Exhibit No.:
Issues: Return on Equity, Capital Structure

Witness: Pauline M. Ahern
Exhibit Type: Rebuttal
Sponsoring Party: Missouri-American Water Company
Case No.: WR-2007-0216 SR-2007-0217
Date: July 10, 2007

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2007-0216
SR-2007-0217

REBUTTAL TESTIMONY

OF

PAULINE M. AHERN

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

MAWC Exhibit No. 2-NP
Case No(s). WR-2007-0216 etc
Date 8-06-07 Rptr KF

NP

I. INTRODUCTION

Q. Please state your name, occupation and business address.

A. My name is Pauline M. Ahern and I am a Principal of AUS Consultants. My business address is 155 Gaither Drive, Suite A, Mt. Laurel, New Jersey 08054.

Q. Are you the same Pauline M. Ahern who previously submitted prepared direct testimony in this proceeding?

A. Yes, I am.

Q. Have you prepared schedules which support your rebuttal testimony?

A. Yes, I have. They have been marked for identification as Schedules PMA-14 through PMA- 29.

II. PURPOSE

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to rebut certain aspects of the direct testimony of David Murray, Witness for the Missouri Public Service Commission Staff (Staff) and Michael Gorman, Witness for the Missouri Industrial Energy Consumers (MIEC) concerning capital structure and common equity cost rate. Specifically, I will address Mr. Murray's proposed capital structure, his application of the Discounted Cash Flow (DCF) Model, Capital Asset Pricing Model (CAPM), and the inadequacy of his recommended overall rate of return, including common equity cost rate. I will also address Mr. Gorman's applications of the DCF, Risk Premium Model (RPM) and CAPM.

III. SUMMARY

Q. Please briefly summarize your rebuttal testimony.

A. My rebuttal testimony describes the error of Mr. Murray's rationale for his use of American Water Works Company's (American Water) capital structure for ratemaking purposes for Missouri American Water Company (MAWC of the Company) as well as recommending a range of common equity cost rate well below any reasonable range for MAWC because:

- Mr. Murray incorrectly relies upon the June 30, 2006 capital structure ratios of American Water, MAWC's parent. His primary rationale for doing so is his erroneous belief that American Water Capital Corp. (AWCC) is the primary, i.e., major, source of long-term and short-term debt for MAWC and an erroneous belief that American Water guarantees the debt of MAWC. Moreover, my rebuttal testimony will demonstrate that American Water is publicly on record that RWE AG, its ultimate parent, will infuse capital in order to insure a minimum common equity ratio of 45% at the time of the upcoming Initial Public Offering (IPO) of American Water's common stock. I will also present the recent approvals from both the Public Utilities Commission of the State of California (PUC of Calif.) and the Illinois Commerce Commission (ICC) both of which approved the divestiture of American Water by RWE AG given that certain conditions were met. In both of those proceeding, one of those conditions being that RWE AG infuse capital as necessary so that American Water's common equity ratio will be a minimum of 45% at the time of the IPO. My rebuttal testimony will also provide the current capital structure of Thames Water Aqua US Holdings, Inc. (TWAUSHI),

the Company's ultimate United States parent at May 31, 2007, the true-up period which demonstrates that TWAUSHI already experiences a common equity ratio of **___**%

- In addition, my rebuttal testimony demonstrates that applying a common equity cost rate derived from a proxy group of water companies, which has a significantly greater average common equity ratio, to American Water's common equity ratio at June 30, 2006, results in a gross mismatch and understatement of the required common equity cost rate applicable to MAWC by 338 basis points (3.38%). Correcting Mr. Murray's recommended range of common equity cost rate of 8.60% - 9.60% for such understatement results in a financial risk adjusted common equity cost rate of 11.98% - 12.98%.
- I also review returns on equity (ROEs) authorized by other regulatory commissions in recently litigated rate cases which average approximately10.5% relative to an average common equity ratio of approximately 47.9%. In addition, I note that the average awarded equity risk premium over A rated public utility bonds was 4.67%. With a current prospective yield of 6.60% on A rated public utility bonds (equal to the average bond rating of Mr. Murray's proxy water companies), an 11.27% common equity cost rate is indicated (6.60% + 4.67% = 11.27%) before any necessary adjustments to reflect MAWC's unique risk associated with Mr. Murray's recommended common equity ratio. Moreover, the average of all litigated awarded ROEs reported by

Regulatory Research Associates (An SNL Company) during the two and on-half year period ended June 30, 2007 of 10.51% (shown Schedule PMA-25) provides confirmation that Mr. Murray's recommended range of common equity cost rate of 8.60% - 9.60% does not pass a reality check, especially when the extremely low common equity ratio he utilizes in his capital structure is taken into account.

- I also demonstrate that Mr. Murray's recommended common equity cost rate range of 8.60% - 9.60% results in an implicit range of common equity cost rate of but 6.97% - 7.55% when applied to MAWC's actual May 31, 2007 true-up capital structure ratios, which is the capital structure against which earnings will be measured.
- Mr. Murray also erroneously relies solely upon the DCF to arrive at his recommended common equity cost rate despite the Commission's consideration of the results of other cost of common equity models and the results of recently awarded ROEs to utilities by various regulatory commissions around the country as noted in Case No. GR-2006-0422. He uses, albeit incorrectly, the CAPM model but only as a check on his flawed and understated recommendation. The Efficient Market Hypothesis (EMH), upon which all the cost of common equity models are premised, confirms that investors rely upon multiple cost of common equity models in formulating their required rates of return.
- Mr. Murray's tests of reasonableness, i.e., his CAPM analysis, is flawed, as are the lower required equity risk premia.

- My rebuttal testimony also addresses Mr. Gorman's rate of recommendations for MAWC. Although, he correctly recommends that MAWC's stand-alone capital structure be used for ratemaking purposes, he erroneously claims that MAWC received all its external capital through American Water and affiliate companies and that all MAWC's debt capital is received from AWCC.
- My rebuttal testimony will also demonstrate that Mr. Gorman's recommended return rate on common equity of 9.7% for MAWC is inadequate given the allowed ROEs authorized by other regulatory commissions around the country in litigated cases which average about 10.5% relative to an average common equity ratio of 47.9%. I also show that a properly applied RPM and CAPM analyses yield results of approximately 11.0% and 10.3%, respectively, for his two proxy groups. Neither result corroborates his recommended cost rate of common equity of 9.7% for MAWC.

IV. CAPITAL STRUCTURE RATIOS

A. Mr. Murray's Proposed Capital Structure Ratios

Q. Is Mr. Murray's recommendation that the Missouri Public Service Commission (MoPSC) adopt American Water's consolidated capital structure ratios for ratemaking purposes to establish an allowed overall rate of return for MAWC appropriate?

A. No. The MoPSC should not set rates for MAWC in this proceeding based upon American Water's consolidated capital structure ratios. Rather, the

MoPSC should adopt the Company's capital structure at the true-up date of May 31, 2007 consisting of 44.50% long-term debt, 7.26% short-term debt, 0.44% preferred stock, and 47.81% common equity.

Q. Why are the Company's capital structure ratios at May 31, 2007 appropriate for ratemaking purposes?

A. These capital structure ratios are appropriate for ratemaking purposes for five reasons; 1) MAWC is a separate corporate entity that issues its own debt and equity and therefore has an independently determined capital structure, 2) MAWC's stand-alone capital structure represents the actual capital financing MAWC's jurisdictional rate base to which rates set in this proceeding will be applied; 3) MAWC's stand-alone capital structure is consistent with the capital structure ratios maintained, on average, by other water companies; 4) MAWC's stand-alone capital structure is consistent with S&P's financial target ratios of total debt to total capital criteria utilities; and 5) MAWC's stand-alone capital structure is consistent with the capital structures allowed by the MoPSC.

Q. Please comment upon the independence of MAWC's stand-alone capital structure.

A. As indicated in the Company's responses to Staff Data Information Request Nos. S0090-R1, S0091-R1 and S0091-R2, attached as Schedule PMA-14, MAWC's capital structure, actual at June 30, 2006 consisted of $284,245,000 long-term debt, $228,245,000 of which are tax-exempt bonds issued directly by MAWC to third parties and $56,000,000 (19.7% of total long-term debt) from AWCC. MAWC's June 30, 2006 capital structure contained $2,656,000 of

preferred stock which is directly issued by MAWC to the external capital markets. MAWC's common equity at June 30, 2006 was $222,961,633, including $124,202,842 in retained earnings obtained directly from water operations. Therefore, MAWC's June 30, 2006 total capital aggregates to $559,287,290 ($284,245,000 long-term debt + $49,424,657 short-term debt + $2,656,000 preferred stock + $222,961,633 common equity), of which the $56,000,000 in borrowings from AWCC represent only 10.0% of MAWC's total capital[1]. In addition, the $56,000,000 of long-term financing which MAWC receives from AWCC represents a mere 2.5% of total AWCC debt at June 30, 2006 of $2,260,960,000 (see page 3 of Schedule PMA-14).

