Exhibit No.:	
Issues:	Cost of Capital Study
Witness:	Roger A. Morin, PhD
Exhibit Type:	Rebuttal
Sponsoring Party:	Missouri-American Water Co.
Case No.:	WR-2015-0301 SR-2015-0302
Date:	February 11, 2016

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2015-0301
CASE NO. SR-2015-0302

REBUTTAL TESTIMONY

OF

ROGER A. MORIN, PhD

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

IN THE MATTER OF MISSOURI-AMERICAN WATER COMPANY FOR AUTHORITY TO FILE TARIFFS REFLECTING INCREASED RATES FOR WATER AND SEWER SERVICE	)))))	**CASE NO. WR-2015-0301** **CASE NO. SR-2015-0302**

AFFIDAVIT OF ROGER A. MORIN

Roger A. Morin, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Rebuttal Testimony of Roger A. Morin"; that said testimony was prepared by him and/or under his direction and supervision; that if inquiries were made as to the facts in said testimony, he would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of his knowledge.

Roger A. Morin

State of Georgia
County of Glynn
SUBSCRIBED and sworn to
Before me this 1st **day of** Feb **2016.**

Notary Public

My commission expires: 04/10/17

BRANDI LEE NOTARY PUBLIC GLYNN COUNTY, GEORGIA MY COMM. EXPIRES APR. 10, 2017

REBUTTAL TESTIMONY
ROGER A. MORIN, PhD
MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2015-0301
CASE NO. WR-2015-0302

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REBUTTAL TESTIMONY
OF
ROGER A. MORIN, PhD

I. INTRODUCTION AND SUMMARY

Q. PLEASE STATE YOUR NAME, ADDRESS, AND OCCUPATION.

A. My name is Dr. Roger A. Morin. My business address is Georgia State University, Robinson College of Business, University Plaza, Atlanta, Georgia, 30303. I am Emeritus Professor of Finance at the College of Business, Georgia State University and Professor of Finance for Regulated Industry at the Center for the Study of Regulated Industry at Georgia State University. I am also a principal in Utility Research International, an enterprise engaged in regulatory finance and economics consulting to business and government.

Q. DID YOU FILE DIRECT TESTIMONY IN THIS PROCEEDING ON BEHALF OF MISSOURI-AMERICAN WATER COMPANY ("MAWC")?

A. Yes, I did.

Q. WHAT IS THE PURPOSE OF THIS REBUTTAL TESTIMONY?

A. I have been asked to rebut certain aspects of the Missouri Public Service Commission Staff Report – Cost of Service (Staff Report, Staff Witness David Murray) and to rebut the direct testimony of Mr. Michael P. Gorman on behalf of the Office of the Public Counsel ("OPC"). Specifically, I shall address several aspects of Staff's rate of return on common equity ("ROE") recommendation, focusing mainly on the numerous contradictions and inconsistencies in the testimony and on the implementation of financial models. Relative to the direct testimony of Mr. Gorman, I shall address his application of the Discounted Cash Flow ("DCF"), Risk Premium, and Capital Asset Pricing Model "CAPM" methodologies. I also address both Staff's and OPC's failure to reflect MAWC's greater risks relative to the proxy group of water companies.

Q. PLEASE DESCRIBE HOW YOUR REBUTTAL TESTIMONY IS ORGANIZED.

A. My rebuttal testimony is organized in two broad sections, corresponding to each of the two aforementioned testimonies.

Q. PLEASE SUMMARIZE THE RATE OF RETURN RECOMMENDATIONS OF THE TWO WITNESSES YOU ARE REBUTTING IN THIS CASE.

A. The ROE recommended by each party I am rebutting in this case is as follows:

Staff	9.25%
OPC	9.00%

II. REBUTTAL OF STAFF'S TESTIMONY

Q. PLEASE SUMMARIZE STAFF'S RATE OF RETURN RECOMMENDATION.

A. In determining MAWC'S cost of common equity capital, Staff's implementation of financial models relies principally on the results of a multi-stage DCF model applied to a group of eight water utilities. As a numerical check on the DCF result, Staff performs a CAPM analysis on the same companies, but little if any weight is attached to these results in arriving at its recommendation (Staff Report, page 20 lines 26-31). Based on the results of this single DCF analysis and various reasonableness checks, Staff recommends a return of 9.25% on MAWC's common equity capital.

Q. WHAT IS YOUR FIRST GENERAL REACTION TO STAFF'S COST OF COMMON EQUITY RECOMMENDATION?

A. My general reaction to Staff's testimony, even before I engage in a more technical critique, is that it contains major infirmities.

First, and foremost, Staff's rate of return testimony is replete with inconsistencies and contradictions which make it extremely difficult to follow.

Q. WHAT SPECIFIC INCONSISTENCIES AND CONTRADICTIONS ARE YOU REFERRING TO?

A. There are numerous anomalies:

(1) Staff's multi-stage DCF results on which it places almost exclusive reliance produces results in an improbably low range of 7.0% - 7.5% (page 34 line 2), yet it recommends a ROE of 9.25%. Other than tacitly conceding that the result is inexplicably too low, it is not clear to me how Staff recommends 9.25% when its principal DCF result and the results of various checks are in the 7.0% - 7.5% range.

(2) In several inconsistent instances, Staff refers to water utilities' cost of common equity being less than that of electric utilities by 35 basis points (page 9 line 27), then by 100 basis points (page 9, line 24), then by 50 basis points (page 10, line 2), then by 30-65 basis points (page 13 line 23), then by 25 basis points (page 13, line 17) and finally by 0-100 basis points (page 13 line 17).

(3) Staff refers to recent electric cases where the Commission allowed 9.53% for Ameren Missouri and 9.5% for KCPL, then argues that the cost of capital has not changed since those two decisions (page 18). However, on

page 15 line 26 and page 16 line 9, Staff argues that the cost of capital is higher since those two decisions.

(4) On page 14 lines 28-30, Staff argues that the Federal Reserve's recent increase in the federal funds rate is not likely to increase long-term rates, then on page 15 line 26 and page 16 line staff points to an increase on utility bond yields.

(5) One of the key inputs to Staff's multi-stage DCF model is the assumed long-term perpetual growth rate of the U.S. economy beyond year 10. Staff uses the long-term projected growth in the U. S. Gross Domestic Product (GDP) as a proxy for this long-term growth rate. On page 30 line 25, Staff cites a GDP growth rate of 4.5%, then cites a growth rate of 4.4% on page 32 line 25, then cites another growth rate range of 4.0% - 4.5% on page 33 line 17, then cites yet another growth range of 3.0% - 4.0% on page 39 line 21. On Schedule 15-1, a GDP growth rate of 4.0% is used, on Schedule 15-2 a 4.5% growth is used, on Schedule 15-3, a 4.4% growth is used, on Schedules 16-1 to 16-4, growth rates of 3.0%, 3.5%, 4.0%, and 4.4% are used. Staff assumes a U.S. Economy Growth of 4.5% in the DCF analysis of water utilities in Schedule 15-2, but uses a different growth rate of the U.S. economy, 3%, on Schedule 16-1 in the DCF analysis of electric utilities. This casts doubt on the reliability of Staff's ROE recommendation which rests heavily on this key input. To add to the confusion, on page 32 lines 11-12, Staff cites that in its experience, most DCF analyses do not assume a growth rate much higher than the expected rate of inflation,

currently 2.0% - 2.5%. No foundation or support is offered for this statement.

(6) One of Staff's "checks" on the reasonableness of its 9.25% ROE recommendation is the current allowed returns by regulatory commissions. To buttress its recommendation, Staff cites a range of 9.7% - 10.0% in allowed returns on page 38 line 10, but recommends only 9.25%.

(7) Staff performs another reasonableness check on its ROE recommendation, namely the "Rule of Thumb" check. According to this rule, the cost of common equity is equal to the cost of the company's debt plus a 3% - 4% premium. On page 18 line 21, Staff cites a cost of debt of 4.14% - 4.18% for MAWC. Adding the 3% - 4% risk premium to the latter range produces a cost of equity of 7.14% - 7.18%. But then, Staff recommends a ROE of 9.25%, which is nowhere near the estimate produced by this so-called "rule of thumb" and is bereft of any explanation for the difference.

Q. WHAT IS YOUR SECOND GENERAL REACTION TO STAFF'S COST OF COMMON EQUITY RECOMMENDATION?

A. My second general reaction to Staff's testimony, even before I engage in a more technical critique, is that its recommendation of 9.25% rests heavily on the results of a multi-stage DCF analysis. Staff has put most of its eggs in the DCF basket which causes it to recommend returns that are well below investors' required returns. This narrow approach stands in sharp

contrast with the cost of capital estimation practices of investment analysts, finance experts, corporate analysts, and finance professionals who rely on a variety of methodologies. Its CAPM check on the DCF result, on which it places little, if any, weight is also flawed, as I discuss later. Staff employs inappropriate model inputs in its analyses, which cause it to recommend returns that are below investors' required returns. Its capital structure recommendation is also flawed, and moreover, Staff did not adjust its ROE upward to account for the weaker common equity ratio it imputes to the Company relative to that of its peer group of companies.

Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TO STAFF'S COST OF EQUITY TESTIMONY?

A. Staff's ROE recommendation is unreliable in view of the numerous aforementioned contradictions and inconsistencies. A proper application of cost of capital methodologies would give results substantially higher than those obtained by Staff. Proper adjustment for the more leveraged balance sheet it attributes to MAWC raises its recommended ROE by 53 basis points from this source alone. Allowance for flotation costs associated with common stock issues adds another 15 basis points to the ROE estimates. Those two corrections alone raise Staff's recommended 9.25% to 9.93%. In short, Staff understates MAWC's cost of common equity by a minimum of 75 basis points (.075%), which would bring its recommended ROE much closer to my own.

Q. PLEASE SUMMARIZE YOUR COMMENTS ON STAFF'S TESTIMONY.

A. On technical grounds, I have thirteen (13) specific disagreements with Staff's testimony:

1. Unreliable Recommendation. Staff's testimony is replete with contradictory data, inconsistencies, and erroneous inputs. As a result, its cost of equity recommendation is unreasonably low, and is not a reliable estimate of MAWC's cost of equity capital.

2. Allowed returns. Staff's recommended return is below the zone of currently allowed rates of return for its sample water companies and for electric utilities.

3. Dividend Yield and Flotation Cost. Staff's dividend yield component is understated by 15 basis points because it does not allow for flotation costs and, as a result, a legitimate expense is left unrecovered.

