGX	\$2,500	6.92	18.93
Strong Small Cap	Small Company	SCAPX	\$2,500	10.12	22.7
Fidelity Japan Small Co	Pacific Stock	FJSCX	\$2,500	7.67	-24.59
PIC Small Cap Growth	Small Company	PISCX	\$2,000	11.78	18.2
Bridgeway Ultra-Small Co	Small Company	BRUSX	\$2,000	10.44	29.74
Sit Small Cap Growth	Small Company	SSMGX	\$2,000	12.65	14.97
AARP Small Company Stock	Small Company	ASCSX	\$2,000	0	n/a
Columbia Small Cap	Small Company	CMSCX	\$2,000	9	n/a
FBR Small Cap Financial	Sp-Financial	n/a	\$2,000	8	n/a
FBR Small Cap Growth/Value	Small Company	n/a	\$2,000	16.61	n/a
Crabbe Huson Small Cap Prim	Small Company	CHSCX	\$2,000	3.97	n/a
Rembrandt Small Cap Inv	Small Company	n/a	\$2,000	13.9	19.18
Clover Capital Small Cap Val	Small Company	n/a	\$2,000	5.92	n/a
Fremont Intl Small Cap	Foreign Stock	FRISX	\$2,000	11.81	12.15
Berger Small Company Growth	Small Company	BESCX	\$2,000	11.14	16.77
Federated Small Cap Strat B	Small Company	SMCBX	\$1,500	13.04	34.16
Federated Small Cap Strat C	Small Company	SMCCX	\$1,500	13.04	33.99
Federated Intl Small Co B	Foreign Stock	ISCBX	\$1,500	13.73	n/a
Federated Intl Small Co C	Foreign Stock	ISCCX	\$1,500	13.73	n/a
Norwest Advant Small Co Gr I	Small Company	NVSCX	\$1,000	8.48	19.82
Colonial Small Cap Value A	Small Company	CSMIX	\$1,000	11.02	18.35
Colonial Small Cap Value B	Small Company	CSSBX	\$1,000	11.02	17.84
Heritage Small Cap Stock A	Small Company	HRSCX	\$1,000	11.71	27.46
Parkstone Small Cap Inv A	Small Company	PKSAX	\$1,000	11.45	27.59
Heritage Small Cap Stock C	Small Company	HSCCX	\$1,000	11.71	26.45
Parkstone Small Cap Inv C	Small Company	n/a	\$1,000	11.45	26.24
Parkstone Small Cap Inv B	Small Company	PKSBX	\$1,000	11.45	26.62
Westcore Small-Cap Opport	Small Company	WTSCX	\$1,000	8.28	25.58
Goldman Sachs Small Cap Eq A	Small Company	GSSMX	\$1,000	6.13	21.84
Goldman Sachs Small Cap Eq B	Small Company	GSQBX	\$1,000	6.13	n/a
Gabelli Small Cap Growth	Small Company	GABSX	\$1,000	7.54	11.88
Accessor Small to Mid Cap	Small Company	ASMCX	\$1,000	11.8	24.74
Munder Small Company Grth A	Small Company	MULAX	\$1,000	11.25	36.83
Norwest Advant Small Cap I	Small Company	NVSOX	\$1,000	0	n/a
Munder Small Company Grth C	Small Company	n/a	\$1,000	11.25	36.23
Munder Small Company Grth B	Small Company	MULBX	\$1,000	11.25	35.9
Kemper-Dreman Small Cap A	Small Company	KDSAX	\$1,000	8.94	29.6

Vala v. Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
ESC Strategic Small Cap A	Small Company	ESCA	\$1,000	9.67	27.43
Kemper-Dreman Small Cap C	Small Company	KDSC	\$1,000	10	29.94
Kemper-Dreman Small Cap B	Small Company	KDSB	\$1,000	8.94	28.54
ESC Strategic Small Cap D	Small Company	ESCD	\$1,000	9.67	26.83
SSGA Small Cap	Small Company	SVSC	\$1,000	11.43	28.79
Bear Stearns Small Cap Val A	Small Company	BSVA	\$1,000	7.57	15.43
Bear Stearns Small Cap Val C	Small Company	BSVC	\$1,000	7.57	14.83
BB&T Small Company Growth A	Small Company	BBBS	\$1,000	11.59	30.77
BB&T Small Company Growth B	Small Company	n/a	\$1,000	11.59	30.98
Montgomery Intl Small Cap R	Foreign Stock	MNIS	\$1,000	23.45	14.97
Oakmark Small Cap	Small Company	OAKS	\$1,000	8.82	39.79
Kent Small Co Growth Invnt	Small Company	KNEM	\$1,000	8.95	19.15
TCW/DW Small Cap Growth	Small Company	TCSC	\$1,000	11.33	13.71
Invesco European Small Co	Europe Stock	IVEC	\$1,000	21.04	31.03
Harris Ins Small-Cap Instl	Small Company	HSCX	\$1,000	10.57	n/a
Harris Ins Small-Cap A	Small Company	n/a	\$1,000	10.57	n/a
HSBC Small Cap	Small Company	MSCF	\$1,000	11.9	15.29
Prudential Small Companies A	Small Company	PGOAX	\$1,000	9.09	23.92
Schwab Small Cap Index	Small Company	SWSMX	\$1,000	9.72	15.49
SEI Instl Small Cap Growth D	Small Company	n/a	\$1,000	10.96	18.75
PIMCO Small Cap Value A	Small Company	PCVAX	\$1,000	0	n/a
PIMCO Small Cap Value B	Small Company	PCVBX	\$1,000	0	n/a
PIMCO Small Cap Value C	Small Company	PCVCX	\$1,000	0	n/a
Pegasus Small Cap Opport I	Growth	PSOPX	\$1,000	10.56	25.63
Pegasus Small Cap Opport A	Growth	n/a	\$1,000	10.56	24.59
Pegasus Small Cap Opport B	Growth	n/a	\$1,000	10.56	24.42
Prudential Small Companies B	Small Company	CHNDX	\$1,000	9.09	22.97
Evergreen Small Cap Eq Inc Y	Small Company	ESCEX	\$1,000	11.29	22.38
Value Line Small-Cap Growth	Small Company	VLSCX	\$1,000	11.24	10.35
Evergreen Small Cap Eq Inc A	Small Company	n/a	\$1,000	11.29	22.01
Evergreen Small Cap Eq Inc B	Small Company	n/a	\$1,000	11.29	21.1
Evergreen Small Cap Eq Inc C	Small Company	n/a	\$1,000	11.29	21.1
Norwest Advant Small Co Sika	Small Company	NCSAX	\$1,000	12.77	25.98
Norwest Advant Small Co Siki	Small Company	NSCTX	\$1,000	12.77	26.03
Norwest Advant Small Co SIKB	Small Company	NCSBX	\$1,000	12.77	24.91
Arch Small Cap Equity Inv A	Small Company	EMGRX	\$1,000	9.87	10.5
Invesco Small Company Value	Small Company	IDSCX	\$1,000	9.18	12.46
Preferred Small Cap	Small Company	PSMCX	\$1,000	11.78	20.46
Heartland Small Cap Contrar	Small Company	HRSMX	\$1,000	10	18.86
Arch Small Cap Equity Inv B	Small Company	n/a	\$1,000	9.87	9.82

Data on Mutual Funds Specializing in Small Company Stocks; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
North American Small/Mid A	Growth	NSMAX	\$1,000	11.94	n/a
North American Small/Mid C	Growth	NSMCX	\$1,000	11.94	n/a
North American Small/Mid B	Growth	NSMBX	\$1,000	11.94	n/a
Aetna Small Company Sel	Small Company	AESGX	\$1,000	10.1	13.62
Gateway Small Cap Index	Small Company	GSCIX	\$1,000	9.13	17.04
Invesco Small Company Growth	Small Company	FLIEGX	\$1,000	12.21	11.62
Aetna Small Company Adv	Small Company	AESAX	\$1,000	10.1	12.79
Safeco Small Co Stock NoLoad	Small Company	SFSCX	\$1,000	8.08	n/a
PaineWebber Small Cap A	Small Company	PSCAX	\$1,000	10.94	17.16
Eastcliff Regional Small Cap	Small Company	EARSX	\$1,000	10.12	n/a
PaineWebber Small Cap B	Small Company	PSCBX	\$1,000	10.94	16.2
PaineWebber Small Cap C	Small Company	PSCDX	\$1,000	10.94	16.22
AAL Small Cap Stock A	Small Company	AASMX	\$1,000	9.21	n/a
ITT Hartford Small Company A	Small Company	IHSAX	\$1,000	11.36	n/a
ITT Hartford Small Company B	Small Company	n/a	\$1,000	0	n/a
Marshall Small-Cap Growth	Small Company	MRSCX	\$1,000	0	n/a
Emerald Small Cap Rel	Small Company	n/a	\$1,000	10.14	10.05
Keystone Small Co Grth II A	Small Company	KSGAX	\$1,000	10.34	n/a
Keystone Small Co Grth II B	Small Company	KSCGBX	\$1,000	10.34	n/a
Keystone Small Co Grth II C	Small Company	KSGCX	\$1,000	10.34	n/a
Dean Witter Intl Small Cap	Foreign Stock	DWISX	\$1,000	21.66	1.01
Keystone Small Co Grth (S-4)	Aggressive Growth	KSFOX	\$1,000	12.67	0.82
Enterprise Small Co Value A	Small Company	ENSPX	\$1,000	7.81	11.28
Kemper Small Cap Equity A	Small Company	KSCAX	\$1,000	10.41	14.09
Enterprise Small Co Value B	Small Company	ESCBX	\$1,000	7.81	10.77
Kemper Small Cap Equity B	Small Company	KSCBX	\$1,000	10.41	12.84
Kemper Small Cap Equity C	Small Company	KSCCX	\$1,000	10.41	12.86
Sentinel Small Company A	Small Company	SAGWX	\$1,000	10.49	21.3
Sentinel Small Company B	Small Company	n/a	\$1,000	10.49	n/a
SunAmerica Small Co Grth A	Small Company	SEGAX	\$500	10.23	14.92
SunAmerica Small Co Grth B	Small Company	SEGBX	\$500	10.23	14.12
Compass Small Cap Grth Inv A	Small Company	CSGEX	\$500	11.64	31.13
Compass Small Cap Val Inv A	Small Company	PSEIX	\$500	8.25	19.34
Phoenix Small Cap A	Small Company	PHSAX	\$500	12.38	29.96
Federated Small Cap Strat A	Small Company	SMCAX	\$500	13.04	35.04
Qualinvest Small Comps Val A	Small Company	QSVAX	\$500	9.89	20.07
Phoenix Small Cap B	Small Company	PHSCX	\$500	12.38	28.93
Qualinvest Small Comps Val C	Small Company	n/a	\$500	9.89	19.35
RIMCo Monument Small Cap Eq	Small Company	RISCX	\$500	10.1	21.92
Federated Intl Small Co A	Foreign Stock	ISCAIX	\$500	13.73	n/a

DATA ON MUTUAL FUNDS SPECIALIZING IN SMALL COMPANY STOCKS; 5-31-97

Company name	Objective	Ticker	Minimum Initial Purchase	Return on Assets %	96 Rtn %
ONE Fund Small Cap	Small Company	n/a	\$500	9.34	17.01
GT Global Amer Small Cap Adv	Small Company	n/a	\$500	8.85	14.22
GT Global Amer Small Cap A	Small Company	GTSAX	\$500	8.85	13.81
GT Global Amer Small Cap B	Small Company	GTSBX	\$500	8.85	13.14
First Omaha Small Cap Value	Small Company	n/a	\$500	8.52	n/a
Alger Small Capitalization A	Small Company	n/a	\$500	12.59	n/a
Alger Small Capitalization B	Small Company	ALSCX	\$500	12.59	4.17
Winthrop Small Company Val A	Small Company	WFLAGX	\$250	9.6	14.58
Keeley Small Cap Value	Small Company	KSCVX	\$250	7.83	25.99
Piper Small Company Growth A	Small Company	PJSCX	\$250	9.2	11.65
Franklin Small Cap Grth I	Small Company	FRSGX	\$100	10.31	27.07
Franklin Small Cap Grth II	Small Company	FRSIX	\$100	10.31	26.07
Templeton Global Small Co I	World Stock	TEMGX	\$100	18	22.09
Templeton Global Small Co II	World Stock	TESGX	\$100	18	21.35
Munder Small Company Grth K	Small Company	MULKX	\$0	11.25	36.89
Landmark Small Cap Equity A	Small Company	LSCGX	\$0	9.44	37.8
Alger Small Cap Retirement	Small Company	ALSRX	\$0	12.02	14.83
Galaxy Small Co Equity Tr	Small Company	GSETX	\$0	11.05	21.59
BB&T Small Company Growth Tr	Small Company	BBCGX	\$0	11.59	31.19
DFA U S Small Cap Value II	Small Company	DFAVX	\$0	7.01	22.07
Warburg Pincus Adv Small Val	Small Company	n/a	\$0	8.52	57
Qualinvest Small Comps Val Y	Small Company	QSVYX	\$0	9.89	20.36
Prudential Small Companies Z	Small Company	PSCZX	\$0	9.09	n/a
Pacific Advisors Small Cap	Small Company	PASMX	\$0	10.89	43.7
Galaxy Small Cap Value Tr	Small Company	SMCEX	\$0	9.21	27.19
Arch Small Cap Equity Tr	Small Company	n/a	\$0	9.87	10.98
Arch Small Cap Equity Instl	Small Company	n/a	\$0	9.87	10.62
Rembrandt Small Cap Tr	Small Company	RSMCX	\$0	13.9	19.42
SEL Instl Inv Small Cap	Small Company	n/a	\$0	9.56	n/a
Kemper Small Cap Equity I	Small Company	n/a	\$0	10.41	14.54
Brown Capital Small Co Instl	Small Company	n/a	\$0	10.44	

Morning Star Report on DFA 9-10 Fund

Docket No 97-00982
Exhibit CA-SM'3
Direct Testimony
Schedule 21
Page 1 of 3

DFA U.S. 9-10 Small Company
(Data as of 05-31-97)

Investment Objective	Assets				NAV
	Rating	Load	Yield (\$mil)		
Small Company	**	None	0.21%	1107.8	11.65

DFA U.S. 9-10 Small Company Portfolio seeks long-term capital appreciation.

The fund invests in a diverse group of small companies with readily marketable securities. These companies may be traded on the NYSE, the AMEX, or the over-the-counter market, but their market capitalizations must be comparable with those in the smallest quintile of the NYSE. The portfolio is rebalanced at least semiannually.

The fund is designed primarily for institutional investors. Prior to April 10, 1989, the fund was named DFA Investment Dimensions Small Company. Prior to 1983, the fund was named DFA Small Company.

Performance: Annual Return %

	YTD	1996	1995	1994	1993
DFA U.S. 9-10 Small Company	4.02	17.65	34.48	3.09	20.97
S&P 500 Index	15.43	22.95	37.53	1.32	10.06

These Figures Match
DFA's and Dr.
Andrews' Numbers in
his Schedule 6, page
1, Far-left Column

Performance: Trailing Return %

	3 Yr		5 Yr	
	1 Mo	3 Mo	1 Yr	Avg
DFA U.S. 9-10 Small Company	10.22	1.92	-1.33	18.60
S&P 500 Index	6.08	7.80	29.40	25.92

Risk Measures

Morningstar Risk: Above Avg. Beta (3 Yr) 0.78

Morning Star Report on DFA 9-10 Fund

Docket No. 97-00982
Exhibit CA-SNB____
Direct Testimony____
Schedule 21____
Page 2 of 3____

Morningstar Return: Average Std. Deviation (3 Yr) 16.59
R-Squared 32

Top Ten Portfolio Holdings (Data as of 02-28-97)

Ticker	Amount 000 Security	Value \$000	% Net Assets
KUH	186 Kuhlman	4380	0.38
GLE	117 Gleason	4187	0.36
INVX	179 Innovex	3844	0.33
FRC	157 First Republic Bancorp	3654	0.32
ROG	128 Rogers	3459	0.30
HEI	133 HEICO	3430	0.30
CULP	179 Culp	3214	0.28
CDSI	105 Computer Data Systems	3193	0.28
ELMG	142 Electromagnetic Sciences	3173	0.27
APR	160 American Precision Inds	3027	0.26

Portfolio Statistics

Price/Earnings Ratio: 21.64 Income Ratio %: 0.22
Price/Book Ratio: 2.80 Turnover Ratio %: 23.68
Return on Assets %: 8.75 Expense Ratio %: 0.61
Median Market Cap (\$mil) 123.29

This figure, 8.75%, is not provided in DFA's
Annual Report See Schedule 22, page 2.

These figures are
the same as
those reported in
DFA's 1996
Annual Report

Expenses and Fees

Front-End Load: 0.00 12b-1 Fee: 0.00
Deferred Sales Charge: 0.00 Management Fee: 0.50
Redemption Fee: 0.00

Operations

Ticker Symbol: DFSCX

Morning Star Report on DFA 9-10 Fund

Docket No 97-00982
Exhibit CA-SNB____
Direct Testimony____
Schedule 21____
Page 3 of 3____

Fund Family: DFA Investment Dimensions Group
Address: 1299 Ocean Avenue 11th Floor
Santa Monica, CA 90401
Telephone: 310-395-8005

Fund Manager: Management Team
Manager Tenure NA years
Min. Initial Purchase \$2000000

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225 W. Wacker Dr. Chicago, IL 60606, 312-696-6000
Although data are gathered from reliable sources,
completeness and accuracy cannot be guaranteed

Docket No. 97-00982

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Schedule 22 _____

Page 1 of 2 _____

DFA Investment Dimensions Group Inc.
and
The DFA Investment Trust Company

ANNUAL REPORT

Year Ended November 30, 1996

DFA INVESTMENT DIMENSIONS GROUP INC.