While it is true that MAWC is receiving part of its debt financing through AWCC, it is a small part, i.e., only 10.0% of MAWC's total capital at June 30, 2006. Moreover, there has been no additional long-term debt financing from AWCC since January 1, 2004 (see MAWC's response to Staff Data Information Request No. S0102 (Schedule PMA-15)). Moreover, because MAWC is not obligated to borrow from AWCC, there is no certainty that the exclusive source of MAWC's future debt financings will be AWCC as implied by Mr. Murray in his citation of MAWC's response to Staff Data Request No. S0102 on page 16, lines 2-7 of his direct testimony.

In addition, MAWC's long-term debt is secured by its own assets and not the assets of American Water or any of American Water's other subsidiaries, some of which are engaged in non-regulated activities. In

[1] $56,000,000 + $559,287,290 = 10.0%.

turn, MAWC's assets do not secure the debt of American Water or any of its subsidiaries. Although a Support Agreement exists between American Water and AWCC, it only assures that AWCC will be able to meet its debt obligations and is silent upon the debt obligations of American Water's operating utility subsidiaries, including MAWC. The Support Agreement does not state that American Water will meet MAWC's debt service obligations to AWCC.

In fact, Standard & Poor's (S&P) indicates the following in its August 1, 2003 Research Report on American Water Capital Corp. (attached as Schedule PMA-16):

> "There is a Support Agreement between American Water Works and AWCC, which links the two entities, but American Water Works does not guarantee debt issued by AWCC." (emphasis added)

Bond rating agencies, such as S&P, are investor influencing and their opinions regarding the non-existence of a guarantee of AWCC's debt by American Water is likely to affect investors' perceptions of the true nature of the Support Agreement between American Water and AWCC.

Furthermore, MAWC's capital structure is consistent with the considerations enumerated by David C. Parcell in The Cost of Capital –A Practitioner's Guide prepared for the Society of Utility and Regulatory Financial Analysts (SURFA) and provided as the study manual to the candidates for its Certified Rate of Return Certification Examination, including Mr. Murray who successfully sat for the exam at SURFA's 2007 Financial Forum held in April

2007. Three of the considerations the manual notes as helpful in determining whether a stand-alone utility or consolidated parent capital structure is appropriate for ratemaking purposes are :

1. Whether the subsidiary utility obtains all of its capital from its parent, or issues its own debt and preferred stock. (emphasis added)

2. Whether the parent guarantees any of the securities issued by the subsidiary. (emphasis added)

3. Whether the subsidiary's capital structure is independent of its parent (i.e., existence of double leverage, absence of proper relationship between risk and leverage of utility and non-utility subsidiaries).

As discussed above, MAWC does not obtain all of its capital from American Water. Furthermore, MAWC does issue its own tax-exempt debt. The decision on whether to issue debt to AWCC or tax-exempt debt to third parties is based upon which type of debt would be lower cost. Hence, MAWC's capital structure is independent of its parent, American Water.

In view of the foregoing, because MAWC is responsible to service its own debt, is not obligated to borrow from AWCC, and does indeed have an independently determined capital structure, the only conclusion to be drawn is that MAWC's stand-alone capital structure at May 31, 2007, the true-up date, is appropriate for ratemaking purposes.

Q. Why is the actual capital financing MAWC's jurisdictional rate base relevant and appropriate for ratemaking purposes?

A. It is relevant and appropriate for ratemaking purposes because it represents the actual dollars which are financing the jurisdictional rate base to which the

rate of return authorized in this proceeding will be applied. In contrast, the consolidated MAWC capital structure proposed by Mr. Murray contains capital which does not finance MAWC's jurisdictional rate base. It includes the long-term debt capital of operating water subsidiaries other than MAWC and which finances the jurisdictional rate bases of those subsidiaries. It also includes capital issued to finance the acquisitions of subsidiaries which operate in states other than Missouri, namely Citizens Communications and Azurix Industrial Corp.. Furthermore, it includes capital which finances American Water's non-regulated subsidiaries, American Water Services and American Water Resources.

As shown on Schedule JMJ-5 updated for information at May 31, 2007, the true-up date, MAWC's ratemaking capital structure at May 31, 2007 aggregates to $604,657,732. In contrast, American Water's total capital at June 30, 2006, as shown on Mr. Murray's Schedule 8, aggregates to $9,276,302,008. American Water's June 30, 2006 total capital is thus $8,671,644,276 greater than MAWC's May 31, 2007 total capital. As discussed previously, American Water's capital finances its numerous subsidiaries, both regulated and non-regulated, which operate in 29 states and 4 Canadian provinces. Thus, approximately $8.7 billion of its capital is simply not available to finance MAWC's jurisdictional rate base.

In view of the foregoing, the capital structure proposed by Mr. Murray, contains capital which is clearly not financing MAWC's rate base. Therefore, his recommended capital structure ratios should be rejected by the MoPSC in

setting rates in this proceeding.

Q. How do the Company's capital structure ratios at May 31, 2007 compare with those maintained by other water companies?

A. The Company's May 31, 2007 capital structure ratios are consistent with those maintained, on average, by the four water companies in Mr. Murray's comparable group, the six AUS Utility Reports water companies and the four Value Line (Std. Ed.) water companies. As shown on page 2 of Schedule PMA-17, the common equity ratios, based upon total capital, including short-term debt, of Mr. Murray's four water companies averaged 49.38% for the year 2006 ranging from 45.50% to 54.92%. The common equity ratios based upon total capital of the proxy group of six AUS Utility Reports water companies averaged 48.97% for the year 2006 ranging from 37.67% to 55.95%. Likewise, the four Value Line (Std. Ed.) water companies maintained an average common equity ratio based upon total capital of 51.25% for the year 2006 ranging from 45.50% to 56.00% as also shown on page 2 of Schedule PMA-17. Thus, MAWC's ratemaking common equity ratio at May 31, 2007 of 47.81% is consistent with, if not more conservative than, that of the water companies in either Mr. Murray's comparable group or both of my proxy groups.

In addition, Phillips[2] supports the use of actual capital structure ratios for ratemaking purposes under such conditions, i.e., when they are consistent with those of other similar utilities, and not a hypothetical one such as the

[2] Charles F. Phillips, Jr., The Regulation of Public Utilities-Theory and Practice, 1993, Public Utility Reports, Inc., Arlington, VA, p. 391.

consolidated American Water capital structure when he states :

> "Debt ratios began to rise during the late 1960s and early 1970s, and the financial condition of the public utility sector began to deteriorate. It became the common practice to use actual or expected capitalizations; actual where a historic test year is used, expected when a projected or future test year is used.[83] (footnote omitted)
>
> The objective, in short, shifted from minimization of the short-term cost of capital to protection of a utility's ability "to raise capital at all times. This objective requires that a public utility make every effort to keep indebtedness at a prudent and conservative level."[84] (footnote omitted)
>
> A hypothetical capital structure is used only where a utility's actual capitalization is clearly out of line with those of other utilities in its industry or where a utility is diversified."[85] (footnote omitted) (emphasis added)

In view of the foregoing, since MAWC's May 31, 2007 capital structure ratios are consistent with those maintained on average by the four water companies in Mr. Murray's comparable group, and both of my proxy groups, the Company's proposed capital structure is the only proper one to use for ratemaking purposes in this proceeding.

Q. How do the Company's capital structure ratios compare with S&P's financial target ratios?

A. The Company's capital structure ratios are consistent with S&P's financial targets. Although MAWC's bonds are not rated by S&P, both American Water's and AWCC's S&P credit ratings are A- and both are assigned a business profile of "2" or "excellent" based upon S&P's consideration of "the stand-alone credit profile of American Water Works" (see Schedule PMA-18). Thus, S&P would likely assign a bond / credit rating of A- and business profile

of "2" to MAWC as well. S&P's financial target debt to total capital benchmark ratio for a utility whose bond / credit rating is in the A category and which is assigned a business profile of "2" ranges from 52% to 58% (see page 14 of Exhibit PMA-2) which implies a range of total equity of 42% to 48%. The Company's total equity ratio at May 31, 2007 of 48.25% (common equity of 47.81% plus preferred stock of 0.44%) falls just above the top of the range of total equity ratios implied for an A rated utility with a business profile of "2". Therefore, MAWC's total equity ratio is consistent with the range of total equity ratios implied by S&P's financial target total debt to total capital ratios for a utility with a business profile of "2" to obtain and maintain an A bond / credit rating. In view of the foregoing, since the May 31, 2007 capital structure ratios of MAWC are clearly consistent with S&P's financial total debt to total capital benchmark ratios, the Company's stand-alone capital structure ratios are the only ratios suitable for ratemaking purposes in this proceeding. Conversely, Mr. Murray's proposed capital structure ratios are inappropriate and should be disregarded.

