Exhibit No.:	
Issues:	Return on Equity, Capital Structure
Witness:	Pauline M. Ahern
Exhibit Type:	Surrebuttal
Sponsoring Party:	Missouri-American Water Company
Case No.:	WR-2011-0337
Date:	February 2, 2012

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2011-0337

SURREBUTTAL TESTIMONY

OF

PAULINE M. AHERN, CRRA

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

NP

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-2011-0337** **CASE NO. SR-2011-0338**

AFFIDAVIT OF PAULINE M. AHERN

Pauline M. Ahern, being first duly sworn, deposes and says that she is the witness who sponsors the accompanying testimony entitled "Surrebuttal Testimony of Pauline M. Ahern"; that said testimony and schedules were prepared by her and/or under her direction and supervision; that if inquires were made as to the facts in said testimony and schedules, she would respond as therein set forth; and that the aforesaid testimony and schedules are true and correct to the best of her knowledge.

Pauline M. Ahern

State of New Jersey
County of Burlington
SUBSCRIBED and sworn to
Before me this 31st **day of** January **2012.**

Notary Public

My commission expires:

SHARON M. KEEFE
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES JULY 9, 2016

TABLE OF CONTENTS

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, Mount Laurel, New Jersey 08054.

Q. Are you the same Pauline M. Ahern who previously submitted direct and rebuttal testimonies in this proceeding?

A. Yes, I am.

Q. What is the purpose of this testimony?

PURPOSE

A. The purpose of this testimony is to respond to the rebuttal testimonies of Matthew J. Barnes, witness for the Missouri Public Service Commission Staff (the Staff); Mr. Michael P. Gorman, Witness for the Missouri Industrial Energy Consumers (MIEC); and, Ms. Billie Sue LaConte, Witness for BJC Healthcare (BJC). Specifically, I will address Staff's criticisms of Missouri-American Water Company's (MAWC) requested capital structure ratios, Staff's corrected recommended common equity cost rate, as well as criticisms of my recommended common equity cost rate analysis. I will also address criticisms of Mr. Gorman and Ms. LaConte on my recommended common equity cost rate.

Q. Have you prepared schedules in support of your surrebuttal testimony?

A. Yes, I have. They have been marked for identification as Schedules PMA-40 and PMA-46.

SUMMARY

Q. Please briefly summarize your testimony.

A. The first section of this testimony focuses upon Mr. Barnes' misplaced criticisms of my recommended common equity cost rate.

With regard to Mr. Barnes' continued recommendation of American Water Works' (AWW, the Parent or American Water) consolidated capital structure ratios, I will demonstrate the inaccuracies of his rationale and reiterate why MAWC's requested capital structure ratios are appropriate for ratemaking purposes.

With regard to common equity cost rate, I will first demonstrate that Mr. Barnes' "corrected" recommended common equity cost rate is more unreasonable and grossly underestimates MAWC's common equity cost rate. Next, I will respond to his comments upon my business risk adjustment, which he mischaracterizes as a size adjustment. I will also show that his criticisms of my Risk Premium Model (RPM) and Capital Asset Pricing Model (CAPM) specifically: 1) the use of forecasted yields in the RPM and CAPM and 2) the use of the arithmetic mean equity risk premium in the RPM and CAPM. I will also address his criticisms of the use of expected returns on book common equity, net worth or partners' capital in my non-price regulated company analysis are misplaced.

The second section of this testimony focuses upon Mr. Gorman's misplaced criticisms of my recommended common equity cost rate. I will first address why Mr. Gorman's use of recently authorized returns on equity for electric and gas utilities as a check on the reasonableness of any common equity cost rate recommendation. I will also comment upon his criticisms of the use of security analysts' forecasts of earnings per share (EPS) growth in a single-stage growth Discounted Cash Flow (DCF) analysis as well as his continued support for the use of a multi-stage growth DCF analysis for stable and mature public utilities. Next, I will comment upon Mr. Gorman's "issues" with my RPM and CAPM analyses, specifically: 1) my reliance upon projected bond yields; 2) the use of bond yields and not total returns in the development of equity risk premiums; and, 3) his characterization of my market equity risk premium as being overstated. I will also address his "concern" with my empirical CAPM (ECAPM) analysis, demonstrating that the use of adjusted betas is not equivalent to the ECAPM. Then, I will address his mischaracterization of my non-price regulated utility analysis as a Comparable Earnings Model (CEM) demonstrating that the use of expected returns on book common equity, net worth and partners' capital as well as the DCF, RPM and CAPM for a group of non-price regulated companies is indeed relevant and appropriate in the instant proceeding. Finally, I will address his comments relative to the flotation cost adjustment

and the business risk adjustment, which he mischaracterizes as a size adjustment.

The third section of this testimony focuses upon Ms. LaConte's misplaced criticisms of my recommended common equity cost rate. It specifically address Ms. LaConte's issues with my DCF, RPM, CAPM and non-utility analyses as well as my flotation cost, business risk and financial risk adjustments.

MoPSC STAFF WITNESS MATTHEW BARNES

CAPITAL STRUCTURE

Q. In his rebuttal testimony Mr. Barnes provides his rationale for why he believes MAWC's capital structure is inappropriate for rate making purposes in the current proceeding. Please comment.

A. As discussed in my direct testimony at page 30, line 9 through page 31, line 16, MAWC's proposed capital structure ratios are reasonable for ratemaking purposes for MAWC. In addition, at page 3, line 21 through page 17, line 18, I have demonstrated why the use of American Water's capital structure ratios are not appropriate for ratemaking purposes. Furthermore, Mr. Barnes's rationale for rejecting MAWC's capital structure in favor of American Water's consolidated capital structure ratios for setting rates in the current proceeding is illogical and not based upon sound financial theory. The specific points he raises to support this position, listed on page 1, line 25 through page 2, line 5 of his rebuttal testimony: 1) relate to the manner in which MAWC is financed;

2) MAWC's lack of a stand-alone credit rating, 3) equity infusions by American Water using debt; 4) the impact of American Water's creditworthiness on AWCC debt; and, 5) his characterization of American Water as a regulated utility. I will respond to each of these points below.

Q. Does Mr. Barnes claim that MAWC's capital structure is unreasonable for ratemaking purposes?

A. Significantly, Mr. Barnes does not claim that MAWC's capital structure is unreasonable in comparison with the water utility industry capital structures or Standard & Poor's (S&P) financial metrics.

Q. Do Mr. Gorman and Ms. LaConte agree with Mr. Barnes' position that the American Water capital structure should be used for ratemaking purposes for MAWC?

A. No. Both Mr. Gorman and Ms. LaConte have adopted MAWC's proposed capital structure ratios in developing their recommended returns on common equity and overall rates of return.

Q. In an attempt to support his position that MAWC's capital structure is inappropriate for ratemaking purposes, Mr. Barnes states that MAWC's capital structure "does not reflect the reality of how MAWC is, and will be, financed" on page 1, line 1 of his rebuttal testimony. Please comment.

A. As noted on page 4, line 23 through page 5, line 4 of his rebuttal testimony, Mr. Barnes incorrectly states that MAWC does not issue its own debt using its financing affiliate, American Water Capital Corp. (AWCC) which "is

actually issuing the debt to third parties on a consolidated basis on behalf of American Water's subsidiaries." He also notes that AWCC acts as the corporate treasury for American Water, by aggregating all the cash transactions for MAWC. The fact that AWCC has been used as one source of long-term debt financing for MAWC does not call into question the propriety of using MAWC's capital structure for rate making purposes. The use of AWCC by MAWC is based solely upon whether there is a cost advantage for MAWC. That is, MAWC issues long-term debt through AWCC only if doing so will result in a lower overall cost to MAWC and, thus, its ratepayers. The Financial Services Agreement (FSA) between MAWC and AWCC reserves to MAWC the discretion to issue long-term debt directly to a non-affiliated third party. As Company Witness William D. Rogers notes in his rebuttal testimony, MAWC exercises this right, which it also considers an obligation, if it is able to issue long-term debt at a lower overall cost than if it were to issue long-term debt through AWCC. This is purely an economic decision made by MAWC, and the ability and potential for using AWCC to reduce MAWC's debt cost does not justify the use of American Water's capital structure in lieu of MAWC's capital structure. In short, the only relevant consolidated impact of MAWC using AWCC as a debt financing conduit is on the cost of MAWC's debt, which is fully accounted for in the calculation of MAWC's overall rate of return. In addition, the fact that AWCC is handling the cash receipts and disbursements for MAWC and all the other

American Water operating subsidiaries is irrelevant to the capital structure decision.

Q. How does MAWC manage its financing function?

A. MAWC, as a separate legal entity, is responsible for making its own financing decisions regarding its sources of financing and its overall capital structure. These sources of financing include funds from related entities – such as long-term and short-term notes issued to AWCC or equity infused by American Water – and funds from unrelated third parties – such as taxable debt issued under MAWC's trust indenture, tax-exempt debt issued under MAWC's indenture through a governmental conduit such as the Environmental Improvement and Energy Resources Authority (EIERA), state revolving fund loans, and preferred stock.

As stated in Mr. Rogers' rebuttal testimony, at page 4, lines 14 - 18, "MAWC sets its capital structure based upon the operating and financial risks of MAWC. MAWC presents its capital structure and financing plant to the MAWC board for its review and approval" with the assistance of American Water's management. When MAWC considers redeeming and refinancing its long-term debt, "MAWC's financial management and AWW's treasury team work collaboratively to assess opportunities and then to refinance when and as appropriate."

Clearly, then, American Water does not make MAWC's financing and refinancing decisions, but rather provides consulting advice and guidance,

evaluating “the risks, returns, performance and financial structure of each subsidiary on a distinct and independent basis” as stated by Mr. Rogers on page 6, lines 19-20 of his rebuttal testimony. In other words, American Water evaluates MAWC’s capital structure on a stand-alone basis. Thus, the MoPSC should adopt MAWC’s requested stand-alone capital structure for ratemaking purposes.

Q. Mr. Barnes states on page 1, lines 28-29 of his rebuttal testimony that MAWC “has centralized most of its financing functions through its affiliate, American Water Capital Corporation (AWCC)”. Please comment.

A. Mr. Barnes has obfuscated the issue. As discussed above and in Mr. Rogers’ rebuttal testimony, MAWC is responsible for making all of its own financing decisions in consultation only with American Water. AWCC is but one potential source of financial services that MAWC can use at its discretion. Those financial services may include, but are not limited to, short-term notes, long-term notes, and cash management services. As also noted previously, MAWC retains the right to obtain these financial services from other third party sources and is under no obligation to use AWCC.

Q. On page 6, lines 12 to 19 of his rebuttal testimony, Mr. Barnes notes that S&P does not issue a credit rating for MAWC, but does so for American Water. Mr. Barnes then claims that <u>if</u> S&P were to assign a credit rating to MAWC it would be based on the consolidated operations of American Water. Please comment.

