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BEFORE THE
TENNESSEE REGULATORY AUTHORITY

REBUTTAL TESTIMONY OF

MICHAEL J. VILBERT

ON BEHALF OF

TENNESEE-AMERICAN WATER

CASE NO. 08-00039

CONCERNING

COST OF CAPITAL

AUGUST 13, 2008

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I. INTRODUCTION AND SUMMARY

A. INTRODUCTION

Q1. Please state your name and address for the record.

A1. My name is Michael J. Vilbert. My business address is The Brattle Group, 44 Brattle Street, Cambridge, MA 02138.

Q2. Did you previously file testimony in this proceeding?

A2. Yes, I filed direct testimony ("Vilbert Direct") on behalf of Tennessee-American Water Company, Inc. ("Tennessee-American" or the "Company") in March 2008 regarding the return on equity that Tennessee-American should be allowed an opportunity to earn on the equity financed portion of its assets. Appendix A of my direct testimony contains information on my professional qualifications.

Q3. What is the purpose of your rebuttal testimony?

A3. I have been asked by Tennessee-American to respond to the testimony of Mr. Michael Gorman ("Gorman Testimony"), who filed testimony on behalf of the City of Chattanooga and the Chattanooga Manufacturers Association ("CMA"), and to the testimony of Dr. Steve Brown ("Brown Testimony"), who filed testimony on behalf of the Consumer Advocate and Protection Division ("CAPD"). Specifically, I will address their recommendations for the allowed return on equity for Tennessee-American Water and their criticisms of my methodology and recommendations in the Vilbert Direct. I will also respond to Mr. Gorman's recommended reduction in the equity percentage of Tennessee-American Water's regulatory capital structure.

B. SUMMARY

Q4. Please summarize your rebuttal testimony.

A4. In my opinion, neither Mr. Gorman's recommended rate of return on equity of 9.9 percent on a capital structure with effectively 28.4 percent equity[1] nor Dr. Brown's

[1] Throughout this testimony, I quote capital structure numbers that are computed excluding short-term debt. This is consistent with the information I typically use when estimating the cost of equity for the sample

recommended rate of return on equity of 7.5 percent on a capital structure with effectively 40.5 percent equity[2] are likely to meet the Supreme Court's requirements specified in the *Hope Natural Gas* and the *Bluefield Waterworks* cases. Specifically, the Supreme Court has ruled that a utility must be allowed a fair opportunity to earn a rate of return commensurate with that earned on comparable risk investments, and that the return should be sufficient to attract capital and maintain the firm's financial integrity. The recommended returns on equity when multiplied times the recommended equity percentages result in total equity returns that are highly unlikely to meet the Supreme Court's standards.

As discussed in Section II, a 9.9 percent rate of return on equity, combined with an equity ratio as low as that recommended by Mr. Gorman, would more than likely result in a non-investment grade bond rating based upon the Tennessee-American's financial ratios if it were considered as a stand alone entity. The primary reason for this negative effect on the Company's financial integrity is that Mr. Gorman does not appropriately adjust the return on equity for the financial risk that is intrinsic to its proposed capital structure. The importance of considering financial risk in determining the appropriate rate of return is discussed in Section III. I discuss methodological issues raised by Mr. Gorman in Section IV.

Dr. Brown recommends a rate of return on equity that exceeds the market cost of debt for similarly rated utilities by less than 50 basis points ("bps"). Such a small risk premium is unreasonably low, especially in light of the increased risks facing water industry investors in recent years, and is inconsistent with a balanced review of the existing research on the magnitude of the risk premium that investments of average market risk command over risk-free investments. Dr. Brown's recommendation is also not likely to support an investment grade credit rating. I discuss the effect of Dr. Brown's recommendations on Tennessee-American's financial ratios in Section II and the serious methodological errors in Dr. Brown's Testimony in Section V. As part of the latter discussion, I will address the following issues: the difficulty of estimating the

companies. For the Gorman Testimony, the cited equity ratio is calculated based on information in Exhibit MPG-8.

[2] Based on Brown Testimony, p. 7, excluding short-term debt.

appropriate growth rate for use in the DCF model, whether the DCF model considers capital gains, the estimation of beta and the market risk premium ("MRP") for use in the CAPM, and the important difference between realized and expected returns. Section VI provides my conclusions.

II. ALLOWED RETURN ON EQUITY AND THE NEED FOR CAPITAL INVESTMENT IN THE WATER INDUSTRY

Q5. Mr. Gorman recommends that Tennessee-American be allowed an opportunity to earn a return on equity of 9.9 percent on a regulatory capital structure with 28.4 percent equity.[3] Do you have any general comments?

A5. Yes. The unusually low equity ratio arises primarily because Mr. Gorman reduces the parent company's equity by the amount of goodwill assets reported on its financial statements and applies the revised capital structure in his double leverage calculation. This represents a reduction in equity of approximately $1.7 billion,[4] but Mr. Gorman does not acknowledge the substantial increase in the Company's financial risk inherent in the resulting equity ratio of only 28.4 percent. Mr. Gorman's discussion of financial risk quotes an equity ratio for the Company of 45.3 percent when short-term debt is excluded[5] without any explanation for the apparent inconsistency with the information in Exhibit MPG-8 which uses an equity ratio of 28.4 percent. Mr. Gorman then argues that 45.3 percent is sufficiently close to the average (book value) equity ratio of sample companies so that an adjustment for differences in financial risk is not necessary.

Putting aside for the moment the fact that financial risk is a concept that applies to the market-value capital structure not the book-value capital structure,[6] Mr. Gorman does not explain why the Company's equity reflects the full goodwill amount when financial risk is discussed, but not when the regulatory capital structure is determined.

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[3] Based on Gorman Testimony, Exhibit MPG-8, excluding short-term debt.

[4] Gorman Testimony, p. 24.

[5] Gorman Testimony, p. 28.

[6] I discuss this point in Section III in the discussion of financial risk.

A. The Effect of the Recommended Return on Equity on Credit Ratings

Q6. If adopted, what are the likely effects of Mr. Gorman's recommendations on the Company's credit rating?

A6. If Standard & Poor's ("S&P") were to consider Tennessee American's credit rating on a stand-alone basis, Mr. Gorman's recommendations, if adopted, would not be consistent with an investment grade credit rating (a rating of BBB- or higher). Mr. Gorman's recommendations imply leverage ratios and cash flow adequacy ratios that would not be in the appropriate range for an investment grade credit rating. Of course, Tennessee American does not have a stand alone credit rating. If it were to be rated, the actual credit rating that may be awarded by S&P depends upon factors in addition to the financial ratios, but Table MJV-R1 below shows that the expected (i.e., pro forma) financial ratios resulting from Mr. Gorman's recommendations would not satisfy the requirements of an investment grade bond rating for several key metrics. Table MJV-R2 shows S&P's ratio guidelines by business profile.[7] Comparison of the ratios for Tennessee American from Table MJV-R1 to S&P's guidelines in Table MJV-R2 shows that three of the five pro forma ratios would be in the range for a BB rating or quite likely even less. In other words if adopted, Mr. Gorman's recommendations would relegate most of these key financial ratios to junk bond status and make the entity a likely candidate for a non-investment grade credit rating.

[7] Business profiles range from Excellent (lowest business risk), Strong, Satisfactory, Weak, to Vulnerable (highest business risk). Water utilities would generally be in the Excellent category. The current scale is a change from S&P's previous 10-point scale ranging from 1 (lowest business risk) to 10 (highest business risk). The guideline ratios shown in Table MJV-R2 follow the scale that was in place at the time they were published. Neither American Water nor Tennessee-American currently has a business profile rating from S&P.

Table MJV-R1. Financial Ratios Implied by the Gorman Testimony

		Double Leverage Adjustment [1]	[2]	[3]	Sources and Notes
[A]	Total Outside Financing	7.4%		**7.4%**	Gorman Testimony, Exhibit MPG-8
[B]	Financing From Parent	92.6%			Gorman Testimony, Exhibit MPG-8
[C]	Parent Financing is Assumed to be 65.77% LT Debt		65.8%	**60.9%**	[2][C] x [1][B]
[D]	5.09% ST Debt		5.1%	**4.7%**	[2][D] x [1][B]
[E]	29.07% Common Equity		29.1%	**26.9%**	[2][E] x [1][B]
[F]	.06% Preferred Equity		0.1%	**0.1%**	[2][F] x [1][B]
		100.0%		**100.0%**	
[G]	Average Cost of Debt for Outside Financing	8.4%			Gorman Testimony, Exhibit MPG-8
[H]	Cost of LT Debt for Parent Financing	6.3%			Gorman Testimony, Exhibit MPG-8
[I]	Cost of ST Debt for Parent Financing	3.25%			Gorman Testimony, Exhibit MPG-8
[J]	Average Cost of Debt	6.3%			Average of [G], [H] and [I], weighted by [A], [C] and [D].
[K]	Cost of Equity	9.9%			Gorman Testimony, Recommendation
[L]	Cost of Preferred	5.0%			Gorman Testimony, Exhibit MPG-8
[M]	Tax Rate	39.2%			Vilbert Direct, p. 29.
[N]	Depreciation Rate	2.3%			TAWC Exhibit No. 2, Schedule 4
[O]	Earnings Before Interest and Taxes (EBIT)	9.0%			([K] x [E])/(1 - [M]) + [J] x ([C] + [A] + [D]) + [L] x [F] / (1 - [M])
[P]	EBITDA	11.2%			[O] + [N]
[Q]	Funds from Operations (FFO)	4.9%			[E] x [K] + [F] x [L] + [N]
[R]	Weighted-Average Interest Expense	4.6%			([A] + [C] + [D]) x [J]

TAWC PRO FORMA FINANCIAL RATIOS*		Implied Rating**	
Total Debt/Total Debt + Equity (%)	73.0	BB or less	([A] + [C] + [D]) x 100
Debt / EBITDA (x)	6.5	BB or less	([A] + [C] + [D]) / [P]
FFO/Total Debt (%)	6.8	BB or less	([Q] / ([A] + [C] + [D]) x 100
FFO Interest Coverage (x)	1.1	BBB	[Q] / [R]
EBIT Interest Coverage (x)	2.0	BBB	[O] / [R]

* Estimated financial ratios if Gorman Testimony's recommendations were adopted.
** Based on ranges in Table MJV-R2.