FINANCIAL HIGHLIGHTS

for a share outstanding throughout each year

The U.S. 8-10 Small Company Portfolio

	Year Ended Nov 30, 1996	Year Ended Nov 30, 1995	Year Ended Nov 30, 1994	Year Ended Nov 30, 1993	Year Ended Nov 30, 1992	Year Ended Nov 30, 1991	Year Ended Nov 30, 1990	Year Ended Nov 30, 1989	Year Ended Nov 30, 1988	Year Ended Nov 30, 1987
Net Asset Value Beginning of Period	\$ 11.03	\$ 8.49	\$ 6.69	\$ 7.75	\$ 6.33	\$ 5.34	\$ 7.74	\$ 7.66	\$ 7.50	\$ 8.94
Income From Investment Operations										
Net Investment Income	0.03	0.05	0.01	0.03	0.04	0.04	0.07	0.07	0.10	0.09
Net Gain (Losses) on Securities (Realized and Unrealized)	1.85	2.61	0.40	1.67	1.53	1.64	(1.77)	0.98	1.48	(1.53)
Total From Investment Operations	1.88	2.66	0.41	1.70	1.57	1.68	(1.70)	1.05	1.58	(1.44)
Less Distributions										
Net Investment Income	(0.01)	(0.04)	(0.03)	(0.05)	(0.05)	(0.07)	(0.08)	(0.09)	(0.11)	—
Net Realized Gains	(0.76)	(0.08)	(0.58)	(0.71)	(0.10)	(0.62)	(0.62)	(0.88)	(1.31)	—
Total Distributions	(0.77)	(0.12)	(0.61)	(0.76)	(0.15)	(0.69)	(0.70)	(0.97)	(1.42)	—
Net Asset Value, End of Period	\$ 12.14	\$ 11.03	\$ 8.49	\$ 6.69	\$ 7.75	\$ 6.33	\$ 5.34	\$ 7.74	\$ 7.66	\$ 7.50
Total Return	18.05%	31.37%	5.08%	23.91%	25.24%	39.08%	(24.09)%	16.09%	24.36%	(16.04)%
Net Assets, End of Period (thousands)	\$ 1,181,804	\$ 925,474	\$ 659,221	\$ 630,918	\$ 651,313	\$ 722,289	\$ 581,102	\$ 949,291	\$ 912,518	\$ 788,821
Ratio of Expenses to Average Net Assets	0.61%	0.62%	0.65%	0.70%	0.68%	0.64%	0.62%	0.62%	0.62%	0.61%
Ratio of Net Investment Income to Average Net Assets	0.22%	0.45%	0.16%	0.26%	0.53%	0.75%	0.99%	0.86%	1.19%	0.92%
Portfolio Turnover Rate	23.68%	24.65%	16.56%	9.87%	9.72%	10.13%	3.78%	7.86%	25.98%	23.05%
Average Commission Rate (1)	\$ 0.0604	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

(1) Computed by dividing the total amount of brokerage commissions paid by the total shares of investment securities purchased and sold during the period for which commissions were charged, as required by the SEC for fiscal years beginning after September 1, 1995

DFA INVESTMENT DIMENSIONS GROUP

1299 Ocean Avenue, 11th Floor, Santa Monica, California 90401
Telephone: (310) 395-8005

STATEMENT OF ADDITIONAL INFORMATION

March 28, 1997

DFA Investment Dimensions Group Inc. (the "Fund") offers thirty series of shares. This statement of additional information relates to twenty-four of those series (collectively, the "Portfolios"):

U.S. 9-10 Small Company Portfolio	Continental Small Company Portfolio
U.S. 6-10 Small Company Portfolio	Large Cap International Portfolio
Enhanced U.S. Large Company Portfolio	U.S. Large Company Portfolio
U.S. Small Cap Value Portfolio	DFA International Small Cap Value Portfolio
U.S. Large Cap Value Portfolio	International Small Company Portfolio
DFA Real Estate Securities Portfolio	DFA One-Year Fixed Income Portfolio
Japanese Small Company Portfolio	DFA Two-Year Corporate Fixed Income Portfolio
Pacific Rim Small Company Portfolio	DFA Two-Year Global Fixed Income Portfolio
United Kingdom Small Company Portfolio	DFA Two-Year Government Portfolio
Emerging Markets Portfolio	DFA Five-Year Government Portfolio
Emerging Markets Small Cap Portfolio	DFA Global Fixed Income Portfolio
DFA Intermediate Government	RWB/DFA International High Book
Fixed Income Portfolio	to Market Portfolio

This statement of additional information is not a prospectus but should be read in conjunction with the Portfolios' prospectus dated March 28, 1997, as amended from time to time, which can be obtained from the Fund by writing to the Fund at the above address or by calling the above telephone number.

TABLE OF CONTENTS

	Page
PORTFOLIO CHARACTERISTICS AND POLICIES.	1
BROKERAGE COMMISSIONS.	2
INVESTMENT LIMITATIONS.	4
OPTIONS ON STOCK INDICES.	7
FUTURES CONTRACTS.	9
FEDERAL TAX TREATMENT OF OPTIONS, FUTURES CONTRACTS AND SIMILAR POSITIONS.	9
DIRECTORS AND OFFICERS.	10
ADMINISTRATIVE SERVICES.	12
OTHER INFORMATION.	14
PRINCIPAL HOLDERS OF SECURITIES.	15
PURCHASE OF SHARES.	19
REDEMPTION AND TRANSFER OF SHARES.	19
CALCULATION OF PERFORMANCE DATA.	20
FINANCIAL STATEMENTS.	24

from the Series to satisfy the Portfolio's redemption request. Any such redemption of the Portfolio would be in accordance with Rule 18f-1 under the Investment Company Act of 1940. Investors may incur brokerage charges and other transaction costs selling securities to receive payment of redemptions. The International Equity, DFA Two-Year Global Fixed Income and DFA Global Fixed Income Portfolios reserve the right to redeem their shares in the currencies in which their investments (and, in respect of the Feeder Portfolios and International Small Company Portfolio, the currencies in which the corresponding Series' investments) are denominated. Investors may incur charges in converting such securities to dollars and the value of the securities may be affected by currency exchange fluctuations.

Shareholders may transfer shares of any Portfolio to another person by making a written request therefore to the Advisor who will transmit the request to the Fund's Transfer Agent. The request should clearly identify the account and number of shares to be transferred, and include the signature of all registered owners and all stock certificates, if any, which are subject to the transfer. The signature on the letter of request, the stock certificate or any stock power must be guaranteed in the same manner as described in the prospectus under "REDEMPTION OF SHARES." As with redemptions, the written request must be received in good order before any transfer can be made.

CALCULATION OF PERFORMANCE DATA

Following are quotations of the annualized percentage total returns for the one-, five-, and ten-year periods ended November 30, 1996 (as applicable) using the standardized method of calculation required by the SEC, which is net of the cost of any current reimbursement fees charged to investors and paid to the Portfolios. Also included is a quotation of the annualized percentage total return for the DFA Two-Year Global Fixed Income Portfolio (for the period from February 9, 1996, the date of commencement of operations), the Enhanced U.S. Large Company Portfolio (for the period from July 3, 1996, the date of commencement of operations) and the International Small Company Portfolio (for the period from October 1, 1996, the date of commencement of operations) to November 30, 1996 using the standardized method of calculation required by the SEC. Reimbursement fees of 1%, 1.5% and 1.5% were in effect from the inception of the Japanese, United Kingdom and Continental Small Company Portfolios, respectively, until June 30, 1995. A reimbursement fee of 1% was in effect from the inception of DFA International Small Cap Value Portfolio until June 30, 1995. Effective June 30, 1995, the amount of the reimbursement fee was reduced with respect to Continental Small Company, Pacific Rim Small Company, Japanese Small Company, Emerging Markets and DFA International Small Cap Value Portfolios, and eliminated with respect to the United Kingdom Small Company Portfolio. The current reimbursement fee for each Portfolio, expressed as a percentage of the net asset value of the shares of the Portfolios, is as follows: Continental Small Company, Pacific Rim Small Company and Emerging Markets Small Cap Portfolios - 1.00%; Japanese Small Company and Emerging Markets Portfolios - .50%; DFA International Small Cap Value Portfolio - .70%; and International Small Company Portfolio - .70%.

A reimbursement fee of 1% was charged to investors in The U.S. 9-10 Small Company Portfolio from December 9, 1986 through June 17, 1988. A reimbursement fee of 0.75% was charged to investors in The Large Cap International Portfolio from the date of its inception until March 5, 1992. In addition, for those Portfolios in effect for less than one, five, or ten years, the time periods during which the Portfolios have been active have been substituted for the periods stated (which in no case extends prior to the effective dates of the Portfolios' registration statements).

	<u>One Year</u>	<u>Five Years</u>	<u>Ten Years</u>
U.S. 9-10 Small Company Portfolio	18.03	20.38	12.35
U.S. 6-10 Small Company Portfolio	18.73	<u>57 Months</u> 13.42	n/a
U.S. Large Company Portfolio	27.48	17.88	<u>71 Months</u> 17.97

U.S. Small Cap Value Portfolio	21.77		
U.S. Large Cap Value Portfolio	22.26	<u>46 Months</u> 16.04	n/a
Enhanced U.S. Large Company Portfolio	<u>4 Months</u> 73.24	n/a	n/a
DFA Real Estate Securities Portfolio	28.24	<u>47 Months</u> 9.63	n/a
Japanese Small Company Portfolio	-6.74	-1.07	8.58
Pacific Rim Small Company Portfolio	17.87	<u>47 Months</u> 18.01	n/a
United Kingdom Small Company Portfolio	26.74	10.30	10.73
Emerging Markets Portfolio	12.61	<u>31 Months</u> 5.89	n/a
Continental Small Company Portfolio	12.83	5.39	<u>103.5 Months</u> 8.31
Large Cap International Portfolio	12.68	<u>64 Months</u> 8.27	n/a
RWB/DFA International High Book to Market Portfolio	14.60	<u>42 Months</u> 10.62	n/a
DFA One-Year Fixed Income Portfolio	5.91	5.28	6.70
DFA Five-Year Government Portfolio	7.54	6.25	<u>114 Months</u> 7.79
DFA Global Fixed Income Portfolio	11.13	8.40	<u>72 Months</u> 8.83
DFA Intermediate Government Fixed Income Portfolio	4.98	7.89	<u>73 Months</u> 9.37
DFA International Small Cap Value Portfolio	7.24	<u>23 Months</u> 2.08	n/a
DFA Two-Year Global Fixed Income Portfolio	<u>10 Months</u> 7.14	n/a	n/a
International Small Company Portfolio	<u>2 Months</u> -0.40	n/a	n/a

As the following formula indicates, the average annual total return is determined by finding the average annual compounded rates of return over the stated time period that would equate a hypothetical initial purchase order of \$1,000 to its redeemable value (including capital appreciation/depreciation and dividends and distributions paid and reinvested less any fees charged to a shareholder account) at the end

of the stated time period. The calculation assumes that all dividends and distributions are reinvested at the public offering price on the reinvestment dates during the period. The quotation assumes the account was completely redeemed at the end of each period and the deduction of all applicable charges and fees. According to the SEC formula:

$$P(1 + T)^n = ERV$$

where:

P = a hypothetical initial payment of \$1,000

T = average annual total return

n = number of years

ERV = ending redeemable value of a hypothetical \$1,000 payment made at the beginning of the one-, five-, and ten-year periods at the end of the one-, five-, and ten-year periods (or fractional portion thereof).

Following are quotations of the annualized total returns for the one-, five-, and ten-year periods ended November 30, 1996 (as applicable) using a non-standardized method of calculation which is used in communicating performance data in addition to the standardized method required by the SEC. Also included is a quotation of the annualized percentage total return for the DFA Two-Year Global Fixed Income Portfolio (for the period from February 9, 1996, the date of commencement of operations), the Enhanced U.S. Large Company Portfolio (for the period from July 3, 1996, the date of commencement of operations) and the International Small Company Portfolio (for the period from October 1, 1996, the date of commencement of operations) to November 30, 1996 using a non-standardized method of calculation. The non-standardized quotations differ from the standardized in that they are calculated without deduction of any reimbursement fees charged to investors and paid to the Portfolios which would otherwise reduce return quotations for the Portfolios with such fees. Additionally, the non-standardized quotations are presented over time periods which extend prior to the initial investment in the Portfolios (except for The Continental Small Company (and Large Cap International) Portfolios) by using simulated data for the investment strategies of the Portfolios for that portion of the period prior to the initial investment dates. The simulated data excludes the deduction of Portfolio expenses which would otherwise reduce the returns quotations. Non-standardized quotations are also presented for the United Kingdom and Japanese Small Company Portfolios calculated assuming the local currencies of the corresponding Series are invested and redeemed at the beginning and ending dates of the period. The local currency calculations ignore the effect of foreign exchange rates on the investment and only express the returns of the underlying securities of the Series.

	<u>Effective Date/ Initial Investment</u>	<u>One Year</u>	<u>Five Years</u>	<u>Ten Years</u>
U.S. 9-10 Small Company Portfolio	12/22/81 12/22/81	18.03	20.38	12.46
U.S. 6-10 Small Company Portfolio	03/06/92 03/20/92	18.73	17.00	11.57
U.S. Large Company Portfolio	02/26/90 12/31/90	27.48	17.88	15.02
U.S. Small Cap Value Portfolio	09/18/92 03/01/93	21.77	22.14	14.88
U.S. Large Cap Value Portfolio	09/18/92 02/18/93	22.26	20.47	15.32

Docket No 97-00982
Exhibit CA-SNB____
Direct Testimony____
Schedule 23____
Page 4 of 4____

and forward contracts is generally governed by Section 1256 of the Code. Positions generally include listed options on debt securities, options on broad-based on futures contracts, regulated futures contracts and certain foreign currency contracts and options thereon.

Absent a tax election to the contrary, each such Section 1256 position held by a Portfolio or Series will be marked-to-market (i.e., treated as if it were sold for fair market value) on the last business day of a Portfolio's or Series' fiscal year, and all gain or loss associated with fiscal year transactions and marked-to-market positions at fiscal year end (except certain currency gain or loss covered by Section 988 of the Code) will generally be treated as 60% long-term capital gain or loss and 40% short-term capital gain or loss. The effect of Section 1256 marked-to-market rules may be to accelerate income or to convert what otherwise would have been long-term capital gains into short-term capital gains or short-term capital losses into long-term capital losses within a Portfolio or Series. The acceleration of income on Section 1256 positions may require a Portfolio or Series to accrue taxable income without the corresponding receipt of cash. In order to generate cash to satisfy the distribution requirements of the Code, a Portfolio or Series may be required to dispose of portfolio securities that it otherwise would have continued to hold or to use cash flows from other sources such as the sale of a Portfolio's or Series' shares. In these ways, any or all of these rules may affect both the amount, character and timing of income distributed to shareholders by a Portfolio.

When a Portfolio (or in the case of a Feeder Portfolio, the corresponding Series) holds an option or contract which substantially diminishes a Portfolio's or Series' risk of loss with respect to another position of a Portfolio or Series (as might occur in some hedging transactions), this combination of positions could be treated as a "straddle" for tax purposes, resulting in possible deferral of losses, adjustments in the holding periods of a Portfolio's or Series' securities and conversion of short-term capital losses into long-term capital losses. Certain tax elections exist for mixed straddles (i.e., straddles comprised of at least one Section 1256 position and at least one non-Section 1256 position) which may reduce or eliminate the operation of these straddle rules.

The Portfolios and those Series taxable as regulated investment companies are also subject to the requirement that less than 30% of their annual gross income be derived from the sale or other disposition of securities and certain other investments held for less than three months ("short-short income"). This requirement may limit a Portfolio's (or in the case of a Feeder Portfolio, the corresponding Series') ability to engage in options, straddles, hedging transactions and forward or futures contracts because these transactions are often consummated in less than three months, may require the sale of portfolio securities held less than three months and may, as in the case of short sales of portfolio securities, reduce the holding periods of certain securities within a Portfolio or Series, resulting in additional short-short income for a Portfolio or Series.

A Portfolio (or in the case of a Feeder Portfolio, the corresponding Series) will monitor its transactions in such options and contracts and may make certain other tax elections in order to mitigate the effect of the above rules and to prevent disqualification of a Portfolio or Series as a regulated investment company under Subchapter M of the Code.

DIRECTORS AND OFFICERS

The names and addresses of the directors and officers of the Fund and a brief statement of their present positions and principal occupations during the past five years is set forth below.

Directors

David G. Booth*, 50, Director, President and Chairman-Chief Executive Officer, Santa Monica, CA. President, Chairman-Chief Executive Officer and Director, Dimensional Fund Advisors Inc., DFA Securities Inc., DFA Australia Ltd., Dimensional Investment Group Inc. (registered investment company) and Dimensional Emerging Markets Fund Inc. (registered investment company). Trustee, President and Chairman-Chief Executive Officer of The DFA Investment Trust Company. Chairman and Director, Dimensional Fund Advisors Ltd.

George M. Constantinides, 49, Director, Chicago, IL. L
Graduate School of Business, University of Chicago. Trustee, Th
Director, Dimensional Investment Group Inc. and Dimensional Emc _ _

John P. Gould, 58, Director, Chicago, IL. Steven G. Rothmeier Distinguished Service Professor of Economics, Graduate School of Business, University of Chicago. Trustee, The DFA Investment Trust Company and First Prairie Funds (registered investment companies). Director, Dimensional Investment Group Inc., Dimensional Emerging Markets Fund Inc. and Harbor Investment Advisors. Executive Vice President, Lexecon Inc. (economics, law, strategy and finance consulting).

Roger G. Ibbotson, 53, Director, New Haven, CT. Professor in Practice of Finance, Yale School of Management. Trustee, The DFA Investment Trust Company. Director, Dimensional Investment Group Inc., Dimensional Emerging Markets Fund Inc., Hospital Fund, Inc. (investment management services) and BIRR Portfolio Analysis, Inc. (software products). Chairman and President, Ibbotson Associates, Inc., Chicago, IL (software, data, publishing and consulting).

Merton H. Miller, 73, Director, Chicago, IL. Robert R. McCormick Distinguished Service Professor Emeritus, Graduate School of Business, University of Chicago. Trustee, The DFA Investment Trust Company. Director, Dimensional Investment Group Inc. and Dimensional Emerging Markets Fund Inc. Public Director, Chicago Mercantile Exchange.

Myron S. Scholes, 55, Director, Greenwich, CT. Limited Partner, Long-Term Capital Management L.P. (money manager). Frank E. Buck Professor of Finance, Graduate School of Business and Professor of Law, Law School, Senior Research Fellow, Hoover Institution, (all) Stanford University (on leave). Trustee, The DFA Investment Trust Company. Director, Dimensional Investment Group Inc., Dimensional Emerging Markets Fund Inc., Benham Capital Management Group of Investment Companies and Smith Breedon Group of Investment Companies.

Rex A. Siquefield*, 52, Director, Chairman and Chief Investment Officer, Santa Monica, CA. Chairman-Chief Investment Officer and Director, Dimensional Fund Advisors Inc., DFA Securities Inc., DFA Australia Ltd., Dimensional Investment Group Inc. and Dimensional Emerging Markets Fund Inc. Trustee, Chairman-Chief Investment Officer of The DFA Investment Trust Company. Chairman, Chief Executive Officer and Director, Dimensional Fund Advisors Ltd.

* Interested Director of the Fund.