A. Although this has little, if any, bearing on the ratemaking capital structure decision for MAWC, Mr. Barnes has overstated the weight that would be given American Water's consolidated operations by S&P in a credit rating analysis on MAWC. It is S&P's practice, such as in its recent analyses of Pennsylvania American Water Company (PAWC) and New Jersey American Water Company (NJAWC), to base their ratings on the financial statements of the specific company to which the rating pertains.[1] For example, the latest analyses by S&P regarding PAWC and NJAWC state that their ratings reflect the consolidated credit quality of American Water, but do not say they are based upon the credit quality of American Water. Thus, if MAWC and American Water have dissimilar financial credit metrics, MAWC would not be rated similarly to American Water. In fact, S&P has assigned a bond rating of "A" to both PAWC's and NJAWC's first mortgage bonds (FMB) as shown on pages 4 and 10 of Schedule PMA-40. An S&P bond rating of "A" is two notches above the corporate credit ratings of PAWC, NJAWC and American Water, based upon S&P's recovery methodology for regulated utilities, which has assigned a recovery rating of "1+" to PAWC's and NJAWC's FMBs. As S&P notes on pages 4 and 10 of Schedule PMA-40, recovery ratings can "result in issue ratings being notched above the corporate credit rating on a utility." Moreover, as Mr. Rogers states in his surrebuttal testimony, MAWC

[1] Standard & Poor's Global Credit Portal – Ratings Direct, August 19, 2011, Pennsylvania-American Water Co. and New Jersey-American Water Co.

has never requested a bond/credit rating from S&P, so it is not possible to determine how S&P would rate MAWC. Thus, any assertions or implications that MAWC would be exclusively rated upon the basis of the consolidated operations of American Water are not justified by the facts.

Q. Mr. Barnes asserts on page 9, lines 13-21 of his rebuttal testimony that the relative risks of American Water and MAWC are the same. Please comment.

A. On page 9, lines 16-19, Mr. Barnes states in his rebuttal testimony:

> As long as the risk associated with the consolidated operations is consistent with MAWC's risk, then it is appropriate to not only use the consolidated capital structure, but also the cost of capital associated with this capital structure for ratemaking purposes.

And, on page 2, lines 2-5 of his rebuttal testimony, Mr. Barnes states:

> Because American Water is predominately a regulated water utility, it is appropriate to use the parent company's capital structure in this case because it is consistent with the way in which American Water believes its regulated water utility operations should be capitalized.

Since Mr. Barnes concludes that "it is appropriate to use the parent company's capital structure . . . [a]s long as the risk associated with the consolidated operations is consistent with MAWC's risk", one can only assume that Mr. Barnes believes that the risks of American Water and MAWC are the same, which they are clearly not as will be discussed subsequently.

Q. Mr. Barnes asserts on page 1, line 29 through page 2, line 1 that "American Water Capital Corporation (AWCC), can receive equity infusions through debt raised at American Water Company" and that on page 6, lines 26 – 27, the "American Water receives debt from AWCC just as its subsidiaries do [an] uses this debt to make equity contribution to its subsidiaries." Please comment.

A. These statements are incorrect. Relative to the first statement, AWCC does not receive any equity from American Water. As noted by Mr. Rogers in his rebuttal testimony at page 5, lines 7 – 8, AWCC as the debt financing arm of American Water "is one mechanism available to MAWC to assist in achieving its refinancing objectives." AWCC is not the issuer of American Water's common stock and therefore does not make equity infusions into any of American Water's subsidiaries.

Relative to the second statement, American Water does not use debt to finance equity contribution to any of its regulated subsidiaries, including MAWC. In his rebuttal testimony, Mr. Rogers presented a detailed discussion relative to the history of debt financing at the American Water holding company level. He concludes on page 5, lines 27 – 31.

> The proceeds of the borrowings by AWW were never used as a source for equity or debt capital contributions to AWW subsidiaries, including MAWC. Excluding the borrowing that were never used to fund AWW subsidiaries would result in a restated AWW capital structure that is approximately 50% equity and 50% debt.

Q. Does the fact that both American Water and MAWC are engaged primarily in the regulated water and wastewater business mean that the risks associated with the consolidated operations of American Water and MAWC are the same?

A. No, it does not. As discussed in detail in my direct testimony at page 18, line 2 through page 22, line 17 and in Company Witness Dennis R. Williams' direct testimony, MAWC faces unique MAWC-specific risks related to the availability/quality of supply; flood exposure; service territory issues; regulatory risks; and MAWC's smaller size.

Furthermore, as stated by Mr. Rogers at page 3, lines 23-31 of his rebuttal testimony:

> Each subsidiary of AWW has its own distinct business risk. For example, each subsidiary has differences in sources of water supply, relations with employees represented under collective bargaining agreements, density of customers served, state utility regulation, state environmental and other regulation, administration of different types of tariffs, state and local economic conditions and age of infrastructure. AWW's business and financial risk profile, on the other hand, is derived from the portfolio of risks from its investments in regulated subsidiaries and market based operations. As such AWW's risk profile does not mirror the risk profile of any one of its regulated subsidiaries.

Q. Is it possible for businesses in the same general line of business to have different credit ratings?

A. Yes, it is. In fact, the S&P credit ratings for U.S. Investor-Owned Water Utilities as of January 11, 2012 range from "BBB+" to "A+"[2] with all of the rated water utilities assigned an identical business risk profile of "Excellent".

Although Mr. Barnes attempts to relate MAWC's lack of an S&P stand-alone credit rating with the notion that MAWC's costs of capital are driven by the consolidated operations of American Water, such a relationship simply does not exist. The costs of capital at MAWC are driven by the creditworthiness of MAWC. Moreover, any S&P bond/credit rating for MAWC, to the extent it would be available, but a measure of its creditworthiness being only a proxy for its common equity risk as discussed in my direct testimony at page 24, line 20 through page 25, line 1. Similar bond/credit rating indicates that the combined risks of two entities are similar, albeit not necessarily equal, as the purpose of the bond/credit rating process is to assess credit quality or credit risk and not common equity risk. In any event, MAWC's creditworthiness must be evaluated on a stand-alone basis since it is independent of its parent company. Moreover, based on the criteria outlined in the S&P analysis is cited by Mr. Barnes, it is more appropriate to conclude that MAWC's and American Water's investment risks are different.

[2] Standard & Poor's Global Credit Portal Ratings Direct Issuer Ranking: U.S. Investor-Owned Water Utilities, Strongest to Weakest.

CORRECTED RECOMMENDED RETURN ON COMMON EQUITY

Q. On page 3, line 9 through page 4, line 12, of his rebuttal testimony, Mr. Barnes updates his recommended rate of return, specifically his recommended return on equity (ROE). Please comment.

A. Mr. Barnes has corrected his ROE analysis to include the projected consensus 3-5 year earnings per share growth rates from Value Line Investment Survey (Value Line) for Connecticut Water Service Inc. (Connecticut), Middlesex Water Company (Middlesex) and York Water Company (York), which he states on page 4, lines 1 and 2 of his rebuttal testimony "should have been included in the ROR Section of Staff's Cost of Service Report." This correction results in a reduction in his recommended range of ROE from 9.40% - 10.40% (mid-point of 9.90%) to 8.95% - 9.95% (mid-point of 9.45%). Since Mr. Barnes applied an analysis identical to that in the Staff Report of November 17, 2011, in arriving at his corrected recommendation, his corrected analysis is also flawed in several respects, resulting in a corrected recommended ROE well below any reasonable range for MAWC, as discussed in my rebuttal testimony, summarized on page 2, line 2 through page 3, line 7.

Q. In your rebuttal testimony, you provided corrections to Mr. Barnes' DCF and CAPM analyses. What are the results of applying these same corrections to Mr. Barnes' corrected ROE analysis?

A. Page 1 of Schedule PMA-40 provides the identical corrected DCF analysis as shown on Schedule PMA-21 but including Connecticut, Middlesex and York, as corrected by Mr. Barnes. Had Staff relied upon security analysts' projected growth in EPS in developing its corrected ROE recommendation, an average DCF cost rate of 10.03% results as shown on page 1 of Schedule PMA-40. However, Middlesex's DCF cost rate of 7.04% is grossly understated relative to Staff's 6.16% long-term debt cost rate and MAWC's requested 6.28% long-term debt cost rate, as it represents an equity risk premium of only 88 and 76 basis points, respectively. Excluding Middlesex's DCF cost rate of 7.04% results in a more appropriate average DCF cost rate of 10.53%.

Staff's corrected projected EPS growth rate now ranges from 3.00% - 9.75%. When added to Staff's corrected dividend yield of 3.46%, an updated range of DCF cost rate of 6.46% - 13.21%, with a midpoint of 9.83% result. However, just as Middlesex's DCF cost rate is grossly understated, an ROE of 6.46% is grossly understated relative to either Staff's corrected long-term debt cost rate of 6.16% or MAWC's requested debt cost rate of 6.28%, since it represents equity risk premiums of but 30 basis points and 18 basis points relative to 6.16% and 6.28%, respectively. Consequently, it is appropriate to not rely upon the 3.00% low end of the range of growth and to rely upon the next lowest growth rate of 6.00% which results in a range of ROE of 9.46% - 13.21%, with a more appropriate midpoint of 11.34%.

Consistent with my rebuttal testimony on page 21, lines 7-10, DCF cost rates of 10.53% and 11.34% clearly demonstrate that Staff's corrected DCF results, ranging from 8.50% - 9.50% and Staff's recommended range of common equity cost rate of 8.95% – 9.9.5% are grossly understated.

Page 2 of Schedule PMA-40 provides the identical corrected CAPM analysis as shown on Schedule PMA-23 but including Middlesex as corrected by Mr. Barnes. Had Staff relied upon a correctly-derived historical market equity risk premium, included a forecasted market equity risk premium, a forecasted risk-free rate as well as the empirical CAPM (ECAPM), the traditional CAPM derived common equity cost rate would be 11.93% and the ECAPM derived common equity cost rate would be 12.51%, which average 12.22%.

Furthermore, these cost rates are understated because they do not reflect either MAWC's greater unique business risks relative to Staff's proxy group of now seven water companies, the greater financial risk of Staff's recommended capital structure ratios or flotation costs.

Page 6 of Schedule PMA-40 indicates that when flotation costs, the greater financial risk inherent in Staff's recommended capital structure ratios and MAWC's greater business risks due to its unique risks are reflected, a corrected indicated Staff common equity cost rate based upon Staff's corrected ROE analysis is 12.64%.

RESPONSE TO MR. BARNES' COMMENTS

Business Risk Adjustment

Q. At page 10, line 12 through page 12, line 19 of his rebuttal testimony, Mr. Barnes relies upon MAWC's response to Staff Data Request 0151 as supporting Staff's position that no small size risk adjustment to any recommended ROE for MAWC is warranted. Please comment.

A. Mr. Barnes is incorrect for two reasons. First, the business risk adjustment of 0.40% to which he is referring is not based exclusively on MAWC's smaller size relative to the proxy group of water companies. As summarized on page 67, line 18 through page 69, line 20 of my direct testimony and discussed in detail on page 18, line 2 through page 22, line 17, the business risk adjustment also reflects MAWC's unique business risks as discussed by MAWC Witness Dennis R. Williams' direct testimony. These include availability / quality of supply; flood exposure; service territory issues; and, regulatory risk. In addition, as summarized specifically at lines 18 – 22 on page 67 of my direct testimony, an indication of an appropriate adjustment to reflect these risks, as well as MAWC's smaller relative size, is given by the Ibbotson® SBBI® – 2011 Valuation Yearbook – Market Results for Stocks, Bonds, Bills and Inflation – 1926-2010 (2011 SBBI) size premium study discussed on page 68 and 69 and provided as Workpaper 18. Second, while not making a size adjustment to their CAPM analysis for the Reg RU (Regulated Business) of American Water, [redacted]

[redacted]

NP

[redacted]

Risk Premium And Capital Asset Pricing Models

Q. On page 11, line 28 through page 12, line 9 and again on page 14, lines 16 – 21 of his rebuttal testimony, Mr. Barnes discusses his disagreement with your use of forecasted yields in the RPM and the CAPM. Please comment.

A. As discussed in my rebuttal testimony, ratemaking and the cost of capital are both prospective. Therefore, the appropriate yields to use in the RPM and CAPM are forecasted yields. In addition Roger A. Morin states[3]:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of g. The accuracy of these forecasts in the sense of whether they turn out to be correct is not at issue here, as long as they reflect widely held expectations. As long as the forecasts are typical and/or influential in that they are consistent with current stock price levels, they are relevant. The use of analysts' forecasts in the DCF model is

[3] Id., at pp. 298-299.

