BEFORE THE
TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

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

Docket No. 08-00039

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DIRECT TESTIMONY
OF
STEVE BROWN

****

July 18, 2008

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TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

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Docket No. 08-00039

AFFIDAVIT

I, Steve Brown, Economist, 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.

Steve Brown
STEVE BROWN

EMILY KNIGHT
STATE OF TENNESSEE NOTARY PUBLIC
DAVIDSON COUNTY, TENN.
My Commission Expires AUG. 23, 2011

Sworn to and subscribed before me this 18th **day of** July, **2008.**

Emily Knight
NOTARY PUBLIC

My commission expires: Aug. 23, 2011

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I. Introduction.

Q_1. Please state your name.

A_1. Dr. Stephen N. Brown

Q_2. Where do you work?

A_2. I work in the Office of the Attorney General.

Q_3. What is your job title?

A_3. I am the Economist in the Consumer Advocate and Protection Division (CAPD). A statement of my credentials appears later.

II. Summary.

Q_4. Please give your summary of your opinions on the cost-of-capital issues in this docket.

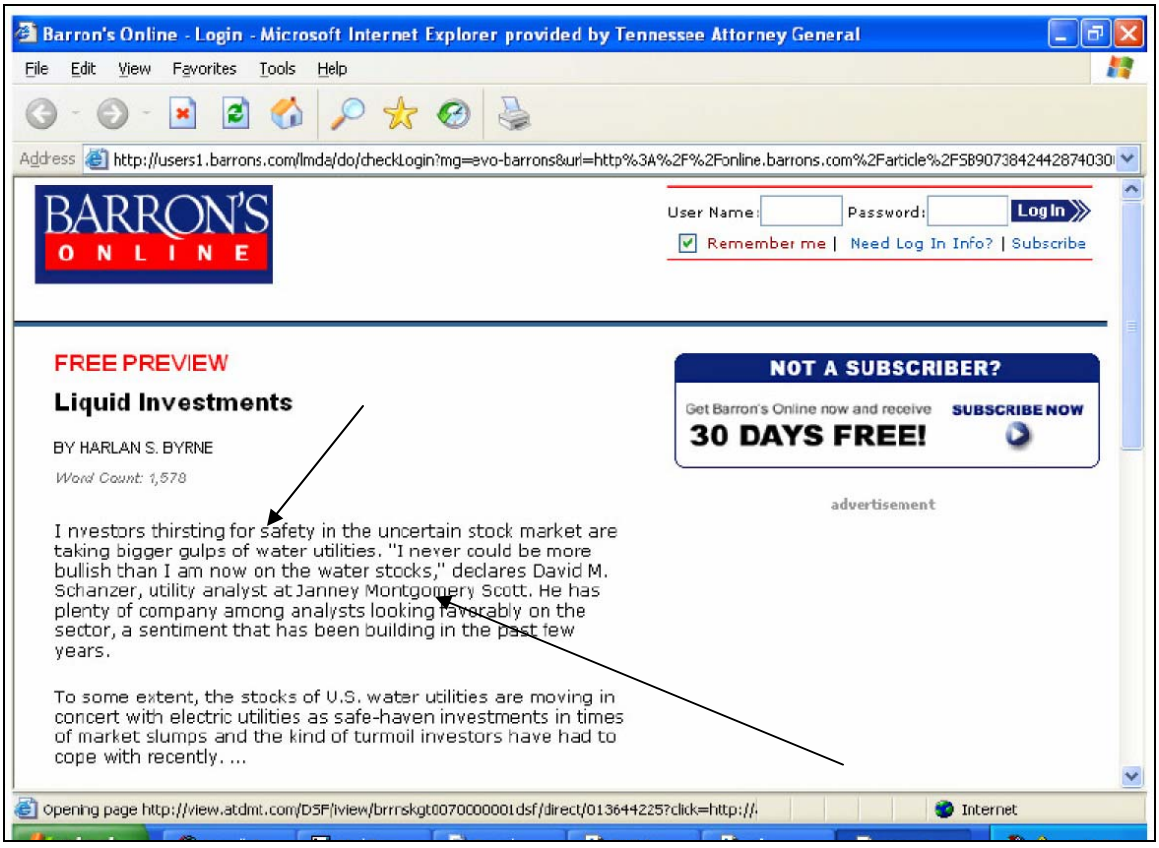
A_4. American Water Works (AWW) is now a publicly traded company in the United States. In my opinion it and its subsidiary, Tennessee American (TAW), have presented to the Tennessee Regulatory Authority (TRA) a rate-increase which is not justified and contrary to prevailing economic and regulatory conditions in two respects:

1. AWW seeks an extreme equity return of 11.75 percent at a time when a 6.50 percent long-term return to investors in the overall market is the normal and prevailing expectation. If AWW has a dividend policy like the eight water companies I discuss, then the 11.75 equity return will have a capital-attraction portion about equal to a 7.5 percent return for dividend payments to AWW's stockholders. The additional 4.25 percent, if granted, is surplus cash for the company, not necessarily the owners.

2. AWW made itself a less attractive investment when it deferred until 2010 an auditor's certification that AWW has met the requirements for Section 404 of the Sarbanes-Oxley Act. An auditor certifies that a company's internal control is preventing errors that cause misleading financial reporting. A publicly traded company without certification is telling potential investors that "there is a greater than remote chance that a material misstatement will not be prevented or detected in a company's financial statements." [1] AWW cannot attract equity capital on reasonable terms because it is not comparable to companies which have certification.

[1] Glass, Lewis & Co. report referred to in this testimony, pages 53-55.

The 11.75 percent equity return and the 8.514 percent overall return which TAW want, are after forecasted taxes and expenses are built into the prices paid by TAW's customers. Regulatory returns are not the same as a lending rate. A bank lending money at 8.514 percent will get revenue from loan payments and then deduct expenses and taxes. Thus water companies are considered "safe havens" for investors. The image below from Barron's shows the general perception is that water companies are "safe" companies, as the Barron's article noted: [2]



[2] The Images In This Testimony Are Clearer When This Testimony Is Read On A Computer Screen.

III. Capital Structure and Capital Cost.

In my opinion TAW's overall cost of capital is 6.65%. This is the result of applying the Tennessee Regulatory Authority's (TRA) practice of double-leverage to AWW's and TAW's financial information. The TRA has used this practice since 1984. The parent's weighted capital cost is 6.51 percent. TAW's weighted capital cost for capital received from outside AWW is .14 percent. These two weighted capital costs sum to 6.65 percent

The parent's capital structure is: $4,888,930 billion in Long-Term Debt, $168,137 million in Short-Term Debt, and $3,809,423 billion in Common Equity, for Total Capital of $8,866,490. In terms of Total Capital, the Long-Term Debt Ratio is 55.14 percent, the Short-Term Debt Ratio is 1.90 percent, and the Common Equity Ratio is 42.96 percent. I calculate the parent's Long-Term Debt Cost as 5.86 percent and the Short-Term Debt Cost as 2.87 percent. In my opinion the parent's Cost Of Equity is 7.50 percent. My calculation of the Long-Term Debt Cost is displayed in the next image on page 5 of this testimony. The parent's capital structure and each component's cost are displayed in the image on page 6 of this testimony.

Calculation of AWW's Long-Term Debt Cost:

Application Of Double Leverage To TAW: Step 1 - Parent Company's Long-Term Debt Cost Costs

Long Term Debt: Calculation Of Weighted Cost

As Of 2008/03/31 From AWW's 10-Q Filed With The SEC On May 10 2008, And AWWs Off-Balance Sheet Transactions As Of May 15, 2008*				Calculation Of Weighted Cost Of Long-Term Debt			
Category	Rate	Maturity Date	Amount (Millions)	Low Rate	High Rate	Weighted Low Rate	Weighted High Rate
Long-Term Debt Of American Water Capital Corp. ("AWCC")							
Private Activity Bonds And Government Funded Debt							
Floating Rate	2.55%-3.20%	2018-2032	86,860	2.55%	3.20%	0.05%	0.06%
Senior Notes							
Fixed Rate	5.39%-6.87%	2011-2037	2,684,000	5.39%	6.87%	2.96%	3.77%
*New Senior Notes Off-Balance Sheet May 15, 2008							
Series G	6.25%	2018	110,000	6.25%	6.25%	0.14%	0.14%
Series H	6.55%	2023	90,000	6.55%	6.55%	0.12%	0.12%
Long-Term Debt Of Other Subsidiaries:							
Private Activity Bonds And Government Funded Debt							
Fixed Rate	0%-6.88%	2009-2038	941,439	0.00%	6.88%	0.00%	1.32%
Floating Rate	2.40%-10.00%	2015-2032	178,145	2.40%	10.00%	0.09%	0.36%
Mortgage Bonds							
Fixed Rate	6.31%-9.71%	2008-2034	725,300	6.31%	9.71%	0.94%	1.44%
Senior Debt							
Fixed Rate	5.60%-9.10%	2008-2025	45,386	5.60%	9.10%	0.05%	0.08%
Mandatory Redeemable Preferred Stock	4.60%-9.75%	2013-2036	24,644	4.60%	9.75%	0.02%	0.05%
Notes Payable And Other	5.76%-11.77%	2008-2026	3,156	5.76%	11.77%	0.00%	0.01%
Long-Term Debt			4,888,930		SUM	4.37%	7.36%
Weighted Cost Of Long-Term Debt:					MID POINT		**5.8644%**

AWW's Capital Structure:

Application Of Double Leverage To TAW: Step 2 - Parent Company's Ratios And Capital Costs

Parent Capital Structure And Capital Cost*

	Amount (Millions)	Ratios	Cost	Weighted Cost
Long-Term Debt	4,888,930	55.14%	5.86%	3.23%
Short-Term Debt	168,137	1.90%	2.87%	0.05%
Common Equity	3,809,423	42.96%	7.50%	3.22%
Total	8,866,490	100.00%		6.51%

*Amounts Not Included in Calculation - Preferred stock without mandatory redemption requirements of 4,568 and Redeemable preferred stock at redemption value 24,296 - Not Material Amounts

TAW's claims its total capital is $119,552,007 million. Of that amount, $9,102,161 million is from sources other than AWW. The remaining amount, $110,449,846 million, is supplied from the parent. TAW admitted in discovery that it has no credit rating. This means the parent, AWW, bears all liability for debt capital loaned to TAW from sources other than the parent. Therefore, the capital structure proposed by TAW witness Mr. Mike Miller is not appropriate for setting rates. The next image on page 7 of this testimony displays the double leverage calculations which lead to an overall capital cost of 6.66 percent, which is rounded down to 6.65 percent for all calculations by Mr. Buckner of CAPD.

Application Of Double Leverage To TAW: Step 3 - Separate TAW's Outside Financing From Capital Supplied By The Parent And Calculate Capital Costs

	Source:TAW Witness Mike Miller - Exhibit 3	Ratios:	Cost Of Outside Financing	Weighted Cost Of Outside Debt
	(1)	(2)	(3)	(4)
TAW's Total Capital ($)	119,552,007	100.0%		
Outside Financing:				
9.25% Series	2,500,000	2.1%	9.3%	2.54%
7.84% Series	5,700,000	4.8%	7.8%	4.91%
9.489% Capital Lease	902,161	0.8%	9.8%	0.98%
Total Outside Financing	9,102,161	7.6%		8.43%
Financing From Parent:	110,449,846	92.4%		
	(1)	(2)	(3)	(4)
Parent 's Weighted Cost [From Step 2]:		Ratios:	Cost Of Financing	Weighted Cost Of Parent's Financing
Long Term Debt:		55.1%	5.86%	3.23%
Short Term Debt:		1.9%	2.87%	0.05%
Equity		43.0%	7.50%	3.22%
Total				6.51%
	(1)	(2)	(3)	(4)
Total Weighted Cost By Source:		Ratios	Cost Of Financing	Weighted Cost: All Financing
Outside Financing:		7.6%	8.4%	0.64%
Parent's Financing:		92.4%	6.5%	6.01%
Total Weighted Cost				**6.66%**

Q_5. Is your capital structure in this docket different from the one you testified to in TAW's most recent rate case, docket 06-00290?

A_5. Yes. It is different. In the last docket my opinion was that the parent's common equity ratio was likely to be 30 percent because 30 percent fit the parent's history of having a very low common equity ratio. The TRA did not accept my opinion and accepted the company's promise that the common equity ratio would be 45

percent after AWW's Initial Public Offering of common stock. However, AWW's unaudited SEC form 10-Q filed in May of this year shows AWW having near $1.6 billion of good-will on its books. If that amount were excluded from AWW's common equity, its common equity ratio would fall to 30 percent. Given the Authority's most recent decision, I did not pursue a 30 percent equity ratio.

However, I did make one additional change. AWW engaged in a $200 million off-book loan transaction. According to the company this amount was to be used to pay down short-term debt. Off-book transactions are like any other obligation. Therefore, I reduced the short-term debt from $368 million to $168 million and raised the long-terms debt by $200 million. This slightly increased the company's capital costs. AWW's SEC forms say the company pays LIBOR rates for its short-term debt. Therefore, I calculated AWW's short-term debt cost as the average of LIBOR rates 30-day, three-month, and six-months respectively: 2.40 percent, 2.79 percent and 3.42 percent as of July 2008.

IV. Capital Market Expectations.

In December 2000, the SEC Chairman Arthur Levitt gave a speech where he addressed an issue that is important in this docket: how do we know if today's conditions represent the short-term or the long-term situation?

> *"As you well know, capital markets, in the long run, place a premium on well-run companies. But in the shorter term, markets aren't always as rationale – and that's where a large part of the challenge lies for management, auditors and boards of directors. The question arises: How do you reconcile short-term market expectations with sustainability over the longer term?"*

The general understanding of return to capital is that it is composed of a stock's capital gains and capital losses plus a dividend if it is being paid. The following definition is a typical definition from Morningstar. It is aninvestment-adviser company which provides information for over 7,000 stocks and over 1,500 mutual funds:

Trailing returns represent shareholders' gain or loss from a stock over a given period of time. Returns include both capital gains and losses (the increase or decrease in the stock price) and income (in the form of dividend payments). They are calculated by taking the change in the stock's price, reinvesting all dividends, dividing by the initial stock price, and expressing the result as a percentage. Returns for periods longer than one year are annualized.

As of July 1, 2008, the American economy has experienced a huge decline in stock prices:

Stocks off $2.1 trillion this year

Biggest June loss since Depression

By Adam Shell
USA TODAY

USA TODAY
Tuesday, July 1, 2008

NEW YORK — Hurt by a record-setting run for crude oil and renewed concerns about the health of the banking sector, Wall Street ended a dismal second quarter Monday with blue-chip stocks on the cusp of their first bear market in almost six years.

After a 10.2% drop last month, its biggest June loss since the Great Depression, the Dow Jones industrial average is now at 11,350, or 19.9% below its October all-time high. The Dow is flirting with its first bear market — a drop of 20% or more — since the 2000-02 bursting of the Internet bubble.

The U.S. stock market has lost $2.1 trillion in value this year — $1.4 trillion in June alone, says Dow Jones Indexes. "Talk about a tough month," says Sam Stovall, chief strategist at Standard & Poor's.

Wall Street is debating whether the market has now priced in the bulk of the bad economic news. Bob Doll, chief investment officer at BlackRock, said Monday he believes the market is past the worst and should "grind higher" the rest of the year.

The big game changer has been the 38% jump in the price of a barrel of oil to $140 in the April-June period. That helped deepen the economic gloom that arose from the housing bust.

Stocks are likely to get a boost if oil prices recede, because it will lift some of the financial pressure off consumers and businesses struggling under the weight of $4.10-a-gallon gasoline, says Tobias Levkovich, chief investment strategist at Citigroup.

Investors are closely watching to see whether the broader S&P 500 index can stay above the recent lows it set in mid-March market meltdown was averted in mid-March when JPMorgan Chase stepped in to buy beleaguered investment bank Bear Stearns.

Fears about the health of banks and brokerages resurfaced in June amid stock downgrades by analysts and expectations that major U.S. financial institutions will write off additional billion-dollar losses on bad mortgages when they report second-quarter earnings in coming weeks.

There's also concern that companies will have trouble meeting optimistic profit outlooks for the rest of 2008. And investors are worried about inflation. The Federal Reserve has hinted that it is done cutting interest rates, in part because it wants to give the U.S. dollar a boost and dampen inflation.

If this turns into an official bear market, it would still be relatively shallow so far compared with the 33 bear markets since 1900, says Ned Davis Research. The Dow has been declining for 262 calendar days, which is shorter than the median bear market of 363 days. Its decline so far also is not as severe as the 26.9% median. That suggests more pain can't be ruled out, says NDR's chief investment strategist, Tim Hayes.

Role of oil speculators
Some see 'mischief,' 1B

Flirting with bear market

Stocks have struggled this year as oil prices surged.

	First half 2008
Dow Jones industrials	-14.4%
Nasdaq composite	-13.5%
Standard & Poor's 500	-12.8%
DJ Wilshire 5000	-11.8% ($2.1 trillion)
Barrel of oil	45.9%

Source: USA TODAY research

1

V. Water Companies Have Followed The Downward Trend In Return.

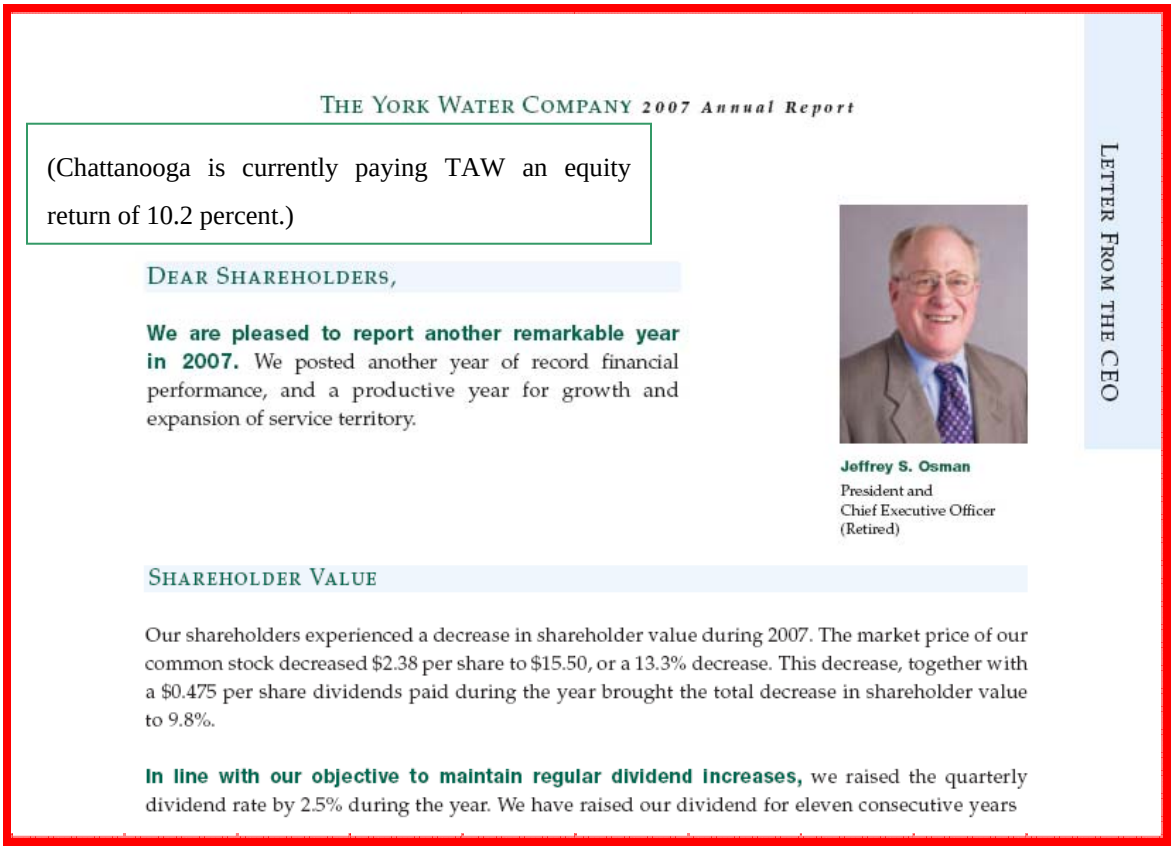
I use the same water companies in this docket 08-00039, as I used in TAW's last rate case, docket 06-00290: American States, Connecticut Water Service, California Water Service Group, Middlesex Water, Southwest Water, Aqua America, SJW, and York Water.