Officers

Each of the officers listed below hold the same office in the following entities: Dimensional Fund Advisors Inc., DFA Securities Inc., DFA Australia Ltd., Dimensional Investment Group Inc., The DFA Investment Trust Company, Dimensional Fund Advisors Ltd., and Dimensional Emerging Markets Fund Inc.

Arthur Barlow, 41, Vice President, Santa Monica, CA.

Maureen Connors, 60, Vice President, Santa Monica, CA.

Truman Clark, 55, Vice President, Santa Monica, CA. Consultant until October 1995 and Principal and Manager of Product Development, Wells Fargo Nikko Investment Advisors, San Francisco, CA from 1990-1994.

Robert Deere, 39, Vice President, Santa Monica, CA.

Irene R. Diamant, 46, Vice President and Secretary (for all entities other than Dimensional Fund Advisors Ltd.), Santa Monica, CA.

Margaret East, 56, Secretary, Dimensional Fund Advisors Ltd.

The Fund commenced offering shares of Emerging Mark International Small Cap Value Portfolio in December, 1994; DFA Two-Year Corporate Fixed Income Portfolio in February, 1996; Enhanced U.S. Large Company Portfolio in July, 1996, and DFA International Small Company Portfolio in October, 1996. The DFA Two-Year Corporate Fixed Income, DFA Two-Year Government and Emerging Markets Small Cap Portfolios had not commenced operations as of November 30, 1996.

Until September, 1995, The DFA Intermediate Government Fixed Income Portfolio was named The DFA Intermediate Government Bond Portfolio, The DFA Global Fixed Income Portfolio was named The DFA Global Bond Portfolio, The Pacific Rim Small Company Portfolio was named The Asia-Australia Small Company Portfolio, The U.S. Large Cap Value Portfolio was named The U.S. Large Cap High Book to Market Portfolio, The U.S. Small Cap Value Portfolio was named The U.S. Small Cap High Book to Market Portfolio, The U.S. 9-10 Small Company Portfolio was named the Small Company Shares, The DFA One-Year Fixed Income Portfolio was named The DFA Fixed Income Shares, and The Continental Small Company Portfolio was named the Continental European Portfolio. Until February, 1996, RWB/DFA International High Book to Market Portfolio was named DFA International High Book to Market Portfolio. From September, 1995 until December, 1996, The DFA Real Estate Securities Portfolio was named DFA/AEW Real Estate Securities Portfolio.

Coopers and Lybrand L.L.P., the Fund's independent accountants, audits the Fund's financial statements.

PRINCIPAL HOLDERS OF SECURITIES

As of February 28, 1997, the following stockholders owned beneficially at least 5% of the outstanding stock of the Portfolios, as set forth below.

THE U.S. 9-10 SMALL COMPANY PORTFOLIO

Charles Schwab & Company, Inc. - REIN*	25.44%
101 Montgomery Street	
San Francisco, CA 94104	

State Farm Insurance Companies	10.76%
One State Farm Plaza	
Bloomington, IL 61710	

Pepsico Inc. Master Trust	8.87%
The Northern Trust Company Trustee	
P.O. Box 92956	
801 South Canal	
Chicago, IL 60675	

Charles Schwab & Company, Inc. - REIN*	(see address above)	5.97%

Owens-Illinois	5.48%
Master Retirement Trust	
34 Exchange Place	
Jersey City, NJ 07302	

National Electrical Benefit Fund	5.26%
1125 15th Street NW	
Washington, DC 20005	

THE U.S. 6-10 SMALL COMPANY PORTFOLIO

McKinsey & Company Master Retirement Trust	26.43%
55 E. 52nd Street	
New York, NY 10055	

Data on Dr. Andrews' Companies

Docket No 97-00982
Exhibit CA-SNB
Direct Testimony
Schedule 25
Page 1 of 1

COMPANY NAME *	PRICE AS OF 4/30/97	STOCK OUTSTANDING (000)	NUM OF SHARE HOLDERS	SHARES PER STOCKHOLDER	VALUE OF		MARKET VALUE 4/30/97 \$(Millions)
					HOLDINGS PER SHAREHOLDER 4/30/97		
(1)	(2)	(3)	(4)	(5)	(6)		(7)
				[col (3) / col (4)]	[col (2) X col (5)]		[col (2) X col (3)]
Almos Energy Corporation	\$22.63	16135	28,624	564	\$12,753		365
Berkshire Gas Company	\$15.13	2177	1,881	1157	\$17,505		33
Bay State Gas Company	\$25.50	13439	10,820	1242	\$31,671		343
Cascade Natural Gas Corporation	\$16.38	10824	10840	999	\$16,351		177
Colonial Gas Company	\$20.00	8518	5931	1436	\$28,724		170
Chesapeake Utilities Corporation	\$16.75	4453	2213	2012	\$33,704		75
Delta Natural Gas Company, Inc	\$16.63	2325	2,382	976	\$16,227		39
Essex County Gas Company	\$24.25	1667	1,336	1248	\$30,258		40
Energen Corporation	\$30.50	13027	7,700	1692	\$51,600		397
Energy North Inc	\$21.75	3244	2,300	1410	\$30,677		71
Energy West Incorporated	\$8.50	2357	1,600	1473	\$12,522		20
Mobile Gas Service Corporation	\$26.75	3228	1,624	1988	\$53,171		86
North Carolina Natural Gas Corporation	\$29.63	6613	5,094	1298	\$38,459		196
Northwest Natural Gas Company	\$24.25	22566	10,859	2078	\$50,394		547
Public Service Company of North Carolina, Incorporated	\$17.25	19296	11,500	1678	\$28,945		333
Pennsylvania Enterprises, Inc	\$22.13	9608	6,627	1450	\$32,077		213
Providence Energy Corporation	\$17.75	5767	6,052	953	\$16,914		102
Southeastern Michigan Gas Enterprises, Inc	\$17.58	13020	8,509	1530	\$26,892		229
United Cities Gas Company	\$21.50	13221	7681	1721	\$37,007		284
Valley Resources, Inc	\$12.25	4266	2824	1511	\$18,505		52
Yankee Energy System, Inc	\$21.13	10450	28,499	367	\$7,746		221
Average	\$20.39	8867	7,852	1371	\$28,195		190

* Excludes Washington Gas Company
It Merged With an Electric Power Company

Gas Company Stocks Owned by the DFA 9-10 Fund

Did the U S 9-10 Small Company Mutual Fund
Own Stock in Dr Andrews' Comparable Companies?

Docket No 97-00982
Exhibit CA-SNB
Direct Testimony
Schedule 26
Page 1 of 1

COMPANY	94	95	96
Atmos Energy Corporation	NO	NO	NO
Berkshire Gas Company	YES	YES	YES
Bay State Gas Company	NO	NO	NO
Cascade Natural Gas Corporation	YES	YES	YES
Chesapeake Utilities Corporation	YES	YES	YES
Colonial Gas Company	YES	YES	YES
Delta Natural Gas Company, Inc.	YES	YES	YES
Energen Corporation	NO	NO	NO
Energy North Inc	YES	NO	YES
Energy West Incorporated	NO	NO	NO
Essex County Gas Company	NO	YES	YES
Mobile Gas Service Corporation	YES	YES	YES
North Carolina Natural Gas Corporation	NO	NO	YES
Northwest Natural Gas Company	NO	NO	NO
Pennsylvania Enterprises, Inc.	NO	NO	NO
Providence Energy Corporation	YES	YES	YES
Public Service Company of North Carolina, Incorporated	NO	NO	NO
Southeastern Michigan Gas Enterprises, Inc	NO	NO	NO
United Cities Gas Company	NO	NO	NO
Washington Energy	NO	NO	NO
Valley Resources, Inc.	YES	YES	YES
Yankee Energy System, Inc.	NO	NO	NO
TOTAL NOT INCLUDED IN PORTFOLIO	13	13	11
TOTAL INCLUDED IN PORTFOLIO	9	9	11

SOURCE 1994 & 1996 - DFA ANNUAL REPORT
SOURCE 1995 10K REPORT

Table A-1

Large Company Stocks:
Total Returns

(continued)

Docket No. 97-00982

Exhibit CA-SNB

Direct Testimony

Schedule 27

Page 1 of 1

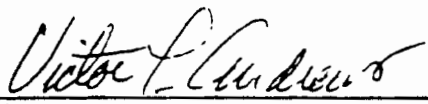
From January 1971 to December 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR	JAN-DEC*
1971	0.0419	0.0141	0.0382	0.0377	-0.0367	0.0021	-0.0399	0.0412	-0.0056	-0.0404	0.0027	0.0877	1971	0.1431
1972	0.0194	0.0299	0.0072	0.0057	0.0219	-0.0205	0.0036	0.0391	-0.0036	0.0107	0.0505	0.0131	1972	0.1898
1973	-0.0159	-0.0333	-0.0002	-0.0395	-0.0139	-0.0051	0.0394	-0.0318	0.0415	0.0003	-0.1082	0.0183	1973	-0.1466
1974	-0.0085	0.0019	-0.0217	-0.0373	-0.0272	-0.0128	-0.0759	-0.0828	-0.1170	0.1657	-0.0448	-0.0177	1974	-0.2647
1975	0.1251	0.0674	0.0237	0.0493	0.0509	0.0462	-0.0659	-0.0144	-0.0328	0.0637	0.0313	-0.0096	1975	0.3720
1976	0.1199	-0.0058	0.0326	-0.0099	-0.0073	0.0427	-0.0068	0.0014	0.0247	-0.0206	-0.0009	0.0540	1976	0.2384
1977	-0.0489	-0.0151	-0.0119	0.0014	-0.0150	0.0475	-0.0151	-0.0133	0.0000	-0.0415	0.0370	0.0048	1977	-0.0718
1978	-0.0596	-0.0161	0.0276	0.0870	0.0136	-0.0152	0.0560	0.0340	-0.0048	-0.0891	0.0260	0.0172	1978	0.0656
1979	0.0421	-0.0284	0.0575	0.0036	-0.0168	0.0410	0.0110	0.0611	0.0025	-0.0656	0.0514	0.0192	1979	0.1844
1980	0.0610	0.0031	-0.0987	0.0429	0.0562	0.0296	0.0676	0.0131	0.0281	0.0187	0.1095	-0.0315	1980	0.3242
1981	-0.0438	0.0208	0.0380	-0.0213	0.0062	-0.0080	0.0007	-0.0554	-0.0502	0.0528	0.0441	-0.0265	1981	-0.0491
1982	-0.0163	-0.0512	-0.0060	0.0414	-0.0288	-0.0174	-0.0215	0.1267	0.0110	0.1126	0.0438	0.0173	1982	0.2141
1983	0.0348	0.0260	0.0365	0.0758	-0.0052	0.0382	-0.0313	0.0170	0.0136	-0.0134	0.0233	-0.0061	1983	0.2251
1984	-0.0065	-0.0328	0.0171	0.0069	-0.0534	0.0221	-0.0143	0.1125	0.0002	0.0026	-0.0101	0.0253	1984	0.0627
1985	0.0768	0.0137	0.0018	-0.0032	0.0615	0.0159	-0.0026	-0.0061	-0.0321	0.0447	0.0716	0.0467	1985	0.3216
1986	0.0044	0.0761	0.0554	-0.0124	0.0549	0.0166	-0.0569	0.0748	-0.0822	0.0556	0.0256	-0.0264	1986	0.1847
1987	0.1343	0.0413	0.0272	-0.0088	0.0103	0.0499	0.0498	0.0385	-0.0220	-0.2152	-0.0819	0.0738	1987	0.0523
1988	0.0427	0.0470	-0.0302	0.0108	0.0078	0.0464	-0.0040	-0.0331	0.0424	0.0273	-0.0142	0.0181	1988	0.1681
1989	0.0723	-0.0249	0.0236	0.0516	0.0402	-0.0054	0.0898	0.0193	-0.0039	-0.0233	0.0208	0.0236	1989	0.3149
1990	-0.0671	0.0129	0.0263	-0.0247	0.0975	-0.0070	-0.0032	-0.0903	-0.0492	-0.0037	0.0644	0.0274	1990	-0.0317
1991	0.0442	0.0716	0.0238	0.0028	0.0428	-0.0457	0.0468	0.0235	-0.0164	0.0134	-0.0404	0.1143	1991	0.3055
1992	-0.0186	0.0128	-0.0196	0.0291	0.0054	-0.0145	0.0403	-0.0202	0.0115	0.0036	0.0337	0.0131	1992	0.0767
1993	0.0073	0.0135	0.0215	-0.0245	0.0270	0.0033	-0.0047	0.0381	-0.0074	0.0203	-0.0094	0.0123	1993	0.0999
1994	0.0335	-0.0270	-0.0435	0.0130	0.0163	-0.0247	0.0331	0.0407	-0.0241	0.0229	-0.0367	0.0146	1994	0.0131
1995	0.0260	0.0388	0.0296	0.0291	0.0395	0.0235	0.0333	0.0027	0.0419	-0.0035	0.0440	0.0185	1995	0.3743

* Compound annual return

Office of the Consumer Advocate Interrogatory/Data Request-7/8/97

- Q.47. Regarding the results of Dr. Andrew's regression analysis shown in Schedule 9, produce the T-statistic for each company's alpha and the T-statistic for each company's beta.
- A.47. The results of regressions performed on the data for each company listed in Schedule 9 are employed only in summary, aggregated form as average alphas and betas. The average alpha and average beta are analogous to the alpha and beta of a portfolio of common stocks, in this case a "portfolio" of 22 small gas LDC's. Tests of significance, such as T-statistics, from the regressions related to individual stocks intrinsically cannot be summed or averaged across the composite (or portfolio). Accordingly, they were not found in company with the individual regressions and, hence, cannot be supplied as requested.


Signature

Victor L. Andrews, President, Andrews Financial Associates, Inc.

APPENDIX A

IBBOTSON YEARBOOK'S HYPOTHETICAL DISTRIBUTION OF RETURNS

The derivation of Schedule 12 and Charts two and three is based on the same probability principles used in the example shown in SBBI-97 at pages 154-155. Those pages are attached to and are part of this appendix as Attachments 1 and 2. The hypothetical distribution in the example assumes:

10% is the size of the loss

30% is the size of the gain

50% is the probability of a loss

50% is the probability of a gain.

Starting with an investment of \$1, after 1 year there are two possible values, the investment will be worth either \$1.3 or 90 cents. After two years there are 4 possibilities, one at \$1.69, two outcomes at \$1.17 and one at \$.81. This shows that the number of possibilities double each year. The example is well-grounded in mathematics and is a simple illustration of a mathematical formula that is over 500 years old. If \$1.3 is treated as X and \$.9 is treated as Y, the first year after the investment the possible outcomes are:

$$(X + Y)^1 = 1(\$1.3) + 1(\$0.9)$$

In the second year after the investment the possible outcomes are:

$$(X + Y)^2 = 1(X^2) + 2(XY) + 1(Y^2)$$

$$(\$1.3 + \$.9)^2 = \underline{1}(\$1.69) + \underline{2}(\$1.17) + \underline{1}(\$.81)$$

The underlined values -- 1 and 1 in the first year and 1, 2 ,1 in the second year -- match the total number of possibilities - 2 in the first year and 4 in the second, and the values in the parentheses -- \$1.3 and \$.9 in the first year and \$1.69 , \$1.17, \$.81 in the second -- represent the values of the possibilities. There are two important aspects of the example especially in the second year: the geometric mean is the middle value, \$1.17, which has a corresponding annual return of 8.2%, is the most likely outcome - 2 chances out of four. Three out of the four chances, 75% of the possibilities, are at or below the middle value. The odds are only 25% that the investment will reach the average of \$1.21, which has a corresponding return of 10%.

The heart of the example can be restated.

This information about a distribution:

10% is the size of the loss

30% is the size of the gain

50% is the probability of a loss

50% is the probability of a gain.

Leads to these facts about the distribution:

an 8.2% return is the distribution's middle

a 10% return is the distribution's average

And

the number of possibilities doubles as the years increase: in the first year there are 2

possibilities, 4 in the second, 8 in the third and so forth.

By the time 71 years elapse from 1925 to 1996 the equation above changes to:

$$(X + Y)^{71}$$

Although this term is huge it can be calculated easily with computers, giving the total number of possibilities and the possibilities for each outcome. Attachments 3 and 4 show the possibilities each year, the symmetrical pattern each year and the distribution in percentage terms. The patterns do not depend on the values of X and Y. No matter what values X and Y are, the pattern of possibilities is the same. This is why Chart 3 in my direct testimony is also symmetrical.

ACTUAL DISTRIBUTION OF LARGE COMPANY RETURNS: 1925-1996

Ibbotson's data on large companies covers 71 years. It shows a return of 10.7% as being in the middle of the distribution and an average of return of 12.7%. This is different than the example in the sense that the order of the information is reversed from the example.

The information about the actual distribution:

a 10.7% return is the distribution's middle

a 12.7% return is the distribution's average

50% is the probability of a loss

50% is the probability of a gain.

Leads to these questions about the actual distribution:

What percentage is the size of the loss?

What percentage is the size of the gain?

I calculated the size of the loss to be 8.3% and the size of the gain to be 33.6%. These are the first and last values in column (3) of Schedule 12. I then applied these two figures to the formula

$$(X + Y)^{71}$$

This gives the total number of possible returns, the value of each return, and the probability of each return in 1996 - given a \$1 investment in 1925. This is the data shown in Schedule 12.

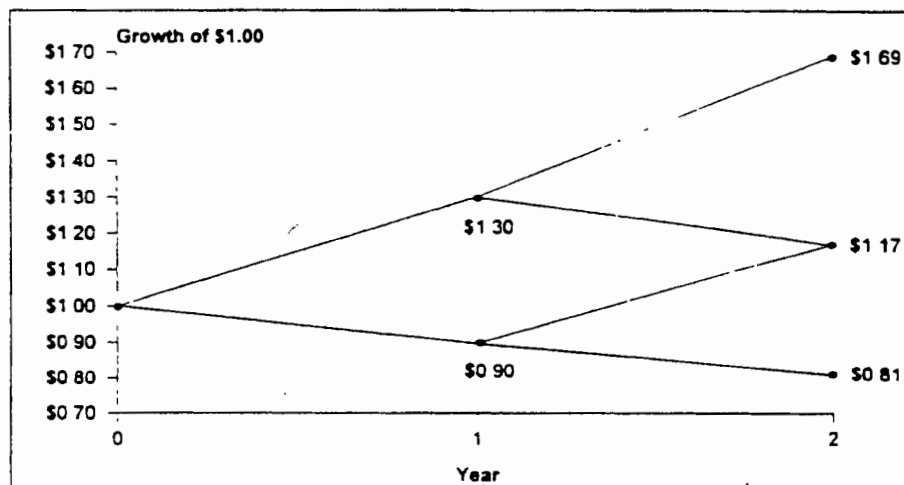
The Schedule indicates that the average return, 12.7%, has a less than 20% chance of being achieved in 1996. If the odds were looked at in 1927, the second year after the investment, the chance of achieving the average return would be no more than 25%. The point here is that as time progresses, the average return has a little less of a chance of being achieved. Its odds shrink from no more than 25% in the second year to less than 20% in the 71st year. This is not much of a change, but it highlights why the average return is not considered a useful measure by the sources I quoted. The average return is not the midpoint of the distribution, and the average return gets further and further away from the midpoint as time progresses.

where the cost of capital is the sum of its parts. Therefore, the CAPM expected equity risk premium must be derived by arithmetic, *not geometric*, subtraction.