> sometimes denounced on the grounds that it is difficult to forecast earnings and dividends for only one year, let alone for longer time periods. This objection is unfounded, however, because it is present investors expectations that are being priced; it is the consensus forecast that is embedded in price and therefore in required return, and not the future as it will turn out to be.
>
> * * *
>
> Academic research confirms the superiority of analysts' earnings forecasts over univariate time-series forecasts that rely on history. This latter category includes many *ad hoc* forecasts from statistical models, ranging from the naïve methods of simple averages, moving averages, etc. to the sophisticated time-series techniques such as the Box-Jenkins modeling techniques. The literature suggests that analysts' earnings forecasts incorporate all the public information available to the analysts and the public at the time the forecasts are released. This finding implies that analysts have already factored historical growth trends into their forecast growth rates, making reliance on historical growth rates somewhat redundant and, at worst, potentially double counting growth rates which are irrelevant to future expectations. Furthermore, these forecasts are statistically more accurate than forecasts based solely on historical earnings, dividends, book value equity, and the like.

Although the foregoing quote by Roger A. Morin is relative to analysts' growth rate projections, the principles apply equally to interest rate projections. Financial analysts do exert a strong influence on the expectations of investors, whether it be with forecasts of growth for use in the DCF or forecasts of interest rate levels. Not only do analysts' earnings forecasts incorporate all the public information available to them and the public at the time of the forecasts, so do analysts' forecasts of interest rate

levels. Therefore, the use of current yields in the RPM and CAPM is not appropriate. Forecasts of corporate, public utility and U.S. Treasury bond yields are appropriate.

Q. Mr. Barnes states at lines 6 – 7 on page 12 of his rebuttal testimony that "using projected bond yield is akin to using projected stock prices when estimating the cost of [common] equity using the DCF methodology." Please comment.

A. Once again, Mr. Barnes is incorrect. First, the theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting the cash flows at the cost of capital, at the investors' capitalization rate. DCF theory indicates that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price, i.e., a future stock price. Note however, in both Mr. Barnes and my applications, the investment horizon is infinity and there is no terminal market price.

Second, the use of projected bond yields in both the RPM and CAPM is more "akin" to the use of a future dividend yield, i.e., $D_{1/2}$ or D_1 and the use of an investor expected growth rate, whether based upon historical and/or projected growth as a proxy for the investors' expected growth in dividends. Moreover, interest rate forecasts are available to investors. Therefore, the use of projected bond yields does not violate the underlying premise of the

EMH. Rather, the use of projected bond yields is both consistent with and required by the EMH. Mr. Barnes comments should be disregarded.

Q. Mr. Barnes criticizes your use of arithmetic means in your RPM and CAPM analyses on page 12, line 12 through and page 14, line 14, respectively, of his rebuttal testimony. Please comment.

A. On page 12, line 20 through page 13, line 5 of his rebuttal testimony, Mr. Barnes provides an example to support his contention that using the arithmetic mean is questionable. However, Mr. Barnes mathematical example is questionable because it does not take into account the probability of each outcome, i.e., an increase of 50% in one year and a decrease of 50% in another. As noted in my rebuttal testimony, at page 25, line 13 through page 26, line 25, the financial literature is quite clear that risk is measured by the variability of expected returns, i.e., the probability distribution of returns. The arithmetic mean return and not the geometric mean return provides insight into the variance and standard deviation of returns, i.e., risk, without which investors cannot meaningfully evaluate prospective risk. An example, similar to Mr. Barnes, is given on page 7 of Schedule PMA-22 which demonstrates that the proper expected value is predicted by compounding the arithmetic mean and not the geometric mean. In other words, it is the arithmetic mean which must be compounded over a period of time in order to achieve the terminal wealth value which gives rise to the compound average or geometric return. As noted on page 7 of Schedule PMA-22, “[t]he

arithmetic mean equates the expected future value with the present value; it is therefore the appropriate discount rate."

Q. At page 14, line 24 through page 15, line 4 of his rebuttal testimony, Mr. Barnes criticizes your use of a non-utility company analysis. He states at page 14, lines 25 - 27, "[i]f the allowed returns are set based on expected returns, then it is possible that these expected returns will not be consistent with the long-term required returns on common equity, i.e., the cost of equity." Please comment.

A. This statement by Mr. Barnes indicates a lack of understanding of the market prices paid by investors. The DCF and CAPM models upon which he relies are based entirely upon investor expectations. Sometimes those expectations are met; sometimes returns are greater than expected; and sometimes returns are less than expected. However, it is the expectations of those returns that influence the market prices that investors pay.

Moreover, using future expected ROEs has a long, well-established history in utility ratemaking and is based upon the premise that regulation is a substitute for the competition of the marketplace consistent with the "corresponding risk" standard set forth in the landmark U.S. Supreme Court cases and consistent with the *Hope* doctrine that the return to the equity investor should be commensurate with returns on investment in other firms having corresponding risks. It is based upon the fundamental economic concept of opportunity cost which maintains that the true cost of an

investment is equal to the cost of the best available alternative use of the funds to be invested. This concept is recognized by Mr. Barnes himself when he notes the "Rate of return witnesses are mindful of the constitutional parameters that guide the determination of a fair and reasonable rate of return. . . announced by the United States Supreme Court in two seminal cases, *Bluefield Water Works and Improvement Company v. Public Service Commission of West Virginia* (1923) (*Bluefield*) and *Federal Power Commission v. Hope Natural Gas Company* (1944) (*Hope*)(footnote omitted)" on page 6, lines 1 - 16 of his prepared direct testimony. Thus, the use of projected ROEs for non-utility companies of comparable total risk is consistent with one of the fundamental principles upon which regulation rests: that regulation is intended to act as a surrogate for competition and to provide a fair rate of return to investors.

Roger A. Morin[4] states (see page 3 of Schedule PMA-41):

> The Comparable Earnings standard has a long and rich history in regulatory proceedings, and finds it origins in the fair return doctrine enunciated by the U.S. Supreme Court in the landmark *Hope* case. The governing principle for setting a fair return decreed in *Hope* is that the allowable return on equity should be commensurate with returns on investments in other firms having comparable risks, and that the allowed return should be sufficient to assure confidence in the financial integrity of the firm, in order to maintain creditworthiness and ability to attract capital on reasonable terms. Two distinct standards emerge from this basic premise: a standard of Capital Attraction and a standard of Comparable Earnings. The Capital Attraction standard focuses on investors' return requirements, and is applied through market value methods described in prior

[4] Morin 381.

> chapters, such as DCF, CAPM, or Risk Premium. The Comparable Earnings standard uses the return earned on book equity investment by enterprises of comparable risks as the measure of fair return.

Roger A. Morin concludes on page 394 (page 16 of Schedule PMA-41):

> More fundamentally, the basic premise of the Comparable Earnings approach is that regulation should emulate the competitive result. It is not clear from this premise which is the proper level of competition being referenced. Is the norm the perfect competition model of economics where no monopolistic elements exist, or is it the degree of competition actually prevailing in the economy? A strong case for the latter can be made of grounds of fairness alone.
>
> Although the Comparable Earnings test does not square well with economic theory, the approach is nevertheless meritorious. If the basic purpose of comparable earnings is to set a fair return rather than determine the true economic return, then the argument is academic. If regulators consider a fair return as one that equals the book rates of return earned by comparable–risk firms rather than one that is equal to the cost of capital of such firms, the Comparable Earnings test is relevant. This notion of fairness, rooted in the traditional legalistic interpretation of the *Hope* language, validates the Comparable Earnings.

In addition, the selection criteria used to select the non-utility companies reflect the total risk, i.e., systematic and unsystematic risks, of my proxy group. As discussed in my prepared direct testimony and in Schedule PMA-42, a copy of "Comparable Earnings: New Life for an Old Precept", co-authored by Frank J. Hanley and myself, Value Line betas were used as a measure of each firm's unsystematic or specific risk, and the standard error of the regression reflects the extent to which events specific to a company's operations will affect its stock price. Therefore, it is a measure of

diversifiable or unsystematic, company-specific risk. In essence, companies which have similar betas and standard errors of the regressions, have similar investment risk, i.e., the sum of systematic (market) risk as reflected by beta and unsystematic (business and financial) risk, as reflected by the standard error of the regression, respectively. Those statistics are derived from regression analyses using market prices which, under the EMH, previously discussed, reflect all relevant risks. The application of these criteria results in a proxy group of non-utility companies similar in total risk to the average company in the proxy group of nine water companies. Consequently, because they are comparable in total risk, the projected returns on their book value of common equity, net worth or partners' capital are relevant to the returns on book values of price regulated utilities of comparable total risk and hence appropriate for setting an authorized return rate on common equity. Mr. Barnes' criticisms should be rejected.

RESPONSE TO MR. GORMAN'S COMMENTS

Q. At page 2, line 19 through page 4, line 5 of his rebuttal testimony, Mr. Gorman discusses why he believes that recently authorized returns on equity for electric and gas utilities do not support your recommended common equity cost rate. Please comment.

A. Schedule PMA-43 is a summary of the regulatory awards made to electric and gas distribution companies during the period January 1, 2010 through January 10, 2012 derived from Regulatory Research Associates (RRA).

Although RRA does not report authorized ROEs for water companies, the authorized ROEs for electric and gas distribution companies are relevant to the current proceeding as MAWC, indeed, all water utilities, compete in the same marketplace for capital as do electric and gas distribution utilities. The average authorized ROE in all litigated cases shown on Schedule PMA-43 is 10.13% relative to an average 48.96% common equity ratio, slightly lower than MAWC's proposed common equity ratio of 50.57%, which has been accepted by both Mr. Gorman and Ms. LaConte in this proceeding.

Mr. Gorman also states on page 3, line 10 through page 4, line 3 that "This decline in capital costs has resulted in regulatory commissions authorizing returns on equity for electric and gas utilities down near 10% and lower for most of 2011. This same trend is evident for water companies, although there is no public source available that I am aware of to collect authorized returns on equity awards for water utilities." However, Schedule PMA-43 indicates otherwise. The average spread between the ROEs awarded in litigated cases from January 2011 through January, 10 2012 and the average 5.17% yield on Moody's A rated public utility bonds over the same period was 4.96%. Currently, the forecasted yield on A rated public utility bonds is 4.67% as derived on page 15 of Schedule PMA-39. However, given that there is an inverse relationship between interest rates and the equity risk premium, i.e., as interest rates fall, the equity risk premium

increases[5], adding the 4.96% implied equity risk premium based upon electric and gas utility average 2011 authorized common equity cost rates to the current prospective yield on Moody's A rated public utility bonds is not appropriate. Empirical research indicates that for every 100 basis point change in interest rates, the equity risk premium changes approximately 50 basis points in the opposite direction. Since the prospective yield on A rated public utility bonds is 4.67%, or 50 basis points (0.50%), lower than the average yield on such bonds of 5.17% from January 2011 through January 2012, the implied equity risk premium of 4.96% must be increased by one-half the 0.50%, or 0.25%, which results in an equity risk premium of 5.21%. Adding an equity risk premium of 5.21% to the current forecasted yield on A rated public utility bonds of 4.67% results in an indicated common equity cost rate of 9.88%, unadjusted for flotation costs, MAWC's financial and unique business risks. If the MoPSC adopts MAWC's proposed capital structure ratios, a financial risk adjustment of a negative 0.21% is indicated using the same Hamada equitation as discussed in detail in my direct testimony on page 63, line 5 through page 65, line 2 and the average common equity ratio of 48.96% for the electric and gas utilities shown on page 2 of Schedule PMA-39. If the MoPSC adopts Mr. Barnes recommended consolidated American Water capital structure, an upward financial risk adjustment of 0.84% relative to the average common equity ratio of 48.96% for the electric

[5] Morin, Roger A., New Regulatory Finance, 128-129 (Public Utilities Reports 2006).

and gas utilities is indicated. Coupling these two financial risk adjustments with the flotation cost adjustment of 0.16% (Schedule PMA-38) and business risk adjustment of 0.40% (Schedule PMA-38) results in a range of common equity cost rate based upon the authorized returns for electric and gas utilities from January 2011 through January 10, 2012 of 10.23%[6] to 11.28%[7]. Therefore, recent awards for electric and gas utilities do not support the 9.40% return on equity recommended by Mr. Gorman.