Table MJV-R2. S&P Key Financial Ratios for Companies with "Excellent" Business Profile

	A	BBB	BB
[1] Total Debt / Capital (%)	35 - 45	45 - 55	> 55
[2] Debt / EBITDA (x)	2 - 3	3 - 4.5	> 4.5
[3] FFO / Debt (%)	45 - 30	30 - 15	< 15
[4] FFO Interest Coverage (x)	3 - 2	2 - 1	n/a
[5] EBIT Interest Coverage (x)	2.9 - 2.3	2.3 - 1.3	< 1.3

Sources and Notes:
- Guidelines are based on a business profile of "Excellent" for [1] - [3], and "2" for [4] and [5].
- [1] - [3]: "S&P Corporate Ratings Criteria 2008," p. 22.
- [4]: "Research: New Business Profile Scores Assigned for U.S. Utility and Power," S&P Ratings Direct, June 6, 2004.
- [5]: "Research: Utility Financial Targets are Revised," S&P Ratings Direct, June 19, 1999.

Q7. Dr. Brown recommends that Tennessee-American be allowed an opportunity to earn a return on equity of 7.5 percent on a regulatory capital structure with 40.5 percent equity.[8] Do you have any general comments?

A7. Yes, Dr. Brown's recommendation is clearly unreasonably low based upon several objective measures. First, Dr. Brown's recommended return on equity of 7.5 percent is only 48 bps points greater than the current yield of 7.02 percent on BBB-rated utility bonds (August 4, 2008).[9] This value reflects an unusually low risk premium to grant equity investors. For example, the Federal Energy Regulatory Commission ("FERC") typically rejects as unrealistic any estimate of the cost of equity for a sample company that does not exceed the company's cost of debt by more than 100 basis points, and then sets a "zone of reasonableness" that ranges from a low estimate at least equal to the cost of debt plus 100 basis points to a high equal to the highest DCF estimate from the FERC method. Dr. Brown's recommendation would be rejected as unreasonable by the FERC.

Second, after applying the double leverage adjustment, Dr. Brown's recommended weighted-average cost of capital is 6.66 percent,[10] a value that is actually *less* than the current yield on a BBB-rated utility bond. Investors would be unlikely to accept a return on total assets less than could be earned on investment grade debt.

[8] Brown Testimony, table on page 7, adjusted to exclude short-term debt.

[9] The yield on BBB rated utility bonds was 7.02 percent on August 4, 2008 and was 6.1 percent for an A rated utility bond on February 7, 2008 at the time the Vilbert Direct was filed. (See data from Bloomberg.) On June 19, 2008 American Water Works Company was downgraded to BBB+ from A-.

[10] Brown Testimony, p. 4. There is a slight inconsistency in Dr. Brown's estimate on p. 4 (6.65%) compared to p. 7 (6.66%).

Finally, Dr. Brown's recommended return on equity is significantly below the allowed returns on equity and equity ratios that have been granted in recent water utility cases in other jurisdictions as documented in the rebuttal testimony of Mr. Michael A. Miller, Treasurer and Comptroller of Tennessee-American.[11] By all of these measures, Dr. Brown's recommendation is inadequate.

Q8. Please elaborate on why a weighted-average cost of capital for Tennessee-American of 6.66 percent is not credible.

A8. A company's debt is always less risky than its equity, but Dr. Brown estimates Tennessee-American's "outside financing" (i.e. not from the parent company) to have a weighted-average cost of 8.43 percent, 177 basis points higher than his recommended 6.66 weighted-average cost of capital for the Company and 93 basis points higher than his recommended cost of equity.[12] Of course, the outside debt costs are embedded costs and may not fully reflect current interest rates, but a recommended cost of equity less than the cost of debt is clear evidence that the cost of equity has been misestimated.

Q9. Would Dr. Brown's recommended return on equity and capital structure support an investment grade credit rating for Tennessee-American on a stand-alone basis?

A9. No. The financial ratios for Tennessee-American, if Dr. Brown's recommendations were adopted, would not support an investment grade credit, as shown in Table MJV-R3.

[11] Rebuttal Testimony of Michael A. Miller, p. 41-43.

[12] Brown Testimony, p. 7.

Table MJV-R3. Financial Ratios Implied by the Brown Testimony

		Double Leverage Adjustment [1]	[2]	[3]	Sources and Notes
[A]	Total Outside Financing	7.6%		**7.6%**	Brown Testimony, p. 7
[B]	Financing From Parent	92.4%			Brown Testimony, p. 7
[C]	Parent Financing is Assumed to be 55.14% LT Debt		55.1%	**50.9%**	[2][C] x [1][B]
[D]	1.9% ST Debt		1.9%	**1.8%**	[2][D] x [1][B]
[E]	42.96% Equity		43.0%	**39.7%**	[2][E] x [1][B]
[F]	0% Preferred		0.0%	**0.0%**	[2][F] x [1][B]
		100.0%		**100.0%**	
[G]	Average Cost of Debt for Outside Financing	8.4%			Brown Testimony, p. 7
[H]	Cost of LT Debt for Parent Financing	5.9%			Brown Testimony, p. 7
[I]	Cost of ST Debt for Parent Financing	2.9%			Brown Testimony, p. 7
[J]	Average Cost of Debt	6.1%			Average of [G], [H] and [I], weighted by [A], [C] and [D].
[K]	Cost of Equity	7.5%			Brown Testimony, Recommendation
[L]	Cost of Preferred				Not included, immaterial (Brown Testimony, p. 6)
[M]	Tax Rate	39.2%			Vilbert Direct, p. 29.
[N]	Depreciation Rate	2.3%			TAWC Exhibit No. 2, Schedule 4
[O]	Earnings Before Interest and Taxes (EBIT)	8.6%			([K] x [E])/(1 - [M]) + [J] x ([C] + [A] + [D]) + [L] x [F] / (1 - [M])
[P]	EBITDA	10.8%			[O] + [N]
[Q]	Funds from Operations (FFO)	5.2%			[E] x [K] + [F] x [L] + [N]
[R]	Weighted-Average Interest Expense	3.7%			([A] + [C] + [D]) x [J]

TAWC PRO FORMA FINANCIAL RATIOS*		Implied Rating**	
Total Debt/Total Debt + Equity (%)	60.3	BB	([A] + [C] + [D]) x 100
Debt / EBITDA (x)	5.6	BB or less	([A] + [C] + [D]) / [P]
FFO/Total Debt (%)	8.7	BB or less	([Q] / ([A] + [C] + [D]) x 100
FFO Interest Coverage (x)	1.4	BBB	[Q] / [R]
EBIT Interest Coverage (x)	2.3	A	[O] / [R]

* Estimated financial ratios if Brown Testimony's recommendations were adopted.
** Based on ranges in Table MJV-R2.

Q10. How do the ratios implied by the return that you recommend in your Direct Testimony compare to these ratios?

A10. The 11.75 percent return on equity that I recommended would result in financial ratios consistent with the current credit rating of American Water Works Company ("AWK") of BBB+, as well as with the credit ratings of other water companies. Table MJV-R4 below shows the financial ratios that would be expected to prevail using the rate of return and capital structure employed in my Direct Testimony. While two of the ratios are in the BB territory, they are much closer to the BBB range than those resulting from either the Gorman or the Brown testimonies.

Table MJV-R4. Financial Ratios Implied by the Vilbert Direct Recommendation.

				Sources and Notes
[A]		LT Debt	50.7%	Provided by TAWC
[B]		ST Debt	5.2%	Provided by TAWC
[C]		Equity	43.0%	Provided by TAWC
[D]		Preferred	1.2%	Provided by TAWC
			100.0%	
[E]	Cost of LT Debt		6.1%	Vilbert Direct, Table MJV-22
[F]	Cost of ST Debt		4.5%	Provided by TAWC
[G]	Cost of Equity		11.75%	Vilbert Direct, Recommendation
[H]	Cost of Preferred		6.2%	Vilbert Direct, Table MJV-22
[I]	Tax Rate		39.2%	Vilbert Direct, p. 29.
[J]	Depreciation Rate		2.3%	TAWC Exhibit No. 2, Schedule 4
[K]	Earnings Before Interest and Taxes (EBIT)		11.7%	([E] x [A]) + ([F] x [B]) + ([G] x [C]) / (1 - [I]) + ([H] x [D]) / (1 - [I])
[L]	EBITDA		14.0%	[J] + [K]
[M]	Funds from Operations (FFO)		7.4%	[G] x [C] + [H] x [D] + [J]
[N]	Weighted-Average Interest Expense		3.3%	[E] x [A] + [F] x [B]

TAWC PRO FORMA FINANCIAL RATIOS*		Implied Rating**	
Total Debt/Total Debt + Equity (%)	55.9	BB	([A] + [B]) x 100
Debt / EBITDA (x)	4.0	BBB	([A] + [B]) / [L]
FFO/Total Debt (%)	13.2	BB	([M] / ([A] + [B])) x 100
FFO Interest Coverage (x)	2.2	A	[M] / [N]
EBIT Interest Coverage (x)	3.5	above A	[K] / [N]

* Estimated financial ratios if Vilbert Direct's recommendations were adopted.
** Based on ranges in Table MJV-R2.

B. Realized Returns versus Expected Returns

Q11. At page 24 of the Brown Testimony, Dr. Brown claims to provide "credible third-party information" as to why his recommended cost of equity of 7.5 percent is a reasonable expected return. Do you agree with that evidence?