Arithmetic Versus Geometric Means

The expected equity risk premium should always be calculated using the arithmetic mean. The arithmetic mean is the rate of return which, when compounded over multiple periods, gives the mean of the probability distribution of ending wealth values. (A simple example given below shows that this is true.) This makes the arithmetic mean return appropriate for computing the cost of capital. The discount rate that equates expected (mean) future values with the present value of an investment is that investment's cost of capital. The logic of using the discount rate as the cost of capital is reinforced by noting that investors will discount their expected (mean) ending wealth values from an investment back to the present using the arithmetic mean, for the reason given above. They will, therefore, require such an expected (mean) return prospectively (that is, in the present looking toward the future) to commit their capital to the investment.

For example, assume a stock has an expected return of +10 percent in each year and a standard deviation of 20 percent. Assume further that only two outcomes are possible each year— +30 percent and -10 percent (that is, the mean plus or minus one standard deviation), and that these outcomes are equally likely. (The arithmetic mean of these returns is 10 percent, and the geometric mean is 8.2 percent.) Then the growth of wealth over a two-year period occurs as shown below.



Appendix A of _____
 Direct Testimony
 Docket No. 97-00982
 Exhibit CA-SNB _____
 Attachment 2

Note that the median (middle outcome) and mode (most common outcome) are given by the geometric mean, 8.2 percent, which compounds up to 17 percent over a 2-year period (hence a terminal wealth of \$1.17). However, the *expected value*, or probability-weighted average of all possible outcomes, is equal to:

	(.25	x	1.69)	=	0.4225
+	(.50	x	1.17)	=	0.5850
+	(.25	x	0.81)	=	<u>0.2025</u>
TOTAL					1.2100

Now, the rate that must be compounded up to achieve a terminal wealth of \$1.21 after 2 years is 10 percent; that is, the expected value of the terminal wealth is given by compounding up the *arithmetic*, not the geometric mean. Since the arithmetic mean equates the expected future value with the present value, it is the discount rate.

Stated another way, the arithmetic mean is correct because an investment with uncertain returns will have a higher expected ending wealth value than an investment that earns, with certainty, its compound or geometric rate of return every year. In the above example, compounding at the rate of 8.2 percent for two years yields a terminal wealth of \$1.17, based on \$1.00 invested. But holding the uncertain investment, with a possibility of high returns (two +30 percent years in a row) as well as low returns (two -10 percent years in a row), yields a higher expected terminal wealth, \$1.21. In other words, more money is gained by higher-than-expected returns than is lost by lower-than-expected returns. Therefore, in the investment markets, where returns are described by a probability distribution, the arithmetic mean is the measure that accounts for uncertainty, and is the appropriate one for estimating discount rates and the cost of capital.

Arbitrage Pricing Theory

APT is a model of the expected return on a security. It was originated by Stephen A. Ross, and elaborated by Richard Roll. APT treats the expected return on a security (*i.e.*, its cost of capital) as the sum of the payoffs for an indeterminate number of risk factors, where the amount of each risk factor inherent in a given security is estimated. Like the CAPM, APT is a model that is consistent with equilibrium and does not attempt to outguess the market. APT

Center of the Distribution



2 E+21

71



Publications By Dr. Brown

(Copies Attached)

Science and Technology

So Long, Calvin Coolidge

Meter Reading Approaches the 1990s
Promising a Pivotal Market for Communications Infrastructure

By Stephen N. Brown

Federal and state regulators must become knowledgeable about Automatic Meter Reading (AMR) and all that it entails. After all, AMR is a pivotal market that will shape the nation's communications infrastructure by determining whether energy and water industries move toward an intelligent, public-switched communication network or toward radio-based personalized communication networks.

The junction lies in the eventual replacement of roughly 250 million electric, gas, and water meters in the United States, nearly all of which reflect the technology of the 1920s: they must be read manually, they are incapable of implementing time-differentiated rates, they cannot communicate with anything, and their information storage capability is nil. They will be replaced by devices embodying today's technology, and that will be compatible with the nation's communication infrastructure.

Radio Networks or Wired Networks?

The infrastructure is being shaped by the century-old competition between radio networks and wired networks. Radio-based cellular and microwave technology use the electromagnetic spectrum and offer the promise of personalized communication networks (PCNs) along with decentralized ownership and splintered control of the nation's communication infrastructure.

The AMR market already reflects the struggle over market position and the dichotomies between radio and

wired technologies, and between unilateral control and integrated control. AMR products available today encompass various radio offerings, including one combination of spread-spectrum signalling with a power line carrier, as well as telephone-inbound/outbound strategies. Telephone-based products require cooperation between the local exchange carriers and the utility; the spread-spectrum/power-line device is unilaterally operated by the utility. However, there is no dominant AMR strategy or product in the electric, gas, and water industries; also, they have no organized strategy on how to migrate from a 1920's-vintage metering technology to the 1990s. The AMR market today is still immature, disorganized, and untapped, but loaded with potential.

Why?

Because replacing 250 million meters, not to mention possible markets abroad, represents a major demand for new manufactured products that embody new communication technology.

Capable Networks for Energy Industries

More capable networks are needed by the electric utility industry, which is under intense pressure to adopt energy efficiency strategies requiring load monitoring, load management, incentive rates, and perhaps eventually real-time pricing. AMR is essential for all these strategies. Therefore, regulators should advocate AMR investments in energy-utility networks, whether radio

or cable-based, that:

- have scale economies;
- possess multi-functionality;
- can easily implement rate structure changes;
- are consistent with open-architecture principles;
- avoid redundancy and duplication of another local utility's investments.

The regulatory community should take the lead in advocating economic cooperation between different utility industries—not only for the potential economic benefits but also because the utilities and American business in general do not value economic cooperation.

Shorter Replacement Cycles

The application to AMR and the regulatory process is this: Regulated industries should be responsive to continual product improvements in AMR. Regulators should not expect AMR products to have a 30- to 40-year depreciation schedule, nor should they expect utilities to make automation investments and then not replace them for decades. Product replacements are likely to occur in shorter cycles such as eight to twelve years. This is true for either radio or wired technologies.

An important feature of continual product improvement is the role of customer feedback in guiding incremental improvements to the product after it has been introduced. This sug-

gests a need for continual cooperation between utilities and AMR manufacturers. In an intelligent network, product improvement means software improvements to create and access data bases that are centralized with regard to a local access transport area (LATA). Without an intelligent network, data bases are located in each local exchange. There are approximately 120-150 LATAs in the country along with several thousand local exchanges. Centralizing data bases in LATAs rather than local exchanges reduces the development cycle for new services from years to months.

However, the communications industry has no plans to develop processing capability in digital central office switches. An intelligent network offering speed but lacking distributed processing may have little value to electric utilities. Their long-term planning is evolving toward the distributed utility concept: the electrical distribution system becomes the focus of planning, processing, reliability, and power quality control. Distribution control was a sideline issue when central station economies of scale dominated the electric power industry, but this situation has changed.

The new emphasis is on the distribution sector, which is ready for massive applications of technology that control and manage the end user's consumption. AMR software and hardware are aimed at the distribution sector; load management is a distribution function. AMR products will also have load management capability. Consequently, there's a clear need for processing capability. But where will that capability be located, at the company's headquarters or at selected points in the field, such as a central office?

The processing capability should be located in the field, making the logical choice for processing in an intelligent network digital central office switches. All organizations, including utilities, would probably recoil at the idea of a digital central office that processes data, fearing for the data's privacy and reliability. Appropriate encryption and validation procedures would make pro-



cessing viable at the central switch, and provide two separate opportunities for cooperation between a phone company and an energy utility: where the local company does not have a digital switch, coordination between the two utilities could result in the installation of a new digital switch. Where a digital switch already exists, joint investment in its distributed processing capability will expand the intelligent network's scope. A utility's data bases could be placed in the central switch and accessed on a LATA basis. Without this capability, the intelligent network may be a case of bandwidth overkill for AMR and load management functions, with no thought given to the network's potential for time differentiated pricing or other add-on services for utilities.

Property and Profit

An intelligent network's product improvement is tied directly to software, a concrete, easily recognized aspect of the intelligent network. But in a radio network product improvement is amorphous because a frequency cannot be "owned", and there are no codified private property rights regarding the spectrum. Government steps in to allocate the spectrum. In a competitive

setting, lack of property rights in the spectrum makes the innovator's profit stream far less secure than for the intelligent network's innovator. In a competitive setting property rights protect the profit stream created by the innovator. For this reason, an intelligent network is more likely to sustain a high rate of innovation than a radio network. In fact, one of the more notable innovations in radio technology thrives on the absence of property rights. Spread spectrum technology hops across adjacent radio frequencies to mask the content of a radio message. While this is successful in military applications, the technology has not yet penetrated the commercial markets to a significant degree.

Product improvement is important for radio-based AMR manufacturers. They will have to demonstrate their product's potential for broad application over time before they can capture the utility industry as a long-term AMR customer.

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Opinion

No Second Time Around for AMR

By Stephen Brown, AMRA Treasurer
Iowa Department of Commerce

David Gorton's editorial in AMRA's January newsletter ["Looking Back to See the Future," p. 2] conveyed the notion that AMR's problems are no different today than they were 30 years ago. To an extent, he is right. AMR's problems are perennial because the utility industry's retail business environment has been remarkably stable. But the time will come when the environment changes, allowing a permanent fix for the infirmities of the AMR market.

Utilities have a growing need for accurate and prompt measurement of consumption. This is not caused by a sense of righteous conversion to AMR. Cold, hard self-interest is the reason. The electric and gas utilities, in particular, are more interested in AMR today because they face the prospect of competition in all phases of their business. Competition implies uncertainty about profit margins and a need for detailed knowledge of the retail market. Good information acquired through AMR will make the difference between success and failure in a competitive market.

Standard and Poor's Corp., a major financial ratings firm, believes that competition is making the electric business very risky. Consequently, the firm set new financial standards that may reduce credit ratings for one-third of the nation's electric utilities. This has never happened before. The industry's new competitive environment may compel utilities to install AMR equipment that embodies rapid communication and sophisticated measurement. Thus, the recycling of AMR's familiar problems may truly come to a final end.

However, Gorton's editorial shows the same thought being voiced in 1967: "AMR has been a 'want' of the electric utilities for many years but now is rapidly becoming a 'must.'" That statement was wrong in 1967, but it's right today. If you want to know why, read an insightful article by AMRA member Roger Levy. He cowrote *Re-engineering DSM: Opportunities Through Information and Integration*, which appears in last November's issue of *The Electricity Journal*. Levy explains why the electric utility industry failed, in general, to implement automation procedures regarding measurement and communication in the retail market. The dominant reason,

says Levy, is "most ... technical and procedural designs incorporate implicit and explicit compromises to make sure that programs cause little disruption and conform as closely as possible to the operating practices and features of existing utility company business management and information systems."

In short, AMR and all automation systems have the potential to create ripple effects throughout a company. If unwilling to live with these or take advantage of them, the company constrains the automation project, cutting it here and tweaking it there until the project is reduced to a shadow, drained of its promise and potential.

In Levy's words, "What starts out as a 'logical compromise' ... artificially limits how ... communication, measurement and control technologies might be used to modernize existing utility systems and practices."

In today's market, many industries depend on rapid information flow for marketing, cost cutting and competing, including: the overnight package delivery industry, the vending machine business, the liquid fuels business of propane and butane delivery, and all "just-in-time" production and inventory businesses. These enterprises have made every effort to automate because it's vital to their success.

In 1967, automation at the retail level didn't mean anything to the utility industry, and AMR was a nonevent. That era is over. The AMR industry should take advantage of the present, push on all fronts and think big.

The advice of Daniel Burnham is appropriate. He was a urban planner who, in 1900, redesigned the cities of Chicago and Washington, D.C. He told the cities' leaders, "Make no small plans, they do not stir men's imagination."

AMR pilot projects have seen their day. The technology won't mature if it's forever limited to trials. Its true potential lies in full-scale, utilitywide projects, and now is the time to pursue them.

Stephen Brown works for the Iowa Department of Commerce, which is based in Des Moines. He also serves as the treasurer of AMRA.



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Opinion

DOE Proposal Trivializes AMR

By Stephen Brown
Iowa Department of Commerce

Automatic meter reading (AMR) received much needed attention when Congress enacted the Telephone Disclosure and Dispute Resolution Act of 1992. It directed the U.S. Department of Energy (DOE) to consider a government demonstration project involving utility communications and AMR.

Last March, the DOE opened docket CE-NOI-93-001, an inquiry meant to implement Congress' directive. After consultation with the U.S. Commerce Department, the DOE released its final report, *Proposal for Demonstrating the Potential of Innovative Communications Equipment and Services for Utility Applications*, on Sept. 2. [See related article on page 3.] In it, the DOE recommends against a "use of federal funds" to develop an AMR or energy-management demonstration project because "it would duplicate demonstrations already planned by utilities."

Despite this reasonable conclusion, the final document is disappointing. It could have been a means for the DOE to show Congress that meter reading and utility communication are vital functions in the American economy. Instead, the DOE sent Congress a message that trivializes AMR.

The report accepts without question a cliched, moss-backed argument used for years to stifle innovation in metering, utility pricing and communication: "Presently the main limitation on automatic meter reading is cost. According to the Edison Electric Institute in their response, a survey of their members shows that it only costs between 30 cents and 60 cents per customer per month to read the meter manually for typical customers...." When Congress reads this, they will wonder why anyone would bother with AMR since manual reading is cheaper than a phone call.

The report is flawed because the agency's world view is confined to the Washington Beltway. Twenty-seven respondents filed comments on CE-NOI-93-001. The DOE apparently thinks only two had opinions that are worthy of Congress' attention. The DOE highlights the filings of the Edison Electric Institute and the Utility Telecommunications Council, two of the oldest guards in Washington. The report does not refer to the opinions of the other 25 respondents — vendors, phone companies, cable companies, utilities and consultants. A balanced report would have drawn from many respondents, not just two. It would

have shown the fallacy of the "manual meter reading is cheap" argument.

Manual meter reading is cheap because it is an almost worthless service. It gives practically nothing to consumers and utilities. The inadequacy of meter reading and its failure to facilitate economic decision making by consumers is shown by the popularity of balanced-billing for gas, water and electric utilities.

In balanced-billing, a customer's annual bill is estimated and divided by 12. The result is the customer's monthly bill. At the end of one year, the difference between actual and estimated consumption is reconciled, the customer receives a credit or debit, and the cycle starts again. Millions of consumers use balanced-billing. In short, the payment for consumption of gas, water and electricity in the United States is little different from making a premium payment for insurance. The success of balanced-billing shows the only effective use of manual meter reading — reconciling the customer's estimated annual consumption against actual consumption once a year in order to balance a company's annual cash flow.

It is a mystery why the DOE gladly accepts the cheap meter-read argument and then passes it on to Congress as an unquestioned truth. Consumers need the opportunity and the tools to treat their energy and water purchases like any other commodity or service. AMR is the tool, and a time-sensitive utility price is the opportunity. These will create new patterns of energy and water use, perhaps allowing the next generation of Americans to mitigate and avoid costs for such things as the safe disposal of nuclear fuel used in power plants, which is now estimated at \$45 billion.

With AMR, the next generation will shop for the right time to buy energy, from the right source and at the right price — just like it shops for the right groceries and right times to travel. It's time for the utility industry's metering practices to measure up to the 1990s and the next century.

The DOE's report could have sent these messages to Congress while still arriving at the same conclusions. Instead, Congress will now dismiss the issue as trivial.

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ECONOMIC INCENTIVES FOR NUCLEAR PLANT PERFORMANCE: A STATE PERSPECTIVE

BY

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DELIVERED AT THE NRC'S STATE LIAISON OFFICERS' MEETING: REGION III
GLEN ELLYN, ILL., SEPTEMBER 29, 1988

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INTRODUCTION

I had the opportunity to listen to Nuclear Regulatory Commissioner Ken Rogers' presentation at the July 25th meeting of NARUC's subcommittee on nuclear issues. Commissioner Rogers clearly takes the position that capacity factors can be a disincentive to the safe operation of a nuclear power plant when they are used as a sole measure of the plant's overall economic performance. Of course, the Commissioner's stance accurately represents the Nuclear Regulatory Commission's (NRC's) basic opinion regarding target capacity factors and their role in the incentive programs established by state regulatory bodies.

I'm a senior staff member of a state regulatory body, the Iowa Utilities Division, a group that provides line and staff support to the Iowa Utilities Board, a body composed of three appointed officials, the decision-makers who set policy. I do not speak for their policy views on incentive programs. But I am in the position to describe why nuclear plant performance is becoming an issue in Iowa, to make my own professional assessment of the capacity factor issue, and to offer a compromise measure, one that may satisfy the concerns of the NRC and those of state regulatory agencies engaged in economic incentive programs.

NUCLEAR POWER IN IOWA

Nuclear power plants provide approximately 25% of the net electrical generation devoted to consumption in Iowa. The plants are: Cooper, wholly owned and operated by Nebraska Public Power, but one-half of the net output is committed to the Iowa Power & Light Company; Duane Arnold, operated by Iowa Electric Light & Power Company, but jointly owned with two rural electric organizations; and Quad Cities Units 1 and 2, operated by Commonwealth Edison, but jointly owned with Iowa-Illinois Gas & Electric Company.

Nuclear plants are normally operated at a nearly constant level of output during most on-line hours, the exception being those on-line hours either immediately prior to a planned shut-down or during coast-down at the end of the fuel cycle. But the Utilities Division Staff found that Cooper and Duane Arnold substantially deviated from this pattern; from 1983 through

1986 both plants appeared to swing with load rather than operating in the base-load fashion characteristic of most other nuclear plants in the country. Table 1 is a comparison of Duane Arnold and Cooper utilization to utilization of nuclear plants in states adjacent to Iowa. For all four years these two plants were consistently near the bottom of the scale. Table 2 is a similar comparison for nuclear plants in the Mid-Continent Area Power Pool (MAPP), and Cooper and Duane Arnold again fall to the bottom of the scale. Tables 3 and 4 are similar comparisons using all the nuclear plants.