Q. What is MoPSC precedent regarding consolidated / parent capital structures for ratemaking purposes?

A While the MoPSC has authorized consolidated / parent capital structures in the past, it has done so under very different circumstances than in the instant situation where the regulated utility has an independently determined capital structure which is consistent with the capital structures maintained by other water companies and with S&P's financial metrics. In Case No. ER-97-394, re:

Missouri Public Service (MPS), a Division of UtiliCorp United Inc., the MoPSC determined that the consolidated capital structure of UtiliCorp was appropriate for ratemaking purposes as MPS, as a division of UtiliCorp, issued no common stock or debt of its own and its capital structure was based upon an allocation of capital. However, the MoPSC's decision in Case No. ER-97-394 stands in contrast to its decision in Case No. ER-93-37 also relating to MPS. In Case No. ER-93-37, the MoPSC determined that MPS'

> divisional capital structure is the most appropriate. . . is testable, understandable, based on published facts and material, has been in continuous operation for more than five years, and has been subjected to substantial regulatory review. . . is reasonable due [to] its continuity.

The MoPSC's decision was upheld in its Order on Remand in Case No. ER-93-37, where the Commission stated:

> The Commission finds that MoPub's proposed capital structure is the most reasonable and should, therefore, be used. . . .the use of UtiliCorp consolidated capital structure may be a valid approach. However, this is not the best approach for this case because UtiliCorp is comprised of both operating utility divisions and unregulated subsidiaries, and its capital structure reflects that mix. Use of MoPub's assigned capital structure will help insulate it to some extent from UtiliCorp's unregulated subsidiaries, and the assigned structure is actually analogous to the capital structures of comparable electric utilities.. . . Finally, the Commission determines that in this case it will not impose a different capital structure on a utility where the management of the company has chosen an appropriate capital structure. (emphasis added)

The principles expressed by the MoPSC in its orders in Case No. ER-93-37 apply equally to this proceeding, namely, that MAWC's proposed stand-alone capital structure is appropriate, testable, reasonable, based upon published facts and material, has been continually in place more than five years, has

been subject to substantial regulatory review, insulates MAWC from American Water's unregulated operations, and is analogous to the capital structures of comparable water utilities.

In view of all the foregoing, Mr. Murray's recommended consolidated capital structure ratios should be rejected by the MoPSC. The Company's ratemaking capital structure ratios at May 31, 2007, the true-up date, consisting of 44.50% long-term debt, 7.26% short-term debt, 0.44% preferred stock, and 47.81% common equity are the only appropriate capital structure ratios to use for ratemaking purposes. They should be adopted by the MoPSC.

Q. Why are American Water's consolidated capital structure ratios not appropriate for ratemaking purposes for MAWC?

A. American Water's consolidated capital structure ratios as proposed by Mr. Murray are not appropriate for ratemaking purposes for MAWC for three reasons; 1) American Water's consolidated capital structure ratios do not represent the actual capital which finances MAWC's jurisdictional rate base to which rates set in this proceeding will be applied; 2) American Water's consolidated capital structure ratios are not consistent with the capital structure ratios maintained, on average, by operating water companies; and 3) American Water's consolidated capital structure ratios at June 30, 2006 are not representative of the consolidated capital structure ratios expected to be in place subsequent to the upcoming Initial Public Offering (IPO) of American Water's common stock.

Q. Why do American Water's consolidated capital structure ratios not represent

the actual capital which finances MAWC's jurisdictional rate base?

A. MAWC's originally requested rate base is $619,398,187. In contrast, the total capital, represented by Mr. Murray's recommended American Water consolidated capital structure, consists of $9,276,302,008 as shown on his Schedule 8. Hence, there is $8,656,903,821 more in capital on American Water's balance sheet than included in MAWC's proposed rate base, i.e., ($9,276,302,008 - $619,398,187 = $8,656,903,821). This $8.7 billion is simply not available or necessary to finance MAWC's rate base as it finances American Water's many and varied operations, including the rate bases of its other operating water subsidiaries, acquisitions of subsidiaries which do not operate in Missouri as well as American Water's non-regulated subsidiaries. Hence, the risk inherent in the consolidated capital structure is not representative of MAWC's actual stand-alone risk.

Q. How do American Water's consolidated capital structure ratios compare with those maintained by operating water companies whose common stocks are actively traded?

A. American Water's consolidated capital structure ratios are not consistent with those maintained, on average, by either the four water companies in Mr. Murray's comparable group, the six AUS Utility Reports water companies or the four Value Line (Std. Ed.) water companies. As shown on page 2 of Schedule PMA-17, the common equity ratios, based upon total capital (including short-term debt), of Mr. Murray's four water companies averaged 49.38% for the year 2006, and ranged between 45.50% to 54.92% 2006. In addition, the common

equity ratios based upon total capital for the six AUS Utility Reports and seven Value Line (Std. Ed.) water companies averaged 48.97% and 51.25%, respectively, in 2006. In contrast, Mr. Murray's proposed consolidated American Water common equity ratio is 28.18%, significantly lower than the average common equity ratios maintained by water companies both Mr. Murray and myself deem comparable to MAWC. A capital structure containing a common equity ratio of 28.18% indicates significantly greater financial risk since common shareholders are last in line after bondholders and preferred shareholders in any claim on the assets and earnings of MAWC. All else equal, greater financial risk also means a higher common equity cost rate because it increases total investment risk, including common equity risk. Mr. Murray has not fully taken the degree of financial risk inherent in American Water's consolidated capital structure into account by increasing his common equity cost rate recommendation by only 10 basis points, the one-third the "usual" average spread between BBB and A rated public utility bond yields (see page 33 of Mr. Murray's direct testimony). As will be discussed subsequently, a much larger increment must be added to his recommended common equity cost rate range to reflect the greater financial risk inherent in his proposed capital structure vis-à-vis the average capital structures maintained by the water companies in his comparable group upon whose market data his common equity cost rate is based .

Q. Why are American Water's June 20, 2006 consolidated capital structure ratios not representative of American Water's post-IPO capital structure?

A. American Water's consolidated common equity ratio is expected to be in the range of 45% - 55% and not Mr. Murray's proposed 28.18% once the IPO is completed by the end of 2007. American Water has indicated in divestiture proceedings in various states that it expects to maintain a capital structure, at a minimum, consisting of approximately 55% - 45% common equity and 45% - 55% debt. Ms. Ellen C. Wolf, Senior Vice President and Chief Financial Officer (CFO) of American Water has stated the following in rebuttal testimony before the Illinois Commerce Commission (ICC) in Docket 06-0336:

> "There will be no impact of the TWAUSHI impairment on the on-going financial integrity of [American Water], the surviving corporation. This is due to the decision by RWE to infuse equity to ensure that [American Water] will have at a minimum 45% common equity at the time of the IPO." (IAWC Exhibit 2.0R-REV, Revised Rebuttal Testimony of Ellen C. Wolf, p. 2, lines 44-47)(emphasis added)
>
> ". . . RWE has made a commitment that American Water's equity ratio will be in the range of 45%-55% at the time of the IPO, consisting of common equity and equity-like instruments. RWE has made a further commitment that American Water's common equity ratio will be at least 45% at the time of the IPO. RWE will infuse common equity capital as required to achieve a common equity target at or above this level at the time of the IPO. To date [February 2007] RWE has infused $1.194 billion of common equity capital. As set forth in the AG Stipulation, if an additional equity infusion is needed to achieve a common equity ratio of at least 45% at the time of the IPO, the required infusion will be provided."(IAWC Exhibit 2.0R-REV, Revised Rebuttal Testimony of Ellen C. Wolf, p. 3, lines 59-67 (emphasis added)

The ICC issued its order in Docket 06-0336 on June 27, 2007, noting on pages 15 and 16 that although:

> "Staff did not enter into a stipulation with the Joint Applicants, but recommends that the transaction be approved subject to two conditions. The Joint Applicants have stated they agree with the

two conditions proposed by Staff.

S-A. AWW's common equity ratio shall be at least 45% at the time of the IPO. The calculation of the common equity ratio shall not include equity-like instruments"[12(footnote omitted)]

The Office of the Attorney General (AG) did reach a stipulation with the Joint Applicants in Docket 06-0336 which included the following terms noted on page 19 of the ICC Order:

"AG-P. RWE has made a commitment that AWW's common equity ratio will be at least 45% at the time of the IPO. As of December 15, 2006, RWE has infused $1.194 billion of common equity capital into AWW. If any additional equity is needed to achieve a common equity ratio for AWW of at least 45% at the time of the IPO, the required infusion into AWW will be provided prior to the IPO. The calculation of the common equity ratio will not include equity-like financial instruments. AWW will file a balance sheet as of the quarter ended immediately preceding the IPO"[17(footnote omitted)]

Finally, the ICC Order states on pages 24 and 26:

"IT IS THEREFORE ORDERED by the Illinois Commerce Commission that the Proposed Transaction described herein is approved, subject to the following 21 Conditions:

Condition 1. The common equity ratio of American Water Works Company, Inc. ("AWW") shall be at least 45% at the time of the initial public offering (IPO). The calculation of the common equity ratio shall not include equity-like instruments.

* * * *

Condition 17. RWE has made a commitment that AWW's common equity ratio will be at least 45% at the time of the IPO. As of December 15, 2006, RWE has infused $1.194 billion of common equity capital into AWW. If any addition equity is needed to achieve a common equity ratio for AWW of at least 45% at the time of the IPO, the required infusion into AWW will be provided prior to the IPO. The calculation of the common equity ratio will not include equity-like financial

instruments. AWW will file a balance sheet as of the quarter ended immediately preceding the IPO."