A11. No. In this section of his testimony, Dr. Brown confuses the concepts of returns investors *expect* (sometimes called required returns) with returns investors *realize* (actual returns). If investors expected to earn a negative return, they would not invest, but investors frequently experience actual returns that are negative. The cost-of-equity estimation models Dr. Brown, Mr. Gorman and I use are attempting to estimate investors' *expected* or required rate of return which is the appropriate return to allow a regulated company a fair opportunity to earn. The concept is illustrated by the following quote from the comedian Will Rogers about investing "The way to make money in the stock market is to buy a stock. Then, when it goes up, sell it. If it's not going to go up, don't buy it!" Investors won't buy an investment on which they *expect* to lose money even

though it may turn out that they actually do lose money. They could just as easily keep their money in the bank or under their mattresses.

Q12. Why do you believe that Dr. Brown is focused on realized instead of expected rates of return?

A12. Dr. Brown points to a series of images from MorningStar showing the realized rates of return for more than 7,000 companies covered by MorningStar.[13] Although he claims that the fact that the realized returns have been at or near zero for the past five years is evidence of the reasonableness of an expected rate of return of 7.5 percent, all these data indicate is that the realized rates of return for these companies have been low. Investors have clearly been disappointed with these results, but that is the nature of the risk of investing. These realized returns over a short period of time provide no information on the expected rate of return for a company. The cost of equity is the *expected* rate of return not the recent past realized rate of return.

Q13. But Dr. Brown argues that water utilities are "safe" companies.[14] Do you agree?

A13. In general, yes. While I agree that water utilities traditionally have been viewed as relatively safe compared to many other industries, the risk of the equity invested in the industry is not equivalent to the risk of debt, as the overall return on capital that Dr. Brown recommends would suggest. Moreover, the risk of the water industry is increasing. While publicly traded water utilities in the U.S. generally have good credit ratings, Moody's Investors Service ("Moody's") and S&P note the need for significant capital expenditures, the costs of complying with environmental and security regulations as sources of risk.[15] Fitch notes that the debt ratios are increasing.[16] At the same time the regulatory requirements imposed on the water industry are evolving.[17] *Value Line Investment Survey* (*"Value Line"*) documents this increase in risk by providing estimated betas for the utility companies in the water sample that have been increasing over time.

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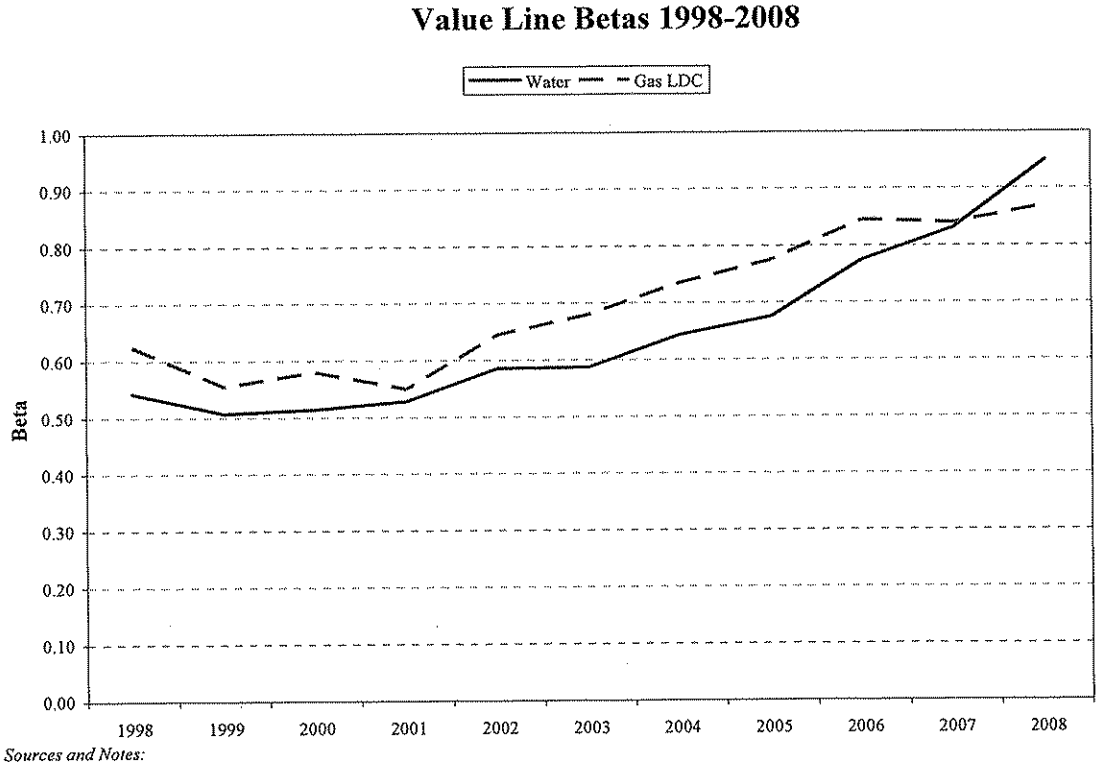
[13] Brown Testimony, pp. 27-30.

[14] Brown Testimony, p. 3, lines 10-12.

[15] Moody's *Credit Risks Are Increasing for U.S. Investor Owned Water Utilities*, Special Comment, January 2004, S&P *Key Rating Factors for Water Companies Around the World*, July 17, 2006.

[16] Fitch Ratings, 2007 Median Ratios for Water and Sewer Revenue Bonds – Retail Systems.

The average estimated betas for the water sample are shown below in Figure MJV-R1. Based upon the end-of-year reports, *Value Line's* estimated betas for the water utility companies have increased from an average of about 0.54 in 1998 to an average of about 0.95 in 2008. *Value Line* clearly believes that the average risk of the industry is increasing.



Sources and Notes:
Data through 2007 are from Value Line Investment Analyzer, last updated August 5, 2008.
Data for 2008 are from most recently available Value Line sheets.

Figure MJV-R1. *Value Line* betas for the companies included in the Vilbert Direct water and gas LDC samples.

Q14. Are *Value Line* betas a reliable measure of the water industry's risk?

A14. As I discuss in my direct testimony, the stocks of publicly-traded water companies trade infrequently, which can lead to bias in the estimation of beta coefficients. Nevertheless, to the extent that the direction and magnitude of the bias do not change significantly over time, the increasing trend illustrated in Figure MJV-R1 reflects an increase in overall industry risk. Gas LDCs do not suffer from the infrequent trading problem, but a similar

[17] For example, the Ground Water Rule was signed in November 2006.

trend of increasing betas is also displayed in graph, which suggests that utilities in general have become more risky in recent years.

Q15. What evidence do you have that the water industry will require substantial capital expenditures going forward?

A15. The Environmental Protection Agency ("EPA") has indicated that the water industry needs to invest capital of about $224 billion over the next two decades to meet the nation's need for clean drinking water and for waste water disposal.[18] Similarly, *Value Line* notes the need for investment totaling "hundreds of millions of dollars in the coming decade" by the water utilities it follows as the EPA enacts more stringent requirements coupled with the fact that portions of many current water systems are approaching 100 years in age and require significant maintenance, in some cases complete rebuilding.[19] In addition, the need to provide security against acts of terrorism may add to the required investment. This is a substantial investment requirement for a group of companies that *Value Line* estimates to have an annual profit of about $215 million in 2009.[20] *Value Line* also notes that "[m]any of the smaller water companies are not up to meeting the higher costs, forcing them to close up shop and sell to larger suitors with the capital resources needed to make the repairs."[21] Tennessee will also require investment in the water infrastructure. Indeed, the American Society of Civil Engineers has estimated that drinking water infrastructure required in Tennessee will be $1.4 billion over the next two decades, with an additional $650 million for waste water infrastructure.[22]

Q16. What are the implications of the need for infrastructure investment and the increasing risks for the industry on the cost of capital?

A16. Financing the needed infrastructure investment means that the industry must attract investor capital. Investors choose to fund investments for which the expected return on their capital corresponds to the risk of the investment. As explained in detail in my

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[18] www.epa.gov/waterinfrastructure/infrastructuregap.html

[19] *Value Line Investment Survey*, Water Utilities, April 25, 2008, p. 1415.

[20] *Ibid*, p. 1415.

[21] *Ibid*, p. 1415.

[22] See, 2005 Report Card for America's Infrastructure, available at www.asce.org.

Direct Testimony, the return on equity that investors require increases with the risks inherent in the investment.[23] Maintaining a financially strong company will be essential if Tennessee-American is to acquire the capital it needs to fund the necessary investments. An allowed rate of return on equity of 7.5 percent on 40.5 percent equity or 9.9 percent on 28.4 percent equity are both outside the zone of reasonableness and would be unlikely to enable the Company to attract the capital necessary to make needed infrastructure investments. The ability to attract investment is another of the requirements of an adequate return established by the Supreme Court that is not likely to be met by the recommendations of either Mr. Gorman or Dr. Brown.

Q17. On p. 73 of his testimony, Dr. Brown refers to a table on p. 72 and notes that it "takes TAW just 16 months or so to cut its regulatory-granted return in half." What conclusion should the Authority draw from Dr. Brown statement regarding the fact that the Company has filed another rate case in a relatively short period of time?

A17. The conclusion to be drawn is that the costs of providing service to the Company's customers have increased such that an increase in rates is necessary. Dr. Brown's table on page 72 shows that the rate base has increased by approximately $20 million (about 20 percent) since the rates were last set. Other costs have increased as well. The low forecast return on equity is not evidence that Tennessee-American has somehow squandered its revenues. It is evidence that costs have increased and that a rate case is necessary to recover the increased cost of providing service to customers.

Q18. Please summarize your comments on Dr. Brown's recommended return and capital structure.

A18. Dr. Brown's recommendations are inconsistent with the allowed returns on equity of comparable water utilities, inconsistent with the capital structures of the water sample companies and inconsistent with financial theory. If adopted, the Company will be unlikely to attract the capital necessary to finance needed infrastructure investments. In other words, Dr. Brown's recommended return on equity is so low as to be highly unlikely to meet the standards set by the Supreme Court. Tennessee-American has been

[23] Vilbert Direct, pp. 5-8.

making needed infrastructure investment to provide reliable service to customers. More frequent rate cases are necessary during periods, like now, of high capital investment and rapidly increasing costs. For these reasons, the Authority should completely disregard Dr. Brown's cost of capital recommendations.