All of this descriptive information substantiates the idea that these two plants, unlike most others in the country, were not being extensively base loaded. This is significant because of the very low fuel costs involved: between 6 and 9 mills per kilowatt-hour at both plants in comparison to costs of 13 to 15 mills at the large coal-fired plants in the state. The very obvious question is: why not increase the output at the nuclear plants as a substitute for the more expensive coal output? This issue is even more puzzling because one of the state's base-load coal fired plants has greater utilization than either Cooper or Duane Arnold during the same time frame. The Iowa Utilities Board ordered an investigation into this issue; interrogatories were sent to the two Iowa companies involved, and responses are expected in mid-October.

This approach appears to be retrospective, but it should also be viewed as a planning consideration. Federal acid rain legislation could have a negative impact on eight major generating plants in Iowa. If and when such legislation becomes law, compliance would most likely require curtailed output at some or all of these plants. As a group, the plants provide 4,600 megawatt hours (MWH) of the state's net electrical output, about 21 percent of the total net output. In addition, the plants' average number of annual service hours exceed 7,000, and the average hourly output is 82 megawatts (MW). Improved performance at the nuclear plants will alleviate some of the negative consequences of compliance with the new legislation. This is a primary reason why nuclear power plant performance in Iowa will be more important in the future.

THE CAPACITY FACTOR ISSUE

Given the scenario just described, how should a regulatory body proceed with the development performance evaluation? A quick answer, but one that would disturb the NRC, would be to use capacity factors. As most of you know, a capacity factor is a composite measure of a plant's availability and output level. If availability falls or if output declines, the capacity factor drops. The NRC's objection to capacity factors is simple but cogent: use of the factor encourages a company to run a nuclear plant when it should be shut down for periodic and preventive maintenance. Therefore, capacity factors lead to incremental deterioration of the plant with a cumulative effect on safety. New York Attorney General Robert Abrams expressed this sentiment when criticizing the New York PSC's incentive program: "A company striving to meet a capacity-factor target would be tempted to ignore or downplay the seriousness of safety problems."

This argument is aimed at state regulatory agencies. These organizations have a direct and large effect on the financial well-being of the utilities involved with the nuclear plants. From a financial view, the state bodies have a much greater impact on the companies than does the NRC. For this reason, state agencies can have substantial influence on how the companies manage nuclear plants. In fact, several states have chosen to exercise their influence, and despite the concerns of the NRC, have adopted incentive programs that include capacity factors. These states include New York, New Jersey, Florida, Virginia, and North Carolina among others. The contention and fractiousness over economic incentives and regulation is quite visible.

For example, a July 1988 Electrical World article summarized a nuclear plant survey conducted by the Reliability Engineering Department of Westinghouse Electric:

...organizational and external factors have a far stronger effect on availability of US reactors than physical attributes, such as age, reactor type, or nuclear-steam-supply-system vendor...Economic regulation sometimes hinders preventive-maintenance initiatives and plant equipment upgrades, the report concluded. "On the state level, there appears to be a widespread lack of understanding by utility commissions of the importance of nuclear power..."

The other side of the coin is illustrated by a December 1985 article appearing in the New York Times:

...(S)tate regulators seem unimpressed with the NRC's concerns and suggestions. "This is a political process," said one state regulator, adding that the NRC's protestations about the deleterious effect of financial incentive programs on reactor safety are "a nice smokescreen."

There appears to be disagreement between many state regulatory authorities, the nuclear power industry, and the NRC over the use of incentive programs and capacity factors. The most important question here is not who's right, but is there an alternative, one that is tenable for all concerned parties?

I believe that the answer lies in a composite measure that incorporates three ideas: (1) the utilization ratio concept illustrated in Tables 1 through 4; (2) service hours; and (3) reactor trip rates, referred to more formally as Reactor Protection System Actuation Rates.

DEVELOPING A COMPOSITE MEASURE

The utilization ratios in Tables 1 through 4 exclude hours when the plant is not in service, and therefore provide a simple indication about the kind of loading that prevails at the nuclear plant. The ratios are useful because they indicate if an economic dispatch problem is present. An

economic dispatch problem is clearly not a plant performance problem, but this distinction would be hidden by capacity factors. By mixing availability and output level, capacity factors fail to pinpoint and isolate system problems from plant problems.

However, utilization ratios shed no light on plant availability; they are useless in this regard. Plant availability should be synonymous with service hours; this method is simple, clear, and avoids any confusion that might be caused by using capacity factors as a surrogate measure for availability. But there is an important point here; if capacity factors should not be used in an economic incentive program, then how can the capacity factor concept be legitimately used by generation planners when they're assessing the economic feasibility of a new plant? The link between capacity factors used for planning and actual capacity factors is shown in a February 1987 decision by the New Jersey Board of Public Utilities. The following is taken from the decision and order in Docket ER85121163.

Nuclear plants are constructed with the expectation that their high capital costs will be offset by their low operating costs, thereby providing an economical, year-round energy supply to ratepayers. At the time the decisions were made to construct each of the Company's five operating nuclear plants - Salem I, Salem II, Peach Bottom II, Peach Bottom III and Hope Creek I - they were projected to perform at approximately 80% capacity factors. These projections were subsequently revised downward at the time construction commenced and again at the time of initial commercial operation. Despite these projections, the plants (exclusive of Hope Creek) have not met performance expectations and have been plagued with prolonged outages. The Company reported that the lifetime cumulative capacity factor for Salem I is 51.3%, Salem II - 47.7%, Peach Bottom II - 53.8% and Peach Bottom III - 60%. Further, plant operations have been characterized by wide swings in performance as evidenced by Salem II's 8% capacity factor in 1983 and Salem I's 95% capacity factor in 1985. Thus, ratepayers have been saddled with the cost burden of the plants' high fixed costs in base rates and expensive replacement power costs incurred as a result of substandard nuclear performance ... It is this history of uneven and substandard nuclear performance, its attendant cost burden to ratepayers and the Company's increasing reliance on nuclear generation that gives rise to the need for nuclear performance standards.

Repudiating capacity factors in an economic incentive program also means repudiating them in the generation planning and economic feasibility stage. How is this contradiction resolved to create a workable incentive program, one that also addresses the concerns of the NRC and the criticism of capacity factors voiced by New York State Attorney General, Robert Abrams, mentioned earlier? I believe the answer lies in the use of reactor trip rates.

The concept is clearly explained in a well-documented paper authored by David Dietrich of Technical Analysis Corporation. He makes several points in his paper, and I'm going to highlight just two of them because they're useful in this forum. The author makes this statement:

An "RPS actuation with control rod motion" -- the standard terminology meaning reactor scram or shutdown -- results in lower economic efficiency because the plant is taken off line. Such an RPS actuation also results in a lower level of safety because the event presents a challenge to safety systems and operating staff that must bring the reactor to a safe condition.

With this comment Mr. Dietrich is establishing a connection between a reactor trip and economic efficiency; the greater the number of trips the lower the overall efficiency. In the next statement the author points out how well reactor trip rates coincide with the NRC's policy goals.

The NRC has had a formal program to reduce trip frequency since 1984 and every year has seen a gradual reduction in trip rates. The NRC has concluded that "a reduction in the frequency of challenges to plant safety systems should be a prime goal of each licensee." It also finds that large reductions in the risk of an anticipated transient without scram (ATWS) can be achieved by reducing the frequency of transients that call for RPS operation. A reduction in the RPS actuation rate, the goal of the proposed incentive program criterion, is not only consistent with formal NRC policy. It is formal NRC policy.

However, reactor trip rates are not complete substitutes for capacity factors; although the two items are inversely correlated with each other, the correlation is not perfect. David Dietrich points out that while low trip rates are accompanied by high capacity factors and vice-versa, there are also instances where high capacity factors and high trip rates accompany each other. Based on this observation, my conclusion is that reactor trip rates alone should not be the only criteria to evaluate the economic performance of a nuclear plant.

CONCLUSION

In my opinion an economic incentive program should explicitly include reactor trip rates because they are useful and prudent, as well as being responsive to the concerns of the NRC. But I continue to believe that utilization levels and the number of plant service hours should also be a part of an incentive program. The exact weight given to each component would be a matter for the policy makers. The conceptual framework provided here represents a middle road, one that does not rely on a single measure to evaluate performance. An incentive program focusing on reactor trip rates, utilization levels, and service hours provides a workable alternative to reliance on target capacity factors and is a solution to the problem I mentioned earlier: where a company or industry repudiates capacity factors as a method of economic evaluation even

though generation planners used capacity factors to justify economic feasibility for the plants in question. Use of the composite measure put forth in this paper would certainly recognize the interests of the ratepayers, the companies, and the concerns for safety expressed by the NRC.

TABLE 1

Comparison of Cooper and Duane Arnold Utilization to
Utilization of Nuclear Plants in States Adjacent to Iowa for 1983-1986.

Plant No.	Year	Plant Name	State	Total Plant Name Plate (A)	Maximum Dependable Capacity (Net MW) (B)	Total MWH Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E)=(C)/(D)	Percentage of Capacity Utilized (F)=(E)/(B)
1.	1983	Palisades	MI	812.00	635.00	3,769,958	5,283.60	713.52	112.37%
2.	1986	Kewaunee	WI	560.00	503.00	3,854,674	7,515.20	512.92	101.97%
3.	1985	Kewaunee	WI	560.00	503.00	3,699,176	7,214.70	512.73	101.93%
4.	1984	Kewaunee	WI	560.00	503.00	3,810,000	7,528.40	506.08	100.61%
5.	1984	Point Beach #1	WI	524.00	485.00	3,109,208	6,380.00	487.34	100.48%
6.	1983	Kewaunee	WI	560.00	503.00	3,706,928	7,335.80	505.32	100.46%
7.	1985	Point Beach #1	WI	524.00	485.00	3,354,176	6,919.30	484.76	99.95%
8.	1986	Point Beach #1	WI	524.00	485.00	3,770,070	7,787.60	484.11	99.82%
9.	1985	Point Beach #2	WI	524.00	485.00	3,603,081	7,491.30	480.97	99.17%
10.	1985	Palisades	MI	812.00	730.00	5,301,797	7,344.40	721.88	98.89%
11.	1986	Point Beach #2	WI	524.00	485.00	3,417,550	7,188.30	475.43	98.03%
12.	1984	Point Beach #2	WI	524.00	485.00	3,512,373	7,406.60	474.22	97.78%
13.	1983	Point Beach #2	WI	524.00	495.00	3,016,298	6,247.60	482.79	97.53%
14.	1984	Cook #2	MI	1,133.00	1,060.00	5,364,363	5,198.70	1,031.87	97.35%
15.	1983	Cook #2	MI	1,133.00	1,060.00	7,013,579	6,838.40	1,025.62	96.76%
16.	1986	Wolf Creek #1	KS	1,250.00	1,128.00	6,966,063	6,418.50	1,085.31	96.22%
17.	1986	Zion #2	IL	1,098.00	1,040.00	7,334,233	7,372.00	994.88	95.66%
18.	1984	Palisades	MI	812.00	635.00	811,549	1,336.30	607.31	95.64%
19.	1984	Callaway #1	MO	1,188.00	1,120.00	323,023	302.50	1,067.84	95.34%
20.	1986	Big Rock Pt. #1	MI	60.00	64.00	506,148	8,361.70	60.53	94.58%
21.	1985	Wolf Creek #1	KS	1,250.00	1,128.00	2,942,100	2,771.60	1,061.52	94.11%
22.	1984	La Crosse	WI	65.00	48.00	318,604	7,067.30	45.08	93.92%
23.	1984	Zion #2	IL	1,098.00	1,040.00	5,986,311	6,180.00	968.66	93.14%
24.	1983	Zion #2	IL	1,098.00	1,040.00	6,181,965	6,406.60	964.94	92.78%
25.	1984	Cook #1	MI	1,152.00	1,020.00	7,550,755	8,017.80	941.75	92.33%
26.	1983	Cook #1	MI	1,152.00	1,020.00	5,286,839	5,630.80	938.91	92.05%
27.	1985	Cook #2	MI	1,133.00	1,060.00	5,683,634	5,855.00	970.73	91.58%
28.	1985	Callaway #1	MO	1,236.00	1,120.00	8,045,764	7,884.90	1,020.40	91.11%
29.	1984	Zion #1	IL	1,098.00	1,040.00	5,692,090	6,030.40	943.90	90.76%
30.	1985	Zion #1	IL	1,098.00	1,040.00	4,813,949	5,107.40	942.54	90.63%
31.	1984	Dresden #2	IL	828.00	772.00	4,460,360	6,403.70	696.53	90.22%
32.	1986	Callaway #1	MO	1,236.00	1,120.00	7,199,113	7,124.50	1,010.47	90.22%
33.	1985	Lasalle #2	IL	1,078.00	1,036.00	3,430,898	3,699.90	927.29	89.51%
34.	1986	Dresden #2	IL	828.00	772.00	4,648,539	6,763.50	687.30	89.03%
35.	1985	La Crosse	WI	65.00	48.00	322,909	7,597.60	42.50	88.54%
36.	1983	Big Rock Pt. #1	MI	60.00	64.00	348,591	6,222.80	56.02	87.53%
37.	1984	Lasalle #2	IL	1,078.00	1,036.00	1,392,117	1,537.40	905.50	87.40%
38.	1986	Cook #1	MI	1,152.00	1,020.00	6,650,074	7,466.00	890.71	87.32%
39.	1986	Palisades	MI	812.00	730.00	841,244	1,324.40	635.19	87.01%
40.	1983	Dresden #2	IL	828.00	772.00	3,397,514	5,080.30	668.76	86.63%
41.	1986	Zion #1	IL	1,098.00	1,040.00	4,904,664	5,452.00	899.61	86.50%
42.	1984	Big Rock Pt. #1	MI	60.00	70.00	417,523	6,906.20	60.46	86.37%
43.	1985	Dresden #3	IL	828.00	773.00	4,390,064	6,621.30	663.02	85.77%
44.	1985	Dresden #2	IL	828.00	772.00	3,087,488	4,680.40	659.66	85.45%

TABLE 1 (Cont.)

Comparison of Cooper and Duane Arnold Utilization to
Utilization of Nuclear Plants in States Adjacent to Iowa for 1983-1986.

Plant No.	Year	Plant Name	State	Total Plant Name Plate (A)	Maximum Dependable Capacity (Net MWe) (B)	Total MWH Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E)=(C)/(D)	Percentage of Capacity Utilized (F)=(E)/(B)
45.	1986	Lasalle #2	IL	1,078.00	1,036.00	5,717,014	6,534.50	874.90	84.45%
46.	1986	Bryon #1	IL	1,175.00	1,129.00	7,396,003	7,761.30	952.93	84.41%
47.	1983	Dresden #3	IL	828.00	773.00	4,147,939	6,403.10	647.80	83.80%
48.	1986	Lasalle #1	IL	1,078.00	1,036.00	2,018,117	2,331.90	865.44	83.54%
49.	1985	Zion #2	IL	1,098.00	1,040.00	5,114,186	5,901.30	866.62	83.33%
50.	1985	Cook #1	MI	1,152.00	1,020.00	2,116,062	2,491.10	849.45	83.28%
51.	1985	Lasalle #1	IL	1,078.00	1,036.00	4,809,395	5,584.90	861.14	83.12%
52.	1984	Lasalle #1	IL	1,078.00	1,036.00	5,206,209	6,055.00	859.82	82.99%
53.	1984	D.A.E.C.	*	597.15	515.00	2,717,563	6,405.00	424.29	82.39%
54.	1984	Dresden #3	IL	828.00	773.00	2,105,646	3,311.10	635.94	82.27%
55.	1983	D.A.E.C.	*	597.15	515.00	2,324,318	5,508.00	421.99	81.94%
56.	1986	La Crosse	WI	65.00	48.00	157,179	3,998.10	39.31	81.90%
57.	1985	Big Rock Pt. #1	MI	60.00	69.00	362,428	6,441.70	56.26	81.54%
58.	1986	D.A.E.C.	*	597.15	515.00	3,008,073	7,181.00	418.89	81.34%
59.	1986	Cooper	*	836.00	764.00	4,052,138	6,546.20	619.01	81.02%
60.	1983	La Crosse	WI	65.00	48.00	201,267	5,232.60	38.46	80.13%
61.	1985	D.A.E.C.	*	597.15	515.00	1,940,485	4,712.00	411.82	79.96%
62.	1983	Cooper	*	836.00	764.00	3,343,199	5,546.00	602.81	78.90%
63.	1984	Cooper	*	836.00	764.00	3,469,953	5,902.00	587.93	76.95%
64.	1986	Dresden #3	IL	828.00	773.00	1,456,025	2,457.10	592.58	76.66%
65.	1986	Cook #2	MI	1,133.00	1,060.00	4,335,567	5,389.70	804.42	75.89%
66.	1985	Bryon #1	IL	1,175.00	1,129.00	1,012,898	1,192.40	849.46	75.24%
67.	1985	Cooper	*	836.00	764.00	1,067,748	1,885.00	566.44	74.14%
68.	1983	Point Beach #1	WI	524.00	495.00	2,384,844	6,499.20	366.94	74.13%
69.	1983	Zion #1	IL	1,098.00	1,040.00	4,016,176	5,742.20	699.41	67.25%
70.	1983	Lasalle #1	IL	1,078.00	1,036.00	1,639,809	3,085.90	531.39	51.29%
71.	1986	Ferri #2	MI	1,215.00	1,093.00	-23,926	437.70	-54.66	-5.00%
72.	1983	Bryon #1	IL	--	--	--	--	--	--
73.	1984	Bryon #1	IL	--	--	--	--	--	--
74.	1983	Callaway #1	MO	--	--	--	--	--	--
75.	1983	Ferri #2	MI	--	--	--	--	--	--
76.	1984	Ferri #2	MI	--	--	--	--	--	--
77.	1985	Ferri #2	MI	--	--	--	--	--	--
78.	1983	Lasalle #2	IL	--	--	--	--	--	--
79.	1983	Wolf Creek #1	KS	--	--	--	--	--	--
80.	1984	Wolf Creek #1	KS	--	--	--	--	--	--

Note: Information taken from The Licensed Operating Reactors Status Summary Report from the USNRC.