Earlier, on May 3, 2007, the Public Utilities Commission of the State of California issued its Opinion Approving a Change of Control for American Water in Application 06-05-025, "subject to the conditions set forth in Appendix A." Condition No. 9 on page 2 of Appendix A of the Opinion states the following:

> "RWE will provide an equity investment to American Water at the time of the proposed initial public offering to ensure that American Water has a capital structure in the range of 45% to 55%, with a minimum of 45% common equity." (emphasis added)

Q. What are the current consolidated capital structure ratios of Thames Water Aqua US Holdings, Inc. (TWAUSHI), the Company's ultimate United States parent?

A. TWAUSHI's current consolidated capital structure ratios at May 31, 2007 are shown in Table 1 below:

Table 1

	Amount Outstanding ($ mill.)	Capital Structure Ratios
Long-Term Debt	**$_____	____%**
Short-Term Debt	** ___	___ **
Preferred Stock	** _____	___ **
Common Equity	** _____	___ **
Total	** _____ **	100.00%

Clearly, TWAUSHI is not just expecting and committed to a minimum common

equity ratio of 45% at the time of the IPO, **_____**. Given its commitment to the minimum 45% common equity ratio and the fact that it is also a condition of both PUC of Calif.'s and ICC's orders approving the divesture and IPO, it is clear, then, that the Mr. Murray's proposed 28.18% consolidated common equity ratio at June 30, 2006 is not only inconsistent with the common equity ratios maintained by other water utilities, but inconsistent with the publicly committed and expected capitalization of American Water subsequent to the completion of the IPO as well as with TWAUSHI's most recent, i.e., May 31, 2007, capital structure.

V. COMMON EQUITY COST RATE

A. Testimony of MoPSC Staff Witness David Murray

1. Discounted Cash Flow Model

Q. Do you have any comment on Mr. Murray's application of the DCF Model?

A. Yes. My comments surround the development of his conclusion of a growth rate to be used in his application of the DCF model. First, on Schedule 13-2, he has included a negative 2.50% historical (2003-2005) earnings per share (EPS) growth rate for American States Water Co. and a negative 0.50% historical (2003-2005) EPS growth rate for California Water Services Group in developing his average annual compound growth rates. It is illogical that investors would rely upon such a growth rate, as investors do not invest in securities expecting to lose money. Hence, this negative growth rate should have been excluded. I have corrected the development of the historical growth in DPS, EPS and BVPS to exclude American States Water Company's

negative 2.50% and California Water Services Group's negative 0.50% growth rate in column 1 on page 1 of Schedule PMA-19 which results in an average historical growth rate of 3.92% for Mr. Murray's comparable group of water companies in contrast to Mr. Murray's conclusion of 3.58% (see Schedule 13-2).

Second, Mr. Murray relied upon both I/B/E/S and S&P's projected 5-year growth in EPS. As indicated on page 3 of Schedule PMA-19, I/B/E/S is the source of S&P's growth rates. Including them in the development of a conclusion of projected growth rate results in double counting of these growth rates and an understatement of the average projected growth rate in EPS. I have also corrected for this on page 1 of Schedule PMA-19. The result is an average projected growth rate in EPS of 7.56% in contrast to Mr. Murray's conclusion of 7.54% as shown on his Schedule 15.

As shown on page 1 of Schedule PMA-19, correcting for the inclusion of a negative growth rate and the double counting of I/B/E/S projected growth in EPS results in an average growth rate of 5.75% in contrast to Mr. Murray's conclusion of growth of 5.57%. Rounding 5.74% to 5.75% and adding Mr. Murray's 100 basis points to this 5.75% results in a range of growth of 5.75% - 6.75% as also shown on Schedule PMA-19. When combined with Mr. Murray's projected dividend yield of 2.90% a range of common equity cost rate of 8.65% to 9.65% results, with a midpoint of 8.15% as shown on Schedule PMA-19. Adding the 10 basis point yield spread between BBB and A rated public utility bonds as Mr. Murray did on page 33 of his direct testimony results

in a range of common equity cost rate of 8.75% to 9.75% with a midpoint of 9.25%. A common equity cost rate of 9.25% still understates the common equity cost rate applicable to his recommended common equity ratio of 28.18% because it reflects the average financial risk of the comparable companies whose common equity ratio averaged 49.38% in 2006 and does not fully reflect the financial risk inherent in his recommended 28.18% common equity ratio which will be discussed in detail subsequently.

2. Capital Asset Pricing Model

Q. Do you have any comment regarding Mr. Murray's application of the CAPM?

A. Yes. Mr. Murray's application is flawed in three respects; 1) his choice of the historical yield on 30-year U.S. Treasury bond as the risk-free rate; 2) his use of an historical market equity risk premium which is incorrectly derived; and 3) his failure to also apply the empirical CAPM to account for the fact that Security Market Line (SML) as described by the traditional CAPM is not as steeply sloped as the predicted SML.

Q. Please comment upon Mr. Murray's use of the historical yield on 30-year U.S. Treasury bonds as the risk-free rate.

A. Both the cost of capital and ratemaking are prospective. Therefore, it is inappropriate to use an historical yield as the risk-free rate in a CAPM analysis. Rather, the prospective yield on the 30-year U.S. Treasury bonds should be used. As shown in note 1 on page 1 of Schedule PMA-20, the current forecasted consensus yield on long-term U. S. Treasury bonds by the nearly 50 economists reported in Blue Chip Financial Forecasts dated July 1, 2007 is

5.3% for the six quarters ending with the fourth quarter 2008. A prospective yield of 5.3% stands in stark contrast to Mr. Murray's recommended 4.72% historical yield (March 2007) on 30-year U.S. Treasury bonds.

Q. You have stated that Mr. Murray erred in exclusively relying upon an historical market equity risk premium which was incorrectly derived. Please explain.

A. Mr. Murray's market equity risk premium of 6.5% is derived as the difference between the arithmetic mean 1926-2006 total return on large company stocks of 12.3% and the arithmetic mean 1926-2006 total return on long-term government bonds of 5.8%. (6.5% = 12.3% - 5.8%). The correct derivation of the historical market equity risk premium is the difference between the total return on large company stocks of 12.3% and the arithmetic mean 1926-2006 income return on long-term government bonds of 5.2% which results in a market equity risk premium of 7.1% (7.1% = 12.3% - 5.2%). Regarding the use of the income return and not the total return in Treasury securities in deriving an equity risk premium, Stocks, Bonds, Bills and Inflation: Valuation Edition 2007 Yearbook (Stocks, Bonds, Bills and Inflation) state[3]:

> Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return, and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested

[3] Stocks, Bonds, Bills and Inflation – Market Results for 1926-2006 - Valuation Edition 2007 Yearbook, Morningstar, Inc., Chicago, 2007, pp. 75-76.

into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.[2] (footnote omitted) (emphasis added)

Hence, the correct historical market equity risk premium to use is 7.1% and not 6.5%. Schedule PMA-20 corrects Mr. Murray's CAPM analysis to reflect a forecasted risk-free rate of 5.3% and a properly calculated historical market equity risk premium of 7.1%, resulting in a CAPM derived common equity cost rate of 11.43%, in contrast to his improperly derived arithmetic CAPM result of 10.33%.

In addition, Mr. Murray relied exclusively upon an historical market equity risk premium which is in direct contrast to his use of both historical and projected growth rates in his application of the DCF model. As stated previously, the cost of capital is prospective and while the arithmetic mean of long-term historical stock market returns can provide insight into investors' expectations of stock market returns because the arithmetic mean of historical returns provides investors with the valuable insight needed to estimate future risk, it is also appropriate to use an estimate of the forecasted or projected stock market return. One indication of the forecasted stock market return can be derived using Value Line's 3-5 year median total market price appreciation projections and dividend yield projections as explained in detail on pages 45 and 46 of my direct testimony and summarized in note 1 on page 3 of Schedule PMA-28. Based upon Value Line a forecasted total market return of 9.8% is indicated. Subtracting the consensus forecasted yield on long-term U. S. Treasury bonds of 5.3% from the 9.8% forecasted total market return yields

a 4.5% market equity risk premium.

In the top half of Schedule PMA-21, I have derived the traditional CAPM, the one applied by Mr. Murray, using the correct forecasted risk-free rate of 5.3% and a market equity risk premium based upon both the arithmetic mean historical market equity risk premium correctly calculated as described above and the forecasted market equity risk premium based upon Value Line's projections as described in note 1 on page 3 of Schedule PMA-2\89. This results in a CAPM derived common equity cost rate of 10.30%, which is only slightly lower than Mr. Murray's derived arithmetic CAPM cost rate of 10.33%, based upon an historical risk-free rate and an arithmetic mean equity risk premium for the years 1926-2006. A CAPM cost rate of 10.30% or even Mr. Murray's 10.33% corroborates neither Mr. Murray's range of DCF results of 8.50% to 9.50% nor the corrected DCF results of 8.65% - 9.65% shown on Schedule PMA-19.

Q. You have stated that Mr. Murray also failed to apply the empirical CAPM to account for the fact that Security Market Line (SML) as described by the traditional CAPM is not as steeply sloped as the predicted SML. Please comment.