III. FINANCIAL RISK AND CAPITAL STRUCTURE

Q19. What does this section of your rebuttal address?

A19. First, I will discuss financial risk and how it is properly measured by reference to a company's market value capital structure as opposed to its book value capital structure. Then, I will explain how the after-tax weighted-average cost of capital ("ATWACC") approach addresses the issue of differences in financial risk among the sample companies and why the ATWACC approach is not a market-to-book value adjustment. Third, I will address Mr. Gorman's treatment of financial risk.

A. Financial Risk is Based on Market Value not Book Value Capital Structures

Q20. Do Mr. Gorman's Testimony and Dr. Brown's Testimony recognize financial risk?

A20. Mr. Gorman claims to recognize the importance of financial risk[24] but appears to either misunderstand or ignore the concept. Dr. Brown does not address the issue of financial risk anywhere in his testimony. Because Dr. Brown does not address financial risk at all, the remainder of this section addresses the Gorman Testimony, which at least acknowledges the concept.

Q21. What is financial risk?

A21. Financial risk is the additional risk shifted to equity holders from the use of debt in a company's capital structure. Changing a company's capital structure by replacing equity with debt increases the risk that the remaining equity holders bear. This is because the promised payments to debt holders are made first before any payments are available to equity holders, but the total risk of the assets is unchanged. As the percentage of equity

[24] Gorman Testimony, pp. 27-28.

in the capital structure shrinks, more of the residual risk not borne by debt is left to be shouldered by a smaller equity base.

Q22. Why do you say that Mr. Gorman's Testimony appears to misunderstand the concept of financial risk?

A22. Mr. Gorman's characterization of financial risk is flawed in a fundamental sense. Mr. Gorman evaluates the financial risk of his sample based on *book-value* capital structures. This is a mistake. There is no debate in financial theory that financial risk is defined in terms of market value capital structures. It is not defined in terms of book value capital structures, nor has Mr. Gorman provided any academic reference suggesting that financial risk is measured by book value capital structures.

Q23. What is the evidence that Mr. Gorman relies on book value capital structures to evaluate financial risk?

A23. Mr. Gorman considers the percentage of equity in the book-value capital structures of the companies in his sample and determines that it is on average somewhat higher than the equity percentage in Tennessee-American's filed regulatory capital structure. Mr. Gorman then asserts that financial risk is slightly lower for the sample companies than for Tennessee-American Water,[25] but that overall, both the water and gas LDC sample companies are comparable in risk to Tennessee-American. This turns the concept of financial risk on its head. The financial risk (and the cost of capital) for the sample companies is determined in the market place using market values and not by the companies' accounting books.

Q24. Can you provide textbook references indicating that market value capital structures are the correct measure of financial risk?

A24. Yes. This is a well-accepted concept in financial theory. See, for example, Richard A. Brealey, Stewart C. Myers, and Franklin Allen, *Principles of Corporate Finance*, New York: McGraw-Hill/Irwin 8th edition (2006). In discussing financial risk on pages 503-506, the authors say "Why did we show the book value balance sheet? Only so you draw

[25] Gorman Testimony, p. 27-28.

a big X through it. Do so now."[26] As another example, see "The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stock," by Robert S. Hamada in *The Journal of Finance*, 1972, which relies on market value capital structures to adjust for differences in financial leverage.

B. The ATWACC Approach is not a Market-to-Book Value Adjustment

Q25. Is the ATWACC approach a market-to-book adjustment in disguise as claimed by Mr. Gorman?[27]

A25. No. The ATWACC approach is *not* a market-to-book adjustment. It is critical to understand this point. If the ATWACC approach is to be accepted or rejected by the Authority, it should be because of what the approach actually recommends and not because it has been incorrectly characterized as a market-to-book adjustment. The distinction is explained below.

Q26. Please review the ATWACC approach and the specific errors made by Mr. Gorman in his critique of the methodology.

A26. The fundamental premise of the ATWACC approach is that the risk of the assets of a company is divided between the debt holders and equity holders, i.e., the company's investors.[28] Mr. Gorman seems to acknowledge this point.[29] When estimating the cost of equity using the standard models, the estimated cost of equity reflects both the business risk and the financial risk of the sample company, based upon the sample company's *market value* capital structure. There is no academic debate on this point. In particular, note that if the market value capital structure were different, the estimated cost of equity would be different as well because of the difference in financial risk.

However, the sample companies may have capital structures that are quite different both among themselves and compared to Tennessee-American. Simply averaging the estimated costs of equity from the sample companies and recommending that average as

[26] Brealey, Myers and Allen, *op cit.*, p. 504.

[27] Gorman Testimony, p. 51.

[28] Preferred equity is ignored for simplicity, but the principles do not change with the addition of preferred stock to the capital structure.

the allowed return on equity for the Company does not consider any differences in financial risk. If these differences are not considered, the result could be a material error in the estimated cost of equity for Tennessee-American Water.

Q27. Is it appropriate to estimate the cost of equity for the sample companies using market data?

A27. Yes. The Discounted Cash Flow ("DCF") model and the risk positioning models (CAPM, Empirical CAPM and risk premium method) all rely upon market information, and the cost-of-equity estimates derived from those models reflect the business risk and financial risk of the sample companies at their *market value* capital structures. Mr. Gorman, Dr. Brown and I all use these models to estimate the cost of equity for the sample companies. The alternative is to rely on accounting information on the return on equity realized on book value assets, as is done in the comparable earnings approach. The return on equity recommended by Mr. Gorman is derived from such market-based models, but Mr. Gorman treats this market-derived return as if it were a return on book value equity.

Q28. How does the ATWACC approach address differences in financial risk?

A28. Most analysts choose sample companies that are expected to be of comparable business risk, but the sample companies may have capital structures that are quite different from each other as well as from the regulated company. Two otherwise identical companies with different (market value) capital structures would have different costs of equity (estimation errors aside) because of differences in financial risk. However their overall cost of capital, i.e., their ATWACCs, would be the same.

The ATWACC approach estimates the overall weighted-average cost of capital of the sample companies. The ATWACC estimate captures both the business risk and the financial risk of the company in a single number, i.e., the combined risk of the debt and the equity used to finance the assets. This, in turn, enables an "apples to apples" comparison among the sample companies which is why the ATWACC approach is the best way of approaching the cost of equity estimation problem – it is the only cost

[29] Gorman Testimony, p. 27.

common to all companies of similar business risk and can therefore provide the only measure comparing the business and financial risk of the sample companies.

Q29. Does the ATWACC methodology depend upon a market-to-book ratio in any way?

A29. No. The market-to-book ratio has no bearing whatsoever on this approach. The book value capital structure of the sample companies does not enter into the ATWACC calculations displayed in Equation (1) in my direct testimony in any way, so it is impossible for the book value capital structure to have any impact on the ATWACC. Moreover, if the regulatory capital structure differs from the market value capital structure, an adjustment is still warranted even if the market-to-book ratio were exactly equal to 1.0, yet one could hardly claim that a market-to-book value "inflation" was being made in that scenario.[30]

Q30. Why should market values, as opposed to book values, be used when estimating the capital structure for use in financial risk adjustment?

A30. Market values reflect the actual risks that investors face. Consider an investor who purchases a share of stock for $20 in a company with a market-to-book value ratio of 2.0, which means that the book value of the purchased share is $10. Suppose also that the expected dividends on the share total $1 for the coming year. Does this mean that the investor is expecting a 10 percent (= $1/$10) dividend yield that year? Clearly not. The investor put $20 into this investment and is receiving $1 in dividends this year – a dividend yield of 5 percent. The investor must purchase shares at the market price and cannot purchase at the book value. Both the DCF and risk positioning model estimates are based upon market data. To match these costs of equity estimates to each company's book value capital structure misrepresents the true risk-return tradeoff. The money at risk is not the book value of $10, but the market value of $20 dollars. As a simple example of this idea, consider a house purchased 10 years ago for $100,000. If the current market value of the house declines from $400,000 to $300,000, you have suffered a loss of $100,000 even though the book value is still $100,000.

[30] Gorman Testimony, p. 52.

In fact, most investors don't even know the book value of the stocks they buy. Instead, they focus on the market value. Newspapers report market prices. All rates of return demanded by investors are based on market values, not book values. This is why determining the overall cost of capital must necessarily rely on market value capital structures – one of the most basic results from modern finance theory. The cost of equity estimated by both the DCF model and the risk positioning model reflects each sample company's level of business risk and its level of financial risk in terms of market values.

Q31. Does the ATWACC approach attempt to provide a dollar return on book value equal to the dollar return estimated on market value?

A31. No. This apparent misunderstanding is explained next.

Q32. Please explain this apparent source of the misunderstanding of the ATWACC approach.

A32. The ATWACC is a *rate of return*, not a dollar amount of return, just as the return on equity estimated from the models is a rate of return. It is not an attempt to maintain a particular market price or a particular market-to-book ratio or to provide a rate of return on the market value of equity equal to the estimate from the models. It is simply the market-determined rate of return that a dollar of assets invested in the line of business should earn.

The flaw in reasoning can be illustrated in the following simplified example. Suppose that the cost of equity estimated using the DCF or the risk positioning method is 10 percent for a regulated company with a market value capital structure with 66.7% equity and 33.3% debt. (See Step 1 in **Figure MJV-R 2** below.) Suppose that the book value capital structure of the regulated company is 50 percent equity and 50 percent debt, implying that the ATWACC-adjusted return on equity is 12.1 percent for the regulatory capital structure. (See Step 2 in **Figure MJV-R 2** below.) Does this mean that if the Commission allows a 12.1 percent return on equity that the return on the market value of equity will be 10 percent as originally estimated? The answer, of course, is no. The reason is that the estimated return on equity is applied to the *book value* of equity in the rate base not the market value of equity. In this example, the market-to-book ratio is 2.0 so the market return on equity would be about 6 percent, half of the allowed return on the

equity financed portion of the rate base. A return of 6 percent is likely to be less than the company's current market cost of debt. (See Step 3 in **Figure MJV-R 2** below.)