4. Historical Growth Rates. In order to estimate the growth component of the "classic" DCF model, Staff relies on 10-year and 5-year historical growth rates in book value, dividends, and earnings per share as proxies for the growth component. Historical growth rates are somewhat redundant since historical growth patterns are already reflected in analysts' growth forecasts, which Staff also uses. Also, the stock price Staff uses in the DCF analysis is predicated on analysts' growth forecasts and not on historical growth rates.

5. Dividend Growth Rates. For estimating the growth component of the classic DCF model, Staff examines historical and projected dividend growth. Earnings growth projections are far more relevant for they are the driving source behind dividends, and as a practical matter there are far more earnings growth projections available than dividend growth projections.

6. Analysts Growth Forecasts. The best proxy for the growth component of the DCF model is analysts' long-term earnings growth forecasts. Staff should have relied strictly on earnings growth forecasts in its classic DCF analysis.

7. Long-Term DCF Growth Rate. Staff's long-term growth forecast of 3.0% for its peer group of water utilities understates the long-term expected GDP nominal growth by at least 150 basis points (1.5%).

8. CAPM Risk-Free Input. Staff has relied on an inappropriate risk-free rate proxy in implementing the CAPM. Using the appropriate risk-free rate, Staff's CAPM estimates are understated by 154 basis points from this correction alone.

9. CAPM Market Risk Premium. Staff's MRP estimate is understated because it relies in part on historical geometric average returns. Using the appropriate MRP, Staff's CAPM estimates are understated by 58 basis points from this correction alone.

10. CAPM and the Empirical CAPM (ECAPM). The plain vanilla version of the CAPM used by Staff understates the Company's cost of equity by 50

basis points. That brings the total understatement of Staff's CAPM analysis to 262 basis points.

11. Capital Structure Recommendation. I strongly disagree with Staff's "double leverage" approach of imputing more debt to MAWC, in effect decimating the company's financial profile at a most inopportune time when the company will be raising huge amounts of external capital. Staff's capital structure recommendation is at odds with the capital structures of its peer group of water companies.

12. Capital Structure/ROE Adjustment. Staff fails to adjust its recommended ROE to reflect the fact that it imputes MAWC's capital structure with considerably more debt than the average capital structure of its comparable group of water utilities. Such a required adjustment raises its ROE recommendation from 9.25% to 9.78% from this omission alone.

13. Risk Adjustment. Staff did not adjust its recommended ROE upward to reflect MAWC's greater than average risk on account of its very small relative size and high construction program relative to its small size.

I shall now expand on each of the aforementioned disagreements one at a time. I have already commented on the first point, that is, the lack of reliability of Staff's recommendation.

2. ALLOWED RETURNS

Q. IS STAFF'S RATE OF RETURN RECOMMENDATION COMPATIBLE WITH CURRENTLY ALLOWED RETURNS IN THE UTILITY INDUSTRY?

A. No, it is not. Allowed returns, while certainly not a precise indication of a company's cost of equity capital, are nevertheless important determinants of investor growth perceptions and investor expected returns. They also serve to provide some perspective on the validity and reasonableness of Staff's recommendation.

ROE awards in the industry exceed Staff's recommended ROE of 9.25% for MAWC. I have examined the returns currently allowed on common equity for the 8 water utilities in Staff's comparable group as reported in AUS Utility Reports survey for January 2016. The currently authorized ROEs for Staff's sample of water utilities[1], shown in Table 1 below, average 9.6%.

Table 1 Allowed ROEs Staff's Peer Group

1	American States Water Co.	9.43
2	American Water Works Co., Inc.	9.75
3	Aqua America, Inc.	9.79
4	California Water Service Group	9.43
5	Connecticut Water Service, Inc.	9.63
6	Middlesex Water Company	9.75
7	SJW Corporation	9.43
8	York Water Company	NM
	Average	**9.60**

For the electric utility industry, which Staff frequently references in its testimony and on Schedules 16-1 to 16-3, the average currently authorized ROE is 10.4% and 10.2% for integrated electric utilities and combination gas and electric utilities, respectively. The average ROE awarded in recent 2015 decisions is 10.0%.

[1] AUS Utility Reports January 2016.

In short, Staff's ROE recommendation is below the mainstream of the allowed rates of return that were current during the period in which Staff performed its analysis and lies outside the zone of recently authorized returns for utilities. The Commission is not bound by decisions of other regulators regarding allowed ROE, but one should not overlook the substantial difference between Staff's recommendation and the returns currently allowed for the very same firms that Staff deems comparable in risk.

An unreasonably low rate of return for a Missouri utility, if implemented, could have repercussions for the State of Missouri which are not mentioned in Staff's testimony. For example, the quality of regulation and the reasonableness of rate of return awards clearly have implications for regulatory climate, economic development and job creation in a given territory. The consistency of regulation in a given state has similar implications. It is my belief that Staff's recommended return has negative implications on these grounds and is not consistent with the economic well-being of the State.

3. DCF DIVIDEND YIELD AND FLOTATION COSTS

Q. BEFORE GOING ON TO MORE TECHNICAL ISSUES, DR. MORIN, DO YOU AGREE WITH STAFF'S PEER GROUP OF WATER COMPANIES?

A. Yes, I do.

Q. DO YOU AGREE ALSO WITH STAFF'S DIVIDEND YIELD COMPONENT IN STAFF'S CLASSIC DCF ANALYSIS?

A. Yes, I agree with Staff's 2.8% dividend yield estimate for the group of water utilities.

Q. IN YOUR DIRECT TESTIMONY, YOU STATED THAT THE RETURN ON EQUITY SHOULD BE ADJUSTED TO INCLUDE AN ALLOWANCE FOR FLOTATION COSTS. PLEASE COMMENT ON FLOTATION COSTS.

A. Flotation costs are very similar to the closing costs on a home mortgage. In the case of issues of new equity, flotation costs represent the discounts that must be provided to place the new securities. Flotation costs have a direct and an indirect component. The direct component represents monetary compensation to the security underwriter for marketing/consulting services, for the risks involved in distributing the issue, and for any operating expenses associated with the issue (printing, legal, prospectus, etc.). The indirect component represents the downward pressure on the stock price as a result of the increased supply of stock from the new issue. The latter component is frequently referred to as "market pressure."

Flotation costs for common stock are analogous to the flotation costs associated with past bond issues which, as a matter of routine regulatory policy, continue to be amortized over the life of the bond, even though no new bond issues are contemplated. In the case of common stock, which

has no finite life, flotation costs are not amortized. Therefore, the recovery of flotation cost requires an upward adjustment to the allowed return on equity.

As demonstrated in my direct testimony, the expected dividend yield component of the DCF model must be adjusted for flotation cost by dividing it by (1 - f), where f is the flotation cost factor, 5% for utilities.

Q. WHAT FLOTATION COST TREATMENT DID STAFF RECOMMEND IN THIS CASE?

A. Staff's common equity return recommendation does not include any allowance whatsoever for issuance expense. Because Staff fails to include any allowance for flotation costs, its DCF estimates of equity costs are downward-biased by approximately 15 basis points as a result of that omission alone[2].

4. DCF HISTORICAL GROWTH RATES

Q. PLEASE DISCUSS THE USE OF HISTORICAL GROWTH RATES IN APPLYING THE DCF MODEL TO UTILITIES.

A. I disagree with Staff's choice of historical growth rates in its "classic" DCF analysis. In arriving at proxies for the growth component in the plain vanilla DCF analysis, Staff relies on 10-year and 5-year historical growth rates in book value per share, dividends per share, and earnings per share.

[2] Staff's dividend yield of 2.8% divided by 0.95 equals approximately 15 basis points (0.15%).

I disagree for two reasons. First, historical growth rates are largely redundant because such historical growth patterns are already incorporated in analysts' growth forecasts that should be used in the DCF model. Moreover, as discussed below, dividend and book value growth rates are inappropriate proxies in the DCF model. Second, as discussed in my direct testimony, the finance literature has demonstrated the superiority of analysts' earnings growth forecasts in implementing the DCF model.

5. DCF DIVIDEND GROWTH RATES

Q. SHOULD STAFF HAVE CONSIDERED DIVIDEND GROWTH PROXIES IN APPLYING THE DCF MODEL?

A. No, it should not for several reasons. First, earnings growth provides a more meaningful guide to investors' long-term growth expectations. After all, it is growth in earnings that will support future dividends and share prices. Second, it is abundantly clear from Schedule 11-1 that the 3.71% average dividend growth rate is an outlier, when compared with the average earnings growth rate of 6.36%. The same is true in Schedule 11-2 where the 3.79% average dividend growth rate is compared with the average 8.71% earnings growth rate. Third, it would not be unreasonable to expect water utilities to lower their dividend payout ratio over the next several years in response to the need to rely more heavily on internal financing sources in light of substantial planned capital expenditures. In other words, earnings and dividends are not expected to grow at the same rate in the future.

Whenever the dividend payout ratio is expected to change, the intermediate growth rate in dividends cannot equal the long-term growth rate, because dividend/earnings growth must adjust to the changing payout ratio. The assumptions of constant perpetual growth and constant payout ratio are clearly not met. The implementation of the standard DCF model is of questionable relevance in this circumstance.

In short, dividend growth rates are unlikely to provide a meaningful guide to investors' growth expectations for water utilities. Moreover, as a practical matter, there are far more earnings forecast available from the investment community than dividend forecasts, which attests to their importance to investors.

6. ANALYST GROWTH FORECASTS

Q. IS THERE ANY EMPIRICAL EVIDENCE DOCUMENTING THE IMPORTANCE OF EARNINGS IN EVALUATING INVESTORS' EXPECTATIONS IN THE INVESTMENT COMMUNITY?

A. Yes, as discussed in my direct testimony, there is an abundance of empirical evidence attesting to the importance of earnings in assessing investors' expectations. The best proxy for the growth component of the DCF model is analysts' long-term earnings growth forecasts.

Q. WHAT GROWTH RATES SHOULD STAFF HAVE USED IN ITS CLASSIC DCF ANALYSIS?

A. Staff should have relied strictly on earnings growth forecasts.

7. DCF LONG-TERM GROWTH RATE

Q. DO YOU AGREE WITH STAFF'S CHOICE OF LONG-TERM DCF GROWTH RATE IN ITS MULTI-STAGE DCF ANALYSIS?

A. It is difficult to say because as I indicated earlier in my rebuttal, Staff cites and uses a variety of long-term U.S. GDP growth rates that vary anywhere from 2.0% to 4.5%, sometimes using 3% as in Schedule 16-1 and sometimes using 4.4% for electric utilities as in Schedule 16-4. There is no basis whatsoever for using one growth rate in the U.S. economy for the water utility industry and a different one for the electric utility industry. My own studies and perusal of various economic forecasts indicate a GDP growth rate in the range of 4.5% - 5.0%.