A. As discussed in my direct testimony at line 26 on page 49 through line 25 on page 50 of my direct testimony, while numerous tests of the CAPM have confirmed its validity, these tests have determined that "the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the

CAPM."[4] These tests have also indicated that the expected return on a security is related to its risk by the following formula:

$$K = R_F + 0.25(R_M - R_F) + 0.75\beta(R_M - R_F)$$

Applying this formula using the corrected risk-free rate and market equity risk premium described previously, yields an empirical CAPM derived common equity cost rate of 10.51% for Mr. Murray's comparable water companies as shown in the bottom half of Schedule PMA-21. Averaging this 10.51% empirical CAPM result with the corrected traditional CAPM result of 10.30% results in an average CAPM result of 10.41%, which also does not corroborate either Mr. Murray's range of DCF results of 8.50% to 9.50% or the range of corrected DCF results of 8.65% - 9.65%.

Q. Please discuss Mr. Murray's use of geometric average market risk premia for the years 1926-2006 and 1996-2006.

A. In addition to calculating a CAPM derived common equity cost rate based upon the historical arithmetic mean equity risk premium, albeit, incorrectly derived, Mr. Murray also calculated CAPM derived common equity cost rates using the long-term historical geometric mean equity risk premium and a shorter term geometric mean equity risk premium.

He correctly concluded that the "short-term geometric average risk premium CAPM is not currently a good test of reasonableness for the DCF model." (page 26, lines 12-14 of Mr. Murray's direct testimony) It is not appropriate to use a short time period when estimating the equity risk premium

[4] Roger A. Morin, New Regulatory Finance, 2006, Public Utilities Reports, Inc., Arlington, VA, p. 175.

because to do so runs the risk of introducing analyst bias into the calculation.

Stocks, Bonds, Bills and Inflation states on page 7 of Schedule PMA-22[5]:

> The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5 (footnote omitted)] Furthermore, because an average of the realized equity risk premium is quote volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants.

However, Mr. Murray's use of the long-term geometric mean historical equity risk premium is inappropriate for cost of capital purposes. As discussed in my direct testimony at page 44, line 3 through page 45, line 25, it is the arithmetic mean return and not the geometric mean return which is appropriate for cost of capital purposes. Because historical total returns and equity risk premia differ in size and direction over time, the arithmetic mean provides insight into the variance and standard deviation of returns, i.e., risk. Thus the prospect for variance, i.e., standard deviation, captured in the arithmetic mean, provides the valuable insight needed by investors and rate of return analysts alike to estimate the expected risk of stocks. Without such insight, investors cannot meaningfully evaluate prospective risk. Because the geometric mean relates the change over many periods to a constant rate of change, the variance, i.e., year-to-year fluctuations, and hence, risk, which is critical to rate of return analysis, is not reflected in geometric mean returns / premia.

[5] Id. at p. 82.

The financial literature is quite clear on this point, that risk is measured by the variability of expected returns, i.e., the probability distribution of returns.[6] Pages 77 through 83 of Stocks, Bonds, Bills and Inflation (see Schedule PMA-22) explain in detail why the arithmetic mean is the correct mean to use when estimating the cost of capital.

In addition, Weston and Brigham[7] provide the standard financial textbook definition of the riskiness of an asset when they state:

> The riskiness of an asset is defined in terms of the likely variability of future returns from the asset. (emphasis added)

And Morin states[8]:

> The geometric mean answers the question of what constant return you would have to achieve in each year to have your investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the future amount of money that will be produced by continually reinvesting in the stock market. It is the rate of return which, compounded over multiple periods, gives the mean of the probability distribution of ending wealth. (emphasis added)

In addition, Brealey and Myers[9] note:

> The proper uses of arithmetic and compound rates of return from past investments are often misunderstood. . . Thus the arithmetic average of the returns correctly measures the opportunity cost of capital for investments. . . *Moral*: If the cost of capital is estimated from historical returns or risk premiums, use arithmetic averages, not compound annual rates of return. (italics in original)

As previously discussed, investors gain insight into relative riskiness by

---

6 Eugene F. Brigham, Fundamentals of Financial Management, 5th Ed., The Dryden Press, 1989, p. 639.

7 J. Fred Weston and Eugene F. Brigham, Essentials of Managerial Finance, 3rd Ed., The Dryden Press, 1974, p. 272.

8 Id., at p. 133.

9 Brealey, R.A. and Myers, S.C., Principles of Corporate Finance, 5th Ed., McGraw-Hill Publications, Inc., 1996, pp. 146-147.

analyzing expected future variability. This is accomplished by the use of the arithmetic mean of a distribution of returns / premia. Only the arithmetic mean takes into account all of the returns / premia, hence, providing meaningful insight into the variance and standard deviation of those returns / premia.

Q. Can it be demonstrated that the arithmetic mean takes into account all of the returns and therefore, that the arithmetic mean is appropriate to use when estimating the opportunity cost of capital in contrast to the geometric mean?

Q. Yes. Schedule PMA-23, which consists of three pages, graphically demonstrates this premise. Page 1 charts the returns on large company stocks for each and every year, 1926 through 2006 from Stocks, Bonds, Bills, and Inflation. It is clear from looking at the variation of these returns that stock market returns, and hence, equity risk premia, vary.

Shown on page 2 is the distribution of each and every one of those returns for the entire period from 1926 through 2006. There is a clear bell-shaped pattern to the probability distribution of returns, an indication that they are randomly generated. The arithmetic mean of this distribution of returns considers all of the returns in the distribution. In doing so, the arithmetic mean takes into account the standard deviation or likely variance which may be experienced in the future when estimating the rate of return based upon such historical returns. In contrast, page 3 of Schedule PMA-23 demonstrates that when the geometric mean is calculated, only two of the returns are considered, namely the initial and terminal years, which, in this case, are 1926 and 2006. Based upon only those two years, a constant rate of return is calculated by the

geometric average. That constant return, graphically, represents a flat line over the entire 1926 to 2006 time period which is obviously far different from reality, based upon the probability distribution of returns shown on page 2 and demonstrated on page 1.

In view of all the foregoing, it should be clear that only the arithmetic mean takes the standard deviation of returns which is critical to risk analysis into account. The geometric mean is appropriate only when measuring historical performance and should not be used to estimate the investors required rate of return.

B. Recommended Common Equity Cost Rate

Q. Please discuss Mr. Murray's recommended common equity cost rate range of 8.60% to 9.60%, with a midpoint of 9.10%, applicable to his recommended common equity ratio of 28.18%.

A. Mr. Murray's recommended common equity cost rate range of 8.60% - 9.60% is inadequate for three reasons; 1) such a cost rate range reflects the financial risk of the comparable water companies and not the greater financial risk inherent in Mr. Murray's recommended consolidated American Water capital structure; 2) such a cost rate range provides an insufficient achieved return on the book common equity of MAWC; and 3) such a cost rate is not consistent with the recently authorized ROEs throughout the country for other utilities.

Q. You have stated that Mr. Murray's recommended common equity cost rate range of 8.60% - 9.60% does not reflect the greater financial risk inherent in Mr. Murray's recommended consolidated American Water capital structure.

Please explain.

A. The academic definition of financial risk is the level of fixed capital in a company's capital structure. Brigham and Gapenski[10] state:

> *Financial leverage* refers to the use of fixed charge securities – debt and preferred stock – and *financial risk* as the additional risk placed on the common stockholders as a result of financial leverage. . . . the use of debt concentrates the firms' business risk on its stockholders. (italics in original)

In addition, Brealey and Myers[11] note:

> The risk of a common stock reflects the business risk of the real assets held by the firm. But shareholders also bear *financial risk* to the extent that the firm issues debt to finance its real investments. The more a firm relies on debt financing, the riskier its common stock is . . . . Financial leverage does not affect the risk of the expected return on the firms' assets, but it does push up the risk of the common stock and lead the stockholders to demand a correspondingly higher return. (italics in original)

Mr. Murray analyzed the market data of his comparable group of four water companies in determining his recommended range of common equity cost rate. These market data reflect investors' perception of the level of financial risk inherent in the capital structures of these water companies, which for the year 2006 reflected an average common equity ratio of 49.38% (see Schedule PMA-17). In contrast, as discussed previously, Mr. Murray's recommended common equity ratio based upon American Water's consolidated capital structure is 28.18%, significantly lower than that of his comparable group. Therefore, his recommended capital structure is significantly higher in financial risk than the companies upon which he based his common equity cost rate.

[10] Eugene F. Brigham and Louis C. Gapenski, Financial Management: Theory and Practice, 4th Ed., The Dryden Press, 1985, p. 491.

As stated above, both debt and preferred stock contribute to financial risk since preferred stock is a fixed security. As recognized by this Commission in its Report and Order re: Missouri Gas Energy, Case No. GR-2006-042,

> "[A] high percentage of debt in a capital structure has an effect on the cost of equity. The shareholders in a company – the holders of equity – are subordinate to holders of debt. Generally, the company must pay the interest on debt, such as bonds issued by the company, before it can pay dividends to its shareholders of before it can invest profits in other ways that benefit the shareholders. If a company's gross income goes down, the risk is borne by the shareholders, Furthermore, if the company has to be liquidated; the holders of debt get paid first. The shareholders get whatever is left over. Therefore, a company with a capital structure that includes a high percentage of debt is more risky for shareholders. The shareholders will consequently demand a higher rate of return to compensate them for the increased risk caused by the high level of debt."