Step 1: Compute ATWACC using market values

		Market values		Return	Tax rate	Wt. average	
		[1]	[2]	[3]	[4]	[5]	
	[A] Equity	1000	67%	10%		6.7%	[5] = [2] x [3]
	[B] Debt	500	33%	6%	40%	1.2%	[5] = [2] x [3] x (1 - [4])
[C] = [A] + [B]		1500	100%			7.9%	ATWACC

Step 2 : Using book value capital structure, compute allowed return on equity that yields the ATWACC determined in Step 1

		Book values		Return	Tax rate	Wt. average	
	[D] Equity	500	50%	12.1%		6.1%	
	[E] Debt	500	50%	6%	40%	1.8%	[5] = [2] x [3] x (1 - [4])
[F] = [D] + [E]		1000				7.9%	ATWACC = [C][5]

Step 3: Implied allowed return on market value of equity

	Dollar amount	Rate of return
[G] Equity	60.7	6.07%

Notes:
[D][5] = [F][5] - [E][5]
[D][3] = [D][5] / [D][2]
[G][1] = [D][3] x [D][1]
[G][2] = [G][1] / [A][1]

Figure MJV-R 2. Example of ATWACC approach and the resulting return on the market value of equity.

In the example, note that the ATWACC is constant at 7.9 percent, but the return on equity must be changed to maintain a constant ATWACC as the capital structure changes. In other words, the ATWACC approach recommends setting a constant overall *rate of return* on assets regardless of the capital structure.

Q33. If the allowed return on equity is 12% instead of 10% in the example, are you saying that this will or will not maintain the current market-to-book ratio?

A33. The ATWACC approach does not say anything about this. Instead, the ATWACC approach simply says that the estimated return on investments of comparable business risk to the regulated company is equal to the ATWACC. Therefore the regulated assets should be allowed a *rate of return* equal to the ATWACC on the *book value* rate base. Moreover, the dollar amount of equity return is unlikely to justify the market-to-book ratio of 2.0 in the above example. This is because, as noted above, the return on the

market value of equity is about 6 percent which may well be less than the company's cost of debt.

Q34. But isn't a market-to-book ratio of 2.0 prima facie evidence that the allowed return on equity has been too high?

A34. No. It used to be the case that analysts believed that a market-to-book ratio greater than 1.0 indicated that the allowed rate of return for the regulated company is too high, but that view is no longer tenable because there are too many reasons why the market-to-book ratio for the sample companies could deviate from 1.0 that have nothing to do with the allowed rate of return. However, the most important reason is that we don't have a complete theory of the determination of security prices. Professor Andrei Shleifer summarizes this point in his book, *Inefficient Markets An Introduction to Behavioral Finance*:

> Despite considerable progress, our knowledge of determination of security prices remains limited. Although we may reject the null hypothesis of market efficiency with more confidence than before, we still know relatively little about such key determinants of prices as expectations about fundamentals, discount rates, and simple movements of demand. Behavioral finance and the finance of the determination of valuations more generally, has many years to grow.

Drawing any conclusion from the absolute level of stock prices (as opposed to relative prices of individual securities) is not warranted because we simply don't have complete explanations of the level of stock prices in the market.

Q35. Is the ATWACC method compatible with the use of a book value rate base?

A35. Yes. The use of book value rate base is perfectly consistent with the use of a rate of return calculated from market data using the ATWACC method. The book value rate base is merely a historical record of the amount of assets purchased by investors to provide service to customers. All rate-of-return analysts estimate a market cost of capital to apply to that investment, as everyone in this proceeding did. The primary difference is that in my direct testimony, I calculated the overall market rate of return on assets and applied that overall rate of return to the rate base. Because the regulated capital structure differs from the market value capital structures of the sample companies, the allowed

return on equity must be adjusted so that the weighted-average cost of capital used to set rates is equal to the market-determined overall cost of capital from the sample of companies with comparable business risk.

Q36. Mr. Gorman asserts that the financial risk adjustment you propose has not gained acceptance in state regulatory proceedings in the U.S. Do you agree with this assessment?

A36. Yes, but that is not the complete story. Although the ATWACC method has not yet been accepted in the U.S., it is the standard regulatory approach used in the United Kingdom, Australia and New Zealand. In the U.S., the Surface Transportation Board uses a method very similar to the ATWACC approach I present here. The countries in which the ATWACC approach is used are characterized by having adopted regulatory procedures much later than procedures were adopted in the U.S. As a result, those countries had the luxury of selecting the most recent advances in financial theory at the time without having to overcome a history of regulatory precedent.

Q37. Mr. Gorman asserts that a financial risk adjustment similar to the one you propose here was rejected in a recent proceeding before the Missouri Public Service Commission. How do you respond?

A37. I did not testify in that proceeding, but I don't believe that the situation is as clear-cut as Mr. Gorman suggests. I have not reviewed the entire history of the proceeding Mr. Gorman mentions nor the previous one, but it is my understanding that the record is mixed. In a relatively recent previous decision,[31] the same Missouri Public Service Commission accepted and praised the testimony of the same witness who used the same methodology that was subsequently rejected in the proceeding referenced by Mr. Gorman. It is not clear from these conflicting decisions that the Missouri Commission made a definitive assessment of the particular financial risk adjustment methodology presented in these proceedings. Instead, the final decisions appear to have been driven largely by the magnitude of the proposed rates of return relative to other evidence.

[31] Report and Order In the Matter of the Tariff Filing of The Empire District Electric Company to Implement a General Rate Increase for Retail Electric Service Provided to Customers in its Missouri Service Area, Case No. ER-2004-0570, issued March 10, 2005.

Q38. Do you have any other comments regarding the decision of the Missouri Public Service Commission?

A38. It is worth pointing out that the financial theories regarding the effect of financial risk on the cost of equity which underlie the ATWACC approach have been instrumental in the award of two Nobel Prizes in economics.[32] The weighted-average cost of capital is a standard topic in nearly every graduate level textbook on corporate finance. Although Mr. Gorman and Dr. Brown may not like the result of applying the methodology because it currently has the effect of increasing the recommended return on equity, there is absolutely no doubt that the theory supporting the ATWACC method is the standard in finance today. Moreover, had they appropriately considered financial risk, their recommendations would not fall so short of maintaining the financial integrity of the Company.

Q39. Please summarize the ATWACC approach you are recommending.

A39. I am recommending that the Authority recognize that financial risk is important and that it affects the cost of equity estimates from the models. The ATWACC approach captures both business risk and financial risk in one estimate of the market required rate of return for the sample companies. Applying that rate of return to the rate base gives a return consistent with the market determined cost of capital and the regulatory capital structure of the Company. If the regulatory capital structure were to have more debt, as recommended by Mr. Gorman, then the return on equity must be higher in order to maintain a constant ATWACC. If the regulatory capital structure has less debt, then the return on equity should be reduced. One benefit of adopting the ATWACC approach is that the debate about the appropriate capital structure would be much less contentious.

Q40. Are there other statements made in the Gorman Testimony that confuse the concept of financial risk, the ATWACC approach or your testimony on these matters?

A40. Yes. Mr. Gorman made the following statements, each of which is incorrect.[33]

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[32] Professor Franco Modigliani of the Massachusetts Institute of Technology won the Nobel Prize in economics in 1985 and Professor Merton Miller of the University of Chicago shared the Nobel Prize in economics in 1990 with Professors Harry Markowitz and William Sharpe.

[33] Gorman Testimony, p. 51.

> ...the underlying assumption of the adjustment is that there is more financial risk in book value capital structures than there is in a market value capital structure... [and similarly] ... there are not two financial risks faced by investors, one based on book value and a second based on market value.
>
> ...his [Dr. Vilbert's] adjustment does not consider the total investment risk of the enterprise but rather is focused only on the amount of financial risk differential between book and market values.

I will address each of these statements below.

Q41. Please address Mr. Gorman's first statement that "the underlying assumption of the [ATWACC] adjustment is that there is more financial risk in book value capital structures than there is in a market value capital structure." Is there a difference in financial risk for a company based upon its market value and book value capital structures?

A41. No. I do not claim that there is more financial risk in the book value capital structure than in the market value capital. There is only one measure of a company's financial risk, and it is based upon the market value capital structure. Nothing in my direct testimony states or intends to state that there are two measures of financial risk. Book values do not appear in the ATWACC calculation, so the basis of these statements is not apparent.

Q42. The Company is regulated on the basis of its book value rate base. How does the difference between the market value capital structures of the sample companies and the book value capital structure of the Company affect the recommended return on equity?

A42. This is the essence of the ATWACC approach. The ATWACC approach recognizes that the return on equity measured by the standard models is a function of both business and financial risk at their market value capital structures. To apply the "rate of return" estimated in the market to the book value rate base for the regulated company requires that the rate of return be properly estimated. Applying the sample estimated cost of equity directly to the book value of equity in the rate base does not consider the financial risk of the sample companies. The ATWACC approach combines the risk of the debt and equity used to finance the regulated assets and applies this overall market-determined rate

of return to the rate base. Capital structure affects the required return on equity, but not the ATWACC.

Q43. Please address the second statement that you did not consider "the total investment risk of the enterprise but rather that [you] focused only on the amount of financial risk differential between book and market values?"[34]

A43. The meaning of this statement is not clear. Mr. Gorman and I were both attempting to estimate the cost of equity for the Company that, by definition, is not the total investment risk of the enterprise. Mr. Gorman only measures the cost of equity of the sample companies at their market value capital structures. On the other hand, I am the only one who actually measured the total investment risk of the enterprise by consideration of the overall cost of capital for the sample companies. This is precisely the difference between the approach in my direct testimony and the approach used by Mr. Gorman and Dr. Brown.