Market Price Of Water Companies, Values Of Major US Indices On The Dates When TAW Filed Its Petitions, And Price Changes

		Market Price On:		
Water Companies:	Stock Symbol	2006/11/22	2008/03/14	Price Change
American States Water	AWR	36.81	33.05	-10.2%
Connecticut Water Service	CTWS	20.86	23.45	12.4%
California Water Svc Group	CWT	38.9	38.69	-0.5%
Middlesex Water Company	MSEX	17.51	17.99	2.7%
S J W	SJW	33.89	28.14	-17.0%
Southwest Water Company	SWWC	12.73	10.93	-14.1%
Aqua America	WTR	23.44	18.47	-21.2%
York Water Company	YORW	17.55	14.83	-15.5%
			Average	-7.9%
		Value Of Index On:		
Major US Indices:		2006/11/22	2008/03/14	Index Change
DowJones Industrial		12326.95	11951.09	-3.0%
NASDAQ CompositeIndex		2465.98	2212.49	-10.3%
SP400 MidCap		812.39	761.09	-6.3%
SP 500		1406.09	1288.14	-8.4%
US10YrBond		4.57	3.42	-25.2%
US30YrBond		4.65	4.35	-6.5%
US5YrBondIndex		4.57	2.34	-48.8%
Wilshire5000		14174.5	12995	-8.3%

TAW's cost-of-capital expert, Dr. Vilbert, uses the same companies. It is no secret how the companies fared from the date of TAW's last rate-increase petition, November 22, 2006 to the date of the current petition, March 14, 2008. Just one brought its stockholders a double-digit return, as shown in the image above.

At least one water company's CEO has admitted that returns have declined. The next image shows how the CEO of York Water explained things to stockholders:



THE YORK WATER COMPANY *2007 Annual Report*

(Chattanooga is currently paying TAW an equity return of 10.2 percent.)

LETTER FROM THE CEO

DEAR SHAREHOLDERS,

We are pleased to report another remarkable year in 2007. We posted another year of record financial performance, and a productive year for growth and expansion of service territory.

Jeffrey S. Osman
President and
Chief Executive Officer
(Retired)

SHAREHOLDER VALUE

Our shareholders experienced a decrease in shareholder value during 2007. The market price of our common stock decreased $2.38 per share to $15.50, or a 13.3% decrease. This decrease, together with a $0.475 per share dividends paid during the year brought the total decrease in shareholder value to 9.8%.

In line with our objective to maintain regular dividend increases, we raised the quarterly dividend rate by 2.5% during the year. We have raised our dividend for eleven consecutive years

The CEO calculated the shareholder's return in the standard way. He added the annual dividend return per share to the annual per share price change (a decline) to raise the equity return from minus 13.3% to minus 9.8%. This shows the limits of a reasonable regulatory return, it cannot account for changes in share price. If regulatory returns were supposed to track capital gains and losses of the stockholders, then many water utilities would be lowering their prices now.

VI. The Two General Methods Used In Setting The Equity Return, DCF and CAPM.

The decline in market returns should affect the return which TAW's customers have to pay, but how?

- should TAW's customers have to shoulder a rate of return of only 2 percent, for example, to reflect a continuation of capital losses in the market?

- should capital losses be ignored so the rate of return can be set at 10 percent, for example, so that TAW's customers pay prices which assume that TAW's ultimate shareholders will enjoy capital gains and dividends?

- should the rate of return be set to exclude both capital gains and capital losses so that TAW's customers pay TAW as if TAW is making normal dividend payments to stockholders?

There are two general methods used in setting the equity return: The Discounted Cash Flow (DCF) method and Capital Asset Pricing Model (CAPM).

The DCF method relies on dividend yield (payments) and dividend growth to set the return. This method does not assume there are capital gains or capital losses. For example, if a company has a dividend yield of 3 percent and a dividend growth rate of 3 percent, the DCF return is 6 percent.

The CAPM assumes there are capital gains in the overall market. The CAPM also assumes that the equity return has a minimum level, such as a company's debt cost, and that the equity return exceeds the minimum level by an overall market premium. For example, if a company has a debt cost of 5.25 percent and the overall market premium is 8 percent, the company's CAPM return would be 13 percent. The CAPM is considered an attractive method for setting returns because the overall market premium can be raised or lowered by a "beta", which is supposed to measure an individual company's risk as a percentage of, or relative to, the market's overall risk. If a company's beta were .8 or 80 percent of the market's overall risk, then in this example the company's CAPM return would be 11.75 percent. For example, 11.75% =5.35% + 8.00% X (.80).

Of the two general methods, DCF and CAPM, my opinion is that the DCF is more appropriate because it tracks the actual flow of a company's payments to shareholders.

VII. TAW's Regulatory Equity Return Should Be A DCF Return Of 7.5%.

In my opinion TAW's equity return should be no more than 7.5% because this return represents the normal dividend-payment behavior of water companies in good times and bad and is not tied to equity gains or losses caused by per share price changes. In my opinion 7.5% is the limit of a reasonable regulatory return

If Chattanooga's ratepayers were to pay an 11.75 percent equity return, as the company requests, then they would be paying AWW and TAW for:

- the capital-attraction return of about 7.5 percent for dividend payments to stockholders,

- an assumed 4.25 percent per share price increase in the value of AWW's stock, but

- because the stockholders do not get paid by the company for per share price changes, the assumed 4.25 percent per share price increase gives the company a cash flow which is put to the company's use not the stockholders'.

- The problem is self-evident. By assuming there will be capital gains of 4.25 percent, TAW's approach ignores the obvious clash between theory and real downturns in the economy.

If investors buy stock to make a capital gain they face a reckoning when actual returns do not meet expectations. However, when TAW's regulatory return is set via an expected market return that proves not to represent the market (10.2 percent in the last case) the reckoning that stockholders must or would face is avoided by TAW itself because TAW's ratepayers continue to pay TAW as if a 10.2 percent equity return were the norm.

The next image displays dividend data for the water companies from 2003 to 2008 and shows that 7.53 percent is the return that can be expected from them as a group when capital gains and losses are excluded. The method I use is the DCF method, which is the sum of the current dividend yield, which I took from the NASDAQ web site and the dividend growth rates of the water companies as whole for the past five years. I compiled the dividends from the water companies SEC 10-K filings. After addressing other concerns related to SOX, which I discuss later, a 7.5 percent equity return as attractive an investment as any other water company.

Payments/Share

Annual Dividend($) History At Jan 1 - Start Of Fiscal Year

Company(Exchange:Stock Symbol)	(1) 2003	(2) 2004	(3) 2005	(4) 2006	(5) 2007	(6) 2008
Amer St Water (NYSE:AWR)	0.872	0.884	0.888	0.900	0.940	0.955
Connecticut Water Service, Inc. (NASDAQ:CTWS)	0.814	0.825	0.835	0.845	0.860	0.865
California Water Svc (NYSE:CWT)	1.120	1.125	1.130	1.140	1.160	1.160
Middlesex Water Company (NASDAQ:MSEX)	0.634	0.649	0.663	0.673	0.690	0.693
S J W Cp (AMEX:SJW)	0.460	0.490	0.510	0.530	0.570	0.600
Southwest Water Company (NASDAQ:SWWC)	0.150	0.160	0.180	0.200	0.210	0.230
Aqua America(NYSE:WTR)	0.320	0.340	0.370	0.400	0.440	0.480
York Water Company (NASDAQ:YORW)	0.350	0.367	0.394	0.424	0.472	0.475

The Return From The Stream Of Dividend Payments:

7.53%

Growth/Share

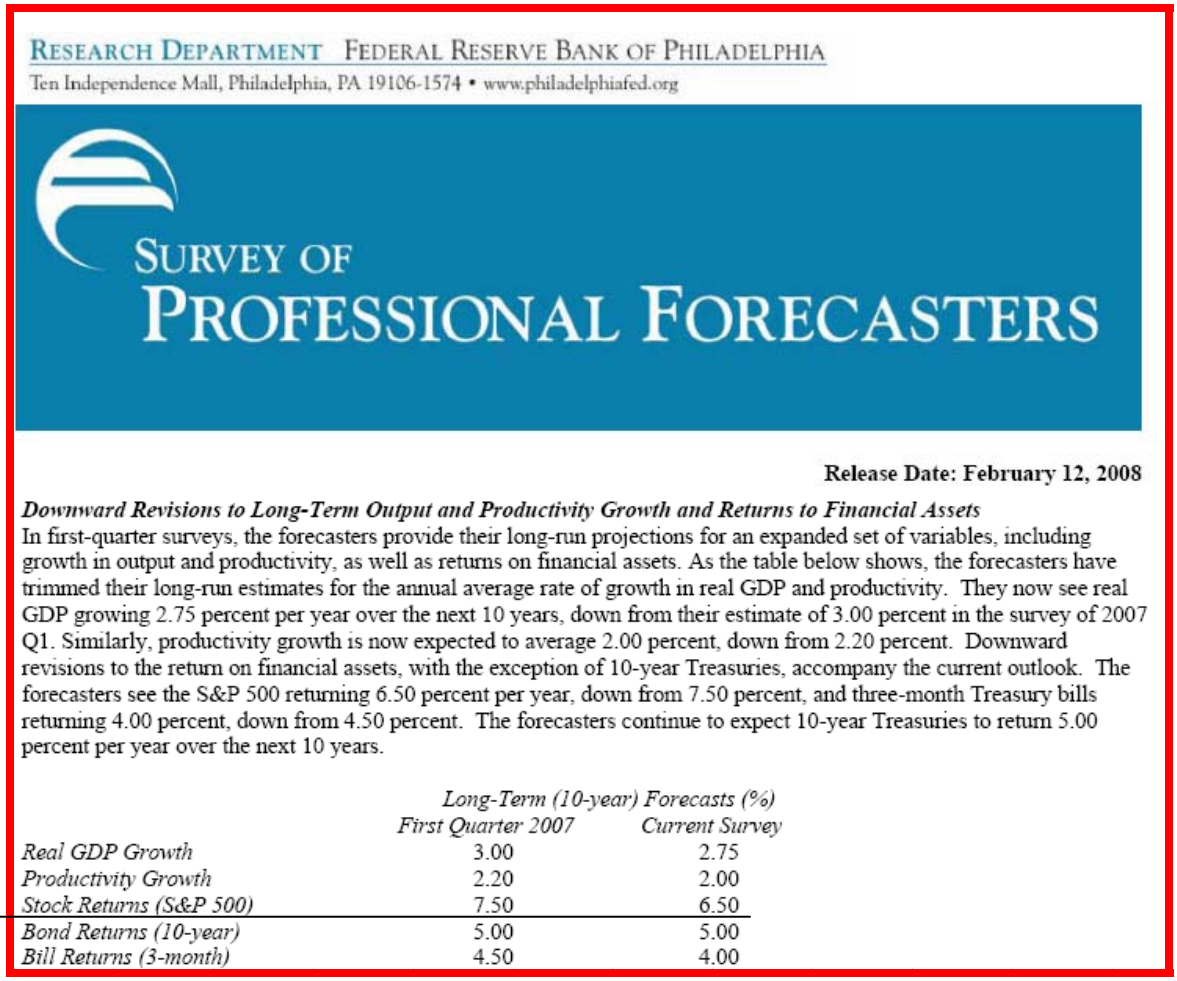
Annual Dividend Growth Rate(%): January To January

Company(Exchange:Stock Symbol)	(1)	(2) 2003-2004	(3) 2004-2005	(4) 2005-2006	(5) 2006-2007	(6) 2007-2008	(7) Average	(8) Dividend Yield % On 2008 July 02	(9)=(7) + (8) Growth Plus Yield
Amer St Water (NYSE:AWR)		1.38	0.45	1.35	4.44	1.60	1.84	2.85	4.69
Connecticut Water Service, Inc. (NASDAQ:CTWS)		1.35	1.21	1.20	1.78	0.58	1.22	3.75	4.97
California Water Svc (NYSE:CWT)		0.45	0.44	0.88	1.75	0.00	0.71	3.53	4.24
Middlesex Water Company (NASDAQ:MSEX)		2.37	2.16	1.51	2.53	0.43	1.80	4.11	5.91
S J W Cp (AMEX:SJW)		6.52	4.08	3.92	7.55	5.26	5.47	2.46	7.93
Southwest Water Company (NASDAQ:SWWC)		6.67	12.50	11.11	5.00	9.52	8.96	2.35	11.31
Aqua America(NYSE:WTR)		6.25	8.82	8.11	10.00	9.09	8.45	3.08	11.53
York Water Company (NASDAQ:YORW)		4.76	7.45	7.61	11.32	0.64	6.36	3.33	9.69
Group Annual Average		3.72	4.64	4.46	5.55	3.39	4.35	3.18	7.53

Available evidence shows that my DCF return is consistent with expectations for the sustainable long-term capital-return of 6 percent to 7 percent. I rely on the Federal Reserve Bank Of Philadelphia Survey Of Professional Forecasters as a measure of reasonable expectations because it is the only forecast survey I know of where major companies identify themselves and their representatives as being participants. The Survey is the oldest such survey in the country, being conducted since 1968.

VIII. Credible Third-Party Information: Long-Term Equity Returns Are Expected To Be 6.5%, Say The Professionals At Bank Of America, Bank of Tokyo, General Motors, Goldman Sachs, Merrill Lynch, Wells Fargo, Verizon And Other Major Organizations.

The next image is provided by the Federal Reserve Bank Of Philadelphia.



RESEARCH DEPARTMENT FEDERAL RESERVE BANK OF PHILADELPHIA
Ten Independence Mall, Philadelphia, PA 19106-1574 • www.philadelphiafed.org

SURVEY OF
PROFESSIONAL FORECASTERS

Release Date: February 12, 2008

Downward Revisions to Long-Term Output and Productivity Growth and Returns to Financial Assets

In first-quarter surveys, the forecasters provide their long-run projections for an expanded set of variables, including growth in output and productivity, as well as returns on financial assets. As the table below shows, the forecasters have trimmed their long-run estimates for the annual average rate of growth in real GDP and productivity. They now see real GDP growing 2.75 percent per year over the next 10 years, down from their estimate of 3.00 percent in the survey of 2007 Q1. Similarly, productivity growth is now expected to average 2.00 percent, down from 2.20 percent. Downward revisions to the return on financial assets, with the exception of 10-year Treasuries, accompany the current outlook. The forecasters see the S&P 500 returning 6.50 percent per year, down from 7.50 percent, and three-month Treasury bills returning 4.00 percent, down from 4.50 percent. The forecasters continue to expect 10-year Treasuries to return 5.00 percent per year over the next 10 years.

	Long-Term (10-year) Forecasts (%)	
	First Quarter 2007	*Current Survey*
Real GDP Growth	3.00	2.75
Productivity Growth	2.20	2.00
Stock Returns (S&P 500)	7.50	6.50
Bond Returns (10-year)	5.00	5.00
Bill Returns (3-month)	4.50	4.00

The professional forecasters' 10-year forecast for the equity return is 6.5 percent, where the equity return is measured as returns to the S&P 500 companies. The professional forecasters include four of the underwriters of AWW's IPO: Goldman Sachs, JP Morgan Chase & Co., Lehman Brothers, and Merrill Lynch. A complete list of organizations appears in the next image.

Name	Company
Edward F. McKelvey	Goldman Sachs (AWW IPO Underwriter)
James Glassman	JP Morgan Chase & Co. (AWW IPO Underwriter)
Drew Matus	Lehman Brothers (AWW IPO Underwriter)
David Rosenberg	Merrill Lynch (AWW IPO Underwriter)
Michael R. Englund	Action Economics, LLC
Joseph Carson	Alliance Capital Management
Thomas Kevin Swift	American Chemistry Council
Albert M. Wojnilower; Richard Yamarone	Argus Research Group
Mickey D. Levy	Bank of America
Ellen Beeson Zentner	Bank of Tokyo-Mitsubishi UFJ, Ltd.
Dean Maki	Barclays Capital
John Ryding	Bear, Stearns, and Company, Inc.
Fred Joutz	Benchmark Forecasts and Research Program on Forecasting, George Washington University
Xiaobing Shuai, Ph.D.	Chmura Economics & Analytics
Neal Soss	Credit Suisse
Michael Moran	Daiwa Securities America
Allen Sinai	Decision Economics, Inc.
Jim Meil	Eaton Corporation
Susan M. Sterne	Economic Analysis Associates, Inc.
L. Douglas Lee	Economics from Washington
Mark Zandi	Economy.com
David W. Berson	Fannie Mae
Keith Hembre	First American Funds
David Teolis	General Motors Corporation
Rajeev Dhawan	Georgia State University
Dr. Irwin Kellner	Hofstra University/MarketWatch/North Fork Bank
Gerard F. Fuda	Independent Economist
Michael P. Niemira	International Council of Shopping Centers
Robert J. Barbera	ITG, Inc.
Mark Nielson, Ph.D.	MacroEcon Global Advisors
John Lonski	Moody's Investors Service
Doug Duncan	Mortgage Bankers Association
Joel L. Naroff	Naroff Economic Advisors
David F. Seiders	National Association of Home Builders
David Huether	National Association of Manufacturers
Richard DeKaser	National City Corporation
David Resler	Nomura Securities International, Inc.
Lea Tyler	Oxford Economics USA, Inc.
; Anthony Metz	Pareto Optimal Economics
Stephen Stanley	RBS Greenwich Capi
Tara M. Sinclair	Research Program on Forecasting, George Washington University
Gary Ciminero	Rhode Island House Policy Office
Saul Hymans, Joan Crary, and Janet Wolfe	RSQE The University of Michigan
Stephen Gallagher	Societe Generale
Joseph Liro	Stone & McCarthy Research Associates
Kurt Karl	Swiss Re.
Martin A. Regalia	U.S. Chamber of Commerce
Sean M. Snaith, Ph.D.	University of Central Florida
Thomas Lam	UOB Group
Constantine G. Soras, Ph.D.	Verizon Communications
William B. Hummer	Wayne Hummer Investments
Scott Anderson	Wells Fargo and Company
	Global Insight

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The Survey in 2008 also shows the change from the Survey in 2007:

- In the first quarter of 2008 the expected equity returns for 10 years into the future are 6.50%, declining from 7.50% in the first quarter of 2007.