Q. At page 6, line 10 through page 7, line 7 of his rebuttal testimony, Mr. Gorman criticizes your use of security analysts' forecasts of EPS growth in your application of the DCF model. Please comment.

A. As previously discussed in my rebuttal testimony on page 16, line 17 through page 20, line 9 and again at pages 38, line 21 through page 40, line 23, there is a wealth of empirical and academic literature which supports the superiority of analyst's forecasts of EPS as measures of investor expectations. I have cited an article by John G. Cragg and Burton G. Malkiel who note that analyst's forecasts are more precise than other growth estimates and whose results support the notion the "analysts' forecasts are needed even when calculated growth rates are available." Also cited is an article by James H. Vander Weide and Willard T. Carleton whose studies affirmed the superiority of analysts' forecasts for use in cost of capital

[6] 10.23% = 9.88% - 0.21% + 0.16% + 0.40.

[7] 11.28% = 9.88% + 0.84% + 0.16% + 0.40.

studies. In addition, I cite Dr. Myron Gordon who stated in a speech given before the Institute of Quantitative Research in Finance held in Palm Beach, FL, in March 1990 that "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." Finally, I cite Anup Agrawal and Mark A. Chen who conclude on page 1 of Schedule PMA-20 that:

> Overall, our findings do not support the view that conflicted analysts are able to systematically mislead investors with optimistic stock recommendations.

Therefore, there is no need to reject the empirical evidence of the proven reliability of analysts' forecasts of EPS by turning to a two- and three-stage DCF model.

Mr. Gorman has provided no empirical evidence that analysts' forecasted growth in EPS for the water group is a temporary phenomenon which will subside after the next five years or so. There is also no empirical evidence that EPS would grow at the average growth of the economy, or GDP growth. Mr. Gorman bases his support for the three-stage DCF upon his belief that analysts' forecasted growth rates in EPS, especially for water companies, "exceed reasonable estimates of long-term sustainable growth . . . [which] substantially exceed the expected long-term growth of the U.S.

economy." (see pages 6, line 12 and 16-17 of Mr. Gorman's direct testimony). However, based upon the previously cited wealth of empirical and academic support for the use of security analysts' growth forecasts of EPS in the DCF model, current earnings growth forecasts are the appropriate growth rates to us in a DCF analysis.

Q. At page 7, lines 11 through 20 of his rebuttal testimony, Mr. Gorman discusses his application of a three-stage growth DCF model to the market data and growth rates you relied upon for your water proxy group. Please comment.

A. The results of Mr. Gorman's three-stage growth DCF model using the market data and growth rates I relied upon for my water proxy group should be disregarded by the MoPSC. It is clear from both my rebuttal testimony (page 40, line 11 through page 42, line 16) and my direct testimony (page 34, line 15 through page 35, line 14) that there is no valid rationale for undertaking a multi-stage DCF analysis to determine the common equity cost rates of mature, stable public utility companies.

Q. At page 8, lines 19 through page 9, line 2 of his rebuttal testimony, Mr. Gorman discusses his issues with my risk premium analysis. Please comment.

A. Mr. Gorman's first issue is my reliance upon projected bond yields. As discussed in my rebuttal testimony at page 22, lines 3 – 12, both the determination of the cost of capital and the ratemaking are prospective in

nature. Therefore, events that affect the future, impact market activity, volatility and investor expectations and are relevant to the determination of the cost of common equity. Consequently, any comments regarding the fact that the prospective bond yield exceeds current observable bond yields are irrelevant. Market prices are a function of investors' expectations for the future, including analysts' expectations. Thus, the MoPSC should rely upon forecasted interest rates in both an RPM and a CAPM analysis.

Mr. Gorman also takes issue with what he claims is my use of a corporate bond yield as a risk-free rate. Nowhere in my direct testimony do I claim that the corporate bond yield used in the RPM is the risk-free rate. My direct testimony is clear on this issue at page 40, line 22 through page 41, line 15 where it states:

> Q. Some analysts state that the RPM is another form of the CAPM. Do you agree?
>
> A. While there are some similarities, there is a very significant distinction between the two models. The RPM and CAPM both add a "risk premium" to an interest rate. However, the beta approach to the determination of an equity risk premium in the RPM should not be confused with the CAPM. Beta is a measure of systematic, or market, risk, a relatively small percentage of total risk (the sum of both non-diversifiable systematic and diversifiable unsystematic risk). Unsystematic risk is fully captured in the RPM through the use of the prospective long-term bond yield as can be shown by reference to pages 3 of Schedule PMA-4, which confirms that the bond/credit rating process involves a comprehensive assessment of both business and financial risks. In contrast, the use of a risk-free rate of return in the CAPM does not, and by

> definition cannot, reflect a company's specific i.e., unsystematic risk. Consequently, a much larger portion of the total common equity cost rate is reflected in the company- or proxy group-specific bond yield (a product of the bond rating) than is reflected in the risk-free rate in the CAPM, or indeed even by the dividend yield employed in the DCF model. Moreover, the financial literature recognizes the RPM and CAPM as two separate and distinct cost of common equity models.

Quite possibly, Mr. Gorman believes my use of a corporate / public utility bond yield "as a risk-free rate" is based upon my use of beta to apportion the market equity risk premium to reflect the risk of the proxy group of water companies. Roger A. Morin provides the rationale for such risk apportionment when he states[8]:

> The risk premium estimates derived from a composite market index must be adjusted for any risk differences between the equity market index employed in deriving the risk premium and a specified utility common stock. Several methods can be used to effect the proper risk adjustment.
>
> * * *
>
> First, the beta risk measure for the subject utility or the beta of a group of equivalent risk companies can service as an adjustment device. The market risk premium, RP_M, is multiplied by the beta of the utility, β_i, to find the utility's own risk premium, RP_i:
>
> $$RP_i = \beta_i RP_M$$
>
> And the beta-adjusted risk premium is added to the bond yield to arrive at the utility's own cost of equity capital.

[8] Id., at pp. 119-120.

Clearly, Mr. Gorman is mistaken in his recommendation that my "estimated market risk premium is overstated and based on a faulty premise."

Q. At page 9, line 20 through page 10, line 10 of his rebuttal testimony, Mr. Gorman discusses his second issue with your risk premium analysis. Please comment.

A. Mr. Gorman's second issue relates to my use of the yield on public utility bonds as opposed to the total return to derive the equity risk premium in my RPM analysis. Because the investment horizon of utilities' common stock is presumed to be long-term, i.e., in perpetuity, by the cost of common equity models used by the witnesses in this proceeding, especially the DCF model, it is entirely appropriate to use the yield on long-term utility bonds when deriving an equity risk premium based upon utility bonds. Using the yield, as opposed to the total return which reflects annual price appreciation and depreciation, on utility bonds presumes that the bond will be held to maturity and thus its yield over the life of the bond is the total return. In addition, the academic literature relating to the bond yield plus risk premium approach to the cost of common equity uses a bond yield, and not the total bond return.

Q. At page 11, lines 11 - 24 of his rebuttal testimony, Mr. Gorman discusses why he believes your market equity risk premium is overstated. Please comment.

A. Mr. Gorman states on page 11, lines 13 – 14 of his rebuttal testimony that my "derived equity risk premium of 8.34% based on *Value Line* data is inflated

and unreliable" because it is based upon an expected market appreciation which is not sustainable because it is "substantially higher" than the GDP growth rate. I have previously addressed why it is inappropriate to compare projected EPS growth rates with the GDP growth rate, so I will not repeat that discussion here. However, while U.S. GDP growth represents growth in the market value of all goods and services produced in the U.S. in a given period, it is not equivalent to capital market appreciation. Growth in GDP is a measure of economic output, not a measure of growth in the value of a portion of the capital (the common equity capital) invested to create that output. GDP grows due to the capital investment and labor productivity employed to create that economic output. In contrast, growth in the market value of common stock is a product of investor expectations. Therefore, Mr. Gorman's comparison of capital market appreciation with U.S. GDP growth is meaningless.

Q. At page 12, line 3 through page 13, line 10, Mr. Gorman expresses his "concerns" with your empirical CAPM analysis (ECAPM). Please comment.

A. Mr. Gorman's "concerns" arise from his confusing the adjustment of beta with the ECAPM. As previously discussed in my rebuttal testimony and my direct testimony, there is considerable academic and regulatory support for the use of the ECAPM. As explained in my direct testimony at page 54, line 11 through page 56, line 8 and in my rebuttal testimony at page 28, line 6 through page 29, line 24, it is essential to take into account the reality that

the empirical Security Market Line (SML) described by the traditional CAPM is not as steeply sloped as the predicted SML. The ECAPM is thus a return adjustment which accounts for this reality and is not an adjustment to beta which is an x-axis adjustment accounting for regression bias. Hence, the use of adjusted betas is not equivalent to the ECAPM. Mr. Gorman's "concerns" are unfounded, unsupported and meaningless.

Q. At page 13, line 19 through page 14 line 10, Mr. Gorman discusses his issues with your non-price regulated utility analysis. Please comment.

A. First, Mr. Gorman has mischaracterized my non-price regulated utility analysis as a Comparable Earnings Model or CEM. Nowhere in my direct testimony have I used the words "Comparable Earnings Model" or the acronym "CEM." That being said, the concept of evaluating projected earned returns on book common equity, net worth, or partners' capital, stems from the comparable earnings concept. However, I have coupled that evaluation with the application of the DCF, RPM and CAPM to the non-price regulated companies comparable in total risk to the proxy group of water companies.

Mr. Gorman states, without any substantiation or rationale, at lines 5 through 7 on page 14 of his rebuttal testimony that "[a] comparable earnings analysis is not a competent method of estimating the current return requirements of investors who assume the risk of a water utility investment." The same can be said for the accounting measures of growth used by rate of

return analysts such as Mr. Gorman and myself. As stated previously, security analysts' forecasts of EPS growth are based upon their consensus of accounting based earnings per share. Such accounting measures are independent of investor expectations, thus, they do not measure investors' return requirements, rather, they serve as a proxy for them.

In addition, both Mr. Gorman's statement that the non-price regulated companies cannot serve as proxies for the water companies and that I have "not shown that they have comparable business and operating risk to a low-risk regulated utility company" are incorrect, as the selection criteria for the proxy group of non-price regulated companies are based upon measures of total risk, i.e., systematic (non-diversifiable) risk as measured by betas and non-systematic (diversifiable) risk as measured by the standard errors of the regression giving rise to the betas, as discussed in detail on page 56, line 14 through page 58, line 11 of my direct testimony.

The selection criteria are derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, they are consistent with the *Hope* doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks.