Although the cited language from the Report and Order refers to "debt", as noted above, preferred stock increases financial risk. Everything in the citation above is also true for preferred stock; common shareholders are subordinate to preferred stockholders; the company must pay preferred dividends before it can pay dividends to common stockholders; and if the company has to be liquidated, the preferred stockholders will get paid before the common shareholders. Therefore, a capital structure that includes a high combined percentage of debt and preferred stock is more risky for common shareholders. The capital structure proposed by Mr. Murray contains 19.18% preferred stock, 46.36% long-term debt and 6.28% short-term debt or an aggregate 71.82% of fixed capital as shown on Mr. Murray's Schedule 20. This represents an extremely high degree of financial leverage and hence financial risk.

[11] Richard A. Brealey and Stewart C. Myers, Principles of Corporate Finance, McGraw-Hill, 1996, p. 213.

Because higher financial risk demands a higher cost of capital, including a higher cost rate of common equity, it is not appropriate to apply his recommended common equity cost rate range of 8.60% - 9.60% to a common equity ratio of 28.18%, without a significant upward adjustment to reflect the greater financial risk inherent in capital structure with a 28.18% common equity ratio.

Q. Is there a way to quantify the downward bias inherent in Mr. Murray's recommended common equity cost rate range?

A. Yes. Although Mr. Murray acknowledged on page 33 at lines 16-23, that American Water has greater risk due to a lower credit rating than his comparable companies, a financial risk adjustment of just 10 basis points is woefully inadequate to reflect the financial risk inherent in a 28.18% common equity ratio. A study by Brigham, Gapenski and Aberwald[12] concluded that a 1 percentage point change in common equity cost ratio in the range of 40.0% to 50.0% results in an average 12 basis points change in common equity cost rate with the change approximately 15 basis points at the lower end, i.e., near 40.0%, and approximately 7 basis points at the higher end of the range, i.e., near 50.0%. Clearly, the lower the common equity ratio, the higher the common equity cost rate, all else equal. Assuming that the relationship between common equity cost rate and common equity ratio is linear, a 1 percentage point change in common equity ratio near 30.0% would likely result in a 23 basis points change in common equity cost rate. Thus, an adjustment

[12] Eugene F. Brigham, Louis C. Gapenski, and Dana A. Aberwald, "Capital Structure, Cost of Capital, and Revenue Requirements", Public Utilities Fortnightly, January 8, 1987, pp. 15-24.

to Mr. Murray's recommended common equity cost rate range based upon the 2,120 basis points (21.20%) difference between the average common equity ratio of his comparable water companies, i.e., 49.38%, and his recommended 28.18% consolidated American Water common equity ratio can be derived as follows: 3.38% = [(49.38% - 40.00%) * 0.12%] + [(40.00% - 28.18%) * { (0.15% + 0.23%) / 2 }] = [9.38% * 0.12%] + [11.82% * 0.19%] = 1.13% + 2.25%.

Adding this 3.38% financial risk adjustment to Mr. Murray's recommended range of common equity cost rate of 8.60% - 9.60% which is based upon the lower financial risk of his comparable water companies, results in a risk-adjusted common equity cost rate range of 11.98% - 12.98%, with a midpoint of 12.48%, which would be properly applicable to a common equity ratio of 28.18%, and therefore more properly reflects the greater financial risk inherent in Mr. Murray's recommended consolidated American Water capital structure.

Correcting Mr. Murray's recommended cost rate of common equity range to reflect the greater financial risk inherent in his recommended consolidated American Water capital structure is summarized below:

Mr. Murray's recommended cost rate of common equity range:	8.60% - 9.60%
Adjustment to reflect the greater financial risk of a 28.18% common equity ratio:	3.38%
Mr. Murray's recommended cost rate of common equity range corrected to reflect the greater financial risk of a 28.18% common equity ratio:	11.98% - 12.98%

Q. If the Commission authorizes MAWC the opportunity to earn Mr. Murray's recommended range of overall weighted cost of capital 6.27% - 6.55%, what is the implicit rate of return range on MAWC's proposed common equity?

A. The authorized overall rate of return, including common equity cost rate, adopted by the Commission in this proceeding will be applied to MAWC's stand-alone jurisdictional rate base which is financed by the capital on its stand-alone balance sheet. Schedule PMA-24 illustrates how significant the impact of Mr. Murray's recommendation would be on MAWC based upon its actual capital structure ratios should his recommended range of overall rate of return of 6.27% - 6.55% based upon a proposed common equity ratio of 28.18% and range of common equity cost rate of 8.60% - 9.60% be adopted by this Commission. As shown on Schedule PMA-24, Mr. Murray's recommendation implies a return rate range on MAWC's proposed common equity ratio of but 6.97% - 7.55%, only 37 - 95 basis points above the current prospective yield on Moody's A rated public utility bonds of 6.6% as derived on page 1 of Schedule PMA-27, which is clearly insufficient and unreasonable. A risk premium range of 37 – 95 basis points above the current prospective yield

on Moody's A rated public utility bonds provides a negligible risk premium violating the basic financial precept of risk and return, namely that the greater the risk, the greater return required by investors. Given that common equity ownership is riskier than debt ownership, such a negligible risk premia is not reasonable and clearly not adequate for the common equity investor.

Nor does a common equity cost rate range of 6.97% - 7.55% approach the level of earnings expected by Value Line for the four companies in Mr. Murray's group of comparable water companies. The latest Value Line Ratings & Reports (Standard Edition) for American States Water Company, Aqua America, Inc. and California Water Service Group, (there is no Rating & Report (Standard Edition) for Middlesex Water Company) indicate that Value Line expects them to earn 9.0%, 11.5% and 10.0% on year-end book common equity (see pages 6-8 of Schedule PMA-27) over the next 3-5 years averaging 10.17%. While these forecasts are for earnings on book common equity, it must be remembered that the return on common equity authorized in this proceeding will be applied to the book value of the common equity financed portion of MAWC's and will therefore become MAWC's opportunity for earnings on book value. An opportunity to earn a range of return on book common equity of either Mr. Murray's recommended range of 8.60% - 9.60% or an implied range of 6.97% - 7.55% is woefully inadequate in comparison with these expected returns on book common equity of comparable water companies.

Such common equity cost rate ranges are also inconsistent with the

comparability of returns standard enunciated in the Hope decision which states:

> The return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks

Clearly common equity cost rate ranges of either 8.60% - 9.60% or 6.97% - 7.55% do not meet the standards set in the Hope decision. Therefore, Mr. Murray's recommended common equity cost rate range and his recommended consolidated American Water capital structure should be rejected by the MoPSC in setting rates for MAWC in this proceeding.

Q. How does Mr. Murray's recommended range of common equity cost rate compare with recently authorized ROEs by other regulatory jurisdictions throughout the country.

A. Schedule PMA-25 is a summary of regulatory awards made to electric and gas distribution companies during the period January 1, 2005 through June 30, 2007 derived from Regulatory Research Associates. Although Regulatory Research Associates does not report authorized ROEs for water companies, the authorized ROEs for electric and gas distribution companies are relevant to the instant proceeding as MAWC, indeed, all water utilities, compete in the same marketplace for capital as do electric and gas distribution utilities. As shown, the average authorized ROE was 10.51% relative to an average common equity ratio of 47.89% in litigated cases. An average awarded ROE of 10.51% is 91 to 191 basis points higher than Mr. Murray's range of common equity cost rate of 8.60% - 9.60%. Also, as shown, the average awarded ROE

of 10.51% represented an average equity risk premium of 4.67% over the yield on Moody's A rated utility bonds in the months prior to the awards. The average yield on A rated utility bonds for those litigated cases was 5.84%. The projected yield on A rated utility bonds is 6.6%, as derived on page 1 of Schedule PMA-27. The 6.6% yield plus an equity risk premium of 4.72% equals an ROE of 11.27% which verifies how unreasonable is Mr. Murray's recommended common equity cost rate range.

VI. TESTIMONY OF MIEC WITNESS MICHAEL GORMAN

A. General Comments

Q. At lines 16-17 on page 3 of his direct testimony and again on page 1 of Appendix B, at lines 14-19, Mr. Gorman makes the claim that MAWC "gets all of its external capital through its parent company or affiliate companies" and that "all debt capital is issued by American Water Capital Corp." Please comment.

A. Mr. Gorman's statements are incorrect. As discussed at length previously in this rebuttal testimony, the overwhelming majority of MAWC's long-term debt outstanding, approximately 80% is in the form of general and first mortgage bonds as is evident from page 1 of Schedule PMA-14.

Q. At lines 25-31 on page 2 of Appendix B, Mr. Gorman criticizes the accuracy of interest rate projections. Please comment.