8. CAPM RISK-FREE ESTIMATES

Q. DOES STAFF PERFORM A CAPM ANALYSIS?

A. Yes, Staff performs a CAPM analysis as a check on its DCF results, although it places little, if any, weight on the CAPM results. On Page 35 lines 23-25 of its testimony, Staff makes it clear that it only uses the CAPM as a check.

Q. WHAT INPUTS DOES STAFF USE IN ITS CAPM ANALYSIS?

A. Three inputs are required in order to implement the CAPM: the risk-free

rate, the beta risk measure, and the market risk premium (MRP). For the risk-free rate, Staff uses 2.96%. For beta, Staff uses 0.73, which is the average of the Value Line betas of its sample of water companies. For the MRP, Staff uses a range of 4.64% - 6.20%, based on the difference between historical returns on stock and bonds.

Q. DO YOU AGREE WITH STAFF'S BETA ESTIMATE?

A. Yes, I do.

Q. DO YOU AGREE WITH STAFF'S RISK-FREE RATE ESTIMATE?

A. No, I do not. Staff's risk-free rate estimate of 2.96% is far too low for purposes of applying the CAPM. Staff's estimate is based on current bond yields on 30-year U.S. treasury bonds. What Staff should have done is rely on forecast yields instead of current yields because investors price securities on the basis on long-term expectations, including interest rates. Staff has frequently relied on forecasts elsewhere in its testimony, DCF growth rates and GDP growth forecasts for instance. It is not clear why Staff did not follow suit in the case of interest rate forecasts.

All the economic forecasts that I am aware anticipate a substantial and steady increase in interest rates from 2016 onward. Value Line's most recent quarterly economic review dated September 2015 forecasts a yield rising to 4.3% in 2019[3]. Global Insight's December 2015 edition forecasts

[3] Global Insight forecasts are for 30-year bonds, while Value Line forecasts are for 10-year bonds. 50 basis points were added to the 10-year forecasts based on the historical 50 basis points spread between 10 and 30-

a long-term level of 4.3%. The Congressional Budget Office ("CBO") projects that the average interest rate on 30-year Treasury notes will rise to 4.8% by 2025 in its latest updated economic review dated August 2015[4]. The U.S. Energy Information Administration forecasts an increase in long-term rates to 5.0% by 2040. The "2016 Economic and Budget Analyses" document published in support of the 2016 federal budget forecasts long-term Treasury bond yields of 5.0% by 2020. In summary, these forecasts suggest a range of 4.5% - 5.0% in long-term interest rates on 30-year Treasury bonds

In short, based on this consistent evidence from various sources, a minimum long-term bond yield forecast of 4.5% should have been used by Staff for purposes of a forward-looking CAPM analysis in the current economic environment for the simple reason that investors price securities on the basis on long-term expectations, including interest rates. The CAPM is a prospective (i.e., forward-looking) model. As a result, Staff's CAPM estimates are understated by 154 basis points (4.50% – 2.96% = 1.54%) from this omission alone.

9. CAPM: MARKET RISK PREMIUM

Q. HOW DOES STAFF ESTIMATE THE MARKET RISK PREMIUM COMPONENT OF THE CAPM?

A. In order to determine the MRP component of the CAPM, Staff relies on the

year yields, as was the case for all other 10-year forecasts.

[4] "An Update To The Budget and Economic Outlook 2015 to 2025", CBO August 2015.

historical difference between earned returns on stocks and earned returns on bonds. The first estimate of the MRP is based on the long-term arithmetic average of historical return differences from 1926 to 2014 – 6.2% and the second estimate is based on the geometric average – 4.64%.

Q. DO YOU AGREE WITH STAFF'S MRP ESTIMATES?

A. No, I do not for two reasons. First, I strongly disagree with the estimate based on geometric average returns. Second, Staff has relied on the total return component of bond returns rather than the income component.

Q. DR. MORIN, WHAT IS WRONG WITH STAFF'S RELIANCE ON GEOMETRIC AVERAGE RETURNS WHEN ESTIMATING THE COST OF CAPITAL?

A. The estimate of 4.64% based on geometric averages should be ignored. Only arithmetic means are appropriate for forecasting and estimating the cost of capital, while geometric means are not.[5] My direct testimony and Chapter 4 of my book The New Regulatory Finance contain a detailed and rigorous discussion of the impropriety of using geometric averages in estimating the cost of capital. There is no theoretical or empirical justification for the use of geometric mean rates of return. Briefly, the disparity between the arithmetic average return and the geometric average

[5] See Roger A. Morin, *The New Regulatory Finance*, chapter 4 (2006); Brealey, Myers, and Allen, *Principles of Corporate Finance* (8th ed. 2006).

return raises the question as to what purposes should these different return measures be used. The answer is that the geometric average return should be used for measuring historical returns that are compounded over multiple time periods. The arithmetic average return should be used for future-oriented analysis, where the use of expected values is appropriate.

Q. PLEASE EXPLAIN HOW THE ISSUE OF WHAT IS THE PROPER "MEAN" ARISES IN THE CONTEXT OF ANALYZING THE COST OF EQUITY.

A. The issue arises in applying methods that derive estimates of a utility's cost of equity from historical relationships between bond yields and earned returns on equity for individual companies or portfolios of several companies. Those methods produce series of numbers representing the annual difference between bond yields and stock returns over long historical periods. The question is how to translate those series into a single number which can be added to a current bond yield to estimate the current cost of equity for a stock or a portfolio. Calculating geometric and arithmetic means are two ways of converting series of numbers to a single, representative figure.

Q. IF BOTH ARE "REPRESENTATIVE" OF THE SERIES, WHAT IS THE DIFFERENCE BETWEEN THE TWO?

A. Each represents different information about the series. The geometric mean of a series of numbers is the value which, if compounded over the period examined, would have made the starting value to grow to the ending value. The arithmetic mean is simply the average of the numbers in the series. Where there is any annual variation (volatility) in a series of numbers, the arithmetic mean of the series, which reflects volatility, will always exceed the geometric mean, which ignores volatility. Because investors require higher expected returns to invest in a company whose earnings are volatile than one whose earnings are stable, the geometric mean is not useful in estimating the expected rate of return which investors require to make an investment.

Q. SHOULD THE HISTORICAL MRP BE ESTIMATED USING THE INCOME COMPONENT OF BOND RETURNS?

A. Yes, it should. As I discussed in my direct testimony, the income component (i.e., the coupon rate) is a far better estimate of expected return than the total return (i.e., the coupon rate plus capital gains), because realized capital gains/losses are largely unanticipated by investors. For that very reason, I recommend the use of the *income* return on government bonds. In other words, bond investors focus on income rather than realized capital gains/losses. I believe Staff's historical MRP of 6.2% is based on total bond returns rather than the income component of bond returns. Morningstar's Valuation 2015 Yearbook (formerly the Ibbotson Valuation

Yearbook) provides data on the difference between total bond returns and the income component of bond returns over the same period as Staff's historical analysis. The historical MRP over the income component of long-term Government bonds is 80 basis points higher than the historical MRP based on total bond returns. This correction alone would increase Staff's MRP estimate from 6.2% to 7.0%.

Q. WHAT DO YOU CONCLUDE ON STAFF'S MRP ESTIMATE?

A. All and all, the evidence, including the MRP evidence I presented in my direct testimony, points to a MRP estimate of 7% versus Staff's 6.2% estimate. The net result is that Staff's CAPM estimate of MAWC's cost of common equity is understated by 58 basis points (0.58%) from this source alone, which is the difference between 7.0% and 6.2% times Staff's Value Line beta estimate of 0.73.

10. CAPM AND THE EMPIRICAL CAPM

Q. DO YOU AGREE WITH STAFF'S USE OF THE RAW FORM OF THE CAPM TO ESTIMATE THE COST OF CAPITAL?

A. No, I do not. I believe that the plain vanilla version of the CAPM should be supplemented by the more refined version of the CAPM. As I discussed in my direct testimony, a CAPM-based estimate of the cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence. The

downward-bias is particularly significant for low-beta securities like the water utilities used by Staff in its comparison group. Staff's CAPM estimates of equity costs are understated by about 50 basis points as a result of this bias alone.

This brings the total CAPM understatement of MAWC's cost of equity to 2.62% (1.54% + 0.58%+0.50% = 2.62%).

11. CAPITAL STRUCTURE

Q. WHAT CAPITAL STRUCTURE DOES STAFF RECOMMEND FOR MAWC?

A. Staff recommends a capital structure consisting of a 46.99% common equity capital.

Q. HOW DOES STAFF'S RECOMMENDED CAPITAL STRUCTURE COMPARE TO THAT OF ITS COMPARABLE GROUP AND THE UTILITY INDUSTRY GENERALLY?

A. It does not. As shown in the table below, the average common equity ratio of Staff's own comparable group is 52.3% versus its recommended 46.99% for MAWC.[6]

[6] The common equity ratios for Staff's comparable companies and the electric utility industry are taken from AUS Utility Reports, January 2016 edition.

Table 2
Staff Water Utilities Common Equity Ratios

	Company	ComEquity Ratio
1	American States Water Co.	58.0
2	American Water Works Co.	44.8
3	Aqua America, Inc.	49.6
4	California Water Service Group	53.4
5	Connecticut Water Service, Inc.	53.9
6	Middlesex Water Company	55.9
7	SJW Corporation	47.8
8	York Water Company	55.1
	AVERAGE	**52.3**

Nor does Staff's recommended capital structure compare with the capital structures used by regulators for ratemaking purposes. According to Regulatory Research Associates' *Regulatory Focus* October 2015 edition, the average common equity ratios used by regulators in recent electric utility cases was 50.3% in 2014 and 50.4% in 2015 versus Staff's recommended 46.99% for MAWC.

Q. HOW DOES STAFF PURPORT TO JUSTIFY SUCH A RECOMMENDATION?

A. Staff argues that MAWC's common equity ratio should be shrunk in order to account for the "double leverage" associated with the equity infusion from the parent that originated from a combination of debt and equity at the parent level.

Q. IS STAFF'S DOUBLE LEVERAGE APPROACH CORRECT?

A. No, Staff's double leverage is just plain wrong. Under the double leverage approach, the operating subsidiary company's equity capital is traced to its source, namely the parent's debt and equity capital. The cost of equity to the operating subsidiary is then the overall weighted average of capital to the parent, since the equity capital is said to have been raised by the parent through a mixture of debt and equity. In order to be consistent with its own double leverage philosophy and take it to its logical conclusion, Staff should have also traced the debt and equity capital invested in American Water Co. to its ultimate source, namely the shareholders and bondholders of American Water Co., (e.g. mutual funds, pension funds, etc.) just as it traced the source of the equity capital in MAWC. I note that Staff did not follow through all the way with its tracing of capital approach. This would be absurd, of course, since cost of capital has nothing to do with the source of capital as I discuss below.