Roger A. Morin[9] states (see page 3 of Schedule PMA-41):

> The Comparable Earnings standard has a long and rich history in regulatory proceedings, and finds it origins in the fair return

[9] Morin 381.

doctrine enunciated by the U.S. Supreme Court in the landmark *Hope* case. The governing principle for setting a fair return decreed in *Hope* is that the allowable return on equity should be commensurate with returns on investments in other firms having comparable risks, and that the allowed return should be sufficient to assure confidence in the financial integrity of the firm, in order to maintain creditworthiness and ability to attract capital on reasonable terms. Two distinct standards emerge from this basic premise: a standard of Capital Attraction and a standard of Comparable Earnings. The Capital Attraction standard focuses on investors' return requirements, and is applied through market value methods described in prior chapters, such as DCF, CAPM, or Risk Premium. The Comparable Earnings standard uses the return earned on book equity investment by enterprises of comparable risks as the measure of fair return.

He concludes on page 394 (page 16 of Schedule PMA-41):

More fundamentally, the basic premise of the Comparable Earnings approach is that regulation should emulate the competitive result. It is not clear from this premise which is the proper level of competition being referenced. Is the norm the perfect competition model of economics where no monopolistic elements exist, or is it the degree of competition actually prevailing in the economy? A strong case for the latter can be made of grounds of fairness alone.

Although the Comparable Earnings test does not square well with economic theory, the approach is nevertheless meritorious. If the basic purpose of comparable earnings is to set a fair return rather than determine the true economic return, then the argument is academic. If regulators consider a fair return as one that equals the book rates of return earned by comparable–risk firms rather than one that is equal to the cost of capital of such firms, the Comparable Earnings test is relevant. This notion of fairness, rooted in the traditional legalistic interpretation of the *Hope* language, validates the Comparable Earnings.

Consequently, because the non-price regulated companies are comparable in total risk, the returns on their book values and the costs or

common equity derived from the application of the DCF, RPM, and CAPM are relevant to the returns on book values of price regulated companies and hence appropriate for setting an authorized return rate on common equity in the current proceeding. Once again, Mr. Gorman's criticisms are unfounded and should be disregarded.

Q. At page 16, line 17 through page 17, line 6, Mr. Gorman discusses why he believes that your adjustment for flotation costs is not appropriate. Please comment.

A. As discussed in my direct testimony at page 65, line 5 through page 67, line 11, there is no other mechanism in the ratemaking paradigm with which flotation costs can be recovered (see Schedule PMA-44). The costs associated with the sale of new issuances of common stock are real and legitimate. Therefore, their recovery should be permitted. As the cost of common equity cost rate models used all Mr. Barnes, Mr. Gorman, Ms. LaConte and myself do not reflect flotation costs, an adjustment to the cost rate of common equity developed from these models as applied to the market data of proxy group of water companies to reflect such costs is necessary. Furthermore, since MAWC is a subsidiary of American Water, it is reasonable to base such an adjustment on the issuance costs incurred by American Water. To that end, since no proceeds from the secondary offerings of American Water were realized by American, I have limited the flotation cost adjustment to the single primary issuance of common stock by

American Water as shown on page 33 of Schedule PM-39. Using the updated DCF cost rate of the proxy group of water companies, the updated flotation cost is 0.16%

Q. At page 17, line 9 through page 19, line 16, Mr. Gorman discusses the business adjustment of 0.40% you made in recognition of MAWC's unique business risk. Please comment.

A. Once again, Mr. Gorman has mischaracterized my direct testimony, as Mr. Barnes has done, relative to my business risk adjustment which is <u>not exclusively</u> an adjustment to reflect MAWC's smaller size relative to the proxy group of water companies. A review of my rebuttal testimony at page 32, lines 15 – 18, clearly shows that because MAWC "is nearly identical in size to Staff's proxy group or six water companies . . . a business risk adjustment o[f] 0.35% (slightly less than my recommended adjustment of 0.40%) is warranted."[10] Therefore, it can be surmised that only 0.05% of the full adjustment of 0.40% is attributable to MAWC's smaller relative size.

As discussed in my direct testimony at page 21, line 3 through page 22, line 17, as well as supported by previously cited financial literature, size is a factor affecting common equity cost rate and must be reflected in any common equity cost rate derived from proxy group of utilities whose average market capitalizations differ from that of the regulated jurisdictional utility.

[10] Note that nowhere on page 69 of my direct testimony or anywhere in the direct testimony, do I describe the 0.40% <u>business</u> risk adjustment as "conservative" as Mr. Gorman states on page 17, line 12 of his rebuttal testimony.

None of the selection criteria used by any of the cost of capital witness in this proceeding reflect that portion of common equity risk attributable to relative size.

Mr. Gorman particularly emphasizes that bond ratings and business profiles when he states on lines 6 through 9 on page 18: "if one relies on a group of companies with bond ratings that are comparable to the proxy company and business profile scores, in particular, that reasonably compare to the utility's business profile score, then the proxy group itself would reflect these risk factors." However, that situation does not exist in the current proceeding. S&P has assigned neither a bond rating, credit rating, business risk profile nor a financial risk profile to MAWC. In addition, although ratepayers do benefit from MAWC's association with American Water through a reduction in service company fees and a sometimes lower cost of debt through American Water Capital Corp. (AWCC), such an affiliation does not eliminate MAWC's risk due to its smaller size, but rather mitigates it, i.e., reduces its effect.

Such a discussion as Mr. Gorman's cannot eliminate the reality recognized in the financial literature, including 2011 SBBI, that the size adjustment is essential because smaller companies earn higher market rates of return over the long run than do larger, less risky companies. Even if MAWC were assigned a bond rating, credit rating, business risk profile and financial risk profile similar to the selected proxy group(s), it is unrealistic to

suggest that the proxy group's and MAWC would be identical in risk. This is tantamount to saying because puppies come from the same litter, that they all have the same color coat and temperament. This is, of course, is not so. Each puppy is distinct. Hence, Mr. Gorman's contention on page 18, lines 16 - 19 that "[s]ince my proxy group and Ms. Ahern's proxy group reasonably emulate an investment grade bond rating, with a higher than average integrated water utility business profile, the proxy group reasonably captures Missouri-American's small size risk and all other risk factors" is inaccurate and unreasonable.

RESPONSE TO MS. LACONTE'S COMMENTS

Q. At page 3, line 11 through page 4, line 10 of her rebuttal testimony, Ms. LaConte criticizes your use of the prospective yield on Moody's A rated public utility bonds in your RPM analysis. Please comment.

A. Ms. LaConte's comments stem from my use of the prospective yield on Moody's A rated public utility bonds "based on the assumption that the average rating for the proxy group is A3" (see page 6, lines 14 – 15 of Ms. LaConte's rebuttal testimony). She asserts on lines 18 – 19 that "[a]n average based on two companies is not an accurate representation of the group." However, since the other water companies in the group are not rated by Moody's, it is all the information available regarding Moody's bond ratings for the group. While all but one of the companies in the proxy group has S&P bond ratings, there is no basis to assume Moody's would assign those

companies identical bond ratings to their S&P counterparts. In fact the two water companies with Moody's bond ratings, i.e., American States Water Co. and American Water are assigned Moody's bond ratings of 'A2' and Baa1', respectively, as shown on page 2 of Schedule PMA-10. In contrast, S&P has assigned these two companies bond ratings of 'A+' and 'BBB+'. Hence, there is no basis for assuming that the companies in the proxy group with S&P bond ratings would be assigned the equivalent Moody's bond rating. In addition, the consensus forecasts of corporate bond yields published by Blue Chip Financial Forecasts are based upon Moody's bond yields. Therefore, it is the average Moody's bond yield of any proxy group which must be used on the basis on consistency. Ms. LaConte's comments are unfounded, unsupported and should be disregarded by the MoPSC.

Q. At page 7, line 4 through page 9, line 5 of her rebuttal testimony, Ms. LaConte criticizes your averaging the long-term historical, 1928 - 2010 (not 1994 – 2010), market equity risk premium from 2011 SBBI with the forecasted market equity risk premium based upon Value Line . Please comment.

A. Ms. LaConte's assertion is incorrect. While I have averaged the two equity risk premiums to develop a market equity risk premium to be allocated by beta on page 6 of Schedule PMA-10, in effect the Value Line derived equity risk premium is given an effective 25% in the derivation of the final equity risk premium which is added to the prospective A3 Moody's bond yield in my

RPM analysis. This is evident because the average beta-adjusted equity risk premium is then averaged with the historical equity risk premium based upon a study using the holding period returns of public utilities with A rated bonds shown on page 5 of Schedule PMA-10.

In addition, it is not appropriate to calculate a weighted average market equity risk premium as Ms. LaConte asserts on page 8, line 3 through page 9, line 1. The 2011 SBBI arithmetic average market equity risk premium is based upon a single study of the entire period from 1926 – 2010 and is expectational because it is the arithmetic mean of a randomly generated data series. The Value Line derived equity risk premium is also expectational, as it is derived from Value Line's hypothetical economic environment 3-5 years hence. Thus, both market equity risk premiums are expectational and therefore, it is appropriate to average them to derive a market equity risk premium.

Q. At page 10, line 2 through page 12, line 20 of her rebuttal testimony, Ms. LaConte criticizes your CAPM analysis. Please comment.

A. Ms. LaConte criticizes my CAPM analysis in two ways. Since her first criticism is the same as her criticism regarding my estimation of the market equity risk premium in my RPM analysis, I will not repeat my previous response here.

Her second criticism surrounds my use of the ECAPM. Like Mr. Gorman, she claims that "no further adjustment is necessary" because the

betas I used in my CAPM analysis are Value Line adjusted betas. As previously discussed relative to Mr. Gorman's concerns with the ECAPM, the use of adjusted betas is not equivalent to the ECAPM, Hence, Ms. LaConte's criticisms are also unfounded, unsupported and meaningless.

Q. At page 13, line 3 through page 14, line 20 of her rebuttal testimony, Ms. LaConte criticizes your comparable risk analysis. Please comment.

A. Ms. LaConte provides three reasons for criticizing my non-utility company analysis. First, she criticizes my evaluation of the expected return on common equity, net worth or partners' capital of the non-utility companies. I have addressed this criticism relative to both Mr. Barnes' and Mr. Gorman's comments. Therefore, it is not necessary to repeat it here.

Second, Ms. LaConte states that "[i]t is not appropriate to compare regulated companies with those that face market-based competition with respect to allowed return" on page 14, lines 6 – 7 of her rebuttal testimony. As discussed previously, relative to Mr. Gorman's comments, the selection criteria used to select the non-utility companies reflect the total risk, i.e., systematic and unsystematic risks, of my proxy group of water companies. Thus, the selection criteria are derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, they are consistent with the *Hope* doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks as well as with one of the fundamental principles upon

which regulation rests: that regulation is intended to act as a surrogate for competition.

Ms. LaConte's third criticism, is that my DCF, RPM and CAPM analyses relative to the non-utility companies "have the same errors as stated previously. Since I have already addressed Ms. LaConte's criticisms of my DCF, RPM and CAPM analyses, it is not necessary to do so here.

Q. Ms. LaConte also criticizes your flotation cost, business risk and financial risk adjustments on page 15, line 3 to page 18, line 13. Please comment

A. I have already addressed the necessity for a flotation cost adjustment both previously in this rebuttal testimony and in my direct testimony, demonstrating that such an adjustment is necessary even when no common stock issuance is expected during the test year.

Relative to the business risk adjustment, like Mr. Barnes and Mr. Gorman, Ms. LaConte presumes that the 0.40% business risk adjustment is based exclusively on size. As discussed previously, it is based upon MAWC's unique business risks as well. However, Ms. LaConte is incorrect that the median, rather than the average, market value of the proxy group should be used. Since the proxy group is selected to be similar, but not identical, in risk to MAWC, it is appropriate to use the average market value of the group and not the median. The average provides a measure of the average company's market value, rather than the median which describes the central tendency of the company's individual market values.