- In the first quarter of 2008 the expected returns to 10 year-bonds are 5.00%, unchanged from 5.00% in the first quarter of 2007.

- The spread between equity returns and debt returns has narrowed from 2.5% in the first quarter of 2007 to 1.5% in the first quarter of 2008.

TAW's request for an equity 11.75 percent return in the current docket is unreasonable in view of the Survey.

IX. More Credible Third-Party Information That 7.50% Is A Reasonable Expected Return: Morningstar Shows Average Returns Have Been At or Near Zero for 5 Years.

Besides the Survey of Forecasters, I turned to another investment-adviser company, Morningstar, which I have already mentioned. It tracks over 7,000 stocks and over 1,500 mutual funds in the United State. Morningstar is a publicly traded company. This status means the company files 10-K forms with the SEC. Morningstar's 10-K for the fiscal year ended December 31, 2007, shows that the company is growing rapidly and has an expansive future.

Morningstar's total revenues increased from $109.6 million in 2002 to $435.1 million in 2007. Assets increased from $152.7 million in 2002 to $649.3 million in 2006.

In its 10-K Morningstar provides ample detail of its activities:

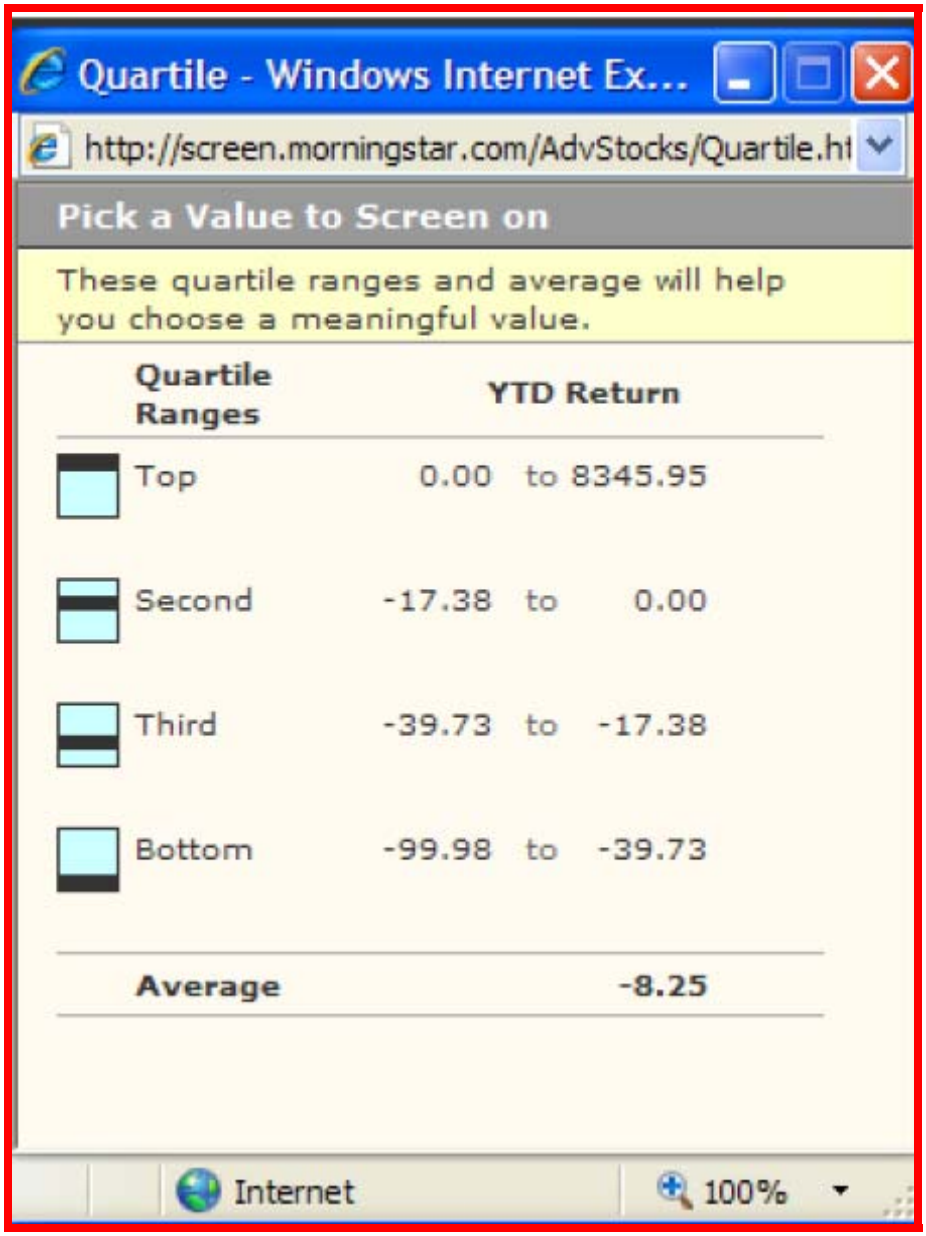
"Morningstar is a leading provider of independent investment research to investors around the world. Since our founding in 1984, our mission has been to create great products that help investors reach their financial goals. We offer an extensive line of Internet, software, and print-based products for individual investors, financial advisors, and institutional clients. Our company also provides asset management services for advisors, institutions, and retirement plan participants. In addition to our U.S.-based products and services, we offer local versions of our products designed for investors in Asia, Australia, Canada, and Europe. Morningstar serves more than 5.2 million individual investors, 210,000 financial advisors, and 1,700 institutional clients. We have operations in 15 countries and hold minority ownership positions in companies located in three other countries.

"We also reach individuals who want to learn more about investing and investors who seek out third-party sources to validate the advice they receive from brokers or financial planners. Our client base in this segment consists of more than 280,000 paying customers, including 180,366 Premium members of Morningstar.com and 100,000 subscribers who purchase our investment newsletters designed for individual investors."

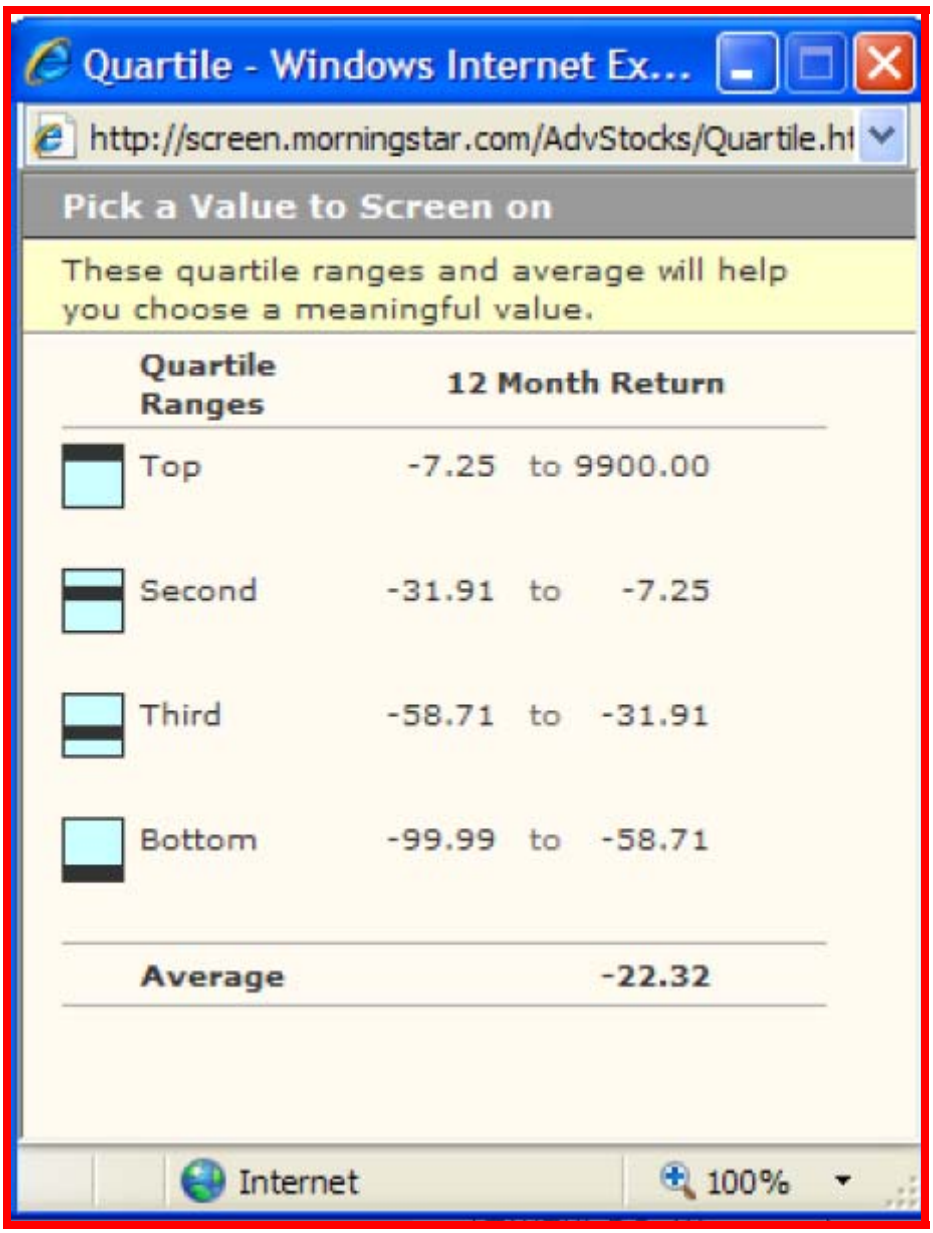
The next four images are from MorningStar's internet site as of July 10, 2008. The four images show returns to stockholders across more than 7,000 companies for four periods: "YTD Return" (Year To Date), "12 Month Return," "3 Year Return",and "5 Year Return."

The results show a cascade of losses, from an average negative return of -0.54 percent five years ago to average negative return of -22.32 percent in the last 12 months.

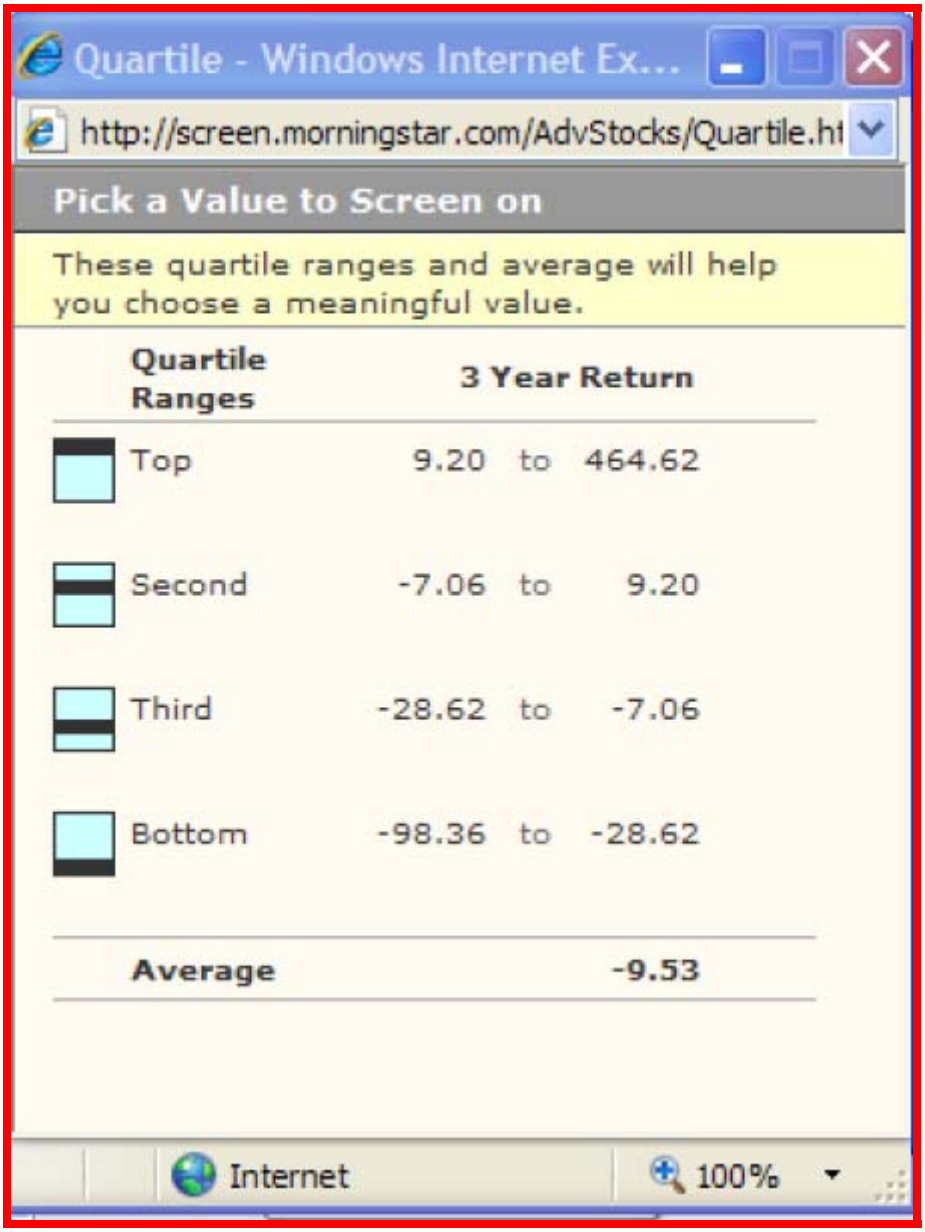
Year To Date Returns – Average and Distribution By Quartiles:



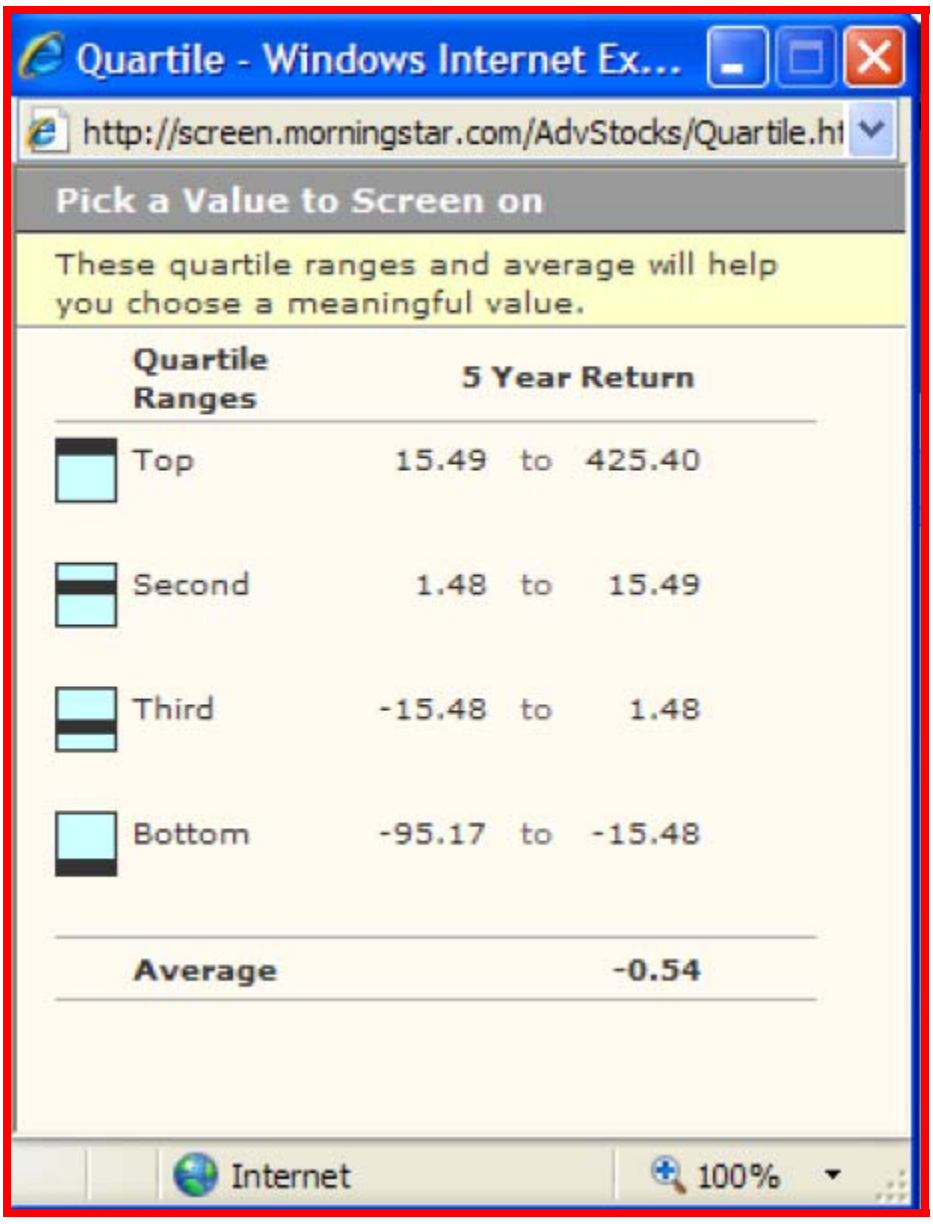
Twelve Month Returns – Average and Distribution By Quartiles:



Three Year Returns – Average and Distribution By Quartiles:



Five Year Returns – Average and Distribution By Quartiles:



The five year returns show that on average the overall return to the market for the past five years has been zero.

X. CAPD's CAPM Model.

Q_18. Do you use the CAPM model?

A_18. Yes, but recent scholarly articles suggest the CAPM is more of a method in search of an application than a reasonable predictor of equity returns and that the CAPM has very limited value. The next five page display excerpts from two scholarly articles dealing with the CAPM. The first one has two authors, Eugene Fama and Kenneth French and was published in the summer of 2004. The second article was published in May 2005 in the Quarterly Journal Of Economics and has three authors and confirms the findings of Fama and French. The essence of each article is that the CAPM approach to equity returns is no longer accepted by the scholarly community that created the theory. In my opinion the DCF model is the reliable method to produce just and reasonable rates.