The antiquated double leverage approach has been largely abandoned in view of its serious conceptual and practical limitations and violations of basic notions of finance, economics, and fairness. The flaws associated with the double leverage approach have been discussed thoroughly in the academic literature and are summarized in Chapter 19 of my book, The New Regulatory Finance. In that chapter, I conclude that the double leverage approach has serious conceptual and practical limitations and is not consistent with basic financial theory and the notion of fairness. In short, the double leverage

argument violates the core notion that an investment's required return depends on its particular risks. Cost of capital has to do with the use of funds and not with the source of funds, and the same is true for the appropriate capital structure. The appropriate return on any investment and capital structure are dictated by the risk of that investment and not by the manner in which that investment is financed. Whether Bill Gates or myself or Staff or MAWC or American Water Co. makes an investment, the proper return and capital structure for that investment must be reflective of that investment's risk, regardless of the source of funding, regardless of the identity of the investor. As I repeatedly tell my executive students and executive audiences, "*it's the investment, not the investor, …….*!" The double leverage approach has no place in regulatory practice and should continue to be discarded. Fortunately, it has largely disappeared from use.

12. CAPITAL STRUCTURE ADJUSTMENT

Q. DID STAFF ADJUST ITS RECOMMENDED ROE TO ACCOUNT FOR THE GREATER LEVERAGE HE ASSIGNS TO MAWC COMPARED TO ITS COMPARABLE COMPANIES?

A. No. Staff should have increased its recommended ROE of 9.25% to reflect the higher relative risk associated with MAWC's more leveraged capital structure. It is a rudimentary tenet of basic finance that the greater the amount of financial risk borne by common shareholders, the greater the return required by shareholders in order to be compensated for the added

financial risk imparted by the greater use of senior debt financing. In other words, the greater the debt ratio, the greater is the return required by equity investors. High risk means high return!

Q. WHAT IS THE MAGNITUDE OF THE REQUIRED ADJUSTMENT TO ACCOUNT FOR STAFF' MORE LEVERAGED CAPITAL STRUCTURE FOR MAWC?

A. Staff attributes a capital structure for MAWC that consists of 46.99% common equity, compared to an average capital structure that consists of 52.3% common equity for the water utilities in Staff's comparable group, as shown on Table 2 above. Therefore, the differential between the common equity component of Staff's proposed capital structure for MAWC and the common equity component of the average capital structure for the water utilities in Staff's comparable group is 5.31%.

Several researchers have studied the empirical relationship between the cost of capital, capital-structure changes, and the value of the firm's securities.[7] The results of these studies suggest that when the debt ratio increases from 40% to 50%, required equity returns increase between 34 to 237 basis points. The empirical studies suggest an average increase of 76 basis points, or 7.6 basis points per one percentage point increase in the debt ratio. The theoretical studies suggest an average increase of 138 basis points, or 13.8 basis points per one percentage point increase in

[7] *See* Roger A. Morin, *The New Regulatory Finance* (2006) Chapter 16 section 16-4 for a summary of the comprehensive and rigorous empirical studies of the relationship between cost of capital and leverage for public utilities.

the debt ratio. In other words, equity return requirements increase between 7.6 and 13.8 basis points for each increase in the debt ratio by one percentage point, and more recent studies indicate that the upper end of that range is more indicative of the repercussions on required equity returns.

The average common equity ratio for Staff's sample of water utilities is 52.3%, and the common equity ratio imputed to MAWC is 46.99%, a difference of 5.31%. The above-described research suggests that Staff should have adjusted its recommended ROE upward by approximately 40 basis points (7.6 x 5.31) to 73 basis points (13.8 x 5.31) to reflect the more leveraged capital structure that Staff recommends. Staff, however, inconsistently recommends an ROE based on a proxy group with a 52.3% equity ratio while imputing to MAWC a lower equity ratio of only 46.99%. Staff's failure to adjust its ROE upward by 0.40% to 0.73% in order to account for the more leveraged capital structure imputed to MAWC is unsupportable. Adjusting the ROE for this necessary consistency would bring Staff's ROE recommendation from 9.25% to a range of 9.7% - 10.0% from this correction alone.

13. RISK ADJUSTMENT

Q. DID STAFF ADJUST ITS RECOMMENDED RETURN ON EQUITY UPWARD IN ORDER TO ACCOUNT FOR THE COMPANY'S HIGHER RELATIVE RISK?

A No, it did not.

Q. WHAT ASPECTS OF MISSOURI-AMERICAN'S BUSINESS RISK PROFILE DIFFERENTIATE THE COMPANY FROM ITS PEERS?

A. The two principal risk factors include a very large infrastructure-related capital investment plan relative to the size of its common equity capital base, and regulatory uncertainties. As I discussed in my direct testimony, higher than average business risks result from an ambitious capital expenditure program which will require MAWC to spend an amount which exceeds its common equity ownership capital, and increase its rate base over the next five years by more than 50%. Because of the Company's large construction program over the next few years, rate relief requirements and regulatory treatment uncertainty will increase regulatory risks as well. Also, MAWC's exposure to regulatory lag remains substantial relative to other utilities.

As a result of these higher relative risks, I recommended in my direct testimony that the expected equity return applicable to the riskier MAWC should be set in the upper portion of my recommended range. Staff should

have also recognized MAWC's higher business risks and accordingly adjusted its recommended return upward.

CONCLUSIONS

Q. WHAT DO YOU CONCLUDE FROM STAFF'S COST OF CAPITAL TESTIMONY?

A. My general conclusion is that there are major infirmities in Staff's testimony. My general conclusions are:

1. **Unreliable Recommendation.** Its cost of equity recommendation is unreasonably low, and is not a reliable estimate of MAWC's cost of equity capital given all the contradictory data, inconsistencies, and erroneous inputs in its analyses.
2. **Allowed returns.** Staff's recommended return is outside the zone of currently allowed rates of return for its sample companies.
3. **Dividend Yield and Flotation Cost**. Staff's dividend yield component is understated by 15 basis points because it does not allow for flotation costs, and, as a result, a legitimate expense is left unrecovered.
4. **DCF Historical Growth Rates.** Historical growth rates are somewhat redundant since historical growth patterns are already reflected in analysts' growth forecasts, which Staff also uses. Also, the stock price Staff uses in the DCF analysis is predicated on analysts' growth forecasts and not on historical growth rates.

5. DCF Dividend Growth Rates. Earnings growth projections are far more relevant for they are the driving source behind dividends, and as a practical matter there are far more earnings growth projections available than dividend growth projections.

6. Analysts Growth Forecasts. The best proxy for the growth component of the DCF model is analysts' long-term earnings growth forecasts. Staff should have relied strictly on earnings growth forecasts in its classic DCF analysis.

7. Long-Term DCF Growth Rates. Staff's long-term growth forecast of 3.0% for its peer group of water utilities understates the long-term expected GDP nominal growth by at least 150 basis points (1.5%).

8. CAPM Risk-Free Rate. Staff has relied on an inappropriate risk-free rate proxy in implementing the CAPM. Using the appropriate risk-free rate, Staff's CAPM estimates are understated by 154 basis points from this correction alone.

9. CAPM Market Risk Premium. Staff's MRP estimate is understated because it relies in part on historical geometric average returns. Using the appropriate MRP, Staff's CAPM estimates are understated by 58 basis points from this correction alone.

10. CAPM and the Empirical CAPM (ECAPM). The plain vanilla version of the CAPM used by Staff understates the Company's cost of equity by 50 basis points. That brings the total understatement of Staff's CAPM analysis to 262 basis points.

11. **Capital Structure Recommendation**. Staff's capital structure recommendation is at odds with the capital structures of its peer group of companies.

12. **Capital Structure/ROE Adjustment**. Staff fails to adjust its recommended ROE to reflect the fact that it imputes MAWC's capital structure with more debt than the average capital structure of its comparable group of water utilities. Such a required adjustment raises its ROE recommendation from 9.25% to 9.8% from this omission alone.

13. **Risk Adjustment**. Staff did not adjust its recommended ROE upward to reflect MAWC's greater than average risk on account of its very small relative size, higher relative regulatory risks, and high construction program relative to its small size.

III. COMMENTS ON OPC's RECOMMENDED ROE

Q. PLEASE SUMMARIZE MR. GORMAN'S RATE OF RETURN ON EQUITY RECOMMENDATION.

A. Mr. Gorman recommends that a return allowance of 9.0% be applied to MAWC's common equity capital for ratemaking purposes. In determining the cost of equity, Mr. Gorman applies three DCF analyses to a group of 8 water utilities and a group of 10 natural gas utilities: a classic constant growth DCF analysis, a constant sustainable growth analysis, and a multi-stage growth DCF analysis. The results of the three DCF analyses for the

proxy companies are summarized on Table 4 page 41 of his testimony. Mr. Gorman concludes that his DCF results support a ROE of 8.8% which is the approximate midpoint of his DCF range of 8.3% - 9.3%.

Mr. Gorman also applies a risk premium analysis based on the difference between the ROE awards of regulators for natural gas utilities and the contemporaneous level of interest rates. This analysis, summarized on Page 47 of his testimony, produces an average allowed risk premium of 4.17% to 6.48% over the yield on long-term Treasury bonds. Adding the forecast long-term bond yield of 3.8% to this range produces a common equity return in the range of 7.97% to 10.28% with a midpoint of 9.13%. By arbitrarily giving 60% weight to his high-end risk premium estimate and 40% to the low-end, his recommended ROE from this technique is 9.36%. Repeating the same process using the yield on “A” rated utility bonds, Mr. Gorman obtains a ROE of 8.69%. Mr. Gorman concludes that this methodology produces a ROE in the range of 8.7% to 9.4% with a midpoint of 9.1%.

Finally, Mr. Gorman applies a CAPM analysis to the same two sets of companies used in his DCF analyses and on page 53 obtains a ROE in a range of 8.9% to 9.5% with a midpoint of 9.2%.

From all these results summarized on Table 5 page 53, Mr. Gorman estimates a ROE for MAWC in the range of 8.8% to 9.2% with a midpoint of 9.0%, the high end based on the CAPM and the low end based on the DCF results.