In her criticism of the financial risk adjustment, Ms. LaConte suggests the use of MAWC's December 31, 2011 common equity ratio in deriving the Hamada adjustment. Such a comparison is incorrect, as the December 31, 2011 capital structure ratios of the proxy companies were not available at the time of the preparation of my direct testimony and are still not available. Therefore, to compare MAWC's 2011 common equity ratio with that of the proxy group on average for 2010, is timing mis-match.

In addition, her comparison is a moot point as her recalculated financial risk adjustment in Table 9 on page 19 of her rebuttal testimony is calculated incorrectly. A review of Ms. LaConte's rebuttal workpapers indicates that although she used the ROUND function in Excel to calculate her unlevered beta, she did not use the ROUND function to derive her re-levered beta of 68% (0.68). Schedule PMA-46 corrects Ms. LaConte's Table 9 using the ROUND function to correctly calculate the re-levered beta of 69% (0.69) on Line No. 5, which results in a downward financial risk adjustment of 0.07% (Line No. 6) relative to my original CAPM analysis and 0.08% (Line No. 6) relative to the "BJC Corrected Version." Note that my originally recommended financial risk adjustment was a downward 0.07% as shown on Line No. 6 on page 2 of Schedule PMA-2 and has been updated to a downward adjustment of 0.21% as shown on Line No. 6, on page 2 of Schedule PMA-39.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

Exhibit No.:
Issues: Return on Equity, Capital Structure
Witness: Pauline M. Ahern
Exhibit Type: Surrebuttal
Sponsoring Party: Missouri-American Water Company
Case Nos.: WR-2011-0337
Date: February 2, 2012

PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

CASE NO. WR-2011-0337

EXHIBIT

TO ACCOMPANY THE

SURREBUTTAL TESTIMONY

OF

PAULINE M. AHERN, CRRA

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

JEFFERSON CITY, MISSOURI

STANDARD &POOR'S

Global Credit Portal®
RatingsDirect®

August 19, 2011

Pennsylvania-American Water Co.

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Table Of Contents

Pennsylvania-American Water Co.

Major Rating Factors

Corporate Credit Rating
BBB+/Stable/--

Strengths:

- A diverse geographic and regulatory environment
- Largely residential and commercial customer base, enabling cash-flow stability
- Relatively low operating risk of nonregulated operations
- Above-average service territory

Weaknesses:

- Acquisition-based growth strategy
- High expected capital expenses of over $1 billion for each of the next three years

Rationale

The ratings on Pennsylvania-American Water Co. reflect the consolidated credit quality of parent American Water Works Co. Inc. (AWW). Pennsylvania-American accounts for about 20% of AWW's revenues and about 28% of cash flow. Pennsylvania-American Water's favorable regulatory environment, strong services territory, stable, mostly residential customer base, absence of competition, and low operating risk support the utility's stand-alone excellent business risk profile. Pennsylvania-American Water's regulator, the Pennsylvania Public Utilities Commission, allows the addition of capital spending to rate base outside of traditional rate proceedings, rate cases based on a future test year, and a consolidated rate structure.

A favorable competitive position, a diverse and supportive regulatory environment, and a stable, above-average service territory support AWW's excellent business risk profile. AWW's regulatory framework includes reasonably allowed returns on equity and various cost-recovery mechanisms, including incentives for infrastructure improvements. The company's geographic diversity provides it with some market, cash-flow, and regulatory diversification. We view AWW's operating risks associated with its nonregulated operations as fairly low. AWW's aggressive financial profile, elevated capital-spending requirements for infrastructure replacement, increased costs of compliance with water quality standards, and the company's reliance on acquisitions to provide growth partly offset these strengths.

AWW provides regulated water and wastewater services to more than 3.3 million customers in 18 states. The company's regulated utility subsidiaries represent about 89% of total revenues, but have provided more than 95% of adjusted EBITDA for the past three years. The company's nonregulated subsidiaries engage in water and wastewater facility management and maintenance, as well as design and construction consulting services related to water and wastewater plants. We view these nonregulated segments as having modest incremental risk for AWW, due to their lack of cash flow contribution and modest expected capital requirements.

A state commission regulates each of AWW's regulated subsidiaries, which supports revenue and cash flow stability. The average allowed return on equity (ROE) in AWW's seven largest jurisdictions, which account for about 80% of consolidated revenues, is about 10.3%. This is similar to the average allowed ROE in the water sector. In a number

of jurisdictions, which represent about 50% of consolidated revenues, the utility recovers replacement capital spending between rate cases up to a stated percentage. The importance of infrastructure surcharge mechanisms has increased, given AWW's capital program of about $1 billion per year. Certain states also allow for surcharges related to the cost of power, chemicals, and purchased water. For the next few years, we expect AWW to file additional rate cases and request additional recovery mechanisms to cover rising operating costs, capital expenditures, and pension and other postretirement obligations.

The U.S. Environmental Protection Agency believes that infrastructure replacement needs for water systems are significant over the next 20 years. AWW estimates that it will need to spend over $1 billion annually in each of the next three years for replacement of infrastructure, new facilities to comply with water quality standards, and projects to enhance reliability, quality of service, and efficiency. AWW's reliability of supply is high, as the company owns a substantial number of treatment facilities for surface and groundwater treatment, and the majority of supply comes from surface and groundwater. In 2010, surface water provided 65% of the company's water supply, groundwater provided 28%, and the company purchased about 7%.

Consolidated financial metrics are improving. In 2010, regulatory commissions granted AWW about $75 million of rate increases in New Jersey, Kentucky, and Arizona; the company asks for rate increases to cover rising operating costs, capital expenditures, and pension and other postretirement obligations.

For the 12 months ended March 31, 2011, AWW's adjusted funds from operations (FFO) totaled $830 million. FFO to debt was 13%, which is acceptable for the rating. Total debt to capital remained at 60.5% during the same period. The uncertainties associated with the timing of the company's rate cases and the substantially higher capital plans are significant risks that may prevent adequate improvements to the company's financial profile. We expect FFO to benefit from additional rate increases, although a sustained improvement in both consolidated FFO to debt and debt to total capital may not materialize, given the company's financing needs.

In March 2011, AWW announced its entrance into an agreement to sell to EPCOR Water (USA) its regulated operations in Arizona and New Mexico for an estimated $470 million. We view the transaction as marginally beneficial to AWW's business and risk profile, albeit not material enough to influence the outlook. AWW will use a portion of the sale proceeds to reduce debt (less than 5% of consolidated debt). Arizona and New Mexico are some of the relatively weaker and smaller states that AWW serves, totaling less than 5% of cash flows. Similarly, in July 2011, AWW announced the sale of its regulated operations in Ohio to Aqua America Inc. for $120 million and a purchase of Aqua America's regulated operations in New York for about $70 million. These announcements do not affect AWW's ratings.

Liquidity

The short-term ratings on AWW and AWCC are 'A-2'. We view the company's overall liquidity as adequate. For the upcoming 12 months, we expect liquidity sources to exceed uses by about 1.07x. Cash sources consist of projected FFO of about $870 million and revolver availability of $$813 million. However, we discount the borrowing availability on the revolver by $320 million to account for commercial paper and other short-term borrowings. Cash uses consist of high expected capital spending of about $1 billion in 2011, dividend distributions of about $160 million, and pension top-up needs of about $120 million. Other potential cash uses, such as working capital needs and long-term debt maturities, are not significant.

Recovery analysis

We rate Pennsylvania–American Water's first mortgage bonds (FMB) 'A', two notches above the corporate credit rating, based on a recovery rating of '1+' under our recovery methodology for regulated utilities. We assign recovery ratings to FMBs issued by U.S. utilities, and this can result in issue ratings being notched above the corporate credit rating on a utility, depending on the corporate credit rating category and the extent of the collateral coverage.

We base the investment-grade FMB recovery methodology on the ample historical record of nearly 100% recovery for secured-bond holders in utility bankruptcies and our view that the factors that supported those recoveries (the small size of the creditor class, and the durable value of utility rate-based assets during and after a reorganization, given the essential service provided and the high replacement cost) will persist. Under our notching criteria, when assigning issue ratings to utility FMBs, we consider the limitations of FMB issuance under the utility's indenture relative to the value of the collateral pledged to bondholders, management's stated intentions on future FMB issuance, and the regulatory limitations on bond issuance.

FMB ratings can exceed a utility's corporate credit rating by as much as one notch in the 'A' category, two notches in the 'BBB' category, and three notches in speculative-grade categories. (See "Changes To Collateral Coverage Requirements For '1+' Recovery Ratings On U.S. Utility First Mortgage Bonds," published Sept. 6, 2007.) Pennsylvania–American Water's collateral coverage of greater than 1.5x supports a recovery rating of '1+' and an issue rating of 'A', two notches above the corporate credit rating.

Outlook

The outlook on Pennsylvania-American Water reflects the outlook on AWW. The stable outlook on AWW reflects our expectation that the company will receive supportive rate increases over the next three years to address rising costs and increased capital spending plans. The current rating can accommodate some acquisitions, assuming management funds the acquisitions in a balanced manner. We could lower the rating if financial performance stalls or deteriorates, which could result from substantial debt-financing of capital expenditures or acquisitions, such that FFO to debt falls below 9% and debt to capital rises above 65%. We could also lower the rating if rate increases or allowed returns are set at levels substantially below the requested figures, and if the company takes significantly longer to resolve rate-case filings than we currently expect. We could raise the rating if higher-than-expected rate increases or favorable cost recovery mechanisms allow for a sustained adjusted FFO to total debt ratio of 12% and adjusted leverage between 50% and 55%.

Related Criteria And Research

- Top 10 Investor Questions: U.S. Investor-Owned Water Companies, published Jan. 25, 2010
- Industry Report Card: U.S. Investor-Owned Water Utilities Continue to Display Rating Stability, published Jan. 12, 2010
- Criteria: Key Credit Factors: Business And Financial Risks In the Investor-Owned Utilities Industry, published Nov. 26, 2008

(Pennsylvania-American Water Co. is a privately owned company and does not publish financial statements publicly).

Ratings Detail (As Of August 19, 2011)*	
Pennsylvania-American Water Co.	
Corporate Credit Rating	BBB+/Stable/--
Senior Secured (6 Issues)	A
Senior Secured (1 Issue)	AA+/Negative
Corporate Credit Ratings History	
17-Feb-2009	BBB+/Stable/--
26-Jan-2001	NR/--/--
19-Jun-2000	A-/Stable/--
Business Risk Profile	Excellent
Financial Risk Profile	Aggressive
Related Entities	
American Water Capital Corp.	
Issuer Credit Rating	BBB+/Stable/A-2
Commercial Paper	
Local Currency	A-2
Senior Unsecured (22 Issues)	BBB+
American Water Works Co. Inc.	
Issuer Credit Rating	BBB+/Stable/A-2
Illinois-American Water Co.	
Senior Secured (1 Issue)	BBB/Developing
Long Island Water Corp	
Senior Secured (1 Issue)	B/Negative
Senior Secured (1 Issue)	BBB/Developing
Missouri-American Water Co.	
Senior Secured (1 Issue)	AA+/Negative
New Jersey-American Water Co.	
Issuer Credit Rating	BBB+/Stable/--
Senior Secured (9 Issues)	A

*Unless otherwise noted, all ratings in this report are global scale ratings. Standard & Poor's credit ratings on the global scale are comparable across countries. Standard & Poor's credit ratings on a national scale are relative to obligors or obligations within that specific country.