TABLE 2

1983-1986 Est. Average MW Generation and Utilization of Nuclear Plants Participating in Mapp

No.	Year	Plant Name	Total Plant Name Plate	Maximum Dependable Capacity (Net MW)	Total MWH Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E) = (C)/(D)	Percentage of Capacity Utilized (F) = (E)/(B)
			(A)	(B)	(C)	(D)	(E) = (C)/(D)	(F) = (E)/(B)
1.	1983	D.A.E.C.	597.15	515.00	2,324,318	5,508.00	421.99	81.94%
1.	1984	D.A.E.C.	597.15	515.00	2,717,563	6,405.00	424.29	82.39%
1.	1985	D.A.E.C.	597.15	515.00	1,940,485	4,712.00	411.82	79.96%
1.	1986	D.A.E.C.	597.15	515.00	3,008,073	7,181.00	418.89	81.34%
2.	1983	Quad Cities #1	828.30	769.00	5,776,352	8,261.00	699.23	90.93%
2.	1984	Quad Cities #1	828.30	769.00	3,349,735	4,687.00	714.69	92.94%
2.	1985	Quad Cities #1	828.30	769.00	6,072,319	8,244.00	736.57	95.78%
2.	1986	Quad Cities #1	828.30	769.00	4,420,669	5,880.00	751.81	97.77%
3.	1983	Quad Cities #2	828.30	769.00	3,151,307	5,622.00	560.53	72.89%
3.	1984	Quad Cities #2	828.30	769.00	4,983,925	6,840.00	728.64	94.75%
3.	1985	Quad Cities #2	828.30	769.00	4,556,866	6,248.00	729.33	94.84%
3.	1986	Quad Cities #2	828.30	769.00	4,722,778	6,401.50	737.76	95.94%
4.	1983	Cooper	836.00	764.00	3,343,199	5,546.00	602.81	78.90%
4.	1984	Cooper	836.00	764.00	3,469,953	5,902.00	587.93	76.95%
4.	1985	Cooper	836.00	764.00	1,067,748	1,885.00	566.44	74.14%
4.	1986	Cooper	836.00	764.00	4,052,138	6,546.20	619.01	81.02%
5.	1983	Monticello	569.00	525.00	4,147,725	8,439.00	491.49	93.62%
5.	1984	Monticello	569.00	525.00	263,119	808.80	325.32	61.97%
5.	1985	Monticello	569.00	536.00	4,286,986	8,030.60	533.83	99.60%
5.	1986	Monticello	569.00	536.00	3,375,350	6,927.10	487.27	90.91%
6.	1983	Prairie Island #1	593.00	503.00	3,888,853	7,624.20	510.07	101.40%
6.	1984	Prairie Island #1	593.00	503.00	4,159,389	8,286.80	501.93	99.79%
6.	1985	Prairie Island #1	593.00	503.00	3,677,016	7,334.60	501.32	99.67%
6.	1986	Prairie Island #1	593.00	503.00	3,819,563	7,871.30	485.25	96.47%
7.	1983	Prairie Island #2	593.00	500.00	3,716,220	7,578.10	490.39	98.08%
7.	1984	Prairie Island #2	593.00	500.00	3,905,956	7,831.10	498.77	99.75%
7.	1985	Prairie Island #2	593.00	500.00	3,608,478	7,378.20	489.07	97.81%
7.	1986	Prairie Island #2	593.00	500.00	3,860,117	7,932.30	486.63	97.33%
8.	1983	Fort Calhoun #1	502.00	438.00	2,749,832	6,405.00	429.33	98.02%
8.	1984	Fort Calhoun #1	502.00	478.00	2,331,771	5,264.90	442.89	92.65%
8.	1985	Fort Calhoun #1	502.00	478.00	3,066,254	6,455.50	474.98	99.37%
8.	1986	Fort Calhoun #1	502.00	478.00	3,605,563	8,264.20	436.29	91.27%
9.	1983	Total MAPP	5,346.75	4,783.00	29,097,806	54,983.30		
9.	1984	Total MAPP	5,346.75	4,823.00	25,181,411	46,025.60		
9.	1985	Total MAPP	5,346.75	4,834.00	28,276,152	50,287.90		
9.	1986	Total MAPP	5,346.75	4,834.00	30,864,251	57,003.60		

Note: Information taken from The Licensed Operating Reactors Status Summary Report from the USNRC.

Northwest Power Cooperative has Genoa #2 listed as a nuclear plant in the 1986 MAPP Load and Capacity Report, but Genoa was not listed in the The Licensed Operating Reactors Status Summary Report for 1983-1986.

TABLE 3

1986 ESTIMATED AVERAGE MW GENERATION AND UTILIZATION OF NUCLEAR PLANTS - SORTED BY UTILIZATION PERCENTAGE

No.	Plant Name	State Location	Total Plant Name Plate (A)	Maximum Dependable Capacity (Net MWe) (B)	Total MWh Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E)-(C)/(D)	Percent of Capacity Utilized (F)-(E)/(B)
1.	Calvert Cliffs #1	Maryland	918.00	825.00	5,830,738	6,856.40	850.41	103.08%
2.	Robinson #2	South Carolina	769.00	665.00	4,798,026	7,030.10	682.50	102.63%
3.	Kewaunee	Wisconsin	560.00	503.00	3,854,674	7,515.20	512.92	101.97%
4.	Calvert Cliffs #2	Maryland	911.00	825.00	7,006,566	8,408.70	833.26	101.00%
5.	St. Lucie #2	Florida	850.00	839.00	6,146,561	7,255.50	847.16	100.97%
6.	St. Lucie #1	Florida	890.00	839.00	7,052,031	8,353.60	844.19	100.62%
7.	Giulia	New York	517.00	470.00	3,610,266	7,659.90	471.32	100.28%
8.	Yankee-Rowe #1	Massachusetts	185.00	167.00	1,392,716	8,322.30	167.35	100.21%
9.	Maine Yankee	Maine	864.00	810.00	6,241,756	7,694.80	811.17	100.14%
10.	Three Mile Island #1	Pennsylvania	871.00	776.00	4,818,263	6,212.30	775.60	99.95%
11.	Point Beach #1	Wisconsin	524.00	485.00	3,770,070	7,787.60	484.11	99.82%
12.	Turkey Point #3	Florida	760.00	666.00	4,513,059	6,820.50	661.69	99.35%
13.	Palo Verde #2	Arizona	1,403.00	1,221.00	2,654,603	2,195.00	1,209.39	99.05%
14.	Arkansas #2	Arkansas	943.00	858.00	5,305,213	6,276.00	845.22	98.52%
15.	Millstone #1	Connecticut	662.00	654.00	5,247,940	8,176.20	641.86	98.14%
16.	Waterford #3	Louisiana	1,153.00	1,075.00	7,301,595	6,924.80	1,054.41	98.08%
17.	Point Beach #2	Wisconsin	524.00	485.00	3,417,550	7,188.30	475.43	98.03%
18.	Limerick #1	Pennsylvania	1,138.00	1,055.00	6,848,850	6,636.00	1,032.08	97.83%
19.	Prairie Island #2	Minnesota	593.00	500.00	3,860,117	7,932.30	486.63	97.33%
20.	Farley #2	Alabama	860.00	824.00	5,959,872	7,458.30	799.09	96.98%
21.	Summer #1	South Carolina	900.00	885.00	7,160,639	8,350.90	857.47	96.89%
22.	Prairie Island #1	Minnesota	593.00	503.00	3,819,563	7,871.30	485.25	96.47%
23.	McGuire #2	North Carolina	1,305.00	1,150.00	6,209,772	5,604.60	1,107.98	96.35%
24.	Wolf Creek #1	Kansas	1,250.00	1,128.00	6,966,063	6,418.50	1,085.31	96.22%
25.	Farley #1	Alabama	860.00	825.00	5,726,616	7,216.80	793.51	96.18%
26.	Palo Verde #1	Arizona	1,403.00	1,221.00	5,851,048	4,968.80	1,172.84	96.06%
27.	Quad Cities #2	Illinois	828.00	769.00	4,722,778	6,401.50	737.76	95.94%
28.	Millstone #3	Connecticut	1,253.00	1,142.00	5,861,760	5,355.90	1,094.45	95.84%
29.	Zion #2	Illinois	1,098.00	1,040.00	7,334,233	7,372.00	994.88	95.66%
30.	Surry #1	Virginia	848.00	781.00	4,488,628	6,015.80	746.14	95.54%
31.	Fitzpatrick	New York	883.00	794.00	6,015,605	7,932.20	758.38	95.51%
32.	Vermont Yankee #1	Vermont	563.00	504.00	2,058,426	4,281.20	480.81	95.40%
33.	Quad Cities #1	Illinois	828.00	769.00	4,420,669	6,037.10	732.25	95.22%
34.	Beaver Valley #1	Pennsylvania	923.00	810.00	4,778,500	6,196.50	771.16	95.21%
35.	San Onofre #2	California	1,127.00	1,070.00	6,361,900	6,267.70	1,015.03	94.86%
36.	Surry #2	Virginia	848.00	781.00	4,498,941	6,075.00	740.57	94.82%
37.	Millstone #2	Connecticut	910.00	857.00	5,160,945	6,354.20	812.21	94.77%
38.	Oconee #1	South Carolina	934.00	860.00	4,784,795	5,872.60	814.77	94.74%
39.	Oconee #2	South Carolina	934.00	860.00	5,801,065	7,124.50	814.24	94.68%
40.	Trojan	Oregon	1,216.00	1,075.00	7,090,231	6,985.30	1,015.02	94.42%
41.	Susquehanna #1	Pennsylvania	1,152.00	1,032.00	5,830,291	5,995.20	972.49	94.23%
42.	Hatch #1	Georgia	850.00	750.00	3,645,387	5,164.40	705.87	94.12%
43.	North Anna #1	Virginia	947.00	915.00	6,310,739	7,330.90	860.84	94.08%
44.	Brunswick #1	North Carolina	867.00	790.00	5,973,813	8,069.90	740.26	93.70%
45.	Peach Bottom #2	Pennsylvania	1,152.00	1,051.00	6,896,565	7,014.00	983.26	93.55%
46.	Pilgrim #1	Massachusetts	678.00	670.00	1,027,531	1,646.00	624.26	93.17%
47.	Turkey Point #4	Florida	760.00	666.00	1,721,504	2,792.10	616.56	92.58%
48.	Salem #1	New Jersey	1,170.00	1,106.00	7,079,276	6,923.80	1,022.46	92.45%
49.	Susquehanna #2	Pennsylvania	1,152.00	1,032.00	5,448,219	5,734.20	950.13	92.07%
50.	Brunswick #2	North Carolina	867.00	790.00	2,911,036	4,029.60	722.41	91.44%
51.	McGuire #1	North Carolina	1,305.00	1,150.00	5,164,769	4,916.00	1,050.60	91.36%
52.	North Anna #2	Virginia	947.00	915.00	6,022,050	7,210.50	835.18	91.28%
53.	Fort Calhoun #1	Nebraska	502.00	478.00	3,605,563	8,264.20	436.29	91.27%
54.	Indian Point #2	New York	1,013.00	849.00	3,810,597	4,926.80	773.44	91.10%
55.	Monticello	Minnesota	569.00	536.00	3,375,350	6,927.10	487.27	90.91%
56.	Oyster Creek #1	New Jersey	674.00	620.00	1,301,476	2,310.90	563.19	90.84%
57.	Oconee #3	South Carolina	934.00	860.00	6,064,306	7,782.80	779.19	90.60%
58.	Callaway #1	Missouri	1,236.00	1,120.00	7,199,113	7,124.50	1,010.47	90.22%

Notes: Information taken from The Licensed Operating Reactors Status Summary Report from USNRC.

TABLE 3 (Cont.)

1986 ESTIMATED AVERAGE MW GENERATION AND UTILIZATION OF NUCLEAR PLANTS - SORTED BY UTILIZATION PERCENTAGE

No.	Plant Name	State Location	Total Plant Name Plate (A)	Maximum Dependable Capacity (Net MWe) (B)	Total MWh Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E)-(C)/(D)	Percent of Capacity Utilized (F)-(E)/(B)
59.	Diablo Canyon #2	California	1,164.00	1,079.00	6,548,174	6,730.50	972.91	90.17%
60.	Nine Mile Point #1	New York	642.00	610.00	3,146,883	5,724.10	549.76	90.12%
61.	Dresden #2	Illinois	828.00	772.00	4,648,539	6,763.50	687.30	89.03%
62.	Salem #2	New Jersey	1,162.00	1,106.00	5,312,561	5,416.90	980.74	88.67%
63.	San Onofre #3	California	1,127.00	1,080.00	6,760,591	7,070.80	956.13	88.53%
64.	Crystal River #3	Florida	890.00	821.00	2,653,212	3,661.30	724.66	88.27%
65.	Catawba #1	South Carolina	1,305.00	1,145.00	5,182,492	5,155.00	1,005.33	87.80%
66.	Big Rock Point #1	Michigan	60.00	69.00	506,148	8,361.70	60.53	87.73%
67.	Cook #1	Michigan	1,152.00	1,020.00	6,650,074	7,466.00	890.71	87.32%
68.	Palladas	Michigan	812.00	730.00	841,244	1,324.40	635.19	87.01%
69.	Zion #1	Illinois	1,098.00	1,040.00	4,904,664	5,452.00	899.61	86.50%
70.	Indian Point #3	New York	1,013.00	1,000.00	5,525,581	6,432.40	859.02	85.90%
71.	Diablo Canyon #1	California	1,137.00	1,073.00	5,293,267	5,758.20	919.26	85.67%
72.	Catawba #2	South Carolina	1,305.00	1,145.00	1,297,202	1,325.80	978.43	85.45%
73.	Peach Bottom #3	Pennsylvania	1,152.00	1,035.00	4,849,352	5,545.30	874.50	84.49%
74.	LaSalle #2	Illinois	1,078.00	1,036.00	5,717,014	6,534.50	874.90	84.45%
75.	Bryon #1	Illinois	1,175.00	1,129.00	7,396,003	7,761.30	952.93	84.41%
76.	LaSalle #1	Illinois	1,078.00	1,036.00	2,018,117	2,331.90	865.44	83.54%
77.	La Crosse	Wisconsin	65.00	48.00	157,179	3,998.10	39.31	81.90%
78.	Duane Arnold	Iowa	597.00	515.00	3,008,073	7,181.10	418.89	81.34%
79.	Cooper Station	Nebraska	836.00	764.00	4,052,138	6,546.20	619.01	81.02%
80.	Haddam Neck	Connecticut	600.00	569.00	2,132,316	4,698.90	453.79	79.75%
81.	Arkansas #1	Arkansas	903.00	836.00	3,573,159	5,447.70	655.90	78.46%
82.	Washington Nuc. #2	Washington	1,201.00	1,095.00	5,183,198	6,134.40	844.94	77.16%
83.	Hatch #2	Georgia	850.00	761.00	3,618,712	6,172.70	586.24	77.04%
84.	Dresden #3	Illinois	828.00	773.00	1,456,025	2,457.10	592.58	76.66%
85.	Cook #2	Michigan	1,133.00	1,060.00	4,335,567	5,389.70	804.42	75.89%
86.	River Bend #1	Louisiana	990.00	936.00	2,995,439	4,225.70	708.86	75.73%
87.	San Onofre #1	California	450.00	436.00	874,187	2,731.50	320.04	73.40%
88.	Grand Gulf #1	Mississippi	1,373.00	1,142.00	4,098,054	5,330.50	768.79	67.32%
89.	Hope Creek #1	New Jersey	1,118.00	1,067.00	1,030,793	1,679.00	613.93	57.54%
90.	Fort St. Vrain	Colorado	343.00	330.00	52,007	1,087.10	47.84	14.50%
91.	Davis-Besse #1	Ohio	962.00	860.00	3,486	116.60	29.90	3.48%
92.	Browns Ferry #1	Alabama	1,152.00	1,065.00	-36,374	0.00	0.00	0.00%
93.	Browns Ferry #2	Alabama	1,152.00	1,065.00	-47,061	0.00	0.00	0.00%
94.	Browns Ferry #3	Alabama	1,152.00	1,065.00	-41,625	0.00	0.00	0.00%
95.	Fermi #2	Michigan	1,215.00	1,093.00	-23,916	437.70	0.00	0.00%
96.	Rancho Seco #1	California	963.00	873.00	-32,157	0.00	0.00	0.00%
97.	Sequoyah #1	Tennessee	1,220.00	1,148.00	-40,178	0.00	0.00	0.00%
98.	Sequoyah #2	Tennessee	1,220.00	1,148.00	-64,434	0.00	0.00	0.00%
Total			90,675.00	83,271.00	407,666,034	538,038.70		

Note: Information taken from The Licensed Operating Reactors Status Summary Report from USNRC.