Q. DR. MORIN, PLEASE COMMENT ON CURRENT ALLOWED ROEs FOR UTILITIES.

A. The ROE recommended by Mr. Gorman is outside the range of currently authorized ROEs for utilities and below the zone of currently authorized ROEs for Mr. Gorman's own sample of comparable companies. As shown on Tables 1 and 2 below, the average currently authorized ROE for Mr. Gorman's group of water utilities is 9.6% and 10.2% for his group of natural gas utilities. The current average allowed ROE is 10.34% for the combination gas and electric utilities and 10.44% for the electric utilities according to AUS Utility Reports January 2016.

Table 1 Allowed ROEs Water Utilities

	Company	Allowed ROE
1	American States Water Co.	9.43
2	American Water Works Co., Inc.	9.75
3	Aqua America, Inc.	9.79
4	California Water Service Group	9.43
5	Connecticut Water Service, Inc.	9.63
6	Middlesex Water Company	9.75
7	SJW Corporation	9.43
8	York Water Company	NM
	AVERAGE	**9.60**

Table 2 Allowed ROEs Gas Utilities

	Company	Allowed ROE
1	Atmos Energy Corporation	9.81
2	Laclede Group, Inc.	NM
3	New Jersey Resources Corp.	10.30
4	NISource	10.61
5	Northwest Natural Gas Co.	9.80

6	Piedmont Natural Gas Co., Inc.	10.40
7	South Jersey Industries	9.75
8	Southwest Gas Corporation	9.98
9	UGI Corporation	11.60
10	WGL Holdings, Inc.	9.58
	AVERAGE	**10.20**

Q. IS MR. GORMAN'S RECOMMENDED RANGE CONSISTENT WITH HIS RESULTS?

A. No, it is not. My general reaction to Mr. Gorman's testimony is that his recommended ROE is at odds with his results. How Mr. Gorman arrived at the upper end of his recommended range of 9.2% is inexplicable given that his high-end CAPM result is 9.5% and the high end of his risk premium result is 10.3%. The low end of his range is inexplicable as well, given that the low-end of his DCF common equity result is 8.3%. Unless Mr. Gorman erred in his final recommended ROE range, his results ranged from 8.3% to 10.3% with a midpoint of 9.3%.

Q. WHAT ARE THE BASIC CONCLUSIONS OF YOUR REBUTTAL TESTIMONY TO MR. GORMAN'S COST OF EQUITY TESTIMONY?

A. While I agree with several of Mr. Gorman's procedures and methodologies, Mr. Gorman understates MAWC's cost of common equity by a minimum of 100 basis points (1.0%), which would bring his recommended ROE to at least 10.0%. If Mr. Gorman's various results are amended to reflect proper

data inputs to the financial models and if appropriate risk adjustments are incorporated into his analysis, Mr. Gorman's revised ROE recommendation would be quite consistent with my own recommendation as I show below.

Q. PLEASE SUMMARIZE YOUR COMMENTS ON MR. GORMAN'S TESTIMONY.

A. I agree with: (i) Mr. Gorman's two samples of utility companies in his DCF and CAPM analyses; (ii) his use of analysts' growth forecasts as proxies for expected growth in the classic constant growth DCF model and first stage of the multi-stage DCF model; (iii) the beta estimates in the CAPM analysis, (iv) part of his MRP component of the CAPM analysis; and (v) the broad outline of his risk premium analysis. My disagreements center more on the appropriate data inputs to the various models and failure to properly recognize MAWC's relative risks.

I disagree with Mr. Gorman on the following grounds: (i) the absence of a flotation cost adjustment; (ii) the use of the sustainable growth version of the DCF model, (iii) the risk-free rate proxy in the CAPM and Risk Premium analyses, (iv) one of the MRP component in the CAPM analysis; (v) the failure to employ the empirical version of the CAPM in keeping with the vast literature on the subject; (vi) the failure to account for the inverse behavior between the allowed risk premium and the level of interest rates; (vii) the failure to adjust his ROE for the higher leverage he attributes to MAWC relative to the peer groups, and (viii) his erroneous recommendation to

reduce the authorized ROE by 25 basis points if the Commission approves the Company's proposed Revenue Stability Mechanism ("RSM") and to reduce the authorized ROE in the lower part of the range if the Commission approves the Company's proposed Environmental Cost Adjustment Mechanism ("ECAM"). I also conclude that his criticisms of my testimony are unfounded.

I shall now treat each of those issues in turn.

1. DCF DIVIDEND YIELD AND FLOTATION COSTS

Q. DO YOU HAVE ANY COMMENT CONCERNING MR. GORMAN'S DIVIDEND YIELD COMPONENT?

A. Yes. The expected dividend yield component of the DCF model should be adjusted for underpricing allowance by dividing it by (1 – f), where f is the underpricing allowance factor. Mr. Gorman's dividend yield component is understated by approximately 20 basis points because it does not allow for flotation costs, and, as a result, a legitimate stockholder expense is left unrecovered.

Q. WHAT FLOTATION COST TREATMENT DID MR. GORMAN RECOMMEND IN THIS CASE?

A. Mr. Gorman's common equity return recommendation does not include any allowance whatsoever for issuance expense, and therefore his DCF

estimates of equity costs are downward-biased by approximately 20 basis points by that omission alone. I refer to my earlier discussion of this issue in my rebuttal of Staff's testimony.

2. SUSTAINABLE GROWTH

Q. PLEASE COMMENT ON MR. GORMAN'S SUSTAINABLE GROWTH ESTIMATE IN THE DCF MODEL.

A. In order to estimate the growth component of the DCF model, Mr. Gorman also relies on the sustainable growth approach, where the growth rate is based on the equation g = b(ROE); b is the percentage of earnings retained and ROE is the expected rate of return on book equity (ROE).

Mr. Gorman also accounts for the impact of external stock financing on growth by adding an external growth term (g = sv).

Q. PLEASE COMMENT ON MR. GORMAN'S SUSTAINABLE GROWTH METHODOLOGY.

A. I disagree with the sustainable growth technique for four reasons: 1) the method is logically circular, for it requires Mr. Gorman to assume the ROE answer to begin with; 2) inconsistency with the academic empirical evidence; 3) the potential lack of representativeness of Value Line's forecasts as proxies for the market consensus; and 4) the resulting growth rate for the water utilities group does not match the analyst growth forecasts

reported on Schedule MPG-4.

Q. IS THE SUSTAINABLE GROWTH METHOD LOGICALLY CONSISTENT?

A. No, it is not. Mr. Gorman's sustainable growth methodology contains a puzzling logical contradiction. The contradiction arises because the method requires an explicit assumption on the ROE expected from the retained earnings that produce future growth. Mr. Gorman bases his ROE estimate on Value Line's current and forecast ROE for the 2016-2018 period as shown on column (5) of Schedules MPG-6 pages 1 and 3. But the ROEs used by Mr. Gorman in calculating the retention growth rate do not match Mr. Gorman's ROE recommendation.

As shown on Column (5) of Schedules MPG-6 pages 1 and 3, the average expected ROE of 10.96% for water utilities and 10.48% for gas utilities used in Mr. Gorman's retention growth computation exceeds Mr. Gorman's recommended 9.0%. Mr. Gorman's analysis thus assumes that the earned returns (ROEs) of the sample companies exceed what he has determined to be their cost of equity forever. That is, Mr. Gorman is assuming that these companies will earn a ROE higher than that granted by their regulators and reflected in their rates.

While this scenario implicit in Mr. Gorman's sustainable growth method may be imaginable for an unregulated company, it is implausible to assume for a regulated company whose rates are set by its regulator at a level designed

to permit the company to earn a return equal to its cost of capital. In essence, by using an ROE that differs from his final recommended cost of equity, Mr. Gorman requires the Commission to make two inconsistent findings regarding ROE. I am perplexed as to why Mr. Gorman assumes that his group of comparable utilities is expected to earn 10.5% - 11.0% forever, while at the same time he recommends an ROE of 9.00% for the Company. The only way that these utilities can earn an ROE of 10.5% - 11.0% is if rates are in fact set so that they will in fact earn 10.5% - 11.0-%. The only logical conclusion to be drawn from the data is that the group's cost of equity is at least 10.5%, since these are the returns implied in Mr. Gorman's retention growth analysis.

In brief, Mr. Gorman's implementation of the sustainable growth method is logically circular because it *assumes* a ROE in a regulatory process that is *designed to estimate* the fair and reasonable ROE, and should be rejected by the Commission.

Q. IS THE SUSTAINABLE GROWTH METHOD CONSISTENT WITH THE EMPIRICAL EVIDENCE?

A. No, it is not. The second difficulty with the sustainable growth rate approach is that the empirical finance literature demonstrates this particular method of determining growth is a very poor explanatory variable of market value, and is not as significantly correlated to measures of value, such as stock price and price/earnings ratios.

Q. ARE VALUE LINE'S ROE AND RETENTION RATIO ESTIMATES REPRESENTATIVE OF THE MARKET CONSENSUS?

A. No, not necessarily. The third difficulty with Mr. Gorman's sustainable growth rates is that exclusive reliance on Value Line forecasts of ROE and retention ratio runs the risk that such forecasts are not representative of investors' consensus forecast.

Q. WHAT IS THE FOURTH PROBLEM WITH MR. GORMAN'S SUSTAINABLE GROWTH METHOD?

A. The fourth problem with Mr. Gorman's sustainable growth approach is that the end result for the water utilities group does not match the analyst growth forecasts reported on Schedule MPG-4. For the water utilities, analysts forecast a growth rate of 6.3% versus Mr. Gorman's sustainable growth estimate of 5.2%, which 1.2% lower than what analysts believe.

3. CAPM RISK-FREE RATE

Q. DOES MR. GORMAN PERFORM A CAPM ANALYSIS?

A. Yes, he does.

Q. WHAT INPUTS DOES MR. GORMAN USE IN HIS CAPM ANALYSIS?

A. Three inputs are required in order to implement the CAPM: the risk-free

rate, the beta risk measure, and the market risk premium (MRP). For the risk-free rate, Mr. Gorman uses 3.80%. For beta, Mr. Gorman uses 0.73 and 0.82 which are the average Value Line betas of his water utilities group and natural gas peer group, respectively. For the MRP, Mr. Gorman uses 6.80% which is the average of an historical estimate of 6.0% and a prospective estimate of 7.6%.