Q44. Do you have examples where Mr. Gorman misapplied the concept of financial risk?

A44. Yes, there are several. First, Mr. Gorman does not take the differences in financial risk between the sample companies and the regulatory capital structure for the Company into account. Second, Mr. Gorman recommends substituting a very large percentage of debt for equity in the Company's regulatory capital structure with no consideration of the corresponding increase in financial risk resulting from the recommendation. As a result, Mr. Gorman's recommendation of 9.9 percent is inconsistent with the sample evidence and the financial risk of Tennessee-American at a capital structure with only 28.4 percent equity.

Q45. Mr. Gorman claims that a 9.9 percent cost of equity is, in fact, consistent with the financial risk of Tennessee-American Water. How do you respond?

A45. Mr. Gorman makes this claim based upon the book value capital structures of the sample companies, but financial risk is a function of the market value capital structures of the sample companies. To argue, as Mr. Gorman does, that financial risk is measured by

[34] Gorman Testimony, p. 51.

book value capital structures is incorrect, and it is inconsistent with financial theory and real world economics.

Q46. How do the market value capital structures of the sample companies compare to Tennessee American's regulatory capital structure?

A46. The average market-value equity ratio in the sample from my direct testimony is 69 percent for both the DCF models and the risk positioning models. Moreover, the book value capital structure of the water sample has approximately 53.3 percent equity as reported by Mr. Gorman.[35] As such, the water sample companies are significantly less leveraged (i.e., have less financial risk) even on a book value basis than the Company would be at the 28.4 percent equity ratio proposed by Mr. Gorman.[36] This additional financial risk demands additional return in the market.

Q47. If the Authority were to accept Mr. Gorman's recommendation to reduce the percentage of equity in the regulatory capital structure, what would be the effect on the required return on equity?

A47. If the Authority were to determine that replacing equity with debt in the regulatory capital structure was warranted for Tennessee-American, the cost of equity would have to be increased to recognize the additional financial risk this would impose on Tennessee-American's remaining equity. Based on my estimates of the ATWACC for the sample, shifting approximately 16.6 percentage points from equity to debt in the capital structure (i.e., from 45 percent to 28.4 percent equity) would result in a point estimate of the cost of equity above 16 percent. Table MJV-R5 below displays the effect of the change in capital structure on the cost of equity estimates compared to Table 1 in Vilbert Direct. Note that only the regulatory capital structure is different. The sample's estimated ATWACC for each estimation method is the same as reported in Table 1 of Vilbert Direct. Comparison of the two tables shows that reducing the equity percentage in the capital structure increases the cost of equity by more than 4 percentage points because of the increased financial risk inherent in a more leveraged capital structure.

[35] Gorman Testimony, p. 27.

[36] Based on Gorman Testimony Exhibit MPG-8, excluding short-term debt.

Table MJV-R5

Regulatory Capital Structure: *28.4% Equity / 0.1% Preferred / 71.6% 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	20.0%	20.1%	20.2%	17.2%	17.3%	17.4%	17.6%	24.9%	14.5%
	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	19.9%	20.0%	20.1%	17.1%	17.2%	17.3%	17.5%	23.3%	14.4%
	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	16.6%	16.8%	17.3%	13.5%	13.9%	14.4%	14.8%	15.5%	15.7%
	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		*Short-Term*		Multi-Stage DCF Parameter:	
Risk Free Rate Estimate:	4.3%	Risk Free Rate Estimate:	1.7%	GDP Growth	
Estimated MRP:	6.5%	Estimated MRP:	8.0%	Estimate:	4.9%

IV. METHODOLOGICAL ISSUES WITH THE GORMAN TESTIMONY

Q48. Mr. Gorman asserts that "using the Treasury bond yield as a proxy for the risk-free rate in the CAPM analysis can produce an overstated estimate of the CAPM return." Do you agree?

A48. No, not if the market risk premium is matched with the proxy for the risk free rate. This is why I use a MRP of 6.5 percent (as did Mr. Gorman) when using a long-term ("LT") Treasury bond yield in the CAPM and a MRP of 8.0 percent when using a Treasury bill yield. The 1.5 percent difference in MRP is equal to the average difference in the yields on Treasury bills compared to Treasury bonds.[37] Finally, as shown in table MJV-C1 in Appendix C of my direct testimony, the size of the correction needed for the CAPM is greater than the 1.5 percent maturity premium used to adjust the MRP when using the LT Treasury bond yield.

[37] See Workpaper #1, Panel B, Table No. MJV-9, in my direct testimony, for the calculation of the 1.5% maturity premium.

Q49. Mr. Gorman also criticizes you for using quarterly compounding, asserting that it is already captured in the market price?[38] What is your response?

A49. Mr. Gorman is simply incorrect on this point. The criticism assumes that I annualize the quarterly dividend (multiplies by 4) before compounding, but this is incorrect. I use the most recent quarterly dividend and the quarterly forecast growth rate in earnings to estimate the required quarterly return on equity. The quarterly return on equity is then annualized to produce the cost of equity estimate on an annual basis. This approach is precisely how the DCF model, upon which both testimonies rely, is developed. It would be an underestimate of the cost of equity estimate not to acknowledge the quarterly payment of dividends.

V. METHODOLOGICAL ISSUES WITH THE BROWN TESTIMONY

Q50. Before you discuss the methodological issues in Dr. Brown's testimony, do you have any general comments on Dr. Brown's critique of your testimony?

A50. Yes. Dr. Brown seems to be concerned that my testimony in this proceeding is similar to my testimony in the previous Tennessee American proceeding, implying that I do not consider the changing economic conditions when providing my estimate of the required return on equity for the Company, but this implication is not correct. It is true that I implement the models in the same manner as I did in the previous case, but the models and the theory underlying them have not changed, so it would be inconsistent to change how I implement them. However, I am very cognizant of the changes in the economy since the last time I filed my testimony. The changes in the economy are reflected in the market data used to estimate the cost of equity for the sample companies.

A. CAPM ISSUES IN THE BROWN TESTIMONY

Q51. Do you have any general comments on Dr. Brown's critique of the CAPM and its implementation of the model?

[38] Gorman Testimony, p. 54.

A51. Yes. Dr. Brown's critique of the CAPM demonstrates confusion regarding the model and the theory underlying it. This confusion is also reflected in Dr. Brown's implementation of the model. The areas of confusion are discussed below.

1. Validity of CAPM and Dr. Brown's Application

Q52. Dr. Brown claims that the "CAPM approach to equity returns is no longer accepted by the scholarly community"[39] Is this an accurate assessment of the CAPM?

A52. No. The article referenced in Dr. Brown's testimony is part of a series of papers by Professors Fama and French offering a substitute model[40] that they claim explains stock returns better than the CAPM. The initial version of their model had three explanatory variables instead of one as does the CAPM, but one of the three is beta of the security measured against the market return as in the CAPM. Hence, despite the early press reports of their work as signifying that "beta is dead," it turns out that beta is still a potentially important explanatory factor (albeit one of several) in their work. Thus, beta remains alive and well as the best single measure of relative risk.

Second, it is simply not accurate to say that the academic community no longer accepts the CAPM as Dr. Brown asserts. The situation is more complicated than that. As noted in my direct testimony, it has long been recognized that empirical tests of the CAPM have not been fully satisfactory, but there currently is no widely recognized or accepted theoretical alternative.[41] The Fama-French model is an empirical model not a theoretical model. It was developed by testing several variables until a set was selected that seem to

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[39] Brown Testimony at 31: 20:23.

[40] See for example, Eugene F. Fama and Kenneth R. French "Common Risk Factors in the Returns on Stocks and Bonds," *Journal of Financial Economics*, Vol. 33, 1993, pp., 3-56; Eugene F. Fama and Kenneth R. French "The Cross-Section of Expected Stock Returns," *Journal of Finance*, Vol. 47, June 1992, pp. 427-465; Eugene F. Fama and Kenneth R. French "Multifactor Explanations of Asset Pricing Anomalies," *Journal of Finance*, Vol. 51, March 1996, pp. 55-84; Eugene F. Fama and Kenneth R. French "The Value Premium and the CAPM," *Journal of Finance*, Vol. 61, October 2006, pp. 2163-2185; Eugene F. Fama and Kenneth R. French "Size and Book to Market Factors in Earnings and Returns," *Journal of Finance*, Vol. 50, March 1995, pp. 131-155; and Eugene F. Fama and Kenneth R. French "Characteristics, Covariances, and Average Returns: 1929-1997," *Journal of Finance*, Vol. 55, February 2000, pp. 389-406.

[41] There is even doubt as to whether or not the CAPM can actually be tested, a sentiment now famously referred to as the Roll Critique (see "A Critique of the Asset Pricing Theory's Tests - Part I: On Past and Potential Testability of the Theory" by Richard Roll, 1977, Journal of Financial Economics, 4, pp. 129-176).

work, and because of this fact, the Fama-French model itself has been subjected to "data-mining" criticisms.[42] The Fama-French model is best viewed as an extension of the CAPM, not a complete rejection of the model.

Q53. Do you attempt to address some of the shortcomings of the CAPM in your testimony?

A53. Yes. I recognize that the intercept is higher and the slope is less steep than predicted by the theoretical version of the CAPM through use of the Empirical CAPM in my testimony.

Q54. What other unfounded claims does Dr. Brown make regarding the CAPM?

A54. Dr. Brown claims that the CAPM "assumes there are capital gains in the overall market."[43] The CAPM makes no such assumption. The CAPM says that a security's expected return is a function of its systematic risk (as measured by its beta) and the expected return on the market. The CAPM provides an estimate of the expected rate of return for a given amount of risk. It says nothing about the "form" of the return, i.e., whether the return will be in the form of current income (dividends) or capital gains or a combination.