TABLE 4

1987 ESTIMATED AVERAGE MW GENERATION AND UTILIZATION OF NUCLEAR PLANTS - SORTED BY UTILIZATION PERCENTAGE

No.	Plant Name	State Location	Total Plant Name Plate (A)	Maximum Dependable Capacity (Net MWs) (B)	Total MWh Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E)=(C)/(D)	Percent of Capacity Utilized (F)=(E)/(B)
1.	Calvert Cliffs #1	Maryland	918.00	825.00	5,268,477	6,237.00	844.71	102.39%
2.	Robinson #2	South Carolina	769.00	665.00	4,230,329	6,226.30	679.43	102.17%
3.	Three Mile Island #1	Pennsylvania	871.00	776.00	5,034,307	6,353.60	792.36	102.11%
4.	Kewaunee	Wisconsin	560.00	503.00	4,008,624	7,811.00	513.20	102.03%
5.	Prairie Island #2	Minnesota	593.00	500.00	4,429,989	8,760.00	505.71	101.14%
6.	Glenn	New York	517.00	470.00	3,797,701	7,994.00	475.07	101.08%
7.	Arkansas #2	Arkansas	943.00	858.00	6,605,168	7,681.70	859.86	100.22%
8.	Point Beach #1	Wisconsin	524.00	485.00	3,567,092	7,350.30	485.30	100.06%
9.	St. Lucie #1	Florida	890.00	839.00	5,715,344	6,814.10	838.75	99.97%
10.	Calvert Cliffs #2	Maryland	911.00	825.00	4,831,976	5,861.60	824.34	99.92%
11.	San Onofre #3	California	1,127.00	1,080.00	7,519,728	6,987.80	1,076.12	99.64%
12.	Point Beach #2	Wisconsin	524.00	485.00	3,606,145	7,481.10	482.03	99.39%
13.	Susquehanna #2	Pennsylvania	1,152.00	1,032.00	8,598,435	8,431.60	1,019.79	98.82%
14.	Prairie Island #1	Minnesota	593.00	503.00	3,590,268	7,234.20	496.29	98.67%
15.	St. Lucie #2	Florida	850.00	839.00	5,950,184	7,209.70	825.30	98.37%
16.	Millstone #2	Connecticut	910.00	857.00	6,892,531	8,180.10	842.60	98.32%
17.	Millstone #1	Connecticut	662.00	654.00	4,377,008	6,827.10	641.12	98.03%
18.	Fort Calhoun #1	Nebraska	502.00	478.00	3,060,620	6,531.70	468.58	98.03%
19.	Palo Verde #2	Arizona	1,403.00	1,221.00	8,190,044	6,858.20	1,194.20	97.80%
20.	Waterford #3	Louisiana	1,153.00	1,075.00	7,425,710	7,087.80	1,047.67	97.46%
21.	Oconee #3	South Carolina	934.00	860.00	5,084,967	6,069.90	837.73	97.41%
22.	Surry #1	Virginia	848.00	781.00	4,633,405	6,116.90	757.48	96.99%
23.	Vermont Yankee #1	Vermont	563.00	504.00	3,536,411	7,290.60	485.06	96.24%
24.	Hatch #1	Georgia	850.00	750.00	5,076,654	7,046.00	720.50	96.07%
25.	San Onofre #2	California	1,127.00	1,070.00	6,230,341	6,068.30	1,026.70	95.95%
26.	Wolf Creek #1	Kansas	1,250.00	1,128.00	6,504,145	6,013.00	1,081.68	95.89%
27.	Palo Verde #1	Arizona	1,403.00	1,221.00	5,268,268	4,504.50	1,169.56	95.79%
28.	Yankee Rowe #1	Massachusetts	185.00	167.00	1,135,611	7,100.70	159.93	95.77%
29.	Indian Point #2	New York	1,013.00	849.00	5,146,333	6,333.00	812.62	95.72%
30.	Grand Gulf #1	Mississippi	1,373.00	1,142.00	7,726,991	7,100.00	1,088.31	95.30%
31.	Farley #1	Alabama	860.00	825.00	6,444,862	8,203.10	785.66	95.23%
32.	McGuire #1	North Carolina	1,305.00	1,150.00	7,348,715	6,715.80	1,094.24	95.15%
33.	Surry #2	Virginia	848.00	781.00	4,790,953	6,457.90	741.87	94.99%
34.	Summer #1	South Carolina	900.00	885.00	5,151,897	6,136.90	839.50	94.86%
35.	Beaver Valley #1	Pennsylvania	923.00	810.00	5,620,890	7,322.90	767.58	94.76%
36.	Millstone #3	Connecticut	1,253.00	1,142.00	6,742,317	6,234.60	1,081.44	94.70%
37.	McGuire #2	North Carolina	1,305.00	1,150.00	7,572,577	6,957.10	1,088.47	94.65%
38.	Haddam Neck	Connecticut	600.00	569.00	2,527,207	4,700.50	537.65	94.49%
39.	Quad Cities #1	Illinois	828.00	769.00	4,456,087	6,141.70	725.55	94.35%
40.	Quad Cities #2	Illinois	828.00	769.00	4,952,988	6,836.20	724.52	94.22%
41.	Catawba #1	South Carolina	1,305.00	1,145.00	6,377,839	5,928.60	1,075.77	93.95%
42.	Susquehanna #1	Pennsylvania	1,152.00	1,032.00	6,127,879	6,333.00	967.61	93.76%
43.	Monticello	Minnesota	569.00	536.00	3,533,357	7,052.90	500.98	93.47%
44.	Lisalle #2	Illinois	1,078.00	1,036.00	4,542,494	4,700.20	966.45	93.29%
45.	Nine Mile Point #1	New York	642.00	610.00	4,515,169	8,130.50	567.64	93.06%
46.	Farley #2	Alabama	860.00	824.00	4,902,626	6,397.80	766.30	93.00%
47.	Diablo Canyon #1	California	1,137.00	1,073.00	8,284,201	8,342.80	992.98	92.54%
48.	Oyster Creek #1	New Jersey	674.00	620.00	3,110,919	5,422.90	573.66	92.53%
49.	Vogtle #1	Georgia	1,157.00	1,084.00	3,921,520	3,920.40	1,000.29	92.28%
50.	Maine Yankee	Maine	864.00	810.00	4,042,901	5,415.40	746.56	92.17%
51.	Diablo Canyon #2	California	1,164.00	1,079.00	5,715,218	5,754.50	993.17	92.05%
52.	Callaway #1	Missouri	1,236.00	1,120.00	6,321,776	6,143.90	1,028.95	91.87%
53.	Turkey Point #4	Florida	760.00	666.00	2,536,070	4,318.90	610.36	91.65%
54.	Hope Creek #1	New Jersey	1,118.00	1,067.00	7,277,090	7,457.10	975.86	91.46%
55.	Zion #2	Illinois	1,098.00	1,040.00	5,114,145	5,384.50	949.79	91.33%
56.	North Anna #2	Virginia	947.00	915.00	5,553,448	6,785.50	833.17	91.06%
57.	Harris #1	North Carolina	950.00	860.00	3,378,829	4,323.60	781.49	90.87%
58.	River Bend #1	Louisiana	990.00	936.00	4,964,440	5,837.70	850.41	90.86%
59.	Brunswick #1	North Carolina	867.00	790.00	4,046,531	5,652.30	715.93	90.52%

Note: Information taken from The Licensed Operating Reactors Status Summary Report from USNRC.

TABLE 4 (Cont.)

1987 ESTIMATED AVERAGE MW GENERATION AND UTILIZATION OF NUCLEAR PLANTS - SORTED BY UTILIZATION PERCENTAGE

No.	Plant Name	State Location	Total Plant Name Plate (A)	Maximum Dependable Capacity (Net MWe) (B)	Total MWh Generation (C)	Service Hours (D)	Estimated Avg. MW Generated (E)-(C)/(D)	Percent of Capacity Utilized (F)-(E)/(B)
60.	Palladas	Michigan	812.00	730.00	2,634,430	3,983.10	661.40	90.60%
61.	Hatch #2	Georgia	850.00	761.00	5,755,607	8,390.40	685.98	90.14%
62.	Zion #1	Illinois	1,098.00	1,040.00	6,058,385	6,482.40	934.59	89.86%
63.	Indian Point #3	New York	1,013.00	1,000.00	4,850,586	5,399.90	898.27	89.83%
64.	Fitzpatrick	New York	883.00	794.00	4,198,340	5,894.80	712.21	89.70%
65.	Duane Arnold	Iowa	597.00	515.00	2,540,837	5,514.80	460.73	89.46%
66.	Catawba #2	South Carolina	1,305.00	1,145.00	7,169,495	7,019.00	1,021.44	89.21%
67.	Perry #1	Ohio	1,250.00	1,205.00	828,484	773.40	1,071.22	88.90%
68.	Big Rock Point #1	Michigan	60.00	69.00	374,931	6,132.20	61.14	88.61%
69.	Salem #1	New Jersey	1,170.00	1,106.00	6,211,441	6,363.20	976.15	88.26%
70.	Salem #2	New Jersey	1,162.00	1,106.00	6,172,052	6,343.40	972.99	87.97%
71.	Brunswick #2	North Carolina	867.00	790.00	5,694,104	8,205.80	693.91	87.84%
72.	Beaver Valley #2	Pennsylvania	923.00	885.00	738,104	949.80	777.12	87.81%
73.	Oconee #1	South Carolina	934.00	860.00	5,028,061	6,694.70	751.05	87.33%
74.	Trojan	Oregon	1,216.00	1,075.00	4,347,772	4,631.60	938.72	87.32%
75.	Cooper Station	Nebraska	836.00	764.00	5,522,126	8,292.40	665.93	87.16%
76.	Dresden #3	Illinois	828.00	773.00	4,395,502	6,595.70	666.42	86.21%
77.	North Anna #1	Virginia	947.00	915.00	3,568,907	4,525.50	788.62	86.19%
78.	Peach Bottom #2	Pennsylvania	1,152.00	1,051.00	1,552,256	1,724.00	900.38	85.67%
79.	Limerick #1	Pennsylvania	1,138.00	1,055.00	5,318,987	5,926.70	897.46	85.07%
80.	Peach Bottom #3	Pennsylvania	1,152.00	1,035.00	1,460,062	1,659.60	879.77	85.00%
81.	San Onofre #1	California	450.00	436.00	2,708,001	7,323.40	369.77	84.81%
82.	Oconee #2	South Carolina	934.00	860.00	6,228,692	8,567.10	727.05	84.54%
83.	Crystal River #3	Florida	890.00	821.00	3,620,784	5,263.80	687.87	83.78%
84.	Cook #1	Michigan	1,152.00	1,020.00	5,033,767	5,918.80	850.47	83.38%
85.	Washington Nuc. #2	Washington	1,201.00	1,095.00	5,397,981	5,981.00	902.52	82.42%
86.	Turkey Point #3	Florida	760.00	666.00	856,146	1,567.70	546.12	82.00%
87.	Clinton #1	Illinois	NA	933.00	684,103	898.30	761.55	81.62%
88.	Dresden #2	Illinois	828.00	772.00	3,342,347	5,345.30	625.29	81.00%
89.	Davis-Besse #1	Ohio	962.00	860.00	5,063,984	7,312.40	692.52	80.53%
90.	Bryon #1	Illinois	1,175.00	1,129.00	5,330,576	6,007.30	887.35	78.60%
91.	Bryon #2	Illinois	1,175.00	1,120.00	1,970,901	2,280.40	864.28	77.17%
92.	Cook #2	Michigan	1,133.00	1,060.00	5,026,564	6,251.60	804.04	75.85%
93.	Arkansas #1	Arkansas	903.00	836.00	4,763,342	7,723.10	616.77	73.78%
94.	LaSalle #1	Illinois	1,078.00	1,036.00	4,073,067	5,456.80	746.42	72.05%
95.	Braidwood #1	Illinois	NA	1,120.00	1,456,651	2,610.70	557.95	49.82%
96.	Palo Verde #3	Arizona	1,403.00	1,221.00	319,661	620.70	515.00	42.18%
97.	Fermi #2	Michigan	1,215.00	1,093.00	1,392,801	4,084.20	341.02	31.20%
98.	Fort St. Vrain	Colorado	343.00	330.00	180,922	2,030.40	89.11	27.00%
99.	Nine Mile Point #2	New York	1,214.00	1,080.00	260,995	1,059.00	246.45	22.82%
100.	Browns Ferry #1	Alabama	1,152.00	1,065.00	-12,718	0.00	0.00	0.00%
101.	Browns Ferry #2	Alabama	1,152.00	1,065.00	-34,470	0.00	0.00	0.00%
102.	Browns Ferry #3	Alabama	1,152.00	1,065.00	-50,980	0.00	0.00	0.00%
103.	Pilgrim #1	Massachusetts	678.00	670.00	0	0.00	0.00	0.00%
104.	Rancho Seco #1	California	963.00	873.00	-56,759	0.00	0.00	0.00%
105.	Sequoyah #1	Tennessee	1,220.00	1,148.00	-48,236	0.00	0.00	0.00%
106.	Sequoyah #2	Tennessee	1,220.00	1,148.00	-59,378	0.00	0.00	0.00%
Total			98,682.00	92,731.00	449,087,064	584,375.40		

Note: Information taken from The Licensed Operating Reactors Status Summary Report from USNRC.

END NOTES

¹ Tables 1 and 2 are drawn from a report authored by Shari Cameron of Utilities Division, Department of Commerce, State of Iowa. A full reference appears in the Bibliography. Tables 3 and 4 were prepared by Leighann O'Tool of the Utilities Division, Department of Commerce, State of Iowa.

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DEC 6 1985

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september-october 85 no. 1

CONTENTS

Volume 1, Number 1
September/October 1985

PAGE

Prudence Investigations Of Nuclear Construction Projects Steven J. Agresta, Esq., Swidler, Berlin & Steirow	2
Bubble Memory Technology: Its Impact On Metering And Rate Structure Steven N. Brown, Ph.D., Supervisor of Rate Design, Houston Lighting & Power	6

Finance

Utility Finance In The Post Nuclear Period J. Edward McEntire, President, Standard & Poor's Compustat Services and David M. Blitzer, Ph.D., Chief Economist, Standard & Poor's Corp.	10
Financial Performance Standard & Poor's Compustat Services	13
The Financial Outlook Leonard S. Lavinan, Vice President, Merrill Lynch Capital Markets	14

Ratemaking

Incentive Regulation: Issues And Recommendations For Illinois Kenneth W. Costello, Consultant, Illinois Department of Energy and Natural Resources	17
Applying CAPM In A Utility Rate Case: Current Issues And Future Directions J. Roger Maiko, Ph.D., Chief Economist, Wisconsin Public Service Commission and Gregory S. Enholm, Securities Analyst, Salomon Brothers, Inc.	29
Long-Run Avoided Capacity Cost Of Electricity In The Context Of Qualifying Facilities Power Mc. Shamsul Huda, Ph.D., Director of Cost Research, Virginia Power	35
The Calculation Of Debt Cost For A Regulated Public Utility Joseph Downing, Ph.D., Research Economist, New Jersey Board of Public Utilities	38

Columns

Profiles: D.W. McClanahan of Southern Co. and D.R. Clem of Central Illinois Light Peggy Scharr, Associate Editor	45
Provocative Thoughts: Varied Perceptions Of Risk David M. Boonin, Associate Editor and Supervisor, Energy Forecasts & Strategies, United Illuminating Co.	47

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Bubble Memory Technology: Its Impact on Metering and Rate Structure

By Stephen N. Brown, Ph.D.
Supervisor of Rate Design
Houston Lighting & Power

Bubble memory will replace magnetic tape as the principal means of implementing product differentiation and rate structures within the electric utility industry for two reasons: first, research and commercial development of bubble memory technology is moving forward after the technology was abandoned by several U.S. producers. Advances in the technology will reduce the importance of silicon and increase the importance of ferrous magnetic substances by achieving very high density rates of bit storage which in turn will bring economies of scale and rapidly declining average costs for the storage of information. Second, bubble memory's performance already exceeds that of magnetic tape, and the difference between these levels of performance will become even greater.

The remainder of this discussion is divided into three parts: the first is a brief explanation of how product differentiation in the electric utility industry creates a need for efficient information storage; the second is a comparison of magnetic tape and bubble memories; and the third section explains why bubble memory technology is viable, marketable, and dependable.

In the context of an electric utility, product differentiation means that electric power sales represent several different services that are distinguished from one another by such criteria as the time of the sale, the customer making the purchase, whether the sale is short-term, long-term, intermittent, or continuous, and any other criteria that would be relevant. Product differentiation naturally entails different prices for different commodities. For example, electric power subject to interruption is clearly a different commodity than power not subject to interruption; similarly, electric power sold at the time of the system's peak demand is different from power sold at another time.

A utility that charges for its product on a time-of-day basis has to know the moment-by-moment purchases of a customer; such information becomes voluminous in a matter of hours and must be processed, evaluated, and stored. Since charging for power sales on a time-of-day basis is now a regular feature of many utilities' rate structure, and since interruptible and standby power sales are becoming more common both to industrial customers and to other utilities, even more information (and storage) will be required. These needs will rapidly exceed the capabilities of magnetic tape as a sales recording device.

II

Bubble memory is a storage medium in solid state form, in which the presence or absence of a "bubble" in a submicroscopic magnetic domain on a chip represents respectively a 0 or a 1, so that data can be stored in binary form. Unlike other kinds of memory, bubble memory has no moving parts and is nonvolatile (i.e., not power-dependent); it retains recorded data even if the power supply is interrupted.¹ Although magnetic tape also retains data when the power supply is interrupted, measurement of consumption using magnetic tape entails a mechanical system installed and reset manually, the shortcomings of which make possible inaccurate measurement of consumption and concomitantly lower revenue. This is readily demonstrated by an examination of the steps required for magnetic tape to measure power consumption by an industrial customer on a time-of-day rate.

The tape of a magnetic tape meter is usually divided into two or more tracks; one track always records time pulses sent from an external clock, while the other tracks record data pulses that represent power consumption. The time pulses are recorded according to a predetermined interval length. Consumption within a time period is determined by adding up the number of data pulses recorded between two adjacent time pulses. Once an initial start time is determined, all time pulses will occur at those regular intervals that subdivide the billing period. For example, if the start time is 9:00 and the interval length is 15 minutes, the time pulses occur at 9:15, 9:30, 9:45, and so on.

While this may seem simple to implement theoretically, practically it poses several problems. Magnetic tape metering requires extensive training of the personnel that install, maintain, and remove the tapes from the metering site.² A tape metering system is essentially a mechanical system, insofar as it relies on the tape drive gears to operate properly and move the tape at the required number of inches per second; otherwise the space between adjacent time pulses may not represent the time interval specified by the utility. Referring to the example above, the interval could represent 9:00 to 9:12, or 9:03 to 9:20 depending on the speed of the tape drive.

The metering tapes also have nonmagnetic leaders and trailers, which record nothing,³ so that when the tape begins, it must be positioned properly for the initial time and data pulses to fall on the magnetic portion. Otherwise there is a mismatch between tape start time and recorded information, causing a loss of information, and in metering situations, loss of information usually means loss of

revenues.

There is another possibility for error. The tape must be replaced before the magnetic trailer is reached, or billing information is lost at this stage, too. This means that the tape must be physically replaced; therefore, the utility must follow a precise schedule not only to read the tapes but to replace them as well.

There are other problems. The initial start time of the first interval on the tape must be set from an external clock, one that runs independently of the tape. The interval length can only be changed by changing the external clock. While this is not a problem for a single meter, it would be a very expensive problem, in terms of labor costs, where several hundred meters are involved. So once a utility selects an interval's starting point and its length, change is a problem.

All of these points underscore the importance of trained personnel in maintaining, setting, and reading the meters. But this also highlights the vulnerability of billing in the event of a labor strike.

Performance characteristics are particularly important in metering situations because the storage medium is subject to the extremes of weather: heat, cold, humidity, and dust. How does magnetic tape hold up compared with bubble memory under these conditions?

Magnetic tape expands with heat and contracts with cold, ages, wrinkles, and develops ripples. The recording head is subject to oxide buildup and must be regularly cleaned.³ Any of these can cause data loss or data error, so that the tape is incorrectly read and translated to a mainframe computer. Bubble memories produced by Intel Magnetics can operate within a range of 0 to 70 Celsius.⁴ The limits of the range will expand to -20 and 85 Celsius in the very near future.⁵ Bubble memory is minimally affected by dust, vapor, vibration,⁶ and hard radiation,⁷ even in very harsh environments, it maintains data integrity.