Journal of Economic Perspectives—Volume 18, Number 3—Summer 2004—Pages 25–46

The Capital Asset Pricing Model: Theory and Evidence

Eugene F. Fama and Kenneth R. French

The capital asset pricing model (CAPM) of William Sharpe (1964) and John Lintner (1965) marks the birth of asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). Four decades later, the CAPM is still widely used in applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. It is the centerpiece of MBA investment courses. Indeed, it is often the only asset pricing model taught in these courses.[1]

The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor—poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the result of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model. For example, the CAPM says that the risk of a stock should be measured relative to a comprehensive "market portfolio" that in principle can include not just traded financial assets, but also consumer durables, real estate and human capital. Even if we take a narrow view of the model and limit its purview to traded financial assets, is it

[1] Although every asset pricing model is a capital asset pricing model, the finance profession reserves the acronym CAPM for the specific model of Sharpe (1964), Lintner (1965) and Black (1972) discussed here. Thus, throughout the paper we refer to the Sharpe-Lintner-Black model as the CAPM.

■ *Eugene F. Fama is Robert R. McCormick Distinguished Service Professor of Finance, Graduate School of Business, University of Chicago, Chicago, Illinois. Kenneth R. French is Carl E. and Catherine M. Heidt Professor of Finance, Tuck School of Business, Dartmouth College, Hanover, New Hampshire. Their e-mail addresses are ⟨eugene.fama@gsb.uchicago.edu⟩ and ⟨kfrench@dartmouth.edu⟩, respectively.*

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legitimate to limit further the market portfolio to U.S. common stocks (a typical choice), or should the market be expanded to include bonds, and other financial assets, perhaps around the world? In the end, we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model are invalid.

We begin by outlining the logic of the CAPM, focusing on its predictions about risk and expected return. We then review the history of empirical work and what it says about shortcomings of the CAPM that pose challenges to be explained by alternative models.

The Logic of the CAPM

The CAPM builds on the model of portfolio choice developed by Harry Markowitz (1959). In Markowitz's model, an investor selects a portfolio at time $t - 1$ that produces a stochastic return at t. The model assumes investors are risk averse and, when choosing among portfolios, they care only about the mean and variance of their one-period investment return. As a result, investors choose "mean-variance-efficient" portfolios, in the sense that the portfolios 1) minimize the variance of portfolio return, given expected return, and 2) maximize expected return, given variance. Thus, the Markowitz approach is often called a "mean-variance model."

The portfolio model provides an algebraic condition on asset weights in mean-variance-efficient portfolios. The CAPM turns this algebraic statement into a testable prediction about the relation between risk and expected return by identifying a portfolio that must be efficient if asset prices are to clear the market of all assets.

Sharpe (1964) and Lintner (1965) add two key assumptions to the Markowitz model to identify a portfolio that must be mean-variance-efficient. The first assumption is *complete agreement*: given market clearing asset prices at $t - 1$, investors agree on the joint distribution of asset returns from $t - 1$ to t. And this distribution is the true one—that is, it is the distribution from which the returns we use to test the model are drawn. The second assumption is that there is *borrowing and lending at a risk-free rate*, which is the same for all investors and does not depend on the amount borrowed or lent.

Figure 1 describes portfolio opportunities and tells the CAPM story. The horizontal axis shows portfolio risk, measured by the standard deviation of portfolio return; the vertical axis shows expected return. The curve *abc*, which is called the minimum variance frontier, traces combinations of expected return and risk for portfolios of risky assets that minimize return variance at different levels of expected return. (These portfolios do not include risk-free borrowing and lending.) The tradeoff between risk and expected return for minimum variance portfolios is apparent. For example, an investor who wants a high expected return, perhaps at point *a*, must accept high volatility. At point *T*, the investor can have an interme-

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MONEY ILLUSION IN THE STOCK MARKET: THE MODIGLIANI-COHN HYPOTHESIS*

RANDOLPH B. COHEN
CHRISTOPHER POLK
TUOMO VUOLTEENAHO

Modigliani and Cohn hypothesize that the stock market suffers from money illusion, discounting real cash flows at nominal discount rates. While previous research has focused on the pricing of the aggregate stock market relative to Treasury bills, the money-illusion hypothesis also has implications for the pricing of risky stocks relative to safe stocks. Simultaneously examining the pricing of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from any change in the attitudes of investors toward risk. Our empirical results support the hypothesis that the stock market suffers from money illusion.

I. INTRODUCTION

Do people suffer from money illusion, confusing nominal dollar values with real purchasing power? When the difference between real and nominal quantities is small and stakes are relatively low, equating the nominal dollar amounts with real values provides a convenient and effective rule of thumb. Therefore, it seems plausible that people often ignore the rate of inflation in processing information for relatively small decisions.[1]

Modigliani and Cohn [1979] hypothesize that stock market investors may also suffer from a particular form of money illusion, incorrectly discounting real cash flows with nominal discount rates. An implication of such an error is that time variation in the level of inflation causes the market's subjective expectation of the future equity premium to deviate systematically from the

* An earlier draft of the paper was circulated under the title "How Inflation Illusion Killed the CAPM." We would like to thank Clifford Asness, John Campbell, Edward Glaeser, Jussi Keppo, Stefan Nagel, Andrei Shleifer, Jeremy Stein, and three anonymous referees for helpful comments.

1. The term "money illusion" was coined by John Maynard Keynes early in the twentieth century. In 1928 Irving Fisher gave the subject a thorough treatment in his book *The Money Illusion*. Since then, numerous papers have described implications of money illusion to test for its existence. The most widely discussed of these implications is stickiness in wages and prices (see Gordon [1983] for a review of the evidence on this topic). Although money illusion can exist even in the absence of inflation, inflation is central to most money illusion stories. Fisher and Modigliani [1978] catalog the ways in which inflation could affect the real economy, with money illusion as one important source of real effects. Shafir, Diamond, and Tversky [1997] examine in detail potential effects of money illusion and present evidence on these effects along with a theory of the psychological underpinnings of the illusion.

The Quarterly Journal of Economics, May 2005

rational expectation. Thus, when inflation is high (low), the rational equity-premium expectation is higher (lower) than the market's subjective expectation, and the stock market is undervalued (overvalued). The claim that stock market investors suffer from money illusion is a particularly intriguing and controversial proposition, as the stakes in the stock market are obviously very high.

Nevertheless, recent time-series evidence suggests that the stock market does suffer from money illusion of Modigliani and Cohn's variety. Sharpe [2002] and Asness [2000] find that stock dividend and earnings yields are highly correlated with nominal bond yields. Since stocks are claims to cash flows from real capital and inflation is the main driver of nominal interest rates, this correlation makes little sense, a point made recently by Ritter and Warr [2002], Asness [2003], and Campbell and Vuolteenaho [2004]. These aggregate studies suffer from one serious weakness, however. Inflation may be correlated with investors' attitudes toward risk, which directly influence stock prices even if investors do not suffer from money illusion. To the extent that these aggregate studies fail to fully control for risk, the results may confound the impact of risk attitudes and money illusion.

Our novel tests explore the cross-sectional asset-pricing implications of the Modigliani-Cohn money-illusion hypothesis. Simultaneously examining the pricing of Treasury bills, safe stocks, and risky stocks allows us to distinguish money illusion from changing attitudes of investors toward risk. The key insight underlying our tests is that money illusion will have a symmetric effect on all stocks' yields, regardless of their exposure to systematic risk. In contrast, the impact of investor risk attitudes on a stock's yield will be proportional to the stock's risk, as risky stocks' yields will be affected much more than safe stocks' yields will be. This insight allows us to cleanly separate the two competing effects.

Specifically, we assume that investors use the logic of the Sharpe-Lintner capital asset pricing model (CAPM) [Sharpe 1964; Lintner 1965] to measure the riskiness of a stock and to determine its required risk premium. According to the CAPM, a stock's beta with the market is its sole relevant risk measure. In the absence of money illusion (and other investor irrationalities), the Sharpe-Lintner CAPM predicts that the risk compensation for one unit of beta among stocks, which is also called the slope of the security market line, is always equal to the rationally ex-

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samples. In an influential paper Fama and French [1992] fail to find support for "the central prediction of [the CAPM], that average returns are positively related to market [betas]." Curiously, this negative result is primarily driven by their 1951–1960 and 1981–1990 subsamples, both of which were preceded by high inflation. The cross-sectional implication of the Modigliani-Cohn hypothesis is that the slope of average returns on beta should be much lower than the equity premium in precisely those subsamples. In a sense, money illusion may have killed the Sharpe-Lintner CAPM.

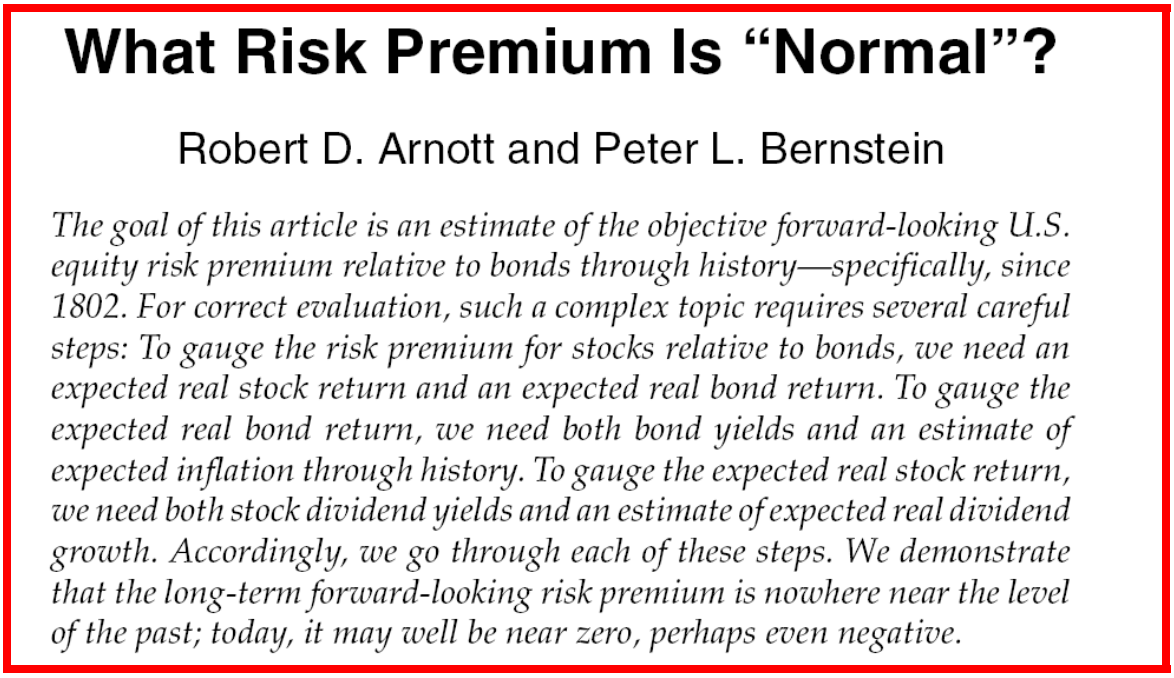
Although we do not explicitly consider money illusion's effect on investor welfare, we believe that our results may nevertheless have some policy implications, however speculative. First, if investors suffer from money illusion, stable and low inflation is likely to result in a less mispriced stock market than volatile and high inflation. To the extent that real investment decisions are influenced by stock market (mis)valuations, one would expect low and stable inflation to be beneficial to society.[5] Second, if government borrowing shifts from nominal bonds to inflation-indexed or real bonds, it is possible that the stock market will value stocks relative to real (instead of nominal) bonds, eliminating the effect of money illusion on stock prices. Third, and most importantly, to the extent that investors perceive a benefit from valuing stocks using nominal quantities, they should pay more attention to expected inflation when forecasting future nominal cash flows.

Q_19. How do you implement the CAPM model?

A_19. I implement the CAPM model by taking into account the current situation -- that *there is no longer a continuity between past and present equity costs, that equity's premium over debt is very low, in the two percent range, and that the relative risk of water companies is low.*

XI. CAPD's CAPM Premium Is Less Than 1 Percent.

According to the influential findings of Robert D. Arnott and Peter L. Bernstein, who wrote 'What Risk Premium "Normal?" and which was published in the Financial Analysts Journal, March-April 2002, the current equity premium may be negative. The article has affected writings in the pension and insurance fields. The next image displays the article's abstract:



What Risk Premium Is "Normal"?

Robert D. Arnott and Peter L. Bernstein

The goal of this article is an estimate of the objective forward-looking U.S. equity risk premium relative to bonds through history—specifically, since 1802. For correct evaluation, such a complex topic requires several careful steps: To gauge the risk premium for stocks relative to bonds, we need an expected real stock return and an expected real bond return. To gauge the expected real bond return, we need both bond yields and an estimate of expected inflation through history. To gauge the expected real stock return, we need both stock dividend yields and an estimate of expected real dividend growth. Accordingly, we go through each of these steps. We demonstrate that the long-term forward-looking risk premium is nowhere near the level of the past; today, it may well be near zero, perhaps even negative.

At one point in the article the authors tout dividends as the reliable aspect of shareholders' equity returns:

Accordingly, the dividend is the one reliable aspect of stock ownership over the past two centuries. It is the cash income returned to the shareholders; it is the means by which the long-term investor earns most of his or her internal rate of return. Finally,

Two years after Arnott's and Bernstein's article was published a Canadian firm wrote this article about Canadian pension plans:

TITLE: AN EXAMINATION OF THE EQUITY RISK PREMIUM ASSUMED BY CANADIAN PENSION PLAN SPONSORS

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July 2004

They noted that the frame when Arnott's and Bernstein's discovery would take hold was from about 2008 through 2012:

Robert D. Arnott and Peter L. Bernstein have done research and written several papers regarding ERP.[7] Although their research focuses on the U.S. financial markets, Arnott has suggested that similar results could be expected in Canada. The U.S. longer term history (50 years) shows an ERP of approximately 5%. Their analysis suggests that expected real stock returns over the 10-year period ending 2012 will be 2.5%, which is less than expected real bond yields of 3.3% and means a negative ERP of 0.8%.

The next image on page 40 of this testimony displays a portion of an article published in the October 2005 issue of the California Broker Magazine, where the author clearly says that offering variable universal life policies with a lure of a 10% return was a mistake because such long-tem returns are not possible.

CALIFORNIA BROKER

VOLUME 24, NUMBER 1 SERVING LIFE/HEALTH INSURANCE PROFESSIONALS & FINANCIAL PLANNERS OF CALIFORNIA OCTOBER 2005

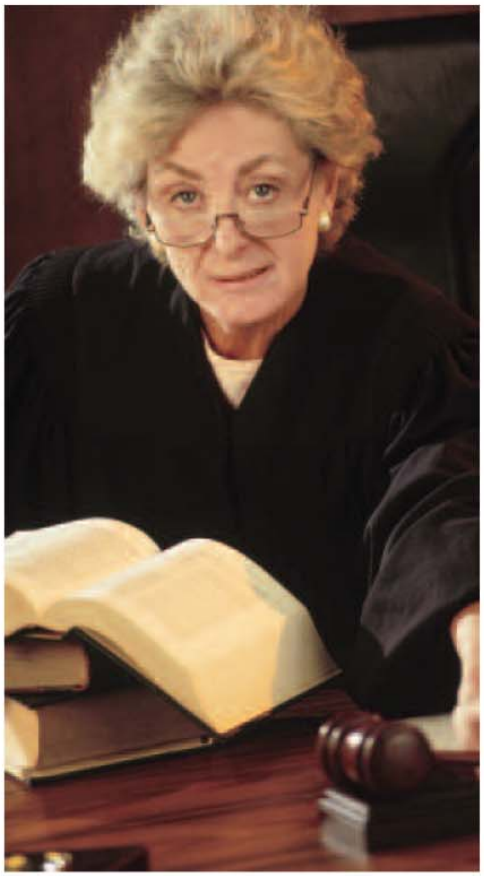
Variable Universal Life

How to Get Sued and Lose All Your Clients Using VUL

by Harry M Beck, CLU, CFA, CFP

Universal life insurance (UL) is popular because it offers the maximum flexibility for case design. Universal life insurance is no different from most forms of life insurance; it is designed to sell through illustrations that are merely estimates of an unknown future. Although illustrations display "guaranteed" results, sales are frequently made from future non-guaranteed estimates. The NAIC and the Securities and Exchange Commission (for variable products) regulate life insurance illustrations.

The success of a policy depends on an assumed premium payment, which is derived from a correct estimate of the capital markets (capital market expectations). Unfortunately, estimating future investment returns is difficult for producers or anyone else. Recent capital market surprises of lower than expected interest rates and lower equity returns have resulted in many traditional UL policies failing or being in danger of failing. I believe these failures will pale in comparison to the coming failure of variable universal life (VUL) policies, which often illustrate equity returns of 10% or more.



It may only be a matter of time before the legal profession finds it lucrative to sue agents who do the following:

- Sell VUL policies using unrealistic past performance illustrations.
- Do not use current capital market expectations to drive current illustrations.
- Do not actively monitor the performance of the VUL policies they sell.