Q. DO YOU AGREE WITH MR. GORMAN'S BETA ESTIMATE?

A. Yes, I do.

Q. DO YOU AGREE WITH MR. GORMAN'S MRP ESTIMATE?

A. No, not entirely. I agree with the prospective estimate of 7.6% but disagree with the historical estimate of 6.0%.

Q. WHAT RISK-FREE RATE DOES MR. GORMAN ADOPT IN HIS CAPM AND RISK PREMIUM ANALYSES?

A. Mr. Gorman uses *Blue Chip Financial Forecasts*' projected 30-year Treasury bond yield of 3.80% as his risk-free input in the CAPM and Risk Premium analyses.

Q. DR. MORIN, DO YOU AGREE WITH THIS RISK-FREE ESTIMATE?

A. No, I do not, for it is too low. Mr. Gorman should have used a range of

4.5% - 5.0% based on several projections. I was surprised by Mr. Gorman's sole reliance on the Blue Chip forecasts. When it came to GDP forecasts to implement the multi-stage DCF model, Mr. Gorman relied on a wide variety of forecasts as seen on his Table 3 page 39 of his testimony. Strangely, he did not rely on the same sources for his forecasts of the risk-free rate.

As I discussed earlier in my rebuttal to the Staff Report, all the economic forecasts of which I am aware, many of which are cited on page 39 of Mr. Gorman's testimony, anticipate a substantial and steady increase in interest rates from 2016 onward. In summary, these forecasts suggest a range of 4.5% - 5.0% in long-term interest rates on 30-year Treasury bonds, with a midpoint of 4.75%. As a result, Mr. Gorman's CAPM and Risk Premium estimates are understated by 100 basis points (4.8% - 3.8% = 1.0%). That in itself would raise his recommended ROE by 1%, from of 9.0% to 10.0%.

4. CAPM: MARKET RISK PREMIUM

Q. DO YOU AGREE WITH MR. GORMAN'S ESTIMATE OF THE HISTORICAL MARKET RISK PREMIUM?

A. No, not entirely. While I agree with his prospective estimate of 7.6%, I disagree with the historical estimate of 6.0%. Mr. Gorman uses a historic risk premium of 6.0%, which, he states (at page 50 of his testimony) is the difference between the 1926-2014 arithmetic average of the achieved total

return on the S&P 500 (12.1%) and the total return on long-term Treasury bonds (6.1%).

The more accurate way to estimate the market risk premium from historic data is to use the income return, not total returns on government bonds, as explained in Morningstar (formerly Ibbotson Associates) *Stocks, Bonds, Bills, and Inflation Classic Yearbook*, the source of Mr. Gorman's data. The long-horizon (1926-2014) market risk premium (based on income returns, as required) is specifically calculated to be 7.2% rather than 6.0%. Morningstar recommends the use of the latter as a more reliable estimate of the historical market risk premium. I concur with this viewpoint because the income component of total bond return (*i.e.* the coupon rate) is a far better estimate of expected return than the total return (*i.e.* the coupon rate + capital gain), as realized capital gains/losses are largely unanticipated by bond investors. The long-horizon (1926-2014) MRP based on income returns, as required, is 7.2% and not the 6% used by Mr. Gorman.

With this correction, Mr. Gorman's MRP becomes 7.4%, the average between his prospective estimate of 7.6% and the corrected 7.2% historical average. This correction alone increases Mr. Gorman's CAPM estimate 44 basis points for the water companies group (the difference between 7.4% and 6.8% times a beta of 0.73) and 49 basis points for the natural gas group (the difference between 7.4% and 6.8% times a beta of 0.82). This correction alone would raise his recommended ROE from 9.0% to nearly 9.5%, even without the risk-free rate understatement correction.

5. CAPM UNDERSTATEMENT

Q. DOES MR. GORMAN'S VERSION OF THE CAPM UNDERESTIMATE THE APPROPRIATE COST OF CAPITAL?

A. Yes, it does. As was discussed earlier in my rebuttal of Staff's CAPM analysis, a CAPM-based estimate of the cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence. Mr. Gorman's version of the CAPM underestimates equity costs by about 50 basis points from this bias.

Q. PLEASE COMMENT ON MR. GORMAN'S ASSESSMENT OF THE EMPIRICAL CAPM USED IN YOUR TESTIMONY.

A. Mr. Gorman argues, on pages 64-65 of his testimony, that my ECAPM analysis is erroneous because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since I have already used Value Line betas which are adjusted for such trend, my ECAPM analysis somehow results in double-counting. I do not share the view that the ECAPM is equivalent to a beta adjustment, so I do not agree with his criticism.

He argues that the ECAPM adjustment is equivalent to using a beta of 0.81 versus the CAPM beta of 0.74. His arithmetic is correct even if his equivalence is not, but that is the whole point of using the ECAPM. The

difference in beta of 0.04 (0.81 – 0.74 = 0.04) corresponds to a return adjustment of about 50 basis points with a MRP of 7.3%, which is exactly the bias of 50 basis points I discussed in my direct testimony and earlier in my rebuttal.

There are two distinct separate issues involved when implementing the CAPM. First, given the validity of the standard CAPM, what is the best proxy for expected beta? Second, and more fundamentally, does the standard CAPM provide the best explanation of the risk-return relationship observed on capital markets?

With respect to the empirical validity of the plain vanilla CAPM, there have been numerous empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That result holds true even when Value Line (adjusted) betas are used. Stated another way, empirical research has long shown that low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. Thus, a CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return required from high-beta securities. This is one of the most well-known results in finance.

A number of variations on the original CAPM theory have been proposed to explain this finding. The ECAPM makes use of these empirical findings. The ECAPM estimates the cost of capital with the equation:

$$K = R_F + \acute{\alpha} + \beta \times (MRP - \acute{\alpha})$$

where K is the expected return, R_F is the risk-free rate, ά is the "alpha" of the risk-return line, a constant, and MRP is the market risk premium. Inserting the long-term risk-free rate as a proxy for the risk-free rate, an alpha in the range of 1% - 2%, and reasonable values of beta and the MRP in the above equation produces results that are indistinguishable from the ECAPM used in my testimony:

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

To reiterate, I do not share Mr. Gorman's view that the ECAPM is equivalent to a beta adjustment or somehow results in double-counting. The ECAPM is a return adjustment and not a beta adjustment. For utility stocks with betas less than one, the CAPM understates the return. The downward-bias is particularly significant for low-beta securities such as the sample water and natural gas utilities used by Mr. Gorman. The ECAPM is consistent with both theory and with a huge body of empirical evidence, and has the added advantage of computational simplicity. In short, Mr. Gorman errs in his view that the use of the ECAPM results in double-counting risk.

6. RISK PREMIUM ANALYSIS

Q. DO YOU AGREE WITH MR. GORMAN'S HISTORICAL RISK PREMIUM ANALYSIS?

A. No, I do not.

Q. HOW DOES MR. GORMAN ESTIMATE THE HISTORICAL RISK PREMIUM ESTIMATES?

A. Mr. Gorman estimated the difference between the required return on utility common equity investments and both U.S. Treasury and A-rated utilities over the 1986- 2015 period bonds to arrive at two risk premia.

Based on this analysis, as shown in his Schedule MPG-11, the average indicated equity risk premium over U.S. Treasury bond yields has been 5.36% and 3.98% over Moody's utility bond yield.

Q. WHAT IS WRONG WITH MR. GORMAN HISTORICAL RISK PREMIUM ESTIMATES?

A. Three things. First, it is based on the wrong risk-free rate forecast. Second, Mr. Gorman's analysis does not recognize the inverse relationship between the risk premium and interest rates, as I did in my direct testimony. Third, the use of 5-year and 10-year rolling averages is problematic since it represents a departure from the methodology Mr. Gorman has followed in prior testimonies.

Q. PLEASE COMMENT ON MR. GORMAN'S RISK PREMIUM ANALYSIS.

A. In his risk premium analysis, Mr. Gorman examines the historical risk premiums implied in the ROEs allowed by regulators over the period 1986-2015 relative to the contemporaneous level of long-term Treasury and "A" rated utility bond yields. Although the average ROE spread over long-term Treasury yields is currently 5.31% as reported on page 43, Mr. Gorman arbitrarily uses a range of 4.17% to 6.48%. I disagree with this range because of the rising trend of the risk premium in response to lower interest rates, ignored by Mr. Gorman. That is evident from Mr. Gorman's own data. On Schedule MPG-11, the risk premium reported for 2005 is 5.5%, which is 20 basis points (0.20%) in excess of Mr. Gorman's average risk premium of 5.3% for the whole period.

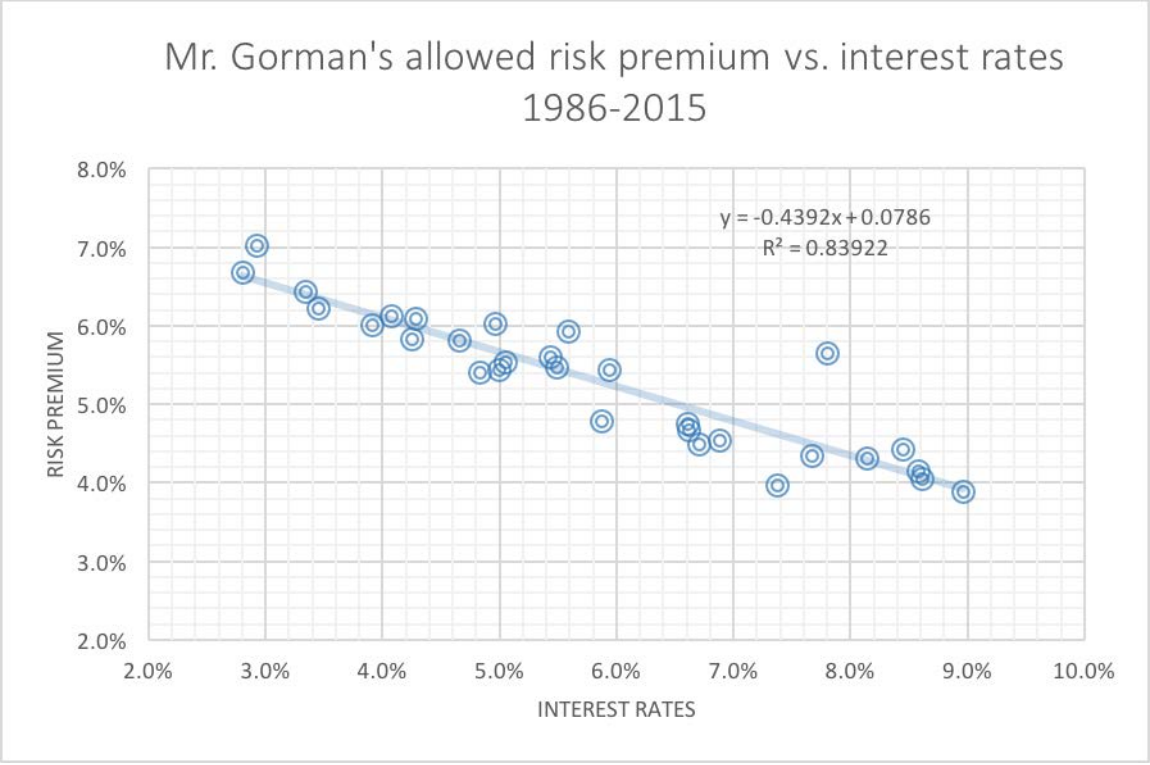
Q. DR. MORIN, DO YOU HAVE ANY OTHER COMMENTS CONCERNING MR. GORMAN'S ALLOWED RISK PREMIUM ANALYSIS?