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Strengths:

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- Relatively low operating risk of nonregulated operations
- Above-average service territory

Weaknesses:

- Acquisition-based growth strategy
- High expected capital expenses of over $1 billion for each of the next three years

Rationale

The ratings on New Jersey-American Water Co. reflect the consolidated credit quality of parent American Water Works Co. Inc. (AWW). New Jersey-American accounts for 25% of AWW's revenues and about 30% of cash flow. New Jersey-American's favorable regulatory environment, strong services territory, stable and mostly residential customer base, absence of competition, and low operating risk support the utility's stand-alone excellent business risk profile. New Jersey-American Water's regulator, the New Jersey Board of Public Utilities, reviews rate cases based on a historical test year with adjustments, and allows a consolidated rate structure and recovery of purchased water costs. In addition, the company has proposed the addition of infrastructure capital spending to rate base outside of traditional rate proceedings in its current rate filing.

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Corporate Credit Rating	BBB+/Stable/--
Senior Secured (9 Issues)	A
Corporate Credit Ratings History	
01-May-2009	BBB+/Stable/--
20-Aug-2002	NR/--/--
17-Sep-2001	A/Watch Pos/--
Business Risk Profile	Excellent
Financial Risk Profile	Aggressive
Related Entities	
American Water Capital Corp.	
Issuer Credit Rating	BBB+/Stable/A-2
Commercial Paper	
Local Currency	A-2
Senior Unsecured (22 Issues)	BBB+
American Water Works Co. Inc.	
Issuer Credit Rating	BBB+/Stable/A-2
Illinois-American Water Co.	
Senior Secured (1 Issue)	BBB/Developing
Long Island Water Corp	
Senior Secured (1 Issue)	B/Negative
Senior Secured (1 Issue)	BBB/Developing
Missouri-American Water Co.	
Senior Secured (1 Issue)	AA+/Negative
Pennsylvania-American Water Co.	
Issuer Credit Rating	BBB+/Stable/--
Senior Secured (6 Issues)	A
Senior Secured (1 Issue)	AA+/Negative

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Missouri-American Water Company
Correction of MoPSC Witness Barnes' DCF
Using only Security Analysts' Projected Growth in EPS

MoPSC Witness Barnes Proxy Group of Seven Water Companies	[1] Expected Annual Dividend (1)	[2] Average High/Low Stock Price (1)	[3] Projected Dividend Yield (1)	[4] Average Projected EPS Growth (2)	[5] Estimated Cost of Common Equity (3)
American States Water Co.	$ 1.18	$ 33.83	3.49%	6.33%	9.82%
Aqua American, Inc.	$ 0.69	$ 21.36	3.23%	8.88%	12.11%
California Water Service Group	$ 0.65	$ 18.15	3.58%	6.00%	9.58%
Connecticut Water Service, Inc.	$ 0.93	$ 26.09	3.56%	6.00%	9.56%
Middlesex Water Co.	$ 0.73	$ 18.06	4.04%	3.00%	7.04%
SJW Corp.	$ 0.75	$ 22.87	3.28%	9.75%	13.03%
York Water Co.	$ 0.52	$ 17.07	3.05%	6.00%	9.05%
Average			3.46%	6.57%	10.03% (4)

Proposed Dividend Yield:	3.46%
Proposed Range of Growth:	3.00% - 9.75%
Indicated Range of Common Equity Cost Rate:	6.46% - 13.21%
Appropriate Range of Growth:	6.00% - 9.75%
Appropriate Indicated Range of Common Equity Cost Rate:	9.46% - 13.21%

Notes:

(1) From MoPSC Staff Report, Appendix 2, Schedule 17, Updated 12/08/11.
(2) From MoPSC Staff Report, Appendix 2, Schedule 15, Updated 12/08/11.
(3) Column 3 + Column 4.
(4) The average cost of common equity, excluding Middlesex Water Co.'s 7.04% cost rate, is 10.53%, which is more appropriate for cost of capital purposes for Missouri-American Water

Missouri-American Water Company
Capital Asset Pricing Model (CAPM) Cost-of-Common-Equity Estimates
for MoPSC Staff's Proxy Group of Four Water Companies Corrected
to Reflect a Projected Risk-Free Rate, a Market Equity Risk Premium which Accounts for
a Properly Derived Historical and projected Market Equity Risk Premium
as well as the Empirical Capital Asset Pricing Model (ECAPM)

	1	2	3	4	5	6
MoPSC Staff's Proxy Group of Seven Water Companies	Value Line Adjusted Beta (1)	Market Risk Premium (2)	Risk-Free Rate (3)	Traditional CAPM Cost Rate (4)	ECAPM Cost Rate (5)	Indicated Common Equity Cost Rate (6)
American States Water Co.	0.75	9.31 %	4.95 %	11.93 %	12.51 %	12.22 %
Aqua American, Inc.	0.65	9.31	4.95	11.00	11.82	11.41
California Water Service	0.70	9.31	4.95	11.47	12.17	11.82
Connecticut Water Service	0.80	9.31	4.95	12.40	12.86	12.63
Middlesex Water Co.	0.75	9.31	4.95	11.93	12.51	12.22
SJW Corp.	0.90	9.31	4.95	13.33	13.56	13.45
York Water Co.	0.70	9.31	4.95	11.47	12.17	11.82
Average				11.93 %	12.51 %	12.22 %

Notes

(1) From Column 2 of Schedule 18 of MoPSC Staff's Direct Exhibit.
(2) Average of the Ibbotson long-term arithmetic mean risk premium of 6.70% and the projected 3-5 year return of the market as calculated by the 13 week average market appreciation potential published by Value Line ended September 30, 2011 minus MoPSC Staff's projected risk-free rate. The average risk premium is 9.31%. ((6.70% + 11.91%) / 2 = 9.31%)
(3) Average of the projected risk-free rate for the years 2012 and 2013 as shown on Schedule 5 of MoPSC Staff's Direct Exhibit. ((4.90% + 5.00%) / 2 = 4.90%)
(4) Calculated as shown on page 22 of Schedule PMA-39, note 3.
(5) Calculated as shown on page 22 of Schedule PMA-39, note 4.
(6) Average of Columns 4 and 5.

Missouri-American Water Company
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.	roup of Seven Water Companies	1 Market Capitalization (1) (millions)	(times larger)	2 Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	3 Applicable Size Premium (3)	4 Spread from Applicable Size Premium for (4)
1.	Missouri-American Water Company					
a.	Based Upon the MoPSC Staff's Proxy Group of Seven Water Companies	$ 806.075		7 - 8	2.27%	
2.	MoPSC Staff's Proxy Group of Seven Water Companies	$ 784.605	1.0 x	7 - 8	2.27%	0.00%

	(A) Decile	(B) Number of Companies (millions)	(C) Recent Total Market Capitalization (millions)	(D) Recent Average Market Capitalization (millions)	(E) Size Premium (Return in Excess of CAPM) (2)
Largest	1	168	$ 8,586,385.656	$ 51,109.438	-0.38%
	2	181	1,873,378.709	$ 10,350.159	0.81%
	3	187	1,022,604.243	$ 5,468.472	1.01%
	4	185	594,702.185	$ 3,214.606	1.20%
	5	213	482,327.242	$ 2,264.447	1.81%
	6	230	360,140.550	$ 1,565.828	1.82%
	7	287	304,948.414	$ 1,062.538	1.88%
	8	361	239,018.595	$ 662.101	2.65%
	9	491	181,744.805	$ 370.152	2.94%
Smallest	10	1320	136,119.075	$ 103.121	6.36%

*From Ibbotson 2011 Yearbook

Notes:
(1) From page 4 of this Schedule.
(2) Gleaned from Column (D) on the bottom of this page. The appropriate decile (Column (A)) corresponds to the market capitalization of the proxy group, which is found in Column 1.
(3) Corresponding risk premium to the decile is provided on Column (E) on the bottom of this page.
(4) Line No. 1a Column 3 – Line No. 2 Column 3 and Line No. 1b, Column 3 – Line No. 3 of Column 3 etc.. For example, the 0% in Column 4, Line No. 2 is derived as follows 0% = 2.265% - 2.265%.

Missouri-American Water Company
Market Capitalization of Missouri-American Water Company and
the MoPSC Staff's Proxy Group of Six Water Companies

MoPSC Staff's Proxy Group of Seven Water Companies	Exchange	1 Common Stock Shares Outstanding at Fiscal Year End 2010 (millions)	2 Book Value per Share at Fiscal Year End 2010 (1)	3 Total Common Equity at Fiscal Year End 2010 (millions)	4 Average High / Low Stock Price (7/11 - 9/11) (2)	5 Market-to-Book Ratio (3)	6 Market Capitalization (4) (millions)
Missouri-American Water Company		NA	NA	$ 415.717 (5)	NA		
Based Upon the MoPSC Staff's Proxy Group of Seven Water Companies						193.9 % (6)	$ 806.075 (7)
MoPSC Staff's Proxy Group of Seven Water Companies							
American States Water Co.	NYSE	18.631	$ 20.264	$ 377.541	$ 33.830	166.9 %	$ 630.287
Aqua America, Inc.	NYSE	138.449	8.481	1,174.254	21.360	251.9	2,957.271
California Water Service Group	NYSE	41.666	10.453	435.526	18.150	173.6	756.238
Connecticut Water Service, Inc.	NASDAQ	8.677	13.134	113.963	26.090	198.6	226.383
Middlesex Water Co.	NASDAQ	15.566	11.132	173.279	18.060	162.2	281.122
SJW Corporation	NYSE	18.552	13.747	255.032	22.870	166.4	424.284
York Water Company	NASDAQ	12.692	7.190	91.257	17.070	237.4	216.652
Average		36.319	$ 12.057	$ 374.407	$ 22.490	193.9 %	$ 784.605

NA= Not Available

Notes: (1) Column 3 / Column 1.
(2) From MoPSC Staff Report, Appendix 2, Schedule 16, Updated 12/08/11.
(3) Column 4 / Column 2.
(4) Column 5 * Column 3.
(5) From Financial Statements of Missouri-American Water Company for Fiscal Year End 2010.
(6) The market-to-book ratio of Missouri-American Water Company on October 21, 2011 is assumed to be equal to the market-to-book ratio of the MoPSC Staff's proxy group of six water companies at October 21, 2011.
(7) Missouri-American Water Company's common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at October 21, 2011 of the MoPSC Staff's proxy group of six water companies, 199.1%, and Missouri-American Water Company's market capitalization on October 21, 2011 would therefore have been $827.693 million.

Source of Information: 2010 Annual Forms 10K
yahoo.finance.com

Missouri-American Water Company
Derivation of the Floatation Cost Adjustment to the Cost of Common Equity

Equity Issuances and Floatation Costs of the Parent Since 2009

Date	Transaction (1)	[Column 1] Shares Issued	[Column 2] Market Price per Share	[Column 3] Offering Price per Share	[Column 4] Market Pressure (2)	[Column 5] Underwriting Discount	[Column 6] Net Proceeds per Share (3)	[Column 7] Gross Equity Issue before Costs (4)	[Column 8] Total Net Proceeds (5)	[Column 9] Total Floatation Costs (6)	[Column 10] Flotation Cost Perecentage (7)
06/10/09	Primary Equity Offering	11,500,000	$ 17.4900	$ 17.2500	$ 0.2400	$ 0.5180	$ 16.7320	$ 201,135,000	$ 192,418,000	$ 8,717,000	4.33%
								$ 201,135,000	$ 192,418,000	$ 8,717,000	4.33%

Flotation Cost Adjustment

	Average Projected EPS Growth Rate	Adjusted Dividend Yield	Average DCF Cost Rate Unadjusted for Flotation (8)	DCF Cost Rate Adjusted for Flotation (9)	Flotation Cost Adjustment (10)
MoPSC Staff's Proxy Group of Seven Water Companies	6.57 %	3.46 %	10.03 %	10.18 %	0.16 %

Notes are on page 34 of Schedule PMA-39.