Illustrating 10% to 12% Equity Returns is Dangerous and Wrong

The SEC allows carriers to illustrate hypothetical future returns. Variable life illustrations must show a 0% return, a 6% return, and a rate "not greater than 12%." Many carriers think it is acceptable to illustrate equity sub-accounts at 10% to 12% simply because the SEC allows them to do so. Many agents, using data from a highly unusual period, still believe that domestic equities are expected to grow at better than 10% per year. These agents believe that it is prudent to illustrate 10% returns and base premium payments upon the equity sub-accounts growing at this rate of return. I disagree and I believe that illustrating these returns is irresponsible and invites legal liability for the following reasons:

10% Equity Return Over Long Periods is Impossible

There is a pragmatic argument, originally brought forth by two of the most respected names on Wall Street – Peter Bernstein and Robert Arnott, which "proves" a 10% rate of return for equities over the long-term is impossible. Assume an investor put $10,000 in a form of super-dynasty trust in 1792 (I know there was no such thing back then) – the year George Washington became our first president. If that money were compounded at 10% for 213 years (until today), it would equal $6.5 trillion. This amount is more than one-half of the U.S. GDP and greater than the GDP of Japan. It is obvious that no single person or family could ever become that rich! Therefore, stocks must offer long-term returns under 10%. This strongly suggests that illustrating 10%

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Of course, dividends and equity returns per share cannot outrun earnings, which can be viewed as the upper limit on sustainable return. But even earnings per share have a history of overestimation. The Chairman of the Federal Reserve Board,Alan Greenspan, said in 2002:

> *"...long-term earnings forecasts of brokerage-based securities analysts, on average, have been persistently overly optimistic. Three-to five-year earnings forecasts for each of the S&P 500 corporations…, compiled from projections of securities analysts… averaged almost 12 percent per year between 1985 and 2001. Actual earnings growth over that period averaged about 7 percent." [Remarks by Chairman Alan Greenspan "Corporate Governance" At the Stern School of Business, New York University, New York, New York March 26, 2002]*

XII. CAPD's Betas Track The S&P500 Index, Averaging Only .5 or 50% Of The Market's Overall Risk.

To implement the relative risk aspect, or the "beta" aspect of the CAPM model, I use betas from the NASDAQ web site because publishes its betas for companies based on how a company's stock tracks S&P500 Index. Here is an example of NASDAQ's report on Aqua America:

WTR

Summary Quote Give Feedback

Web NASDAQ.com Corporate/ListingsInvestor RelationsSymbol DirectoryHome Home Site Map Corporate/Listings Company List Portfolio Tracker MyNASDAQ Ticker Advertise with us Newsroom Help Quotes, Charts & Research US Stock Quotes & Research Charts Option Quotes Mutual Fund Quotes Global Markets Institutional Holdings IPOs LiveQuotes Service Extended Trading Extended Trading Pre-Market Most Active Pre-Market Quotes Pre-Market Heatmap After Hours Most Active After Hours Quotes Market Activity Market Activity Most Active Unusual Volume Commodities Market Indices Sector Indices Sector Analysis 52 Wk Hi/Low Total Returns Market News Moving the Market Business Video Market Headlines Economic Calendar Tools Investing Tools Stock Screener Guru Screener Risk Grades Annual Reports Heatmaps Toolbar RSS Feeds Portfolio Wizard ETFs ETFs Closed End Funds Index Options Structured Products NASDAQ Indexes - Financial Products ETF Annual Reports Personal Finance Personal Finance Investing Mutual Funds Options Trading Forex Trading Book Store Brokerage Partners NASDAQ Summary Quotes - Stock Prices - Stock Research

Jul 2, 2008US Market Closed NASDAQ 2253.05 -51.92 -2.25% | DJIA 11216.08 -166.18 -1.46% | S&P 1261.51 -23.4 -1.82%

Page: Real Time FlashQuotes InfoQuotes Summary Quote Charts Interactive Charts Pre-Market Charts After Hours Charts Revenue / EPS Summary Company Financials - View Competitors - Short Interest Company News Press Releases Analyst Stock Research Stock Report Real-Time SEC Filings - Holdings/Insider Summary - Institutional Holdings - Insider Form 4 Equity Options Pre-Market Quotes After Hours Quotes Company Research - StockConsultant - Guru Analysis Annual Report Symbol List:AWRCTWSCWTMSEXSJWSWWCWTRYORW Edit Symbol List Symbol Lookup

Real Time NEW! FlashQuotes InfoQuotes Summary Quotes Company News Charts Stock Analysis Fundamentals Holdings Options Chain After Hours Quotes | Pre-Market Quotes | Related Links: NASDAQ-100 | NASDAQ Financial-100 | DJIA

New! Dynamic quotes, click this link to turn:On. Updates every 7 Seconds.

WTRAqua America, Inc. | WTR
Portfolio Tracking Ticker Alerts
NewsPrice
ChartsCompany
FinancialsHoovers
Profile

Consensus Recommendation

Analyst Info
Annual EPS Est:$ 0.74
Quarterly EPS Est:$ 0.17
PEG Ratio:2.13
Mean Recommendation:
View Summary/View All 1.63
Jul. 2, 2008 15:42 ET Market Open
Common StockMarket : NYSE

Last Sale$ 15.78
Change Net / %0.48 2.95%
1y Target Est:$ 22.00
Today's High / Low$ 16.25 / $ 15.72
Share Volume952,655
Previous Close$ 16.26
52 Wk High / Low$ 26.62 / $ 15.76
Shares Outstanding133,630,000
Market Value$ 2,108,681,400
P/E Ratio22.54
Forward P/E (1yr)19.12
Earnings Per Share$ 0.70
Annualized Dividend$ 0.50
Ex Dividend DateMay 14, 2008
Dividend Payment DateJun. 1, 2008
Current Yield3.08 %
Beta0.6

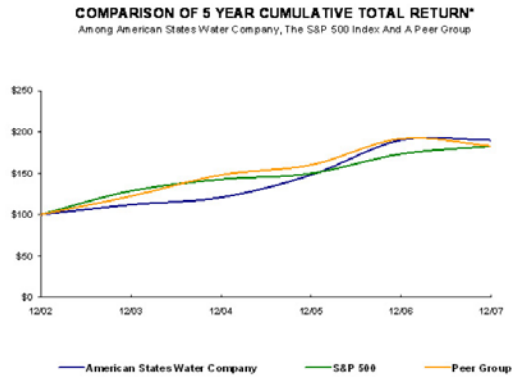
1
2

The next seven images were compiled from the water companies SEC Form 10-Ks or the companies' annual reports. Six of the water companies explicitly compare their performance to the S&P500 index. Middlesex compares itself to the Wilshire5000, which very closely tracks the S&P500 I could not find any reference where York Water's performance was compared to any index.

American States:

Stock Performance Graph

The graph below compares American States Water Company's cumulative five-year total shareholder return on Common Shares with the cumulative total returns of the S & P 500 index and a customized peer group of six companies that includes: Artesian Resources Corp., California Water Service, Connecticut Water, Middlesex Water Company, SJW Corp. and Southwest Water Company. The graph tracks the performance of a $100 investment in our Common Shares, in the index and in the peer group (with the reinvestment of all dividends) from December 31, 2002 to December 31, 2007.



* $100 invested on 12/31/02 in stock or index including reinvestment of dividends. Fiscal year ending December 31.

	12/02	12/03	12/04	12/05	12/06	12/07
American States Water Company	100.00	111.97	120.88	147.89	190.16	190.02
S&P 500	100.00	128.68	142.69	149.70	173.34	182.87
Peer Group	100.00	122.36	147.86	160.13	191.86	183.05

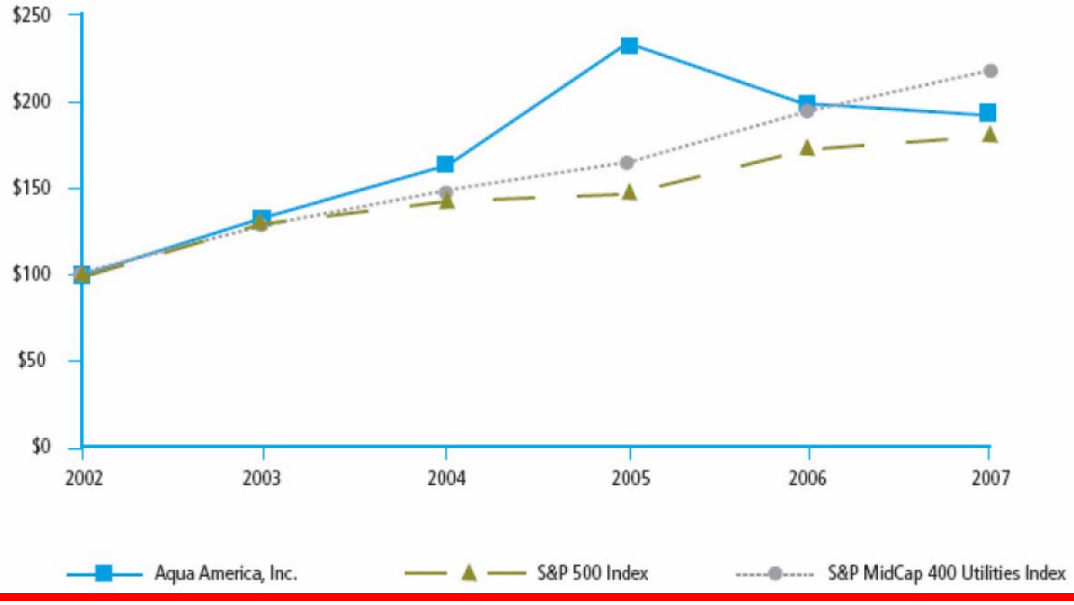
Aqua America:

Comparison of Five-Year Cumulative Total Shareholder Return*

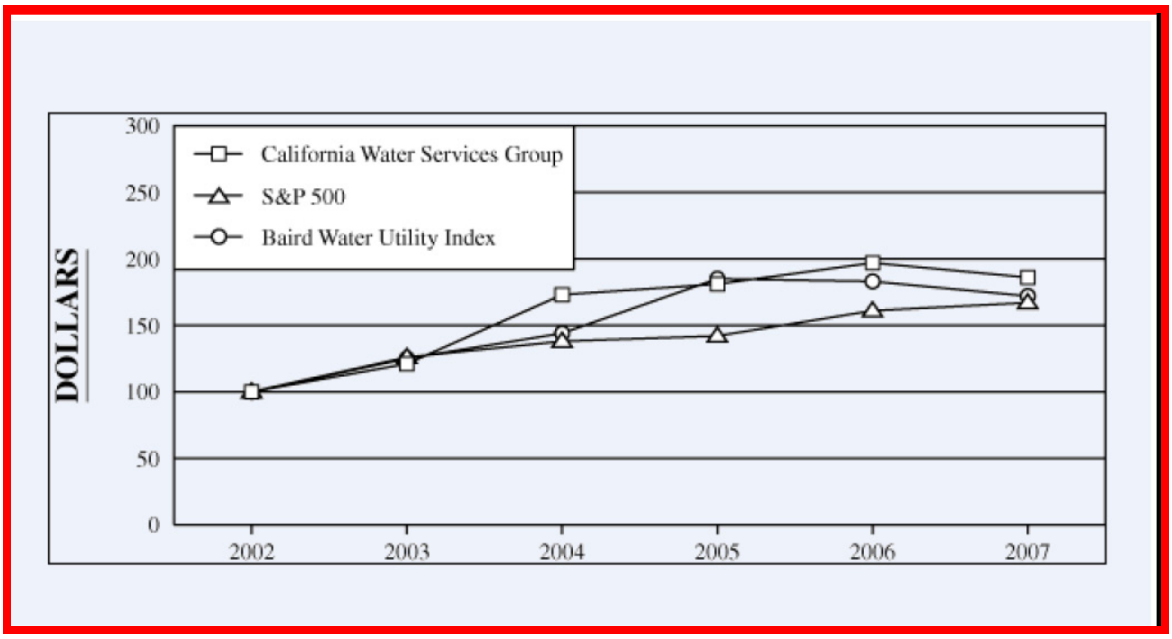
Among Aqua America, Inc., the S&P 500 Index and the S&P MidCap 400 Utilities Index

The graph below compares the cumulative 5-year total return of holders of Aqua America, Inc.'s Common Stock with the cumulative total returns of the S&P 500 index and the S&P MidCap 400 Utilities index. The graph tracks the performance of a $100 investment in our Common Stock and in each of the indices (with the reinvestment of all dividends) from 12/31/2002 to 12/31/2007.

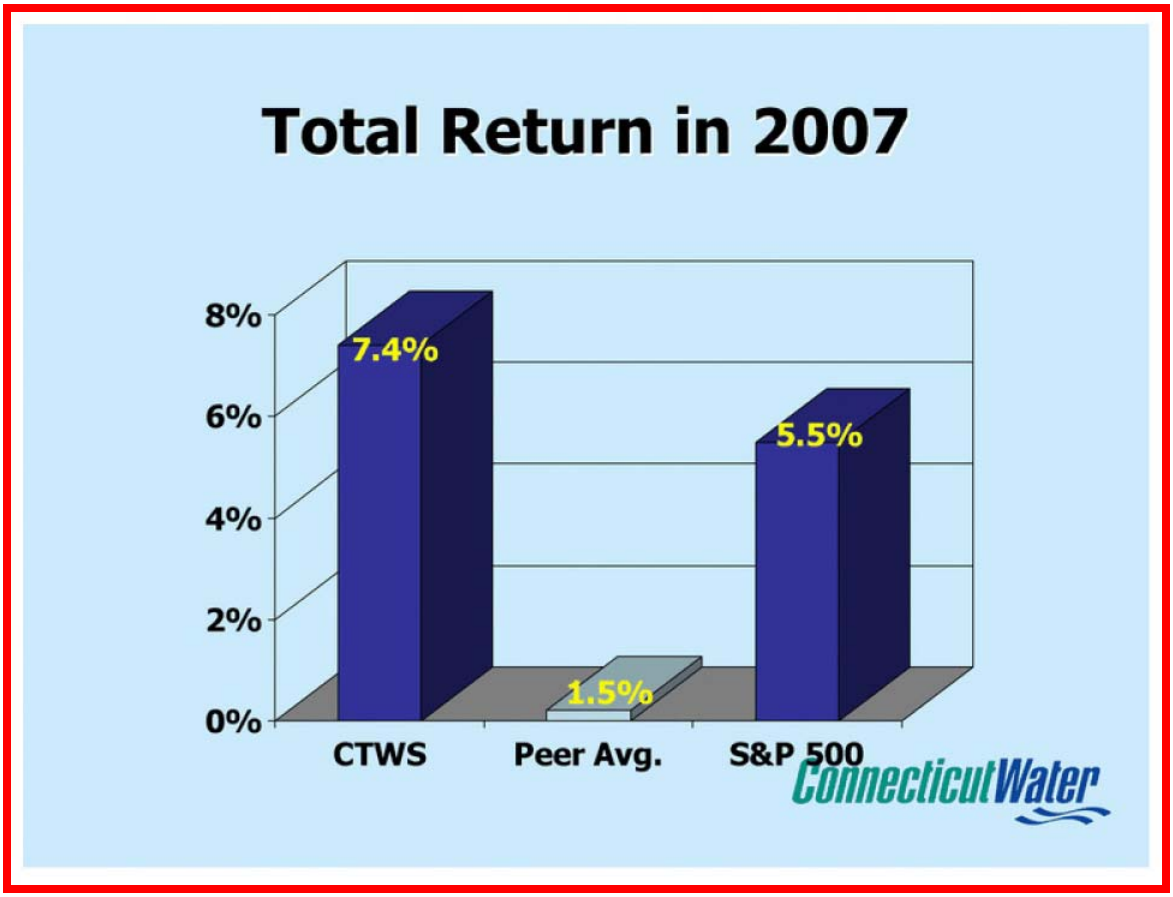
The S&P MidCap 400 Utilities Index consists of the following companies: AGL Resources, Alliant Energy, Aqua America, Inc., Aquila, Inc., Black Hills, DPL Incorporated, Energy East, Equitable Resources, Great Plains Energy Inc., Hawaiian Electric Industries, IDACORP, Inc. Hldg. Co., MDU Resources, National Fuel Gas, Northeast Utilities, NSTAR, OGE Energy Corp., ONEOK, Inc., Pepco Holdings, Inc., PNM Resources, Inc., Puget Energy, Inc. (Hldg. Co.), SCANA Corp., Sierra Pacific (New), Vectren Corporation, Westar Energy, Inc., WGL Holdings, Inc. and Wisconsin Energy.



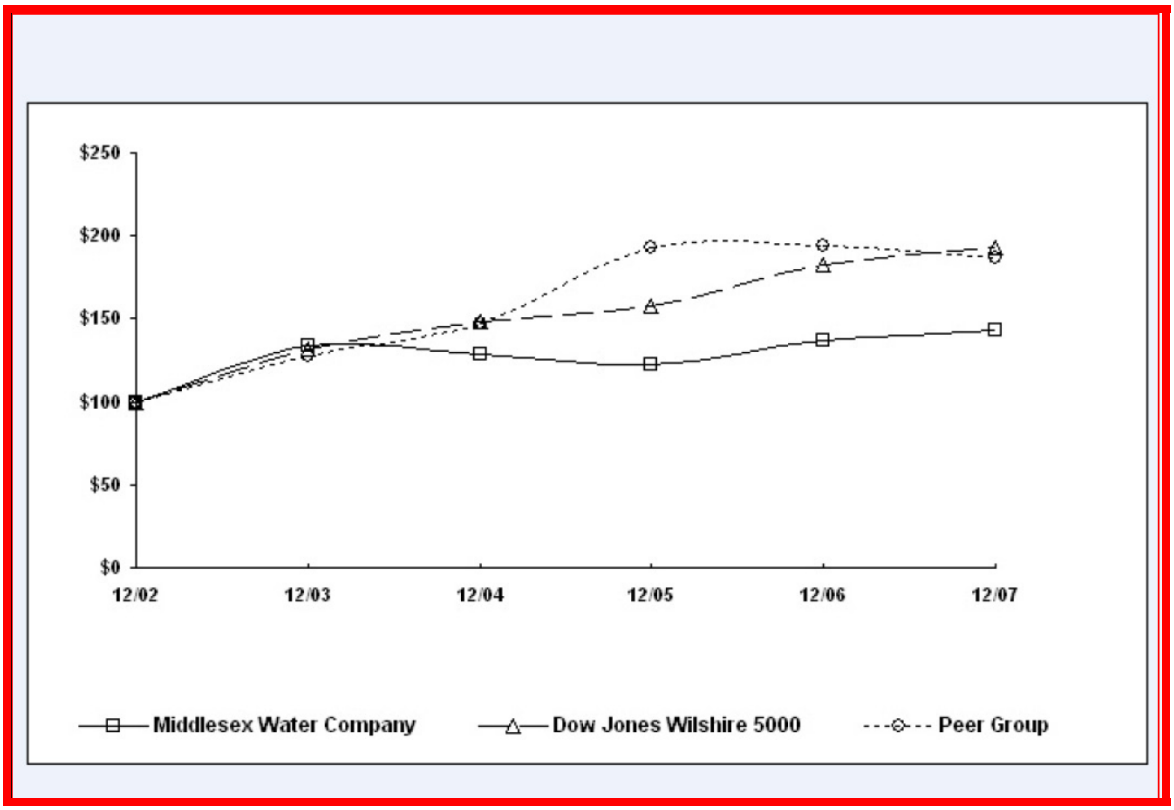
California Water Services:



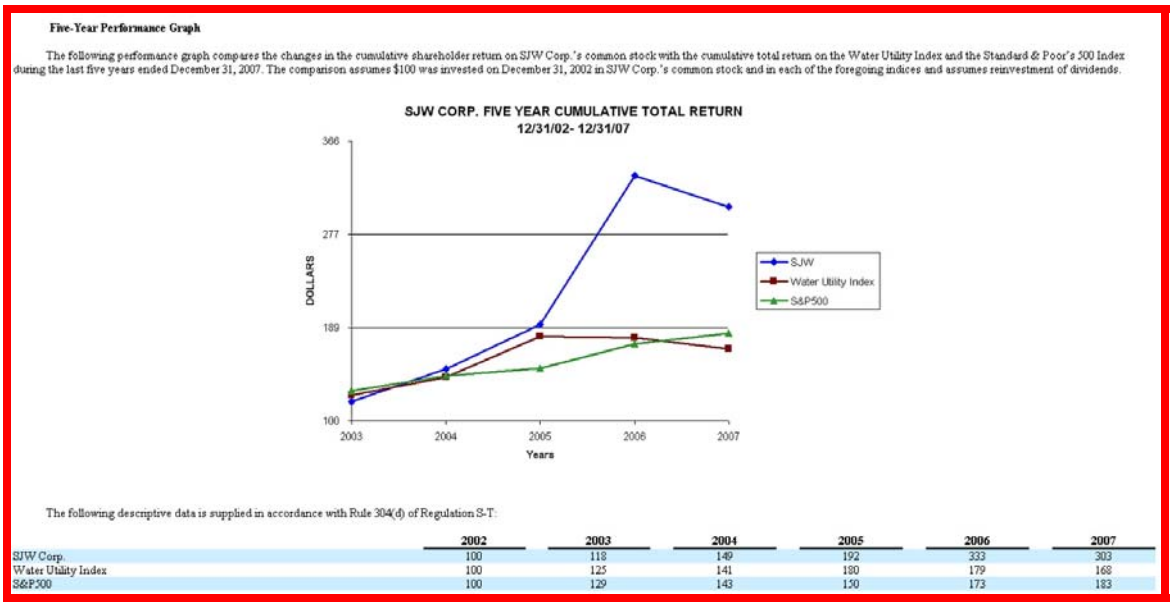
Connecticut Water:



Middlesex:



SJW:



Five-Year Performance Graph

The following performance graph compares the changes in the cumulative shareholder return on SJW Corp.'s common stock with the cumulative total return on the Water Utility Index and the Standard & Poor's 500 Index during the last five years ended December 31, 2007. The comparison assumes $100 was invested on December 31, 2002 in SJW Corp.'s common stock and in each of the foregoing indices and assumes reinvestment of dividends.