A. Yes, I do. I disagree with Mr. Gorman's risk premium range because the rising trend of the risk premium in response to lower interest rates is ignored by Mr. Gorman.

A careful review of ROE decisions relative to interest rates reported in Mr. Gorman's Schedule MPG-11 reveals a narrowing of the risk premium in times of rising interest rates, and a widening of the premium as interest rates fall. This is shown in the graph below, based on Mr. Gorman's own

data on Schedule MPG-11. The following statistical relationship between the risk premium (RP) and Treasury bond yields (YIELD) emerges over the 1986-2015 period:

$$RP = 7.86 - 0.4392\ YIELD \qquad R^2 = 0.84$$



The relationship is statistically significant as indicated by the high R^2. Inserting the current long-term Treasury bond yield of 3.8% used by Mr. Gorman in the above equation suggests a risk premium estimate of 6.2% that would be allowed. This in turn implies an allowed ROE of 10.0% rather than Mr. Gorman's recommended 9.0%. Inserting the 4.75% risk-free rate that Mr. Gorman should have used in his CAPM and Risk Premium

analyses suggests a risk premium estimate of 5.8%, which in turn implies a ROE of 10.5%.

Q. HAS MR. GORMAN RELIED ON 5-YEAR AND 10-YEAR AVERAGES OF THE RISK PREMIUM IN PRIOR TESTIMONIES?

A. No, he has not. On the last two columns of numbers on Schedules MPG-10 and MPG-11, Mr. Gorman calculates rolling 5-year and 10-year averages of the annual risk premiums of Column (3). To the best of my knowledge, this is the first proceeding in which Mr. Gorman has relied on this methodology, which, not surprisingly, produces lower results than using the simple average risk premium over the whole period as he has done consistently in the past. Had he been consistent with prior testimonies[8], Mr. Gorman would have relied on the 5.31% average risk premium shown at the bottom of column (3) rather than the lower averages shown at the bottom of columns (4) and (5).

7. CAPITAL STRUCTURE RECOMMENDATION

Q. WHAT CAPITAL STRUCTURE DOES MR. GORMAN RECOMMEND FOR MAWC?

[8] See for example Mr. Gorman's testimony Schedule MPG-34 in a recent Puget Sound Energy rate case, Dockets UE-121697 and UG-121705.

A. Mr. Gorman recommends a capital structure consisting of a 50.6% common equity capital.

Q. HOW DOES MR GORMAN'S RECOMMENDED CAPITAL STRUCTURE COMPARE TO THAT OF HIS TWO COMPARABLE GROUPS AND THE UTILITY INDUSTRY GENERALLY?

A. It does not. As shown on the table below taken from Schedule MPG-2 page 1, the average common equity ratio of Mr. Gorman's water utility group is 52.4% versus his recommended 50.6% for MAWC.

Table 2
Water Utilities Common Equity Ratios

	Company	ComEquity Ratio
1	American States Water Co.	59.4
2	American Water Works Co.	44.4
3	Aqua America, Inc.	49.5
4	California Water Service Group	53.1
5	Connecticut Water Service, Inc.	54.1
6	Middlesex Water Company	55.3
7	SJW Corporation	47.4
8	York Water Company	55.8
	AVERAGE	**52.4**

Q. DID MR. GORMAN ADJUST HIS RECOMMENDED ROE TO ACCOUNT FOR THE GREATER LEVERAGE HE ASSIGNS TO MAWC COMPARED TO THE COMPARABLE COMPANIES?

A. No. Mr. Gorman should have increased his recommended ROE of 9.0% to

reflect the higher relative risk associated with MAWC's more leveraged capital structure. As I discussed earlier in my rebuttal of the Staff report, the greater the debt ratio, the greater is the return required by equity investors. High risk means high return!

Q. WHAT IS THE MAGNITUDE OF THE REQUIRED ADJUSTMENT TO ACCOUNT FOR MR. GORMAN' MORE LEVERAGED CAPITAL STRUCTURE FOR MAWC?

A. Mr. Gorman attributes a capital structure for MAWC that consists of 50.6% common equity, compared to an average capital structure that consists of 52.4% common equity for his water utilities group as shown on the above table. Therefore, the differential between the common equity component of Mr. Gorman's proposed capital structure for MAWC and the common equity component of the average capital structure for the water utilities in Mr. Gorman's comparable group is 1.8%. (52.4% - 50.6%) = 1.8%

As discussed earlier in my rebuttal, equity return requirements increase between 7.6 and 13.8 basis points for each increase in the debt ratio by one percentage point, and more recent studies indicate that the upper end of that range is more indicative of the repercussions on required equity returns. Therefore, Mr. Gorman should have adjusted his recommended ROE upward by approximately 14 basis points (7.6 x 1.8) to 25 basis points (13.8 x 1.8) to reflect MAWC's more leveraged capital structure. That would bring Mr. Gorman's ROE recommendation from 9.0% to a range of 9.14% -

9.25% (midpoint 9.2%) from this correction alone.

8. RISK ADJUSTMENT

Q. DID MR. GORMAN ADJUST HIS RECOMMENDED RETURN ON EQUITY UPWARD IN ORDER TO ACCOUNT FOR THE COMPANY'S HIGHER RELATIVE RISK?

A. No, he did not.

Q. WHAT ASPECTS OF MISSOURI-AMERICAN'S BUSINESS RISK PROFILE DIFFERENTIATE THE COMPANY FROM ITS PEERS?

A. The two principal risk factors include a very large infrastructure-related capital investment plan relative to the size of its common equity capital base, and regulatory uncertainties. As I discussed in my direct testimony and earlier in my rebuttal, higher than average business risks result from the Company's large construction program over the next few years, which will require external financing and rate relief, enhancing regulatory risks as well.

As a result of these higher relative risks, I recommended in my direct testimony that the expected equity return applicable to the riskier MAWC should be set in the upper portion of my recommended range. Mr. Gorman should have also recognized MAWC's higher business risks and accordingly adjusted his recommended return upward in the top half of his recommended range.

9. IMPACT OF REVENUE STABILITY MECHANISM

Q. DO YOU AGREE WITH MR. GORMAN'S 25 BASIS POINTS DOWNWARD ADJUSTMENT TO ROE FOR DECOUPLING?

A. No, I do not. Mr. Gorman recommends a downward return adjustment of 25 basis points in order to account for the Company's Revenue Stability Mechanism ("RSM") because he argues in essence that such a mechanism reduces the Company's risk. I disagree. Although risk-mitigating mechanisms, such as RSM, may reduce risk on an absolute basis, they do not necessarily do so on a relative basis (i.e., compared to other utilities). For example, a purchased water adjustment mechanism may reduce absolute risk, but it does not reduce relative risk because most water utilities in the industry have similar mechanisms. The approval of adjustment clauses, revenue decoupling mechanisms such as RSM, ROE incentives riders, trackers, forward test years, and cost recovery mechanisms by regulatory commissions is widespread in the utility business and is already largely embedded in financial data, such as stock prices, bond ratings, and business risk scores. Moreover, it is important to note that investors generally do not associate specific increments to their return requirements with specific rate structures. Rather, investors tend to look at the totality of risk-mitigating mechanisms in place relative to those in place at comparable companies when assessing risk.

Although adjustment clauses, riders, and cost tracking mechanisms may mitigate (on an absolute basis but not on a relative basis) a portion of the risk and uncertainty related to the day-to-day management of MAWC's operations, there are other significant factors to consider that work in the reverse direction for MAWC, for example, the Company's dependence on substantial capital spending program to refurbish an aging infrastructure and regulatory risks, particularly in light of MAWC's inability to earn its allowed return in recent years. These additional factors largely offset the presence of the aforementioned risk-mitigating mechanisms. Mr. Gorman chose not to discuss such factors in his testimony.

My own view is that any risk-mitigating impact that decoupling could have on the Company's risk profile is reflected in the capital market data of the comparable companies and that the risk impact of these mechanisms is offset by several factors that work in the reverse direction. As explained in my direct testimony, the market-derived cost of common equity for other utility companies already incorporates the results of decoupling and/or similar mechanisms so that no further adjustment is necessary or appropriate in determining the cost of common equity for MAWC[9] Decoupling and other similar risk-mitigating mechanisms have become the norm for regulated utilities across the U.S. In short, a downward ROE

[9] Morin, Exh. No. ___(RAM-1T) at page 68, lines 3-13.

adjustment as recommended by Mr. Gorman, if applied, would constitute double-counting.

Q. IS THERE ANY EMPIRICAL EVIDENCE ON THE IMPACT OF RISK MITIGATORS?

A. Yes, there is. A recent comprehensive study by the Brattle Group[10] investigated the impact of a particular risk-mitigating mechanism, namely, revenue decoupling, on risk and the cost of capital and found that its effect on risk and cost of capital, if any, is undetectable statistically.

Q. DR. MORIN, ARE YOU AWARE OF ANY REGULATORY COMMISSION REDUCING THE ALLOWED ROE IN ORDER TO ACCOUNT FOR THE PRESENCE OF A REVENUE-DECOUPLING MECHANISM IN RECENT YEARS?

A. No, I am not. Not since 2011 has a regulatory commission applied such a downward return adjustment to the best of my knowledge. The few cases cited by Mr. Gorman where such adjustments took place are very old and were done prior to 2011 at a time when such mechanisms were not firmly implanted in the utility industry as they are now.

[10] Wharton, Vilbert, Goldberg & Brown, *The Impact of Decoupling on the Cost of Capital: An Empirical Investigation,* The Brattle Group, February 2011.

10. RESPONSE TO MR. GORMAN'S COMMENTS

Q. PLEASE COMMENT ON MR. GORMAN'S CRITICISM OF YOUR FLOTATION COST ADJUSTMENT.

A. Mr. Gorman's dividend yield component is understated by 20 basis points because it does not allow for flotation costs, and, as a result, a legitimate stockholder expense is left unrecovered.