Q55. Dr. Brown also claims that if the Authority were to grant the Company's requested 11.75 percent return on equity, the 4.25 percent not paid out in dividends would accrue to the Company and not necessarily to the shareholders.[44] Is this accurate?

A55. No. The shareholders are the owners of all of the assets of the firm including cash in the Company's bank accounts. Net income not paid out as dividends is retained in the firm and increases the assets of the firm. Nor is there a clash of "theory and the real downturn

[42] Data mining refers to the effort to explain an observation by looking back in time at things that also happened and then claim that such an occurrence will predict the future. For example, the league that wins the World Series is associated with the party of the winning candidate in the next presidential election. There is no theory why the correlation of such events in the past should continue into the future because there is no causation (no theory) involved. This is simply data mining, i.e., finding two variables that are correlated without an explanation of why it should be so.

[43] Brown Testimony, p. 16.

[44] Brown Testimony, p. 2 and pp. 17-18.

in the economy"[45] by continuing to estimate the rate of return investors require to compensate for the risk of the investment in spite of the fact that currently the economy has not been performing well. Once again this is an example of the distinction between the realized and expected (required) rate of return on an investment. It is also an explanation of why current expected returns are above current realized returns. Investing is risky and investors are often disappointed, but they will not willingly invest if they expect very low or negative rates of return. They can simply keep money in the bank rather than invest. Nor do investors necessarily expect to earn extraordinarily high rates of return if the market has been successful recently.

Q56. What other erroneous assumptions does Dr. Brown make regarding the CAPM?

A56. Dr. Brown claims that the CAPM assumes that the equity return has a minimum level such as a company's debt cost.[46] This is not what the CAPM assumes. The CAPM is premised on a minimum rate of return that is equal to the risk-free rate for positive betas.[47]

Q57. Does Dr. Brown correctly implement the CAPM?

A57. No. Dr. Brown implements a risk-positioning model, but it is not the CAPM, contrary to the claim in his testimony. Dr. Brown employs a risk-premium model where the benchmark rate of return is AWK's cost of long-term debt not risk-free rate on U.S. Treasury bonds.[48] There is also a minor inconsistency in his estimates in that he uses 5.84 percent for the cost of long-term debt in his risk-premium calculation, but he calculates the Company's weighted-average cost of debt to be 5.86 percent on page 5 of his testimony.

2. Beta Estimates

Q58. What beta estimates does Dr. Brown use in his implementation of the risk-positioning model?

[45] Brown Testimony, p. 18.

[46] Brown Testimony, p. 16.

[47] Vilbert Direct, pp. 20-21.

A58. Dr. Brown uses betas from NASDAQ's internet site.[49] These betas include a beta estimate for York Water of -0.01, essentially zero. Recall that a beta of zero means that the asset has the same risk as a risk-free asset, i.e., a U.S. Treasury bill. It is doubtful that any reasonable observer would conclude that the stock of any water utility company is no more risky than a U.S. Treasury bill, but Dr. Brown uses the -0.01 beta estimate in his CAPM model and makes no comment whatsoever about the likely validity of such an estimate. The beta estimate for Connecticut Water Service is 0.13, and the beta estimate for Middlesex Water Company is 0.09, while the estimate for San Jose Water (SWJ) is 1.29. The betas in the Brown Testimony range from -0.01 to 1.29, a much wider range than the 0.50 to 1.10 range in the Vilbert Direct, but Dr. Brown did not comment on this extreme variability in beta estimates. The wide variation in the betas relied upon by Dr. Brown should at least have been worthy of a comment as to their reliability. In my view, the *Value Line* betas I use are likely to be more reliable than the betas relied upon by Dr. Brown because their variability is less than half of the variability of those he used.

Q59. Does Dr. Brown suggest there are problems with the betas you use in your direct testimony?

A59. Yes. Dr. Brown argues that the index against which beta, or relative risk should be measured is the S&P500 index, not the NYSE index which underlies the *Value Line* betas on which I rely. Dr. Brown argues this should be the case because "these companies compare themselves to the S&P500 index."[50] This objection makes no sense because the S&P500 index and the NYSE index both contain many of the same companies and those companies represent a large share of the overall value of the equity market in the U.S., so that the S&P500 index and the NYSE index are highly correlated. The correlation in the returns on the indices is 0.97 over the last five years and 0.97 over the last year based on weekly return data.

Recall that beta is a measure of correlation between the return on a company's stock and the returns on the index. Because the two indices are so highly correlated, the betas

[48] Brown Testimony, p. 49.

[49] Brown Testimony, p. 41.

[50] Brown Testimony, p. 47.

calculated on these two indices will be nearly identical. The differences between the betas used by Dr. Brown and the ones I use are not due to using different market indices; they are due to the difference in the methodologies employed by NASDAQ and *Value Line* and perhaps in time periods used in their estimation. In particular, *Value Line* uses weekly returns when estimating betas, while NASDAQ, according to Dr. Brown, uses monthly returns.[51] Thus, Dr. Brown has no basis to support his claim that the S&P500 index is a better index than the NYSE index against which to measure relative risk.

3. The Estimated Market Risk Premium

Q60. The Brown Testimony cites several articles that he argues support a claim for a very low market risk premium. Do you agree that this is a fair representation of the current perception of the MRP?

A60. No. In my direct testimony, I attempt to provide a balanced and broad representation of economists' perceptions of the market risk premium. I provide a survey of the academic literature showing that current estimates of the expected MRP vary widely compared to the nearly universal agreement only a few years earlier that the historical realized MRP is the best estimate of the future MRP. Given this divergence of opinion, it is necessary to weigh all of the evidence to arrive at a reasonable estimate of the expected or forward-looking MRP. My estimate of 6.5 percent (on an arithmetic mean basis over the yield on long-term Treasury bonds) is below the long-run historical arithmetic average MRP of 7.1 percent in the most recent edition of Morningstar Ibbotson SBBI Valuation Edition yearbook[52] and is the result of a careful consideration of all of the evidence.

Q61. Dr. Brown uses a Federal Reserve Bank of Philadelphia Survey forecast of expected long-term equity returns of 6.5 percent to calculate his equity risk premium. Do you have any comments on the appropriateness of using such an estimate to derive a market risk premium?

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[51] CAPD response to TAWC Discovery Request No. 10.

[52] *SBBI: Valuation Edition 2008 Yearbook,* p. 189. The long-horizon MRP is 7.2 for the period 1945-2007 and 7.1 percent for the period 1926-2007.

A61. Yes, the practice of using relatively short-term forecasts to estimate the expected market return is questionable. Moreover, the 6.5 percent is a forecast of the expected compound rate of return earned on the market over the next 10 years. In other words, this is a geometric (or compound) rate of return. The appropriate rate of return for the CAPM is the arithmetic or mean rate of return. Moreover, the practice of using forecasts of the future is specifically discouraged in the speech by John C. Bogle in an article cited by Dr. Brown in previous testimony in front of this Authority.[53]

Q62. Why is it inappropriate to implement the CAPM with reference to a forecast of the expected return on the market?

A62. First, as noted by Mr. Bogle, forecasts of expected market returns are so difficult and the actual outcomes so variable that relying upon such a forecast is highly questionable. It is no more correct to rely on a very high or very low forecast than it is an average forecast because the forecasts are so frequently and substantially wrong. The correct implementation of the CAPM is to add an estimate of the MRP to a forecast interest rate. This procedure adjusts the expected market return as the risk-free interest rate changes. A method that relies upon forecasts of the market return and a current interest rate results in a changing MRP as interest rates change. For example, if I were to use Dr. Brown's estimate of the return on the market with the long-term risk-free rates employed in my direct testimony of 4.3 percent, the resulting market risk premium would be 2.2 percent. Assuming Dr. Brown's beta of 0.50, his market return would yield a cost of equity for the Company of 5.4 percent (4.3 + [6.5 – 4.3] x 0.5). This is less than the current yield on BBB utility bonds of 7.02 percent by 162 basis points, which would suggest that a BBB utility bond is of substantially greater risk than the stock market. Such a result does not lend credence to Dr. Brown's estimate for the cost of equity and his implementation of the CAPM approach.

Q63. Do you have any final comments on Dr. Brown's implementation of the CAPM?

A63. Yes. Dr. Brown estimates a return on equity for the companies in the water sample of 7.5 percent. This is only 48 basis points greater than the current yield on BBB rated utility

[53] See "What's Ahead for Stocks and Bonds – And How to Earn Your Fair Share," Keynote Speech by John C. Bogle, "The Money Show", Las Vegas, NV, May 15, 2006.

debt, but this fact does not even warrant a comment in the Brown Testimony. This outcome is the result of the following questionable assumptions inherent in Dr. Brown's implementation of the model: a sample average beta that includes an estimate of -0.01 in the average for the sample, a risk premium of 0.66 percent over AWW's cost of long-term debt and 2.2 percent over the long-term risk-free rate, and no consideration of financial risk differences among the sample companies.

B. DCF Issues in the Brown Testimony

Q64. Dr. Brown argues that the DCF model is the more appropriate method for estimating the cost of equity "because it tracks the actual flow of a company's payments to shareholders."[54] He also claims the DCF method does not assume there are capital gains or capital losses.[55] Do you agree with Dr. Brown's characterization of the DCF model?

A64. No. The DCF model explicitly assumes capital gains unless the forecast growth rate of dividends is zero. To understand the problem with Dr. Brown's characterization, it is useful to recall the definition for the rate of return to investors in common stock. The rate of return to investors in common stock can be defined as the sum of dividend yield (current income) and capital gains (i.e., the growth rate of share price).[56] The DCF model estimates the expected rate of return on equity as the sum of dividend yield and a long-term growth rate of dividends per share. The strong simplifying assumption of the DCF is that the long-term rate of growth in dividends is the same as the long-term rate of growth in price, so the DCF model does in fact assume a rate of capital gains equal to the forecast growth rate in dividends.

Q65. Are there any other potential problems with the DCF model?