A. Mr. Gorman's statements are misleading. Events that affect the future impact market activity and volatility. Therefore, investors are interested in both the future, including analysts' expectations and in current conditions. For example,

typically one prepares for forecasted severe weather, i.e., snowstorms, and / or hurricanes, regardless of the historical accuracy of weather forecasting. When severe weather is forecasted, those expected to be affected generally begin preparing by laying in supplies of food, batteries, candles, etc. If the severe weather does not materialize, apparently that does not stop them from making the same preparations the next time severe weather is predicted.

Under the Efficient Market Hypothesis (EMH) as discussed in my direct testimony at page 20, line 19 through page 22, line 12, investors are aware of the accuracy of analysts' forecasts and reflect their awareness in the market prices they are willing to pay.

B. Discounted Cash Flow Model

Q. On page 14, line 3 through page 15, line 2 of Appendix B, Mr. Gorman expresses his concerns with the Water Group's 8.47% five-year growth rate in EPS. Please comment.

A. Mr. Gorman's statements are curious in light of his testimony earlier in Appendix B. He notes at page 12, line 19 through page 13, line 2 the following:

> Because they are more reliable estimates, and assuming the market, in general, makes rational investment decisions, analysts' growth projections are the most likely growth estimates built into stock prices.

In addition to the Gordon, Gordon and Gould article cited by Mr. Gorman on page 12 of Appendix B, there is a wealth of empirical and academic literature which support the superiority of analysts' forecasts of EPS as measures of investor expectations. For example, Cragg and Malkiel[13] state"

[13] Expectations and the Structure of Share Prices, John G. Cragg and Burton G. Malkiel, The

> Efficient market hypotheses suggest that valuation should reflect the information available to investors. Insofar as analysts' forecasts are more precise than other types we should therefore expect their differences from other measures to be reflected in the market. It is therefore noteworthy that our regression results do support the hypothesis that analysts' forecasts are needed even when calculated growth rates are available. As we noted when we described the data, security analysts do not use simple mechanical methods to obtain their evaluations of companies. The growth-rate figures we obtained were distilled from careful examination of all aspects of the companies' records, evaluation of contingencies to which they might be subject, and whatever information about their prospects the analysts could glean from the companies themselves of from other sources. It is therefore notable that the results of their efforts are found to be so much more relevant to the valuation than the various simpler and more "objective" alternatives that we tried.

In addition, Vander Weide and Carleton[14] note:

> . . . our studies affirm the superiority of analyst's forecasts over simple historical growth extrapolations in the stock price formation process. Indirectly, this finding lends support to the use of valuation models whose input includes expected growth rates.

A study conducted by Brown and Rozeff[15] found:

> Given rational market expectations, our evidence of analyst superiority over time series models means that analyst's forecasts should be used in studies of firm valuation, cost of capital and the relationship between unanticipated earnings and stock price changes until forecasts superior to those of analysts are found.

Finally, it should be noted that Myron Gordon, who first introduced the standard DCF model adopted for utility ratemaking, which both Mr. Gorman

---

University of Chicago Press, 1982, Chapter 4.

[14] "Investor Growth expectations: Analysts vs. History", James H. Vander Weide and Willard T. Carleton, The Journal of Portfolio Management, Spring 1988, pp. 78-82.

[15] "The Superiority of Analyst Forecasts as Measures of Expectations: Evidence from Earnings", Lawrence D. Brown and Michael S. Rozeff, The Journal of Finance, March 1978, pp. 1-16.

and I use, came to recognize that his original "Gordon Model" had a serious limitation. In a presentation on March 27, 1990, before the Institute for Quantitative Research In Finance held in Palm Beach, Florida, entitled, "The Pricing of Common Stocks", Dr. Gordon stated:

> The most serious limitation of the Gordon Model is the assumption that the dividend expectation can be represented with just two parameters, D and br ... We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks. That is, better estimates are obtained for the coefficient of the various explanatory variables. *...estimates by security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg. Secondly, the estimates by security analysts must be superior to the estimates derived solely from financial statements.* (italics added for emphasis)

In all of these studies, the referenced analyst's growth forecasts were forecasts of growth in EPS. As the recent dramatic rise of the stock market has shown, EPS is a prime, but not the sole, driver of market price movements Therefore, analyst's forecasts of EPS growth are extremely relevant to investors in making their investments decisions. It is the goal of rate of return analysts, such as Mr. Gorman and myself, to emulate investor behavior. Therefore, consistent with the EMH, the foundation of modern investment theory, the market prices of securities reflect all relevant information at all times. This implies that prices adjust instantaneously to new information, such as analysts' forecasts of EPS growth. It is therefore appropriate to rely upon such forecasts in a DCF analysis.

In view of the foregoing, the use of analysts' forecasts of EPS growth should be used to estimate today's market cost of capital. On page 4 of

Appendix B, at lines 9-14, Mr. Gorman states:

> The ratemaking process in itself provides utility protection against the increasing cost of capital. Indeed, If Missouri-American's [sic] utility subsidiaries' rates of return are set based on today's market cost of capital, and capital costs increase in the future, then the utilities are free to file for a rate change to reflect higher capital costs in the future when or if costs change. Hence, the regulatory mechanism itself provides utilities a hedge against increasing capital costs.

Mr. Gorman's statements are equally true should capital costs decrease in the future. Should the market cost of capital change because analysts' forecasts of EPS growth change, parties to the regulatory process can petition for a change in a regulated utility's rates based upon changing capital costs. So the regulatory process itself provides a hedge against both increasing and decreasing capital costs. Thus, there is no need to reject the empirical evidence of the proven reliability of analysts' forecasts of EPS by turning to a two-stage DCF model which will be discussed subsequently.

Q. Please comment upon Mr. Gorman's single-stage growth DCF results.

A. Neither the average water group DCF result, 11.3% nor the average gas group DCF result, 8.4% are consistent with the average authorized ROE of 10.55% in litigated cases for electric and gas utilities from January 2005 through June 2007 as shown on Schedule PMA-25. The individual DCF results for the water group are more in line with the individual authorized ROEs in litigated cases than are those for the gas group. The authorized ROEs for litigated cases ranged from a low of 9.45% to a high of 11.90% between January 2005 and June 2007 as can be gleaned from the information shown on Schedule PMA-25. Only three water group DCF results are outside this range, American

States Water Co.'s 7.44%, Aqua America, Inc.'s 12.21%, and Connecticut Water Services 13.89%. If these results are excluded from the average DCF for the water group, an average DCF cost rate of 11.34% results, remarkably similar to Mr. Gorman's average 11.3% for the entire group. In contrast, only two companies in his gas group, Atmos Energy and South Jersey Industries, with DCF results of 9.64% and 9.50%, respectively are within the range of authorized ROEs for litigated cases. Averaging these two DCF results yields a 9.57% DCF result for the gas group.

However, even this 9.57% understates the cost rate applicable to MAWC for while Mr. Gorman selected a gas utility group comparable to Missouri American in several respects, the average market capitalization of the group is significantly greater than that of Missouri American. As discussed in my direct testimony, at page 12, line 8 through page 14, line 24, size has a bearing on risk. And consistent with the basic financial concept of risk and return, investors demand greater returns to compensate them for the greater business risk inherent in a small company.

On Schedule PMA-26 I have estimated the market capitalization of MAWC for the 13-weeks ending May 18, 2007 based upon the average market-to-book ratio of Mr. Gorman's gas group for the same time period, of 196.3%. Hence, MAWC's market capitalization is estimated at $579.144 million and the average gas company's is estimated at $2,551.437 million, while that of Atmos Energy and South Jersey Industries averages $1,962.400 million as can be gleaned from the information on page 2 of Schedule PMA-26.

As also discussed in my direct testimony, a business risk adjustment can be quantified by looking to Chapter 7 entitled "Firm Size and Return" from Stocks, Bonds, Bills and Inflation. The determinations are based upon the size premia for decile portfolios of the New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2006 time period as shown on Schedule PMA-26. The average size premia for the decile in which the proxy group falls and between which Atmos Energy and South Jersey Industries fall, i.e., the 5th and 6th deciles, respectively, have been compared to the average size premia for the 8th and 9th deciles between which MAWC falls. As shown on page 1 of Schedule PMA-26, the size premium spread between MAWC and Mr. Gorman's gas group is 1.04%. It can be gleaned from the information shown on page 1 that the average size premium for the 5th and 6th deciles is 1.56% (1.56% = 1.45% + 1.67%) / 2) and the size premium spread between MAWC and Atmos Energy and South Jersey Industries is 0.93% (0.93% = 2.49% - 1.56%). Adding these premia of 1.04% and 0.93% to the 9.57% single-stage constant growth DCF result for his gas group, the average for those two companies whose DCF results fall within the range of authorized ROEs as shown on Schedule-PMA-25 indicates that a risk-adjusted gas group DCF is in the range of 10.50% - 10.61% (10.50% = 9.57% + 0.93%) and (10.61% = 9.57% + 1.04%) which are more appropriately applicable to MAWC.