Mr. Gorman's only argument against my flotation cost adjustment is that it is not based on MAWC-specific costs. That argument is specious. MAWC's common equity capital is raised by its parent American Water Co. The parent-subsidiary relationship does not eliminate the costs of common stock issues, but merely transfers them to the parent. It would be unfair and discriminatory to subject parent shareholders to dilution while individual shareholders are absolved from such dilution. Fair treatment must consider that if the utility subsidiary had gone to the capital marketplace directly, flotation costs would have been incurred.

Moreover, to base a flotation cost allowance on a one-company sample, although company specific, would not provide a sufficiently reliable statistical and economic basis to infer a utility's appropriate flotation cost allowance. While it is conceptually correct to rely on the particular company circumstances in quantifying the flotation cost allowance, it is not a practical alternative. The flotation cost allowance is a weighted average cost factor designed to capture the average cost of various equity vintages and types of equity capital raised by the company.

Q. PLEASE COMMENT ON MR. GORMAN'S CRITICISM OF YOUR DCF GROWTH RATES.

A. On page 65 of his testimony, Mr. Gorman maligns my analysts' growth rates on the grounds that they exceed the long-term sustainable growth rate of the economy. Be that as it may, these are the growth rates impounded in stock prices. Whether I or Mr. Gorman agree or disagree with such growth rates is beside the point. Mr. Gorman goes on to "correct" my DCF results by rehashing his own multi-stage DCF analysis using my own peer group of companies. That is Mr. Gorman's analysis, not mine. I do not rely on multi-stage DCF analyses in my testimony.

Q. PLEASE COMMENT ON MR. GORMAN'S CRITICISM OF CAPM ANALYSIS.

A. On page 66, Mr. Gorman argues that my CAPM estimate is too high because: 1) my 4.4% risk-free rate exceeds the 3.8% in the Blue Chip Economic forecast, and 2) my prospective MRP estimate is unreasonably high.

With respect to his first criticism, I indicated earlier that I was surprised by Mr. Gorman's sole reliance on the Blue Chip forecasts. When it came to GDP forecasts to implement the multi-stage DCF model, Mr. Gorman relied on a wide variety of forecasts as seen on his Table 3 page 39 of his

testimony. Strangely, he did not rely on the same sources for his forecasts of the risk-free rate. The forecasts sources that I am aware of, some of which are the same sources as Mr. Gorman sources of GDP growth forecast, suggest a risk-free rate in the range of 4.5% - 5.0%, with a midpoint of 4.75%.

I also find Mr. Gorman's second criticism strange that my MRP is too high, given that my MRP estimate of 7.3% is nearly identical to his own corrected estimate of 7.4% discussed earlier.

Q. PLEASE COMMENT ON MR. GORMAN'S CRITICISM OF YOUR HISTORICAL RISK PREMIUM ANALYSIS.

A. On pages 27-28 of his testimony, Mr. Gorman takes issue with my historical risk premium analysis because it is based on an overstated risk-free rate of 4.4% rather than be based on his Blue Chip forecast of 3.8%. I have already discussed the impropriety of Mr. Gorman's 3.8% risk-free rate.

Q. PLEASE COMMENT ON MR. GORMAN'S FIRST CRITICISM OF YOUR ALLOWED RISK PREMIUM ANALYSIS.

A. On pages 27-28 of his testimony, Mr. Gorman takes issue with my historical risk premium analysis because it is based on an overstated risk-free rate of 4.4% rather than be based on his Blue Chip forecast of 3.8%. I have already discussed the impropriety of Mr. Gorman's 3.8% risk-free rate.

Q. DO YOU AGREE WITH MR. GORMAN'S SECOND CRITICISM OF YOUR HISTORICAL RISK PREMIUM ANALYSIS?

A. No, I do not. I was very surprised by Mr. Gorman's criticism on page 68 that the inverse relationship between equity risk premiums and interest rates is not supported by academic research. My first reaction was to simply point to the graph earlier in my rebuttal showing such a clear significant relationship using Mr. Gorman's own data.

Contrary to Mr. Gorman's contention that the finance literature does not fully endorse the notion that the risk premium shrinks as interest rates decline, there is an abundance of studies that support the notion. Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992), Carleton, Chambers, and Lakonishok (1983), Maddox, Pippert and Sullivan (1995), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates, rising when rates fell and declining when interest rates rose. Regulators have recognized this tendency as well. The California Public Utility Commission also recognizes that the cost of equity does not move in tandem with interest rates, and its long-standing practice has been to adjust the cost of equity by one-half to two-thirds of the change in bond yields.

The reason for this relationship is that when interest rates rise, bondholders, whose interest rates are fixed, often suffered a decrease in the market value of their bonds, experiencing a capital loss. This is referred to as interest rate risk. Stockholders, on the other hand, are more concerned with the firm's

earning power. In order to avoid interest rate risk in an environment of rising interest rates, investors tend to become more willing to undertake equity investments which, although subject to some fear of loss of earning power, are less sensitive to the fear of interest rate risk. The resulting increase in the supply of funds available for such equity investments causes a downward pressure on the market price for equity. So, generally it is observed that if bondholders' fear of interest rate risk exceeds shareholders' fear of loss of earning power, the risk differential will narrow and hence the risk premium will shrink. This is particularly true in high inflation environments. Interest rates rise as a result of accelerating inflation, and the interest rate risk of bonds intensifies more than the earnings risk of common stocks, which are partially hedged from the ravages of inflation. This phenomenon has been termed as a "lock-in" premium. Conversely in low interest rate environments, as is the case currently, when bondholders' interest rate fears subside and shareholders' loss of earning power dominate, the risk differential will widen and hence the risk premium will increase.

In short, the empirical evidence from the published academic literature demonstrates that the risk premium varies inversely with the level of interest rates, contrary to Mr. Gorman's view. The relationship remains true today, as evidenced by the graph I referenced earlier in my rebuttal.

Q. HOW DOES MR. GORMAN VIEW MAWC'S RISK AND IS HE CORRECT?

A. Mr. Gorman views MAWC's risk as comparable to that of his comparable group based on its favorable bond ratings. This view is inappropriate. This proceeding is mainly concerned with common stock risk/returns, and not bond risk/returns. Bondholders are concerned with creditworthiness, and bond ratings constitute a measure of creditworthiness. Common shareholders, on the other hand, are concerned with variability of returns, typically measured by beta risk measures. It is incorrect to measure a common stock's riskiness on the basis of its bond rating alone. In short, Mr. Gorman has confounded the risk of bonds and the risk of common stocks. As a practical matter, there is little, if any, correlation between DCF returns and bond ratings.

CONCLUSIONS

Q. WHAT DO YOU CONCLUDE FROM MR. GORMAN'S COST OF EQUITY ANALYSES?

A. I agree with several of Mr. Gorman's views and procedures: (i) his two samples of utility companies in his DCF and CAPM analyses; (ii) his use of analysts' growth forecasts as proxies for expected growth in the classic DCF model; (iii) his beta estimates in the CAPM analysis, (iv) part of his market risk premium component of the CAPM analysis; and (iv) the broad outline of his risk premium analysis, although not the input data.

I disagree with Mr. Gorman on the following grounds: (i) the absence of a flotation cost adjustment; (ii) an understatement of the risk-free rate in the CAPM and Risk Premium analyses; (iii) part of his MRP component in the

CAPM analysis; (iv) the failure to employ the empirical version of the CAPM in keeping with the vast literature on the subject; (v) the failure to account for the inverse behavior between the allowed risk premium and the level of interest rates; (vi) the failure to adjust his return recommendation upward because of the more leveraged capital structure he assigns to MAWC; and (vii) the failure to recognize MAWC's higher business risk on account of its small size, external financing requirements, and above average regulatory risks. I also conclude that his criticisms of my testimony are unfounded. My specific conclusions are as follows:

1. **DCF Dividend Yield and Flotation Costs.** Mr. Gorman's return estimates are understated by 20 basis points because he does not allow for flotation costs, and, as a result, a legitimate stockholder expense is left unrecovered.
2. **CAPM and Risk Premium Risk-Free Rate.** Mr. Gorman's risk-free rate is understated by 1%. Using the appropriate risk-free rate, Mr. Gorman's CAPM and Risk Premium estimates are to be raised by 100 basis points from this correction alone.
3. **CAPM MRP.** One of Mr. Gorman's MRP is understated. Using the appropriate MRP, Mr. Gorman's CAPM estimates are understated by to be raised by 47 basis points from this correction alone.
4. **CAPM Version.** The raw form of the CAPM used by Mr. Gorman understates the cost of equity for low-beta securities by approximately 50 basis points.

5. **Allowed Risk Premium Analysis.** Mr. Gorman's allowed risk premium analysis does not account for the inverse relationship between allowed returns and the level of interest rates, understating returns by 100 basis points.

6. **Capital Structure Adjustment.** Mr. Gorman should have adjusted his recommended ROE upward by 20 basis points in order to reflect the more leveraged capital structure he assigns to MAWC.

7. **RSM Downward Adjustment**. Mr. Gorman's recommended 25 basis points in order to account for the Company's RSM should be rejected by the Commission because it constitutes double-counting and is no empirically justified.

The table below recapitulates my findings with respect to Mr. Gorman's testimony. Column 1 shows the three methodologies employed. Column 2 shows Mr. Gorman's original findings and the midpoints. Column 3 shows the 20 basis points understatement due to the flotation cost adjustment. Column 4 shows the 100 basis points correction for the understated risk-free rate in the CAPM and Risk Premium analyses. Column 5 displays the 47 basis points understatement in the CAPM MRP component. Column 6 shows the 100 basis points understatement of the Risk Premium results due to the unaccounted inverse relationship between risk premiums and interest rates. Finally, Column 7 corrects for the 20 basis points understatement of financial risk due to the assignment of a more leveraged capital structure. The last column sums the various understatements. As seen at the bottom of the table, the sum total of these corrections and revisions is that Mr. Gorman's ROE recommendation becomes 10.6% which is quite consistent with my own.

SUMMARY OF MR. GORMAN'S UNDERSTATEMENTS

Financial Model	Gorman Original	Flotation Cost	Risk-Free Rate	MRP	Inverse Relation	Capstruct Adj't	Final Estimates
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DCF	8.80%	0.20%	0.00%	0.00%	0.00%	0.20%	9.20%
CAPM	9.20%	0.20%	1.00%	0.47%	0.00%	0.20%	11.07%
Risk Premium	9.00%	0.20%	1.00%	0.00%	1.00%	0.20%	11.40%
						Average	**10.56%**

Q. DR. MORIN, DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.