A65. Yes, as with the CAPM, the DCF model has also been subject to criticism in the academic community. As noted on page D-5 of my Direct Testimony, the DCF model

[54] Brown Testimony at 16, lines 24-27.

[55] Brown Testimony at 15, lines 14-15.

[56] See "Discounted Cash Flow Estimates of the Cost of Equity Capital – A Case Study," by Stewart C. Myers and Lynda S. Borucki, Financial Markets, Institutions & Instruments, V.3, N. 3, August 1994.

has been called into question by a branch of the academic literature on the volatility of stock prices compared to the volatility of forecast dividends[57] as well as other questions about the applicability of the model also discussed in Appendix D of my Direct Testimony. Dr. Brown does not mention this branch of the academic literature on the estimation models when arriving at his conclusion that the DCF model is preferable to the CAPM. Of course, the most important assumption in the DCF model is that earnings, dividends, market price and book value all grow at the same constant rate forever. This is an assumption that is hard to satisfy even in stable industries, but it is particularly difficult when an industry is in flux as is the water industry due to the changing environmental standards and the requirement to replace aging infrastructure.

Q66. Dr. Brown uses historical growth rates to estimate the long-term growth in dividends for his DCF model. Do you agree with this procedure?

A66. No. The superiority of forecasted growth rates over historical growth rates has been well established. The whole point of using analyst forecasts is that they have larger information sets available to them than available to the general public, and they have specialized knowledge and experience to better interpret that information. Specifically, the analysts' forecasts will generally embody historical growth information in addition to an abundance of additional information which helps predict future growth rates. As such, the analysts' forecasts would themselves incorporate historical growth rates. Indeed, by using only historical growth rates, Dr. Brown ignores a potentially large and important set of forecasting information. The superiority of analyst forecasts to historical growth rates as predictors of future earnings has been documented repeatedly.[58]

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[57] See for example, Robert J. Shiller (1981), "Do Stock Prices Move Too Much to be Justified by Subsequent Changes in Dividends?" *The American Economic Review*, Vol. 71, No. 3, pp. 421-436. John Y. Campbell and Robert J. Shiller (1988), "The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors," *The Review of Financial Studies*, Vol. 1, No. 3, pp. 195-228. Lucy F. Ackert and Brian F. Smith (1993), "Stock Price Volatility, Ordinary Dividends, and Other Cash Flows to Shareholders," *Journal of Finance*, Vol. 48, No. 1, pp. 1147-1160. Eugene F. Fama and Kenneth R. French (2001), "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay?" *Journal of Financial Economics*, Vol. 60, pp. 3-43. Borja Larrain and Motohiro Yogo (2005), "Does Firm Value Move Too Much to be Justified by Subsequent Changes in Cash Flow?" Federal Reserve Bank of Boston, *Working Paper*, No. 05-18.

[58] For additional discussion on this issue, see Chapter 9 in *New Regulatory Finance*, by Roger A. Morin, Public Utilities Reports, Inc., Vienna, Virginia, 2006.

Q67. Does the historical growth rates relied on by Dr. Brown to calculate his DCF model growth rate support the constant growth assumption of the DCF Method?

A67. No. The historical dividend growth rates fluctuate dramatically over time and across companies. For example, the dividend growth rate for York Water Company ranges from 0.64 percent to 11.32 percent from 2003 to 2008. It dropped from 11.32 for 2006-2007 to 0.64 for 2007-2008, a period of only one year. Similar variation holds for the remaining sample. Dr. Brown's own data corroborates that the constant dividend growth assumption is not met by the water industry at this time. The inability to satisfy the key assumption of the DCF model makes the cost of equity results obtained from the constant-growth DCF unreliable.

C. Other Issues in the Brown Testimony

Q68. Dr. Brown also opines that your use of the gas LDC sample is not appropriate to estimate the cost of capital for a water utility company. How do you respond to Dr. Brown's arguments?

A68. This is truly a matter of a difference of opinion although Mr. Gorman appears to agree with me in this proceeding that the gas LDC sample is a useful comparator. Dr. Brown points out the differences in the gas LDC industry and the water industry based upon the commodity delivered, but he ignores the great similarity in the regulatory procedures governing both as well the comparability of the industries' infrastructure. For example, companies in both industries are regulated by the same state regulatory bodies. Companies in both industries are regulated on a cost-of-service basis using original cost rate base as a measure of investment. They both deliver a commodity through a capital intensive network of pipes to residential, commercial and industrial customers. Both industries are confronting the need to replace aging infrastructure and pressure from regulators to conserve resources. Finally, Dr. Brown completely ignores the data issues with the water sample companies that have the potential to affect the cost of capital estimates, which is the reason that I use the gas LDC sample. The weaknesses of the water sample are enumerated in the Vilbert Direct on pp. B-3 and B-4. I use the gas LDC sample estimates as a check on the results of the water sample. It is a mistake not to at least check the validity of the results of the water sample given that there are data issues

known to affect the cost of capital estimates. Such an approach is unnecessarily incomplete when there is an easy alternative.

Q69. Is it likely that not having Sarbanes-Oxley ("SOX") certification until 2010 will result in the problems discussed by Dr. Brown?[59]

A69. No. American Water Works Company only recently became a stand-alone company after its divestiture by RWE. It is not required to provide Section 404 certification until certification of its 2009 financial statements. This point and others about the explanation for not currently being certified are discussed in the testimonies of company witnesses Mr. Michael Miller and Mr. Mark Manner. However, the primary point I wish to emphasize is that once again Dr. Brown ignores the ability of the Authority to protect customers against any of the concerns Dr. Brown lists *if they should arise*.

Q70. Are all of the sample companies in the water and gas LDC sample SOX certified?

A70. Yes.

Q71. What conclusion should be drawn about the fact that all of the sample companies are SOX certified?

A71. The conclusion is that the rate of return estimates for the samples used by all of the cost of capital witnesses in this case would not be affected by the lack of certification of AWK because AWK is not in the sample. I do not believe that the lack of SOX certification is affecting the cost of capital for AWK, but even if it were true that AWK's cost of capital is higher due to the lack of certification, it would not affect the cost of capital estimates from the samples. Therefore, neither my recommendation nor any of the other witnesses' recommendations would have been affected by the sample data.

Q72. What is your conclusion about the effect of SOX on Tennessee-American?

A72. Although Dr. Brown spends 20 pages of his testimony on this issue, it is an issue that should not currently be a concern of the Authority. The sample companies are all certified, and the Authority has all of the tools it needs to protect customers should the need arise.

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[59] Brown Testimony, pp. 50-70.

D. Conclusions Regarding the Brown Testimony

Q73. What are your conclusions regarding the Brown Testimony?

A73. As noted above, Dr. Brown's recommendations for the rate of return on equity and capital structure are unlikely to meet the standards established by the Supreme Court in the *Hope Natural Gas* and the *Bluefield Waterworks* cases. Specifically, a utility must be allowed a fair opportunity to earn a rate of return commensurate with that earned on comparable risk investments, maintain its financial integrity and attract capital. The 7.5 percent rate of return on equity recommended by Dr. Brown is simply not comparable to that of other water utilities or generic utilities, nor is the capital structure comparable. It is highly unlikely that Tennessee-American, on a stand-alone basis, would be able to attract the capital it needs for infrastructure investments and environmental upgrades if it were allowed a return on equity of only 7.5 percent on a capital structure which effectively has only 39.8 percent equity when short-term debt is considered.

Dr. Brown demonstrates a misunderstanding of the theory and practice of the CAPM and the DCF models with factually inaccurate statements and references. Dr. Brown does not even consider differences in financial risk between the sample companies and the recommended capital structure for Tennessee-American. Moreover, Dr. Brown's reliance solely on historical data to estimate expected growth rates for use in the DCF model destroys one of the primary virtues of the DCF model, i.e., that is it a forward-looking model.

Finally, Dr. Brown consistently ignores the ability of the Authority to protect customers against actions by American Water or the Company that are the result of improper behavior. In my opinion, the Authority has all of the tools necessary to protect customers should any of the concerns voiced by Dr. Brown arise. However, filing rate cases to recover the increased cost of providing service is not evidence of misbehavior on the part of the Company.

VI. CONCLUSIONS

Q74. Please summarize your rebuttal testimony.

A74. The importance of considering financial risk is amply demonstrated by the recommendations of Mr. Gorman and Dr. Brown in this proceeding. Because neither explicitly considered financial risk, their recommendations, if adopted, would fall short of allowing the Company to achieve an investment grade bond rating if evaluated on a stand alone basis. Had they adequately addressed differences in financial risk, their recommended return on equity would have been higher.

Mr. Gorman's failure to address financial risk is the primary source of the difference in our recommendations. This is not true of Dr. Brown, however. Dr. Brown's testimony demonstrates a lack of complete understanding of the cost of equity estimation models. For example, his belief that the DCF model does not consider capital gains is not supported by theory or reality, nor is his belief that the CAPM assumes capital gains valid. Dr. Brown's failure to distinguish expected from realized rates of return leads him to erroneous conclusions about the returns investors expect from their investments. Finally, Dr. Brown consistently fails to recognize the tools available to the Authority to protect ratepayers against the various actions he fears that the Company or American Water Company may take that could increase costs to rate payers, if they were to occur.

TENNESSEE REGULATORY AUTHORITY

COMMONWEALTH OF MASSACHUSETTS

COUNTY OF MIDDLESEX

BEFORE ME, the undersigned authority, duly commissioned and qualified in and for the State and County aforesaid, personally came and appeared Michael J. Vilbert, being by my first duly sworn deposed and said that:

He is appearing as a witness on behalf of Tennessee-American Water Company before the Tennessee Regulatory Authority, and if present before the Authority and duly sworn, his testimony would set forth in the annexed transcript consisting of 10 pages.

Michael J. Vilbert

Michael J. Vilbert

Sworn to and subscribed before me
This 13th day of August 2008.

Notary Public

MARJORIE J. FISCHER
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
November 7, 2014

My commission expires November 7, 2014

NOV. 7, 2014 NOTARY PUBLIC