SJW CORP. FIVE YEAR CUMULATIVE TOTAL RETURN
12/31/02- 12/31/07

The following descriptive data is supplied in accordance with Rule 304(d) of Regulation S-T:

	2002	2003	2004	2005	2006	2007
SJW Corp.	100	118	149	192	333	303
Water Utility Index	100	125	141	180	179	168
S&P500	100	129	143	150	173	183

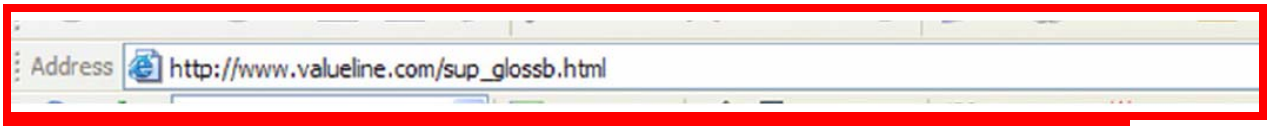
Southwest Water:

	Current Value of a December 31, 2002 Investment in:			Price of:	
	SWWC	S&P 500 Composite	A.G. Edwards Water Utility Index	SWWC	S&P 500
December 31, 2002	$ 100.00	$ 100.00	$ 100.00	$ 9.01	$ 880
December 31, 2003	122.50	128.68	129.07	10.86	1,112
December 31, 2004	146.78	142.69	149.99	12.81	1,212
December 31, 2005	166.60	149.68	203.79	14.31	1,248
December 31, 2006	162.76	173.32	204.62	13.76	1,418
December 31, 2007	150.74	182.84	193.64	12.52	1,468

Because these companies compare themselves to the S&P500 Index, this is the index to use as the basis for "relative risk. The next image shows a comparison of the NASDAQ betas with those used by Dr. Vilbert which are from Value Line.

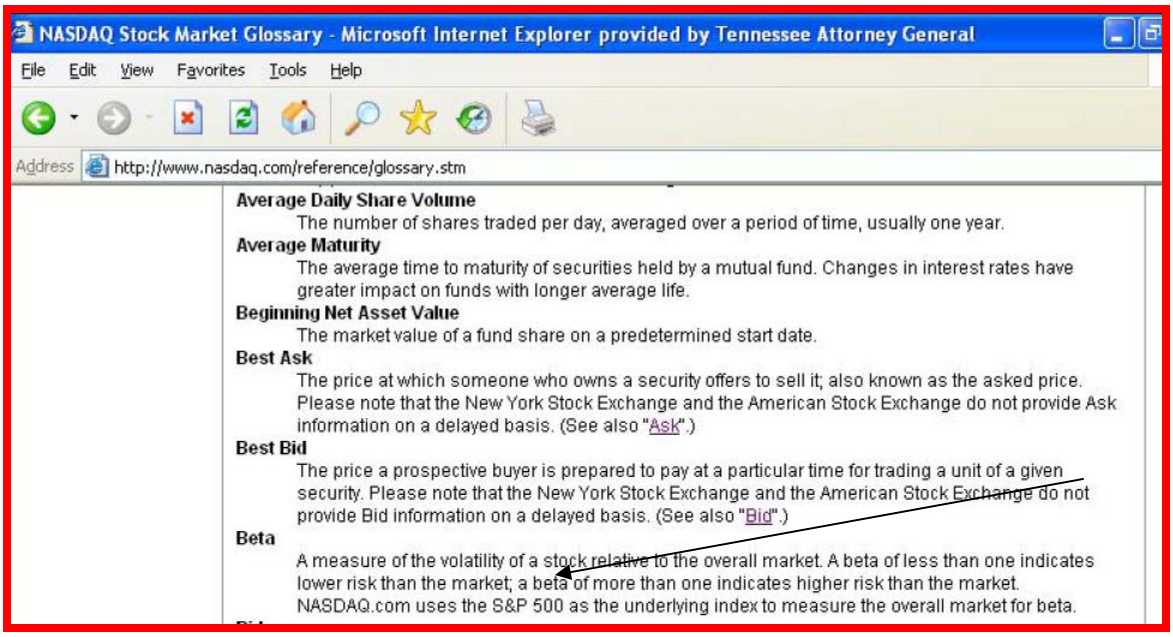
	Docket 08-00039		
	Witness: Vilbert		Witness: Brown
Company:	Value Line's Published Beta As Filed	Dr. Vilbert's Adjusts Value Line's Published Beta At Workpaper # 1 To Table No. MJV 10:	Betas From The NASDAQ Internet Site: July 2, 2008
Water Companies			
Amer St Water (NYSE:AWR)	1.00	0.97	0.76
Connecticut Water Service, Inc. (NASDAQ:CTWS)	0.85	0.75	0.13
California Water Svc (NYSE:CWT)	1.15	1.19	0.67
Middlesex Water Company (NASDAQ:MSEX)	0.90	0.82	0.09
S J W Cp (AMEX:SJW)	1.10	1.12	1.29
Southwest Water Company (NASDAQ:SWWC)	1.00	0.97	0.49
Aqua America(NYSE:WTR)	0.90	0.82	0.60
York Water Company (NASDAQ:YORW)	0.50	0.22	-0.01
Average	0.93	0.86	0.50

The next image is from Value Line's web site, showing that its betas track the NYSE index, an index that the water companies do not use.



Beta—a relative measure of the historical sensitivity of the stock's price to overall fluctuations in the New York Stock Exchange Composite Index. A Beta of 1.50 indicates a stock tends to rise (or fall) 50% more than the New York Stock Exchange Composite Index. The "Beta coefficient" is derived from a regression analysis of the relationship between weekly percentage changes in the price of a stock and weekly percentage changes in the NYSE Index over a period of five years. In the case of shorter price histories, a smaller time period is used, but two years is the minimum. The Betas are adjusted for their long-term tendency to converge toward 1.00.

The next image is from NASDAQ's web site showing it uses the S&P500 index.



My CAPM result shows an equity return of 6.17%, where I treat the minimum return as 5.84 percent, which is AWW's cost of Long-Term Debt, where the market return is 6.50 percent, which is the long-term expected return to the S&P500 Index, and where the beta or relative risk is .50, and where the equity premium is .66 percent, which is the difference between the market return of 6.50 percent and the minimum return as 5.84 percent as shown:

$$6.17\% = 5.84\% + (6.50\% - 5.84\%) * .5$$

XIII. Without 404 Certification, AWW's Financial Statements Are Justifiably Suspect, And Less Attractive To Prudent Investors.

In my summary I pointed out that AWW has deferred its SOX certication until at least 2010. Without certification AWW's financial statements are justifiably suspect and less attractive to prudent investors. Here is an example of a certification appearing in an Securities and Exchange Commission (SEC) form 10-K for the fiscal year 2007 of American States Water, a publicly traded water company and one of the eight water companies I discuss:

> *To the Board of Directors and Shareholders of American States Water Company:*
>
> *Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2007, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).*
>
> *PricewaterhouseCoopers LLP*

The SEC has said many times that meeting Sarbanes-Oxley requirements is necessary to attract capital:

> *"As I have mentioned before, good, honest companies should fear neither Sarbanes-Oxley nor our enforcement efforts. Rather, they should recognize that the improved standards that the Act mandates and smart and fair enforcement of the laws are the right thing to do and help attract capital and investment."[Testimony Concerning Implementation of the Sarbanes-Oxley Act of 2002 William H. Donaldson Chairman U.S. Securities and Exchange Commission Before the Senate Committee on Banking, Housing and Urban Affairs September 9, 2003]*

More recently in London SEC Commissioner Campos emphasized that certification strengthens the U.S. system and would "continue to attract capital:"

> *"But back to my main point. That is, capital demands protection. Nowhere in the world is capital better protected than in the United States. I am told every day by major foreign investors that they invest billions of dollars in the U.S. because they love Sarbanes-Oxley…The most famous - or infamous - corporate governance rule in the U.S. is Section 404 of the Sarbanes-Oxley Act. Investors love it. Companies, perhaps not so much. In my opinion, SOX 404 provides great advantages and protections for capital…But the SOX 404 bottom line has not and will not change: SOX 404 is the only standard in the world where both the management of the issuer certifies the effectiveness of, and the auditor tests and attests to, internal controls…."*

"One of the great strengths of the U.S. market is the system of high standards and protections of capital. This system will continue to attract capital from all corners of the world. I submit that investors appreciate and desire this high level of protection for capital. Indeed, the available data indicates that savings in the cost of capital for companies cross-listed on the U.S. are several times greater than the costs of complying with U.S. regulations." [Remarks Before the Governance for Owners Conference, by Commissioner Roel C. Campos U.S. Securities and Exchange Commission London, England March 22, 2007]

In Chicago, the SEC's Chief Accountant said in a speech that certification of internal control "strengthens public confidence in our markets and encourages investment:"

"However, given the massive financial scandals, decline in market capitalization and the resulting loss of investor confidence in our markets, I believe that, of all of the recent reforms the internal control requirements have the greatest potential to improve the reliability of financial reporting….Representing to the world that a company has in place an appropriate control system, free of material weaknesses, that gathers, consolidates and presents financial information strengthens public confidence in our markets and encourages investment…"." [Keynote Speech at 11th Annual Midwestern Financial Reporting Symposium by Donald T Nicolaisen, Chief Accountant U.S. Securities and Exchange Commission Chicago October 7, 2004]

XIV. Investors Are Demanding 404 Certification: "How Can You Invest In A Company If You Can't Rely On Their Financial Statements?"

AWW has not "represented to the world" that AWW "has in place an appropriate control system, free of material weaknesses." That lack of certification has a price because the investment community is demanding companies comply with SOX.

In 2005 the investment research company of Glass, Lewis & Co. sent a large report to the SEC regarding proposed changes to SOX requirements. Glass supported the certification of internal control. At one point in the report, Glass said directly: "How can you invest in a company if you can't rely on their financial statements?" I have placed the Glass Lewis report in my supporting documents. The next two images are excerpts from the Glass Report.

Mr. Jonathan G. Katz
Committee Management Officer
Securities and Exchange Commission
100 F Street NE
Washington, DC 20549-9303

Re: File Number 265-23

Dear Mr. Katz:

Glass, Lewis & Co., LLC is pleased to respond to the SEC Advisory Committee on Smaller Public Companies Request for Public Input (Release No. 33-8599; August 2, 2005). Glass Lewis is a leading independent investment research and proxy advisory firm, serving institutions that collectively manage more than $8 trillion in assets. Glass Lewis helps institutional investors make better informed investment and proxy voting decisions by identifying business, legal, governance and financial statement risks at more than 7,000 companies worldwide. The research staff at Glass Lewis has significant experience as financial executives at both large and small companies, and as auditors of both large and small companies.

The capital markets and investors need accurate financial data with which to make informed decisions as to where capital should be allocated and invested. Whenever the integrity and confidence in that data has been compromised, as was the case in recent years, the risk of loss by investors has increased significantly. As a result, it is important to the regulation of the securities markets, where money and profits no doubt drive human behavior, for sufficient investor protections to exist. These protections are necessary to minimize the types of events that occurred in 2000 to 2002, which to some degree continue to date.

We strongly believe the Sarbanes-Oxley Act of 2002 (SOX) creates improved governance, enhanced transparency, and higher quality financial reporting, which has increased investor confidence in the reliability of financial reports. This Act has, in our opinion, contributed to the investing public regaining confidence in the U.S. capital markets subsequent to when the market bubble burst contributing to trillion dollar losses in capitalization. This level of transparency also provides investors with higher quality and more timely information, which enables them to make better informed decisions as to where they should allocate their capital. We have heard from a number of business executives, including small businesses, as well as their professional advisors and stockholders that this information contributes to an improved relationship with their stockholders particularly long-term institutional investors.

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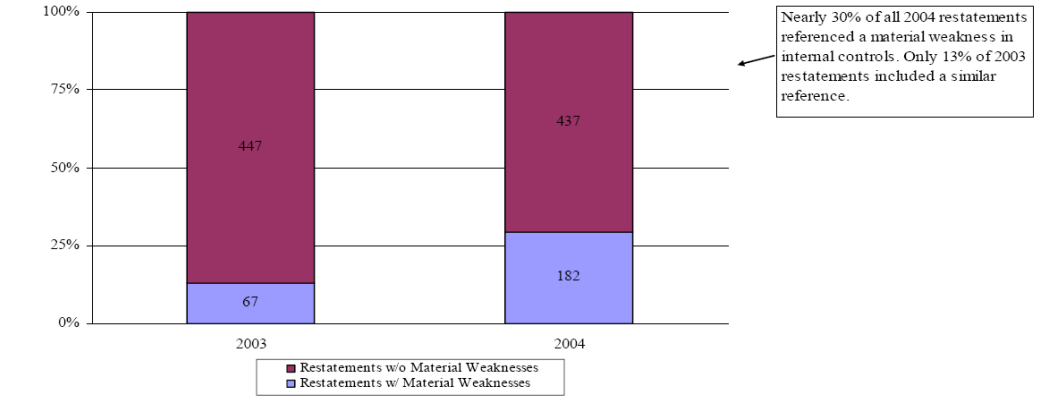
Restatements and Material Weaknesses in Internal Controls

How can you invest in a company if you can't rely on their financial statements? Investors depend heavily on the reliability of a company's system of financial reporting and the corresponding financial statements. Accordingly, investors should take notice when restatements associated with material weaknesses in internal control increased 172% from 2003 to 2004. Graph 20 shows the rapid growth in material weaknesses.

Graph 20: Annual Growth in Restatements with Material Weaknesses



Source: Glass Lewis.

When management discloses their company has a material weakness in internal control, they are in effect telling investors: There is greater than a remote chance that a material misstatement will not be prevented or detected in their company's financial statements.[31] A disclosed weakness and lack of fidelity in the company's financial statements is not good for investors, who could be negatively affected by a dip in both a company's share price and credit ratings. The investor must also consider the potential impact to a company when audited financial statements are not available due to delays caused by the evaluation of internal controls.[32] Failing to issue timely financial statements could jeopardize a company's ability to obtain credit financing or, worse, put a company in default of existing credit arrangements.

In 2007 the Council of Institutional Investors told the SEC, "The Council believes that the internal control requirements of Section 404 are a core element… We believe any company tapping the public markets to raise capital…should have appropriate internal controls in place with meaningful review by external auditors:"

COUNCIL OF INSTITUTIONAL INVESTORS

Suite 500 • 888 17th Street, NW • Washington, DC 20006 • (202) 822-0800 • Fax (202) 822-0801 • www.cii.org

Via Email

August 24, 2007

Nancy M. Morris
Secretary
Securities and Exchange Commission
100 F Street, NE
Washington, DC 20549-1090

Re: Revisions to the Eligibility Requirements for Primary Securities Offerings on Forms S-3 and F-3 (File Number: S7-10-07)

Dear Ms. Morris:

I am writing on behalf of the Council of Institutional Investors ("Council"), an association of more than 130 public, corporate and union pension funds with combined assets of over $3 trillion. As a leading voice for long-term, patient capital, the Council welcomes the opportunity to provide comments on the Securities and Exchange Commission's ("SEC" or "Commission") proposal to amend the eligibility requirements of Form S-3 and Form F-3 ("Proposed Rule"). We note that Council members have about half of their domestic equity holdings invested in indexed funds,[1] including significant investments in the Russell 2000 index which contains a number of smaller public companies that would likely become eligible to use Form S-3 to access the public markets if the Proposed Rule is adopted.[2]
The Council believes that the internal control requirements of Section 404 are a core element of SOX and play a vital role in ensuring high quality financial reporting and in maintaining investor confidence in the markets. Consistent with the requirements of Section 404, we believe any company tapping the public markets to raise capital, particularly the generally riskier smaller public companies that are the subject of the Proposed Rule, should have appropriate internal controls in place with meaningful review by external auditors.

XV. AWW's Current Auditor, PricewaterhouseCoopers (PWC), Has Been AWW's Auditor Since 1993.

PWC is AWW's current auditor and has been auditing AWW since 1993, as shown below:

Report of Independent Accountants on
Financial Statement Schedules

To the Board of Directors
American Water Works Company, Inc.

Our audits of the consolidated financial statements referred to in our report dated February 1, 1994 appearing on page 35 of the 1993 Annual Report to Stockholders of American Water Works Company, Inc. (which report and consolidated financial statements are incorporated by reference in this Annual Report on Form 10-K) also included an audit of the Financial Statement Schedules listed in Item 14(a) of this Form 10-K. In our opinion, these Financial Statements Schedules present fairly, in all material respects, the information set forth therein when read in conjunction with the related consolidated financial statements.

PRICE WATERHOUSE

Thirty South Seventeenth Street
Philadelphia, Pennsylvania 19103
February 1, 1994

PWC knows well the workings of AWW. AWW's Vice President and Chief Financial Officer said in AWW's 10-K filing with the SEC in early 2003, just before RWE completed its purchase of AWW:

"The Company's independent accountants, PricewaterhouseCoopers LLP, are engaged to conduct an independent audit of the Company's financial statements in accordance with auditing standards generally accepted in the United States of America. Their audit includes obtaining a sufficient understanding of the internal control structure to establish a basis for reliance thereon in determining the nature, extent and timing of the tests applied in the audit of the financial statements. Their opinion on the fairness of the reported operating results, cash flows and financial condition appears below."