Furthermore, the reliability of bubble memory is a distinct advantage to a utility's metering capability. The failure rate for a 128K bubble memory device is 1 in 10 to the 15th power; this is about once in every 100 years of operation.⁸ The mean repair time (i.e., for replacement) of a bubble memory unit is only a few minutes.⁹ The reliability of a magnetic tape system is far less simply because it is a mechanical system.¹⁰ A major portion of any magnetic tape storage system involves mechanically operated systems—control and drive hardware.

Another point of comparison is storage capacity, and magnetic tape used in metering situations has a maximum capacity of 3 M bits/square inch.¹¹ In 1983, Intel Magnetics introduced a 4M bit chip measuring 1.46 x 1.35 centimeters with a storage capacity of slightly more than 2 M bits per square centimeter or 5 M bits per square inch.¹² On this basis, bubble memory has a 50x capability of magnetic tape. Does not apply in metering situations because increasing data storage on tape at a metering site requires decreasing the speed at which the tape moves and because there is a limit to how slow a tape can be set to move.¹³ For example, for data collected

on a 15-minute interval basis, tapes used in metering situations have a practical storage limit of 90 days. Bubble memory, on the other hand, has no moving parts; its full storage capacity can always be utilized as this capacity continues to increase with technological advances. Bubble memory already has a capacity in the range of 6 months for 15-minute intervals and 2 months for 5-minute intervals. Unlike magnetic tape, bubble memory technology offers the possibility of remote readings over telephone lines or other data transmission paths. Telephone interrogation of magnetic tapes is not practical. Remote data access and bubble memory technology also offer the possibility of automatic reprogramming from a central source of all interval lengths and start times for all meters simultaneously.

The foregoing clearly implies that the use of bubble memory would be substitution of capital for labor, thereby providing greater management control over the entire process. More important, however, is the flexibility (that does not now exist) in a utility's rate structure that bubble memory can provide. Consider the following as a case in point. For billing purposes, the practical minimum interval length on a magnetic tape is 15 minutes. This interval length cannot accurately measure power used in time periods that are shorter than the interval and that overlap interval boundaries.

For example, given the 15-minute interval beginning at 9:00, there is no way to measure the power flow from 9:07 to 9:22, and this is particularly important where large inductive loads operate intermittently and where the operation of these loads is timed to circumvent the real measure of the power flow: for example, if an electric drag line or an electric furnace is used between 9:07 and 9:22, the power flow measure on a magnetic tape meter with 15-minute intervals described above would only capture half the actual power flow. In this situation, the unmeasured power sales become system-demand losses to the utility. These losses usually range from 5 percent to 10 percent of a utility's net generation.

However, a bubble memory using a one-minute or five-minute interval would solve this problem by recording a higher sales volume, leading to lower system-demand losses and to either greater revenue for a given sales price or lower prices because of a given revenue requirement. This could have a substantial industry-wide effect by bringing in several hundred millions of dollars that are otherwise lost or by keeping electrical price levels lower. Furthermore, bubble memory's capability to record power usage accurately no matter how short the duration will also provide for more precise cost-of-service studies, enhance the utility's ability to sell interruptible power, and thereby more fully utilize spinning reserve. The last point of comparison to be made here between bubble memory and magnetic tape is data access. At one time, both magnetic tape and bubble memory entailed sequential access to data; the only way to access data in the middle of stored information was by accessing all information leading up to what was desired. Improvements in chip architecture for bubble memories now make data access time two to four times faster than either hard or floppy

disk drive access times.¹⁴ Of course, data access time on a magnetic tape cannot be improved by manipulating the medium, and this further demonstrates that bubble memory storage is superior to tape storage.

III

Major factors in adopting any new technology are expected life and serviceability. Bubble memory is not new, but it is still a fairly recent development. The driving force behind the discovery of magnetic bubbles was a group of scientists at Bell Laboratories, prominent among them A.H. Bobeck, U.F. Gianola, R.C. Sherwood, H.E.D. Scovil, and W. Shockley.¹⁵ Theoretical discoveries in the late 1960's by the Bell group gave impetus to further research and attempts at commercial development throughout the 1970's. Research has been conducted along several lines of development: materials analysis, chip architecture, and chip fabrication, to mention a few. At one time in the late 1970's, development programs were underway at Texas Instruments, National Semiconductor, Rockwell International, Motorola, Intel, and Signetics. Bell Labs developed an experimental 11.5 M bit bubble device only 1.3 inches square; even Hewlett Packard developed applications in desktop calculators.¹⁶ All of this is sufficient indication that the bubble memory market was perceived as one that would grow and be viable. In the late seventies, there was a consensus that the annual sales volume in the United States would approach 1 billion dollars and that the technology would cost only 10 millicents per bit.¹⁷ But by 1981 Intel was the only domestic producer of bubble memory; all the others had abandoned the market.

Far from being sidelined in terms of research and development, bubble memory remains viable because it is ideally suited for portable applications and because of its radiation-hardness. For example, in the mid-1970's it was considered for inclusion as a component for an on-board attitude control computer for spacecraft.¹⁸ Research on magnetic bubbles continues in Japan, Britain, France, West Germany, and the Soviet Union. From the standpoint of development in the United States, Intel negotiated a "second source" agreement with Motorola in 1982, so that technological research, product development and manufacture of bubble memory will be shared between the two firms.¹⁹ This is significant because bubble memory will have a full line of support electronics, the lack of which had previously hampered commercial development. Furthermore, research done by IBM at San Jose determined that "magnetic bubble memories must have a capacity of at least 4 M bits to challenge RAM devices on the basis of cost."²⁰ It is no coincidence, therefore, that Intel introduced a 4 M-bit chip in 1983. This is a clear signal that further commercial development of bubble

memory is anticipated. A 16 M bit device is the next logical step²¹ and it could be available by the early 1990's. Research is under way at Hitachi, Fujitsu, Sagem,²² IBM, and Bell Labs.²³ It must not be forgotten that the original corporate developer of the bubble memory, Bell Labs and its parent AT&T, were prevented from entering the computer technology market. But this has all changed with the recent divestiture of AT&T. It is only logical to conclude that the founder of the technology would seek to commercialize and expand it now that legal restrictions are removed from commercial competition in the industry.

Further development of the technology can be expected because of the tremendous potential for miniaturization and scale economies in bubble fabrication. In fact, scale economies are already occurring. In 1979 Intel published a series of guaranteed prices for bubble devices purchased in quantities of 25,000. The

prices of devices were \$1000 in 1980, \$600 in 1981, and \$300 in August of 1982. By January of 1983, the prices fell below \$250 in lots of 10,000.²⁴ The price of the 4 M bit device is expected to approach \$150 by 1986.²⁵ Achieving low-cost chips requires high device density and large chip capacity. The complementary technologies to achieve this are either in place or undergoing advancement themselves. For example, the Intel 4 M chip referred to earlier in this essay was fabricated using x-ray lithography.²⁶ This is the production tool that enabled the achievement of 4 M bit density, but as time and research continue, x-ray lithography can be expected to give way to electron beam lithography.²⁷ The ultimate key to bubble miniaturization and scale economies.

The ongoing research and commercial development makes a myth of the notion that bubble memory is a dead technology. The complexities of the utility industry are already outdistancing the capabilities of the magnetic tape, and new avenues must be investigated. Bubble memory is a viable and superior option to develop for the long term.

Conclusion

Some of the technological differences between magnetic tape and magnetic bubble memory have been discussed and policy implications briefly outlined. The industry cannot ignore the technological changes that are coming in the 1980's and 1990's. The limitations of magnetic tape necessitate a vigorous search for a suitable substitute, one that does not allow data error/loss in metering, one that can measure interruptible and standby power, and insure against revenue erosion by means of interval adjustment, one that allows for remote monitoring using data communications technology, and one that makes for greater flexibility in the development of rate structures.

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The Sine Qua Non of Order 636: Cooperative Competition, Information Flow, and Rate Design

Stephen N. Brown

The FERC completed a remarkable turnaround in regulatory philosophy in its gas pipeline restructuring order.

Competition for natural gas supply will promote the nation's economic growth. That idea describes the essence of Federal Energy Regulatory Commission (FERC) Order No. 636 and provides the driving force behind the commission's effort to restructure the natural gas industry. But the FERC's eventual success ultimately depends on the spirit of "cooperative competition": The willingness of individual players to share information about day-to-day pipeline operations and the vital conditions that determine rate design and prices.

The FERC itself is acutely aware of this vulnerability. That is why the commission framed Order 636 with language that simultaneously coaxes, cajoles, and urges the industry to do its patriotic duty (see box).

This language makes FERC's order 636 truly remarkable. It tells the pipelines that their traditional way of doing business blocks the spread of competition within the natural gas industry. This finding was unthinkable twenty years ago. The natural gas industry was built on the principle of bundled, city-gate, firm sales service. During the industry's early years, certificates of convenience and necessity were issued to pipelines only if they offered such service to distribution companies. The industry's building block is now an unlawful restraint of trade.

The pipelines' old virtue is now a vice because the merchant function is gradually fading away. In the first quarter of 1984 pipeline sales made up 94 percent of throughput. By the second quarter of 1991 pipeline sales totaled only 12 percent of throughput. Nevertheless, in 1991 pipeline sales consumed over 60 percent of peak-day capacity. This surprising mismatch between throughput and capacity told the FERC that pipeline sales enjoy a clear

advantage over the open-access firm transportation of nonpipeline natural gas:

Free-flowing Information

The FERC intends to solve the fairness problem by establishing equivalency between bundled, city-gate firm sales by the pipeline and open-access firm transportation of nonpipeline natural gas. The solution lies with the idea of "No-Notice Transportation Service." Success will depend on cooperation between the various segments of the industry, as the FERC is quite aware:

[We] expect the pipelines and all interested participants to craft . . . the operating conditions needed to

The Spirit of 636

Drawing on Patriotism:

"[We] . . . remind the industry that it is in the nation's best interest and the industry's interest . . . to keep gas flowing and deliverable when and where needed and . . . not unreasonably inhibit the meeting of gas purchasers and gas sellers in a competitive market." [Order No. 636, p. 96.]

From Virtue to Vice:

"[The] pipelines' bundled, city-gate, firm sales service is operating, and will continue to operate, in a manner that causes considerable competitive harm to all segments of the natural gas industry . . . this harm has an unreasonable impact on gas sellers and is an unlawful restraint of trade." [Order No. 636, p. 39.]

To Level the Field:

"Pipelines and other gas suppliers are not competing on an even basis for sales customers, even where firm transportation is available to move the gas sold by the pipelines' competitors." [Order No. 636, p. 32.]

An Open Book, But Who Will Read It?

Pipelines in a Fishbowl:

Pipelines will retain operational control, but will perform in a fishbowl, since all buyers and sellers must now constantly monitor pipeline operations.

Second-guessing by Customers:

Buyers and sellers are likely to develop "shadow" operations groups that not only will monitor operating conditions, but are also likely to second-guess the pipelines from time to time.

Information Overload:

A tremendous need will arise for accurate, speedy, and voluminous information on storage facilities, receipt and delivery points, pressure, pumping stations, capacity reallocations, and anything else that might be viewed as relevant.

ensure that the pipelines can provide a "no-notice" transportation service pursuant to which firm shippers can receive delivery of gas on demand up to their firm entitlement on a daily basis without incurring daily balancing and scheduling penalties.

To its lasting credit, the FERC recognizes that "no-notice" markets will not be fully competitive without another simultaneous development — the rapid and free flow of information. The FERC clearly says "that pipelines must provide timely and equal access to any and all information necessary for buyers and sellers to arrange gas sales and capacity reallocations." This policy will work only if all players cooperate. Any effort to tilt the scales by withholding or disguising relevant information may easily subvert the FERC's goal of uniting gas purchasers and gas sellers in a competitive market place. The importance of good and timely information cannot be overestimated for a competitive market, whether it's the New York Stock Exchange, the Chicago Board of Trade, or the natural gas industry.

The FERC's policy on information flow has major implications. The pipelines may not yet have realized that the order lays out their operations for all to see. It's just like letting one person cut the cake while others choose which piece they want. For example, the pipelines must make electronic bulletin boards accessible to all users and no one will be granted preferential access to the boards:

The pipelines must keep daily back-up records of the information displayed on their bulletin boards for at least three years and permit users to review those records . . . pipelines must also periodically purge transactions from current files when transactions have been completed, so that users do not have to sift through massive amounts of historical data to find current information.

The FERC is right to be cautious, considering the im-

pending modernization of the nation's telecommunications infrastructure and uncertain behavior of the players in the natural gas industry. How will the new infrastructure affect the competitiveness of the natural gas industry? Will the pipelines really want to give up their advantage of occupying 60 percent of the peak-day capacity, particularly when their sales are less than 20 percent of annual throughput? Do local distribution companies (LDCs) really want to jump into a competitive market with complexities that rival those of a major stock exchange? Will the upstream and downstream pipelines really cooperate with one another?

Rate Design

The restructuring hearings will not deal with the single biggest rate design issue for pipelines: transportation cost recovery through the "straight fixed-variable method" (SFV). This rate design definitely affects the central feature of the FERC's restructuring proposal: The presumed willingness of gas buyers to participate in "no-notice transportation service."

The SFV method removes all fixed costs from the pipeline's commodity charge for transporting gas. For years the FERC allowed significant amounts of fixed costs in the pipeline's commodity charge. The commission now believes such practice inhibits competition by preventing gas purchasers from making accurate comparisons of prices, terms, and conditions offered by various gas sellers. The SFV method corrects this mistake and promotes "head-to-head, gas-on-gas competition."

The FERC prefers the SFV rate design but suggests that it may be avoided by any particular pipeline if the parties agree on an alternative costing method. If the parties can't persuade the FERC to deviate from its preference, or if they lack a consensus on rate design, the SFV method will prevail. The odds favor SFV, since rate design is rarely characterized by harmony. It's an impossible goal because the customers' load factors are too diverse. In fact, the SFV method reduces costs for customers with high annual load factors, and increases costs for customers with poor load factors. This explains both the support and the opposition to SFV — with a rate design consensus unlikely, there will be no viable alternative.

The SFV method will increase costs for some customer groups. The FERC has agreed to limit such increases to 10 percent and to phase in the increase over a four-period after the pipeline's initial compliance filing. But after four years, the phase-in terminates and the limitations expire for SFV-related cost increases. After that customers are on their own; they must adapt to changed circumstances. The burden cannot be laid at the door of producers or pipelines. It falls exclusively on gas consumers and perhaps their agents acting as gas purchasers.

What does this mean for hot new designer rates? It means that "no-notice" transportation rates must strongly

reflect the prevailing operating conditions on the pipeline.

I'm not advocating a different price for every hour of the year on every different section of the line. But I am advocating that the industry get far away from the idea that "one rate fits all." The nature of a competitive market place allows for some tailoring and customizing of individual prices and contract terms. Indeed, if the market doesn't exhibit these characteristics at all, then it's not really a competitive market. Customizing may be one way to develop a "no-notice" competitive transportation market. There's certainly room for this market considering that interruptible transportation now accounts for 51 percent of pipeline deliveries to market.

Tailored rate designs ought to reflect a match between the customers needs, the producer's supply, and the pipeline's operating conditions. This brings me back to my emphasis on the need for good information. More than ever before, there will be an emphasis on the optimal scheduling of pipeline flows, storage, maintenance, controlling, and shifting consumer demand. In this situation command and control of information is paramount because a competitive market inevitably reduces profit margins for the poorly organized and inefficient party. To be effective negotiators, gas purchasers and sellers must have the ability to recognize and act on the opportunities offered by the ebb and flow of a pipeline's operating conditions. FERC clearly understands this and accordingly has decided to make pipeline operations an open book for both gas buyers and sellers.

I hope LDCs and their customers are ready for the responsibilities of a competitive natural gas market. The LDCs fit the national pattern already noted by the FERC: Buying a lot of gas on the spot market, using interruptible transportation, and relying on pipeline sales for peak-day purchases, while keeping overall bills below the potential cost of exclusive reliance on pipeline gas. The LDCs have had an extended learning opportunity. It's up to them to take this experience and skillfully apply it the emerging market that the FERC is now creating.

The competitive market certainly raises uncertainties at the federal and state levels. How will the FERC draw the boundary between proprietary information and information required to make the market competitive? How does state regulation establish risk-sharing between the core customers and an LDC making a gas purchase on their behalf? Will a purchased gas adjustment (PGA) clause continue to serve a useful purpose once pipelines comply with Order 636?

These questions don't exhaust the possibilities, but sooner or later, perhaps in a rate case setting or in a notice of inquiry, the LDCs will have to show their state regulatory body that they've read the open book on pipeline operations and made good use of it. This would serve everyone's interest, and the LDCs should avoid putting truth to old sayings: "You can lead a horse to water but you can't make it drink," or, in the case of pipeline operations, "seeing a book open does not

Order 636-A: A Short-term Solution?

On July 30 the FERC met and voted to approve Order No. 636-A, in which it slightly relaxed its effort to push the natural gas industry into the information age. Pipeline capacity released for less than one calendar month will now require neither advanced posting on electronic bulletin boards nor bidding.

But the practicality of omitting short-term transactions from posting and bidding requirements will diminish as the industry learns better how to handle transactions of various sizes and duration. These short-term events cause a nuisance only when the players in the market are not ready to use or interpret the information that they provide. Any competitive market features short-term, low-volume transactions, and there is no inherent reason why such transactions should hinder a competitive market in its allocative efficiency. Thus, we can likely expect that the FERC will eventually withdraw Order 636-A and replace it in a subsequent rule making.

make its reader think."

Competition Versus Reliability

The importance of pipeline operations cannot be overstated because major changes in public policy towards regulated industry are constrained by technical considerations. The FERC's restructuring efforts are no exception. At the inception of the "Mega-NOPR," pipeline system reliability was incompatible with competition — one condition precluded the other. With the industry's help, the FERC resolved this apparent contradiction and found that system reliability and competition coexist. Neither one preempts the other.

With a little imagination, the FERC might apply this reasoning to the issue of transmission access in the electric power industry. All that's needed is to substitute "electric utility" for "pipeline" and "no-notice transmission" for "no-notice transportation". Can the FERC make competition in the electric industry compatible with system reliability? Perhaps not, but the electric industry may soon be hard pressed to explain why system reliability and competition cannot coexist in the power industry.

The FERC has offered a number of individual steps that, if taken quickly and cooperatively, will speed the gas industry's adoption of competitive market practices. But I emphasize the *fragility* of the FERC's proposal and the need for cooperation to make the system work. Hot new designer rates won't sell in the market place if the players torpedo the restructuring. I agree with the unspoken sentiment expressed by the FERC: Restructuring the industry will work only if the players adopt the spirit of "cooperative competition." That should characterize all bargaining between sellers, buyers, and pipelines.

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