Q. On page 16 of Appendix B, at lines 9-17, Mr. Gorman discusses his "beliefs" concerning current analysts' EPS growth forecasts for water companies.

expected EPS growth are not likely to return to a "more normalized long-term sustainable level" for a very long time as Mr. Gorman states on lines 16-17 of page 16 of Appendix B.

Q. Mr. Gorman concludes on page 17 at lines 5-15 of Appendix B that the results of his "water utility constant growth DCF are unreasonably high because it reflects a growth rate that is not sustainable over an indefinite period of time." Please comment.

A. This comment provides the rationale for his use of a two-stage DCF analysis which uses a purported long-term growth projection in GDP during its second stage. However, growth in GDP, represents the average growth of the economy, meaning that some firms will grow more rapidly than the economy and some will grow less rapidly. While it is intuitively appealing to assume that the growth all firms will eventually converge upon the growth in GDP, Mr. Gorman has provided no empirical evidence that the analysts' forecasted growth in EPS for either the water or gas groups will do so. Absent such empirical evidence and given the wealth of empirical evidence as to the reliability of analysts' forecasted growth in EPS as well as Mr. Gorman's own testimony that "analysts' growth projections are the most likely growth estimates built into stock prices", to undertake a two-stage DCF analysis is inconsistent with both the empirical evidence and Mr. Gorman's own earlier testimony.

Q. Please comment upon Mr. Gorman's two-stage DCF analysis.

A. In view of the foregoing, there was no valid rationale for undertaking a two-

stage DCF analysis. Moreover, the results of his two-stage DCF analysis fail a common sense test as they are even more inconsistent with the range of authorized ROEs shown on Schedule PMA-25 than the results of his single-stage growth DCF analysis. Only two of his water group's and one of his gas group's two-stage DCF results, namely Connecticut Water Services' 9.69% and Middlesex Water Co's 9.46% and Keyspan Corp.'s 9.60% fall within the range of authorized ROES of 9.45% to 11.90%. As discussed previously, MAWC is significantly more risky than the companies in Mr. Gorman's gas group. As can be gleaned from the information shown on pages 1 and 3 of Schedule PMA-26, Keyspan's estimated market capitalization for the 13-weeks ending May 18, 2007 is $7,241.436, making it 12.5 times larger than MAWC's estimated market capitalization of $579.144. Based upon the information shown on the bottom of page 1 of Schedule PMA-26, it can be determined that Keyspan falls in the 3rd decile whose size premium is 0.81%. As noted previously MAWC falls between the 8th and 9th deciles which have an average size premium of 2.49%. Hence, an indication of the size premium which would need to be added to Keyspan's two-stage DCF result of 9.60% to make it applicable to MAWC would be 1.68% (1.68% = 2.49% - 0.81%). Adding this 1.68% to the 9.60% two-stage DCF results yields a risk-adjusted DCF common equity cost rate of 11.28% which is applicable to MAWC.

In view of the foregoing, Mr. Gorman's two-stage DCF analysis should be rejected because the results fail a common sense test as they are woefully inadequate relative to recently authorized ROEs for electric and gas utilities

against which MAWC must compete for capital in the capital markets.

C. Risk Premium Model

Q. Do you have any comments regarding Mr. Gorman's risk premium analysis?

A. Yes. My comments center on the time period over which he estimates the equity risk premium and his use of authorized returns to do so.

Q. Do you agree with Mr. Gorman's use of the years 1986 – 2006 to determine an equity risk premium?

A. No. It is especially inappropriate in view of his use of a two-stage growth DCF model and emphasis upon long-term sustainable growth. As discussed previously in this rebuttal testimony and my direct testimony, Stocks, Bonds, Bills and Inflation makes it clear that the arbitrary selection of short historical periods is highly suspect and unlikely to be representative of long-term trends in market data. Page 7 of Schedule PMA-22 clearly shows that it is inappropriate to estimate a market equity risk premium over a short period of time. For example on page 7 Stocks, Bonds, Bills and Inflation states:

> "The estimate of the equity risk premium depends on the length of the data series studied. . . requires a data series long enough to give a reliable average. . . *because an average of* the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. . . "

Q. Have you applied an appropriate risk premium model to Mr. Gorman's comparable electric & gas group?

A. Yes. That information is shown on Schedule PMA-27. Using the same risk premium methodology described in my direct testimony on page 38, line 15

through page 48, line 29, a risk premium indicated common equity cost rate is 10.9% for Mr. Gorman's group of water companies and 11.1% for his group of gas companies based upon current market conditions as summarized on page 1, Schedule PMA-27.

D. Capital Asset Pricing Model

Q. Please comment upon Mr. Gorman's application of the CAPM.

A. Mr. Gorman's application of the CAPM is flawed for two reasons. First his "forward-looking" equity risk premium is not truly a prospective equity risk premium. Second, Mr. Gorman failed to utilize the Empirical Capital Asset Pricing Model (ECAPM) *in addition to the traditional* CAPM.

Q. Why is Mr. Gorman's "forward-looking" equity risk premium not truly forward-looking?

A. Mr. Gorman derived his "forward-looking" equity risk premium by merely adding a current consensus analysts' inflation projection to Ibbotson Associates long-term historical arithmetic mean real market return for the years 1926-2006. A more appropriate method of deriving the prospective equity market return is based upon Value Line's projected 3-5 year market appreciation potential, which when converted to an annual rate plus the market's median expected dividend yield results in a forecasted total annual market return as explained in note 1 on page 3 of Schedule PMA-28. This methodology yields a truly prospective market return which is based upon an important investor-influencing publication. As shown in Schedule 9 accompanying my direct testimony, more shares of common stock of the companies in my two proxy groups are held by individuals than by institutions.

Individual investors are more likely to be influenced by such projections of total market return.

Q. Why should Mr. Gorman have included an ECAPM analysis in deriving his CAPM-based common equity cost rate?

A. As discussed in my direct testimony at page 49, line 26 through page 50, line 25, the empirical Security Market Line (SML) described by the traditional CAPM is not as steeply sloped as the predicted SML. As Morin[16] notes:

> . . .low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.

Hence, both the traditional CAPM and ECAPM should be used in deriving a CAPM-based common equity cost rate. I have shown the results of applying both the traditional CAPM and ECAPM to Mr. Gorman's comparable electric and gas companies, as well as using an appropriate prospective market equity risk premium based upon Value Line on Schedule PMA-28. As shown on page 1 of Schedule PMA-28, the traditional CAPM result is 10.0% for the water companies and 10.3% for the gas companies while the ECAPM result is 10.3% for the water companies and 10.5% for the gas companies. The average of both cost rates is 10.2% for the water companies and 10.4% for the gas companies.

Q. Mr. Gorman states on page 24, lines 20-22 of Appendix B that "for companies with betas less than one, 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." Is he correct?

A. No. As discussed in my direct testimony at page 51, line 7 through page 52, line 32, the yield on long-term U.S. Treasury bonds is almost risk-free and its term is consistent with the long-term cost of capital to public utilities. Moreover, his assertion that the CAPM and the resulting risk premia based upon U.S. Treasury bond yields are overstated for companies with betas less than one is unfounded because beta captures so little of total company risk. Mr. Gorman has assigned greater significance to beta than is actually justified. Beta is a measure of non-diversifiable, systematic market risk and not of diversifiable unsystematic company-specific risk. Page 1 of Schedule PMA-29 contains excerpts from Diana R. Harrington's book on the CAPM, which explain that the beta for an average stock only accounts for perhaps as much as 30% of the total variation in market price. Conversely, this means that 70% or more remains to be explained. She further explains that the coefficient of determination, or R^2, is the regression statistic which measures how well the security market line fits the data. She states, "If all the stock-return variation were coincident with market-return changes, the R^2 would be 1.00. Smaller explanatory power would result in a lower R^2."

On page 2 of Schedule PMA-29, I have shown the June 15, 2007 Value Line adjusted betas derived from a Value Line proprietary database, which makes various regression statistics available. I have also shown for each of the companies in Mr. Gorman's groups of comparable water companies and gas companies the R^2, or coefficient of determination, related to each beta. As shown

[16] Id., at p. 175.

on page 2 of Schedule PMA-29, the average R^2 for Mr. Gorman's comparable water companies was 0.1711 and 0.3468 for the gas companies. In other words, market-return changes account for only about 17% to 35% of the total change in market price.

Pages 3-5 of Schedule PMA-29 are taken from Stocks, Bonds, Bills and Inflation - Market Results for 1926-2006 – Valuation Edition 2007 Yearbook. The graph shown on page 4 of Schedule PMA-29 (Graph 6-4) shows the distribution of the R^2 (coefficient of determination) for the approximate 5,000 companies included in the publication. As can be determined from Graph 6-4, a significant number of those companies have an R^2 of either 0.17 of 0.35 or less, similar to Mr. Gorman's group of comparable water and gas companies. That means that for the majority of those 5,000 companies, beta explains 35% or less of the changes in market prices. Conversely, it means that 65% or more of total market price change is not beta related. These are similar to the relationships of the recent betas for Mr. Gorman's group of comparable water companies and gas companies.

In view of the foregoing, Mr. Gorman's assertion that "for companies with betas less than one, 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" is without merit.

Q. Does that conclude your rebuttal testimony?

A. Yes.