Ellen C. Wolf, Vice President and Chief Financial Officer"

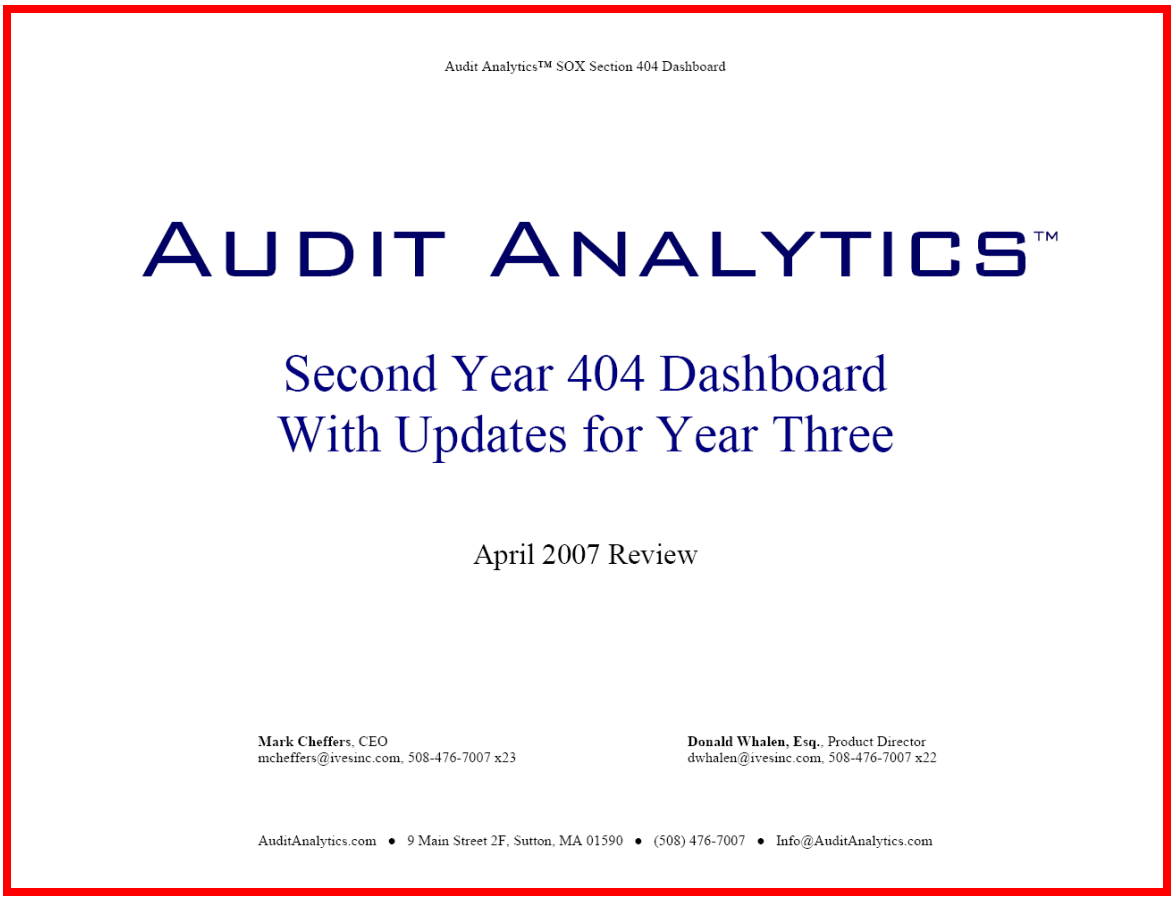
It has been common knowledge since November 2006 that RWE meant to divest itself of AWW so AWW would become a publicly traded company in the United States. Despite these two years of planning, and PWC's long association with AWW, PWC has not certified AWW's internal financial controls. Since 2005 PricewaterhouseCoopers has certified annually the internal controls of American States Water, Aqua America, Connecticut Water Service, all three being publicly traded water companies.

XVI. There Is A One in Six Chance That PWC Will Find Material Weakness In AWW's Internal Control.

There is about a 16 percent chance that PWC will find material weakness in AWW's internal controls, according to a report by Audit Analytics.

This firm has been referenced in SEC documents as performing reviews of auditors' findings regarding internal controls. I have placed Audit Analytics 2007 report in my supporting documents. I have also provided a copy of the cover page for 2007 and page 9 of the report within the body of this testimony.

This is the cover page of Audit Analytics' April 2007 report:



Audit Analytics™ SOX Section 404 Dashboard

AUDIT ANALYTICS™

Second Year 404 Dashboard
With Updates for Year Three

April 2007 Review

Mark Cheffers, CEO
mcheffers@ivesinc.com, 508-476-7007 x23

Donald Whalen, Esq., Product Director
dwhalen@ivesinc.com, 508-476-7007 x22

AuditAnalytics.com • 9 Main Street 2F, Sutton, MA 01590 • (508) 476-7007 • Info@AuditAnalytics.com

The next page, which is easier to see on a computer screen, is Audit Analytics analysis of the Auditors' findings regarding internal controls.

Audit Analytics™ SOX Section 404 Dashboard

April 2007

Year 1 Internal Controls over Financial Reporting Weaknesses - (404) Opinions Analysis*
Review of Internal Control Issues

	First Year 404 Opinions Filed*	First Year 404 Opinions with Material Weaknesses (MW) as of 2-9-07	Internal Control Issues (compared to the firm's total amount of MWs)[1] [2]					
			Personnel Issues	Segregation of Duties	Restatements of Financials	Material YE Adjustments	Internal Audit Issues	IT Processing, Access Issues
Ernst & Young	937	119	47	16	60	69	1	13
% of Firm's Total		12.7%	39.5%	13.4%	50.4%	58.0%	0.8%	10.9%
% of Category Total	25.3%	19.1%	15.5%	10.7%	18.5%	20.6%	5.9%	9.6%
PricewaterhouseCoopers	860	138	74	29	98	87	1	28
% of Firm's Total		16.0%	53.6%	21.0%	71.0%	63.0%	0.7%	20.3%
% of Category Total	23.2%	22.1%	24.3%	19.5%	30.2%	26.0%	5.9%	20.7%
KPMG	763	126	75	22	62	66	4	23
% of Firm's Total		16.5%	59.5%	17.5%	49.2%	52.4%	3.2%	18.3%
% of Category Total	20.6%	20.2%	24.7%	14.8%	19.1%	19.7%	23.5%	17.0%
Deloitte & Touche	671	116	44	25	69	57	5	20
% of Firm's Total		17.3%	37.9%	21.6%	59.5%	49.1%	4.3%	17.2%
% of Category Total	18.1%	18.6%	14.5%	16.8%	21.3%	17.0%	29.4%	14.8%
Grant Thornton	118	36	14	15	11	11	2	17
% of Firm's Total		30.5%	38.9%	41.7%	30.6%	30.6%	6%	47.2%
% of Category Total	3.2%	5.8%	4.6%	10.1%	3.4%	3.3%	12%	12.6%
BDO Seidman	86	30	20	15	11	19	0	11
% of Firm's Total		35.3%	66.7%	50.0%	36.7%	63.3%	0.0%	36.7%
% of Category Total	2.3%	4.8%	6.6%	10.1%	3.4%	5.7%	0.0%	8.1%
Crowe Chizek & Company LLC	33	6	0	1	1	5	0	1
% of Firm's Total		18.2%	0.0%	16.7%	16.7%	83.3%	0.0%	16.7%
% of Category Total	0.9%	1.0%	0.0%	0.7%	0.3%	1.5%	0.0%	0.7%
McGladrey & Pullen LLP	20	3	2	0	2	2	0	0
% of Firm's Total		15.0%	66.7%	0.0%	66.7%	66.7%	0.0%	0.0%
% of Category Total	0.5%	0.5%	0.7%	0.0%	0.6%	0.6%	0.0%	0.0%
Regional & Local Firms (105 firms)[3]	213	50	28	26	10	19	4	22
% of Firm's Total		23.5%	56.0%	52.0%	20.0%	38.0%	8.0%	44%
% of Category Tota	5.8%	8.0%	9.2%	17.4%	3.1%	5.7%	23.5%	16%
Totals	3700	624	304	149	324	335	17	135
% Total of 404 Opinions		16.9%	48.7%	23.9%	51.9%	53.7%	2.7%	21.6%

Of the 860 opinions filed by PWC on Section 404 performance in the first year of implementation, 16 percent found material weaknesses.

XVII. Material Weakness - A Greater Than Remote Chance That A Material Misstatement Will Not Be Prevented Or Detected In A Company's Financial Statements.

The Glass Lewis report which I cited, makes this statement about "Material Weakness" at page 20:

> *"When management discloses their company has a material weakness in internal control, they are in effect telling investor: There is a greater than remote chance that a material misstatement will not be prevented or detected in their company's financial statements."*

The source page is provided, showing that Glass Lewis was referring to the Public Company Oversight Board ByLaws and Rules.

When management discloses their company has a material weakness in internal control, they are in effect telling investors: There is greater than a remote chance that a material misstatement will not be prevented or detected in their company's financial statements.[31] A disclosed weakness and lack of fidelity in the company's financial statements is not good for investors, who could be negatively affected by a dip in both a company's share price and credit ratings. The investor must also consider the potential impact to a company when audited financial statements are not available due to delays caused by the evaluation of internal controls.[32] Failing to issue timely financial statements could jeopardize a company's ability to obtain credit financing or, worse, put a company in default of existing credit arrangements.

Section 404 of the Sarbanes Oxley Act (SOX 404) mandates an independent audit of a company's system of internal controls over financial reporting in conjunction with the annual audit of a company's financial statements. The internal control audit requirement is effective for all fiscal years ending after November 15,

[31]Public Company Accounting Oversight Board Bylaws and Rules – Standards – AS2: "A *material weakness* is a significant deficiency, or combination of significant deficiencies, that results in more than a remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected."

[32]Public Company Accounting Oversight Board Bylaws and Rules – Standards – AS2, paragraph 175: If there are significant deficiencies that, individually or in combination, result in one or more material weaknesses, management is precluded from concluding that internal control over financial reporting is effective. In these circumstances, the auditor must express an adverse opinion on the company's internal control over financial reporting."

XVIII. AWW Opted Out Of Certification Until 2010.

AWW is not likely to present such certification until at least 2010. In 2007 the SEC revised its rules so that a company borne of IPO, such as AWW, would have the option of avoiding certification until the second filing of an SEC 10-K. However, the SEC's rules do not prevent or discourage such certification. PWC or its predecessor PriceWaterHouse has been AWW's auditor since at least 1993.

Also, AWW said in 2003 that PWC "had sufficient understanding of [AWW's] internal control structure." Nothing prevented AWW from having certification at the outset of becoming a publicly traded company in the United States.

AWW could have proceeded with all due speed to obtain PWC's certification by the time the IPO was issued, instead AWW exercised its option to avoid certification until the last possible day.

Thus AWW's financial statements are justifiably suspect until there is an auditor's certification of internal controls.

XIX. AWW's Opt-Out: Not A Way To Attract Capital And Not In The Customers' Best Interests, Whose Future Rates Depend On Financial Data That Lack Authentication.

TAW's understanding of capital-attraction is quite different from the capital-attraction standards mentioned the SEC's remarks I quoted. TAW's rate and revenue expert explained the capital attraction principle to the Times Free Press in a recorded meeting as shown in the next image:

The recording is 65 minutes long. From minutes 34 to 36 TAW's rate and revenue expert said:

> *"like any other business we still have to attract capital in order to do these investments…if… we have two banks on Broad Street or wherever.. and one is paying 6 and one is paying 6 and quarter you are likely going to invest at the 6 and a quarter…it is no different than an investor in American Water Works or an investor in any other business…we have to be able to provide a return on that capital that is at least commensurate with companies of similar risk…I don't want to limit this to American Water Works. This is basic business practice. We are not going to be able attract capital… that is not in our customers' best interests…it's is not in our investors' best interests…it's is not in anybody's best interest…"*

The statement about 6 percent being a likely return is accurate, but there is no mention of the internal controls issue, even though it is a basic business practice today to have an auditor certify the internal controls of a company. AWW's decision to opt out of certification until 2010 is clearly not in the interests of investors. Nor is the opt-out in the customers' best interests, whose future rates depend on financial data that lack authentication, but this data is the basis for a rate-increase in Chattanooga.

AWW could have refrained from filing for rate increase until such certification was achieved, but it did not. AWW could rectify this deficiency by asking PWC to complete the work necessary for certification.

XX. In Tennessee Every Other Publicly-Traded, Rate-Regulated Utility Has Achieved SOX Compliance.

SOX compliance has not been an issue in Tennessee's regulatory process because every publicly-traded, rate-regulated utility in Tennessee has achieved SOX compliance. But AWW's rate petition has placed Tennessee's regulatory process in a difficult spot because the AWW's financial statements lack the now normal precautions demanded by investors.

AWW expected that its IPO in April 2008 would be valued between $24 and $26 a share. The final price was approximately $21.50, 10 percent to 20 percent below expectations for the 58 million shares which were sold in the IPO. AWW's majority stockholder, RWE, still owns over 90 million shares of AWW stock, and RWE has been clear that it wants to divest itself of AWW, "as soon as reasonably practicable" through more public offerings. To determine how many more offerings there would be and what conditions AWW thought were "reasonably practicable" CAPD made two discovery requests. The requests and the replies are provided in the next two images.

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 08-00039
FIRST DISCOVERY REQUEST OF THE
CONSUMER ADVOCATE AND PROTECTION DIVISION

Responsible Witness: Michael Miller/Others

PART III: QUESTIONS & REQUESTS REGARDING COST OF CAPITAL & MISCELLANEOUS

Question:

7. In its S-1 Registration statement filed May 6 with the SEC, American Water Works stated: "RWE intends to fully divest its ownership of American Water through the consummation of one or more public offerings of common stock of American Water as soon as reasonably practicable, subject to market conditions." Provide any study, document, emails and all written material where RWE or RWE Aqua Holdings GmbH consider what circumstances financial, and otherwise, constitute conditions that "are reasonably practicable, subject to market conditions" for the public offerings of common stock.

Response:

The Company objects to this request on the grounds that it is overbroad, unduly burdensome, and seeks information that is not relevant to this proceeding, seeks information that may be subject to attorney/client privilege and work product, and seeks information that is highly confidential. Furthermore, this request seeks information that is not in the possession, custody or control of the TAWC.

Subject to and without waiving its objections, the Company states that public information about AWK can be found at the following web sites: www.sec.gov and www.amwater.com (investor relations).

TENNESSEE AMERICAN WATER COMPANY
DOCKET NO. 08-00039
FIRST DISCOVERY REQUEST OF THE
CONSUMER ADVOCATE AND PROTECTION DIVISION

Responsible Witness: Michael Miller/Others

PART III: QUESTIONS & REQUESTS REGARDING COST OF CAPITAL & MISCELLANEOUS

Question:

8. Provide any study, document, emails and all written material where RWE, RWE Aqua Holdings GmbH, or American Water Works has performed or caused to be performed a study of American Water Works' expected market value between now and 2010.

Response:

The Company objects to this request on the grounds that it is unduly burdensome, seeks information that is irrelevant to this proceeding now that TAWC's parent company's (AWK) initial public offering has closed, and seeks information that is not in the possession, custody or control of the TAWC. Furthermore, the Company objects to this request to the extent it seeks Highly Confidential Information. The Company objects to the production of highly confidential data without the entry of a protective order that includes heightened protections sufficient to protect highly confidential information from public disclosure. Subject to and without waiving these objections, please see the public information about AWK which can be found at the following web sites: www.sec.gov and amwater.com (investor relations). Please see the response to TN-COC-01-Q2 for the public road show information.

Review of the referenced sites shows that neither RWE nor AWW has identified an upper limit on what stock price would cause RWE to divest itself of AWW, and that the current rate case is not the end of TAW's rate-case cycle in Chattanooga.

To the extent that AWW succeeds in acquiring extreme regulatory returns without SOX certification, another rate case is invited in 2009. Also, investors may be persuaded to purchase stock when they would have otherwise invested elsewhere. This could be a financial mistake if AWW's share price rises in the near future and then a material weakness is found in 2010 causing AWW's market price to decline. In my opinion, one reason AWW is seeking an extreme equity return is to overcome the negative effect of not having a SOX certification.

XXI. An 11.75% Equity Return Is Not In Best Interests Of The Customers And "Society Generally."

In TAW's last case, Docket 06-00290, AWW's cost of capital witness, Dr. Vilbert, submitted testimony on November 22, 2006. His testimony was 35 pages in length and had several appendices. He concluded that TAW's needed an equity rate of 11.25%. In this case his testimony is 35 pages in length and has several appendices. He concludes that TAW's needs an equity rate of 11.75%.

Besides asking for an even higher return, Dr. Vilbert added something else new to his testimony this year. He suggests in his current testimony that a denial of the rate increase is bad for everyone, and even it is denied TAW would come back soon, "forced" to file for another rate case:

> *" More important for customers, however, are the economic issues an inadequate return raises for them. In the short run, deviations of the expected rate of return on the rate base from the cost of capital may seemingly create a "zero-sum game"-- investors gain if customers are overcharged, and customers gain if investors are shortchanged. But in fact, even in the short run, such action may adversely affect the utility's ability to provide stable and favorable rates because some potential efficiency investments may be delayed or because the company is forced to file more frequent rate cases. In the long run, inadequate returns are likely to cost customers -- and society generally -- far more than may be gained in the short run. Inadequate returns lead to inadequate investment, whether for maintenance or for new plant and equipment…it is in the customers' interest not only to make sure the return investors expect does not exceed the cost of capital, but also to make sure that it does not fall short of the cost of capital, either…. However, a regulatory authority that sets rates so investors expect to earn the cost of capital on average treats both customers and investors fairly, and acts in the long-run interests of both groups."*
> *[Dr. Vilbert Direct 08-00039, Pg 7 of 35, lines 6 -26]*

Dr. Vilbert's emphasis on "force" and the "long run" is worth noting because it signals the Company's strategy of denial that the cost of capital is declining. I paraphrase: "The current economic situation is just a blip, not normal, and the cost of equity capital has not really changed, other than to go up by two-quarters of a point from 11.25 percent to 11.75 percent."

TAW's history of rate-increase filings is shown in the next table.

Data From TAW Rate-Increase Petitions

Filing Date	2003 Feb 07	2004 Sep 09	2006 Nov 22	2008 Mar 14
Docket	03-00118	04-00288	06-00290	08-00039
Rate Base (Millions $)	87.270	87.611	100.583	119.810
Company Claimed Return At Then-Current Rates	5.95%	6.77%	4.77%	4.81%
Proposed Overall Return	8.55%	8.00%	8.466%	8.514%
Proposed Equity Return	11.00%	10.77%	11.25%	11.75%
Regulatory Granted Equity Return	9.90	9.90	10.20	???

Dr. Vilbert's concern about TAW getting "inadequate returns" seems misplaced because TAW usually receives the lion's share of its proposed equity return. However, the table above shows that no "long-term" equity return lasts long in TAW's hands. It takes TAW just 16 months or so to cut its regulatory-granted return in-half.

TAW's rate and revenue expert told the Chattanooga Times Free Press that a "rate case is the last resort not the first thought" [minutes 17.54 to 17.59 Chattanooga Times Free Press Audio Recording]. The sentiment of TAW's expert is at odds with the rapid-fire history of TAW's rate-increase-petitions. TAW's idea of capital attraction may include the equity return expected from the regulatory process. I paraphrase:

> *"if… we have two banks on Broad Street or wherever and one is paying 6 and one is paying 6 and quarter, and we have a regulatory rate of return of 10 percent, you are likely going to invest to get that regulatory rate of return…*

If a company invests to get that "regulatory rate of return" seeing the future as the past, the company is making a mistake. Past equity returns such as 11.75%, 10.2%, and even 9% are above normal market returns expected today and expected in the future.

TAW may have based its current Petition on the wrong regulatory signal, causing the company to invest when it would not otherwise have done so. On the other hand, to the extent that TAW's revenue requirement and rate-base include forecasted amounts rather than actual amounts, or amounts that should have been retired or more quickly depreciated, Dr. Vilbert would be even more mistaken to claim that denial of the rate increase is in best interests of the customers and "society generally."

XXII. Is TAW's Rate-Base Growing Because Of Necessary Or Because Of Discretionary Investment?

TAW's history of rate-increase filings, which is shown on page 72 of this testimony, shows a rapid increase in TAW's rate base. Dr. Vilbert's opinion that . "inadequate returns lead to inadequate investment" [Dr. Vilbert Direct Pg 7 of 35] suggests that he considers all of TAW's investment as necessary and unavoidable.

However, Mr. Mike Miller, TAW's rate and revenue expert, has testified in the past that a water company's investments can be separated between necessary and discretionary investments. He provided rebuttal testimony in the West Virginia-American Water Company, PSC Case No. 03-0353-W-42T:

> *"This additional equity capital for growth could be considered discretionary and will have to meet certain internal criteria for those investments. A key consideration for any investment of equity capital is the authorized ROEs of the various states in which American Water subsidiaries operate…every business considers its capital investment alternatives and determines to invest its capital where it believes it will obtain the best return on that investment. A comparative rate of return on equity will obviously be a consideration for the Company on future investments if they are discretionary in nature. The Company will continue to make utility plant upgrades necessary to meet water quality regulations or maintain acceptable service levels to existing customers, and discretionary investments will be reviewed carefully to assure they meet internal expectations and are economically justified. If the Company is to compete for discretionary equity investment, it must have an opportunity to achieve an ROE comparable to that obtained by other American Water operating subsidiaries in other jurisdictions." [Mr. Miller, as cited, Page 20, lines 1-20]*

Mr. Miller's testimony offered no criteria to distinguish discretionary investment from necessary investment. However, TAW's President, Mr. Watson, told the Chattanooga Times Free Press that a "we don't put off capital investment" [minutes 14.59 to 15.02 Chattanooga Times Free Press Audio Recording]. At this point it is not clear to me what type of investment, discretionary or necessary, is not being "put off." Nor is it clear to me what type of investment, discretionary or necessary is causing TAW to expand its rate base in Chattanooga.

It is possible that the DCF return of 7.5 percent would help TAW clarify priorities:

- A rate of return consistent with current and expected conditions may aid TAW in identifying a necessary investment and confine future investment to what is indeed a necessary investment.

- On the other hand a rate of return inconsistent with current and expected conditions may call forth discretionary investment that does not necessarily have a demonstrated need.

Dr. Vilbert has a negative opinion of using the dividend stream as a basis for the regulatory return. In docket 06-00290 Dr. Vilbert testified, "I rely primarily on risk positioning…I do not believe the DCF [dividend] is completely reliable at this time." In the current docket 08-00039 Dr. Vilbert testifies, "I rely primarily on risk positioning…I believe that the DCF [dividend] is generally less reliable …the conditions necessary for …the DCF [dividend] method are not met at this time." Because the dividend approach does not include a return based on expected capital gains, I do not believe that there are any conditions which will ever satisfy Dr. Vilbert's objections. The next image is a side-by-side comparison of page 2 of Dr. Vilbert's testimonies in each docket. Not only did Dr. Vilbert not change his opinion from one docket to the next, he did not change the page where he expressed the opinion.

Q4. Please summarize any parts of your background and experience that are particularly relevant to your testimony on these matters.

A4. Brattle's specialties include financial economics, regulatory economics, and the gas and electric industries. I have worked in the areas of cost of capital, investment risk and related matters for many industries, regulated and unregulated alike, in many forums. I have testified or filed cost of capital testimony before the Federal Energy Regulatory Commission, the Arizona Corporation Commission, the Pennsylvania Public Utility Commission, the Public Service Commission of West Virginia, the Canadian National Energy Board, Alberta Energy and Utilities Board, the Ontario Energy Board, and the Labrador & Newfoundland Board of Commissioners of Public Utilities. I have not previously testified before this Authority. Appendix A contains more information on my professional qualifications.

Q5. Please summarize how you approached this task.

A5. I review the evidence from two samples, a sample of regulated water utilities and a sample of natural gas local distribution companies ("gas LDC"). I use the results of the gas LDC sample as a check on the results of the water sample. I give the results from the two samples about equal weight. My analyses considers cost of capital evidence from the risk positioning and discounted cash flow models, but I rely primarily on the risk positioning results because I do not believe that the DCF method is completely reliable at this time.

Specifically, I estimate the cost of equity for the companies in the two benchmark samples using both cost of equity estimation methods. Given the cost of equity estimates for each company and the sample company's market costs of debt and preferred stock, I calculate each firm's overall cost of capital, i.e., its after-tax weighted-average cost of capital ("ATWACC"), using the

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Tennessee-American Water
Direct Testimony of Michael J. Vilbert
Page 2 of 35

Q5. Please summarize the parts of your background and experience that are particularly relevant to your testimony on these matters.

A5. Brattle's specialties include financial economics, regulatory economics, and the gas, water and electric industries. I have worked in the areas of cost of capital, investment risk and related matters for many industries, regulated and unregulated alike, in many forums. I have testified or filed cost of capital testimony before the Federal Energy Regulatory Commission, the Arizona Corporation Commission, the Pennsylvania Public Utility Commission, the Public Service Commission of West Virginia, the Public Service Commission of Wisconsin, the South Dakota Utilities Board, the Public Utilities Commission of Ohio, the California Public Utilities Commission, the Canadian National Energy Board, Alberta Energy and Utilities Board, the Ontario Energy Board, and the Labrador & Newfoundland Board of Commissioners of Public Utilities. I previously testified before the TRA in Case No. 06-00290, on behalf of Tennessee-American. Appendix A contains more information on my professional qualifications.

Q6. Please summarize how you approached this task.

A6. I review the evidence from two samples, a sample of regulated water utilities and a sample of regulated natural gas local distribution companies ("gas LDC"). I use the results of the gas LDC sample as a check on the results of the water sample, because the sample of available water companies is not completely reliable at this time. My analysis considers cost of capital evidence from the risk positioning (i.e., the CAPM and Empirical CAPM) and discounted cash flow models, but I rely primarily on the risk positioning results because I believe that the DCF method is generally less reliable. In the case of the water sample in particular the conditions necessary for the implementation of the DCF method are not met at this time.

Specifically, I estimate the cost of equity for the companies in the two benchmark samples using both cost of equity estimation methods. Given the cost of equity estimates for each company and the sample company's market costs of debt and preferred stock, I calculate each firm's overall cost of capital, i.e., its after-tax weighted-average cost of capital ("ATWACC"), using the company's market value capital structure. For each

However, the actual returns of the water companies shows the risk premium approach is not reliable and not accurate. In Docket 06-00290 Dr. Vilbert thought the water companies' equity returns would be, between 11.8 percent and 13.6 percent.

Dr. Vilbert is well aware of what happened to these companies' returns, but his current testimony does not offer an explanation for why he was so wide of the mark.

The image on page 80 of this testimony displays a table of equity returns he was expecting to occur after docket 06-00290 was complete.

Table No. MJV-11

Risk Positioning Cost of Equity at Tennessee American Water's Capital Structure

Panel A: 2006 Water Sample
Using All Companies

	Overall Cost of Capital [1]	Tennessee American Water's Regulatory % Debt [2]	Tennessee American Water's Cost of Debt [3]	Corporate Tax Rate [4]	Tennessee American Water's Regulatory % Preferred Equity [5]	Tennessee American Water's Cost of Preferred Equity [6]	Tennessee American Water's Regulatory % Equity [7]	Estimated Return on Equity [8]
Using Long-Term Risk-Free Rates:								
CAPM using Unadjusted Value Line Betas	7.3%	0.55	6.4%	39.2%	0.01	6.3%	0.43	11.8%
ECAPM (0.5 %) using Unadjusted Value Line Betas	7.5%	0.55	6.4%	39.2%	0.01	6.3%	0.43	12.1%
ECAPM (1.5%) using Unadjusted Value Line Betas	7.7%	0.55	6.4%	39.2%	0.01	6.3%	0.43	12.6%
Using Short-Term Risk-Free Rates:								
CAPM using Unadjusted Value Line Betas	7.4%	0.55	6.4%	39.2%	0.01	6.3%	0.43	11.8%
ECAPM (1%) using Unadjusted Value Line Betas	7.6%	0.55	6.4%	39.2%	0.01	6.3%	0.43	12.4%
ECAPM (2%) using Unadjusted Value Line Betas	7.9%	0.55	6.4%	39.2%	0.01	6.3%	0.43	13.0%
ECAPM (3%) using Unadjusted Value Line Betas	8.1%	0.55	6.4%	39.2%	0.01	6.3%	0.43	13.6%

Sources and Notes:
[1]: Table No. MJV-10; Panels A - G, [8].
[2]: Provided by Tennessee American Water.
[3]: Mergent Bond Record, August 2006. Based on an A rating.
[4]: Tax Rate provided by Tennessee American Water.
[5]: Provided by Tennessee American Water.
[6]: Mergent Bond Record, August 2006. Based on an A rating.
[7]: Provided by Tennessee American Water.
[8]: {[1] - ([2] x [3] x (1 - [4]) + [6] x [7])} / [5].

The image at page 82 of my testimony shows page 30 of Dr. Vilbert's current testimony, where he displays results from his current analyses. I have highlighted his returns and the "mean risk premium" or MRP, which is as high as 8 percent. There is little difference between the two tables. At pages 22 and 23 of his current testimony he formulates his risk positioning approach in two ways:

a) The Capital Asset Pricing Model

$$k_s = r_f + \beta_s \times MRP \quad (2)$$

where k_s is the cost of capital for investment s; r_f is the risk-free rate, β_s is the beta risk measure for the investment s; and MRP is the market risk premium.

b) The Empirical Capital Asset Pricing Model

The second model makes use of these empirical findings. It estimates the cost of capital with the equation, where α is the "alpha" adjustment of the risk-return line, a constant,

$$k_s = r_f + \alpha + \beta_s \times (MRP - \alpha) \quad (3)$$

and the other symbols are defined as above. I label this model the Empirical Capital

These are variants of the CAPM approach which I discuss in my testimony from pages 31 to 49. Neither of Dr. Vilbert's CAPM formulations has proved accurate or reliable for setting rates. The risk premium method may actually cause harm if it has or is leading TAW to make discretionary investments.

Table 1. Cost of Equity Results

Regulatory Capital Structure: *45.3% Equity / 1.2% Preferred / 53.4% Debt* *2008 Tax Rate: 39.2%*

		METHODS								
		RISK POSITIONING (using Long-Term Risk-Free Rate)			RISK POSITIONING (using Short-Term Risk-Free Rate)				DCF	
		CAPM	α = 0.5%	α = 1.5%	CAPM	α = 1%	α = 2%	α = 3%	Simple	Multi-stage
[1]	**Water Sample***									
	Full Sample									
	Cost of Equity	13.8%	13.9%	14.0%	12.1%	12.1%	12.2%	12.3%	16.9%	10.4%
	Average ATWACC	8.3%	8.3%	8.4%	7.5%	7.6%	7.6%	7.6%	9.7%	6.8%
	Sub-sample									
	Cost of Equity	13.8%	13.8%	13.9%	12.0%	12.1%	12.2%	12.3%	15.9%	10.4%
	Average ATWACC	8.3%	8.3%	8.4%	7.5%	7.5%	7.6%	7.6%	9.3%	6.7%
[2]	**Gas LDC Sample****									
	Cost of Equity	11.7%	11.9%	12.1%	9.8%	10.0%	10.3%	10.6%	11.0%	11.1%
	Average ATWACC	7.4%	7.4%	7.6%	6.5%	6.6%	6.7%	6.9%	7.1%	7.1%

[3] Risk Positioning Security Market Line Parameters:

Long-Term
Risk Free Rate Estimate: 4.3%
Estimated MRP: 6.5%

Short-Term
Risk Free Rate Estimate: 1.7%
Estimated MRP: 8.0%

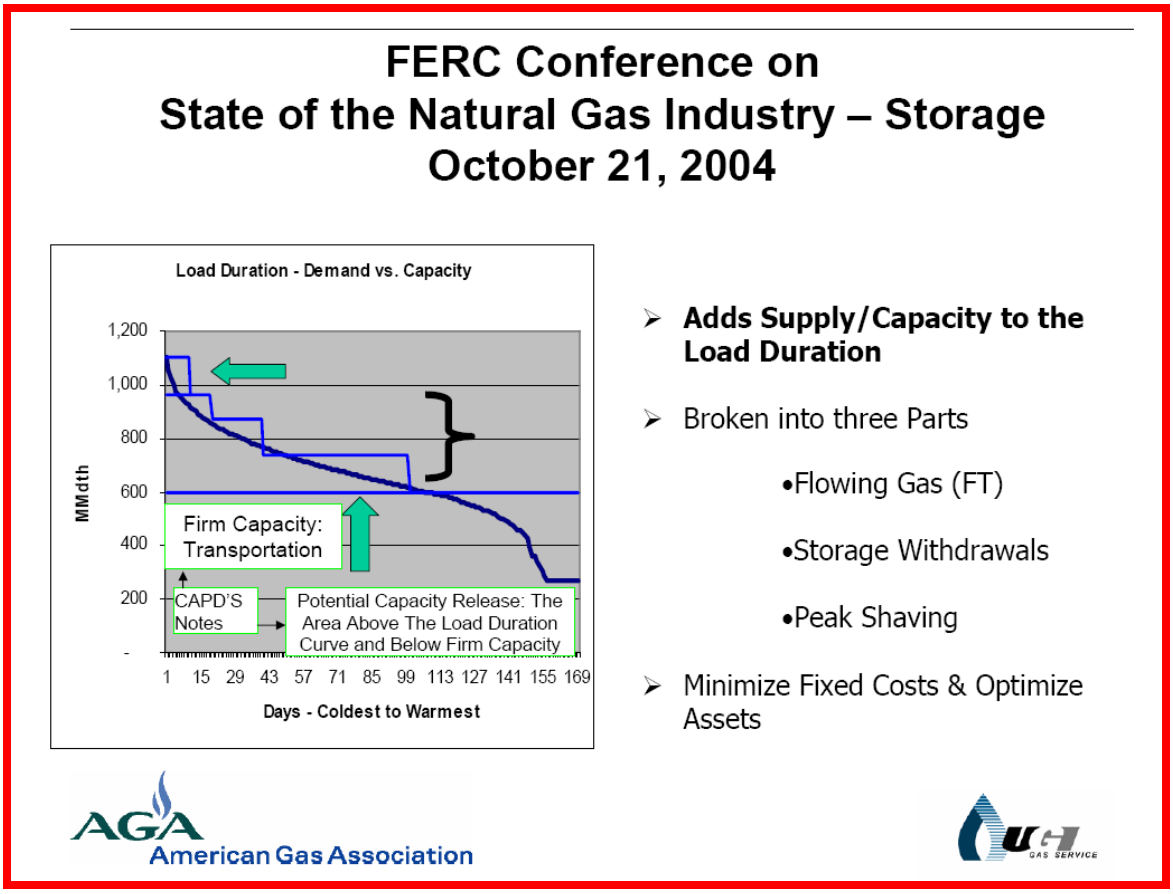
Multi-Stage DCF Parameter:
GDP Growth Estimate: 4.9%

XXIII. Gas And Water Companies Are Not Substitutes For Each Other In A Rate-Case Proceeding.

Q_17. In your opinion are gas and water companies similar enough to be substitutes in a rate-case proceeding?

A_17. No. In my opinion they are not. I do not know of any rate-case for regulated gas company in Tennessee or elsewhere where a water company has been used in the derivation of a gas company's ROE. Dr. Vilbert's use of gas companies is inappropriate because there are huge operational differences between them.

For example, local gas companies have to contract with interstate natural gas pipelines to acquire natural-gas, the commodity being sold to the end-user. To that end the local companies have to coordinate their contracts with storage and peaking facilities as shown on the next page, as shown in a slide presentation by the American Gas Association to the Federal Energy Regulatory Commission:



Gas companies have the opportunity to release or resell the firm capacity not currently being used by firm customers as a potential offset to the revenues required to serve firm customers. In response to CAPD discovery item III, part 15, in the last rate case, docket 06-00290 TAW provided a copy of chapters seven and eight of the "Rates Manual of the American Water Works Association." I found no mention of secondary markets as a means to offset revenues required from firm customers. Thus I still have the same opinion that gas companies are not financial substitutes for water companies.

Also, the products offered by the water and gas industries are not substitutes for each other. In my opinion Dr. Vilbert has not established how the industries are comparable to each other. I have the same opinion of Mr. Watson's statement to the Chattanooga Times Free Press, where he compares water rates to cable rates and gas rates:

> *"This is still the lowest priced utility here in Hamilton County. Water is less than sewer, is less than phone, is less than cable, is less that gas, is less than electricity, and we want to keep it that way."[Minutes 30.31 to 30.48 Chattanooga Times Free Press Audio Recording].*

This concludes my testimony at this time.

XXIV. Statement of Credentials and Experience

Q_20. What experience do you have regarding utilities?

A_20. In 1995 I began work as an economist in the Consumer Advocate and Protection Division (CAPD) of the Attorney General's Office. I have also appeared as a witness for CAPD in several cases before the Tennessee Regulatory Authority (TRA). From 1986 to 1995 I was employed by the Iowa Utilities Board as Chief of the Bureau of Energy Efficiency, Auditing and Research, and Utility Specialist and

State Liaison Officer to the U.S. Nuclear Regulatory Commission. From 1984 to 1986 I worked for Houston Lighting & Power as Supervisor of Rate Design. From 1982 to 1984 I worked for Arizona Electric Power Cooperative as a Rate Analyst. From 1979 to 1982 I worked for Tri-State Generation and Transmission Association as Power Requirements Supervisor and Rate Specialist. Since 1979 my work spanned many issues including cost of service studies, rate design issues, telecommunications issues and matters related to the disposal of nuclear waste.

Q_21. **What is your educational background?**

A_21. I have an M.S. in Regulatory Economics from the University of Wyoming, an M.A. and Ph.D. in International Relations with a specialty in International Economics from the University of Denver, and a B.A. from Colorado State University.

Q_22. **Dr. Brown, have you authored any articles relating to your profession?**

A_22. Yes, my articles have appeared in Public Utilities Fortnightly.

Q_23. **Are you and have you been a member of any professional organizations?**

A_23. Yes, I am a past member of the NARUC Staff Committee on Management Analysis, a past trustee of and a member of the Board for the Automatic Meter Reading Association, and a current member of the National Association of Business Economists.

Q_24. **Have you studied mathematics and statistics as part of your education?**

A_24. Yes.

Q_25. **Dr. Brown, do you use mathematics and statistics in combination with economics as part of your profession?**

A_25. Yes.