Missouri-American Water Company
Brief Summary of MoPSC Staff's Corrected Common Equity Cost Rate

No.	Principal Methods	MoPSC Staff's Proxy Group of Six Water Companies
1.	Discounted Cash Flow Model (DCF) (1)	10.53 %
2.	Capital Asset Pricing Model (CAPM) (2)	12.22
3.	Indicated Common Equity Cost Rate before Adjustment for Business Risks	11.38 %
4.	Flotation Cost Adjustment (3)	0.16
5.	Financial Risk Adjustment (4)	0.75
6.	Business Risk Adjustment (5)	0.35
7.	Indicated Common Equity Cost Rate	12.64 %

Notes:
(1) From Note 4 on page 1 of this Schedule.
(2) From page 2 of this Schedule.
(3) From page 39 of Schedule PMA-39.
(4) Financial risk adjustment to reflect the greater financial risk inherent the MoPSC Staff's recommended capital structure relative to Staff's proxy group of seven water companies.
(5) Business risk adjustment to reflect Missouri-American Water Company's greater unique business risks relative to the proxy group as detailed in Ms. Ahern's direct testimony.

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Chapter 13
Comparable Earnings

The Comparable Earnings standard has a long and rich history in regulatory proceedings, and finds its origins in the fair return doctrine enunciated by the U.S. Supreme Court in the landmark *Hope* case. The governing principle for setting a fair return decreed in *Hope* is that the allowable return on equity should be commensurate with returns on investments in other firms having comparable risks, and that the allowed return should be sufficient to assure confidence in the financial integrity of the firm, in order to maintain creditworthiness and ability to attract capital on reasonable terms. Two distinct standards emerge from this basic premise: a standard of Capital Attraction and a standard of Comparable Earnings. The Capital Attraction standard focuses on investors' return requirements, and is applied through market value methods described in prior chapters, such as DCF, CAPM, or Risk Premium. The Comparable Earnings standard uses the return earned on book equity investment by enterprises of comparable risks as the measure of fair return.

13.1 Rationale

The Comparable Earnings approach stems from a particular interpretation of the *Hope* language that states that returns are to be defined as book rates of return on equity (ROE) of other comparable firms. Book return on common equity is computed by dividing the earnings available to common shareholders by the average book common equity. ROE should be measured using "normalized" earnings, that is, earnings before extraordinary items and unusual charges. To implement the approach, a group of companies comparable in risk to a specified utility is defined, the book return on equity is computed for each company, and the allowed return is set equal to the average return on book value for the sample. The reference group of companies is usually made up of unregulated industrial companies of similar risk.

The rationale of the method is that regulation is a duplicate for competition. The profitability of unregulated firms is set by the free forces of competition. In the long run, the free entry of competitors would limit the profits earned by these unregulated companies, and, conversely, unprofitable ventures and product lines would be abandoned by the unregulated companies. In other words, the free entry and exit of competitors should ensure that the profits earned by non-regulated firms are normal in the economic sense of the term. Aggregating book rates of return over a large number of comparable risk unregulated companies would even out any abnormal short-run profit aberrations, while averaging over time would dampen any cyclical aberrations. Thus, by averaging the book profitability of a large number of unregulated companies

over time, an appropriate measure of the fair return on equity for a public utility is obtained.[1]

13.2 Implementation

To implement the Comparable Earnings standard, three steps are required. First, a sample of unregulated companies of reasonably comparable risk is developed. Second, an appropriate time period over which book rates of return on equity are measured is chosen. Third, the result is adjusted for any risk differential between the sample of unregulated companies and the utility, to the extent that such a differential exists. The three steps are discussed in more detail below. The apparent simplicity of the method is overshadowed by various practical difficulties encountered in executing the method, some of which are more illusory than real.

Risk Comparability

The measures of risk described in Chapters 2 and 3 and the methodologies and case examples described in Chapter 14 for identifying comparable risk companies provide a solid basis for identifying firms in a comparable risk class. A myriad of risk screening criteria can be used, such as bond ratings, betas, coverage ratios, earnings or ROE volatility, and stability of dividends. For example, a list of companies comparable in risk to a specified utility might be screened from a computer data base according to the following criteria: (1) they should have a standard deviation of market return and/or beta as close as possible to the subject utility; (2) they should be publicly traded companies to ensure data availability; (3) they should have a given Value Line rating indicating a degree of safety similar to the subject utility; (4) they should have a given Standard & Poor's quality rating, comparable to the subject utility; and (5) the companies should be non-regulated industrials so as to avoid circularity problems, as discussed below.

Some analysts impose additional qualitative criteria for constraining the sample of comparable firms to resemble utilities. For example, the universe of companies could be limited to consumer-oriented industries on the grounds that they, like utilities, exhibit more stability than other industries, such as cyclical, durable goods, construction, and natural resource industries. Others exclude financial institutions (banks, real estate companies, investment companies, etc.) because of their very high degree of financial leverage and capital turnover relative to utilities. Other analysts impose minimum size constraints, minimum

[1] For illustrative implementation of the Comparable Earnings approach, see McShane (2005), Morin (2004), and Parcell (2005).

volume of trading on public exchanges, and a ceiling on the amount of dividend cuts over a past period.

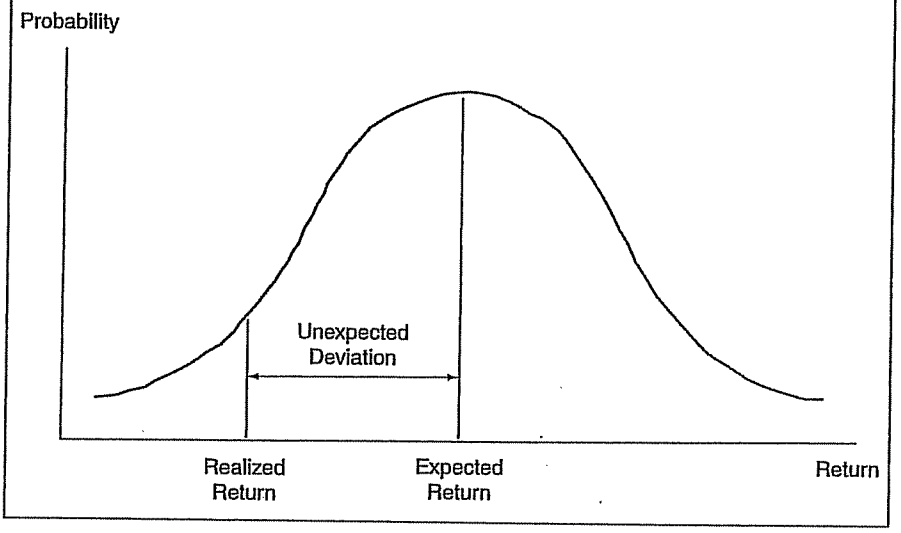
In defining a population of comparable-risk companies, care must be taken not to include other utilities in the sample, since the rate of return on other utilities depends on the allowed rate of return. The historical book return on equity for regulated firms is not determined by competitive forces but instead reflects the past actions of regulatory commissions. It would be circular to set a fair return based on the past actions of other regulators, much like observing a series of duplicate images in multiple mirrors. The rates of return earned by other regulated utilities may very well have been reasonable under historical conditions, but they are still subject to tests of reasonableness under current and prospective conditions.

Time Period

The cost of capital of a company refers to the expected long-run earnings level of other firms with similar risk. But a company's achieved earnings in any given year are likely to exceed or be less than their long-run average. Such deviations from expectations occur at the macroeconomic level as well. At the peak of the business cycle, firms generally earn more than their cost of capital, while at the trough the reverse is typical. Aggregating returns over a large number of comparable-risk unregulated firms averages the abnormally high and low rates of profitability in any given year. Furthermore, to dampen cyclical aberrations and remove the effects of cyclical peaks and troughs in profitability, an average over several time periods should be employed. The time period should include at least one full business cycle that is representative of prospective economic conditions for the next cycle. Such cyclical variations can be gauged by the official turning points in the U.S. business cycle, reported in *Business Conditions Digest.*

Averaging achieved returns over a full business cycle can serve as a reasonable compromise between the dual objectives of being representative of current economic conditions and of smoothing out cyclical fluctuations in earnings on unregulated firms. Some analysts confine their return study to the most recent time period. The most serious flaw of this approach is that historical returns on equity vary from year to year, responding to the cyclical forces of recession and expansion and to economic, industry-specific and company-specific trends. The most recent period is not likely to mirror expectations and be representative of prospective business conditions. Moreover, in the short run, reported book profitability frequently moves in the opposite direction to interest rates and to investors' required returns. For example, a period of disinflation and falling interest rates will increase company earnings and earned equity returns, while investors' return requirements are falling, and conversely.

FIGURE 13-1
PROBABILITY DISTRIBUTION OF RETURNS
EXPECTED VS. REALIZED OUTCOME



The fundamental issue is whether realized book returns are an adequate surrogate for expected returns. To visualize the problem, Figure 13-1 represents a probability distribution of returns envisaged by investors. The Comparable Earnings standard attempts to measure the expected book return, that is, the mean of the probability distribution. But the actual realized return in any given time period represents but a single outcome on the distribution, which may be far removed from original investor expectations. The problem is not unique to the Comparable Earnings method. Any method that relies on historical data is vulnerable to this deficiency. To maximize the possibility that historical results will match expectations, the sample of companies studied should be large enough so that deviations from the mean return will cancel out. But such deviations will only cancel out if there are no systematic economy-wide effects acting upon all companies at the same time, such as recession or expansion cycles. The remedy is to average actual book returns over at least a full business cycle.

One practical difficulty with Comparable Earnings is the lag in the availability of reported accounting data. Frequently, the most recent accounting data available are already one year old, notwithstanding the fact that rates will not become effective until an even later date. A remedy does exist, however. An estimate of the current year's ROE and of next year's expected ROE can be derived from analysts' earnings forecasts. The consensus earnings forecasts from IBES or Zacks for a given company can be divided by an estimate of the per share book value of common equity to obtain a forward-looking ROE.

The estimated per share book value of common equity is equal to the previous year's book value per share plus the projected addition to retained earnings. The latter is simply the projected earnings per share for the coming year less the projected dividends per share. Therefore, it is possible to devise projected Comparable Earnings results and circumvent the tardiness of accounting data.

Real Comparable Earnings

Under the "real comparable earnings" approach, the adequacy of unregulated companies' current book returns is examined in relation to varying inflationary environments. For example, suppose that a given utility has the same degree of risk as the average stock market investment. The Standard & Poor's 400 Industrials Index provides a ready-made comparable risk group of companies. If, from 1997–2006, the book equity returns of the S&P 400 averaged 13%, and the rate of inflation over the corresponding period was 4%, then annual real return must have averaged 9%. If the current or forecast inflation rate is 3%, an average prospective return on book equity for the S&P 400 index of 9% + 3% = 12% would be required to maintain a real return comparable to past experience.

Inflation accounting remains a controversial topic. The relationship between comparable earnings and inflation is tenuous. To assess real returns, that is, inflation-adjusted ROEs, one must work with formal inflation-adjusted financial statements where reported earnings and equity book values are adjusted for inventory profits, replacement cost depreciation, and the monetary gains of debt financing. Holland and Myers (1979) studied the real returns of U.S. corporations using the national income accounts. They found that the complexity and data requirements involved in deriving and applying inflation-adjusted returns are probably not worth the practical benefits. Inflation accounting or current cost accounting concepts are not yet officially recognized or used. More importantly, accounting rates of return possess conceptual blemishes that far outweigh any of the benefits of applying formal inflation adjustments.

In times of variable inflation, it is obvious that accounting rates of return are not accurate measures of true economic rates of return. What is less obvious is that accounting returns are generally not valid measures of economic returns even under non-inflationary conditions. Accounting or book return is, in many cases, a poor measure of true economic return. The relationship between the two rates is a complex function of the age structure of a firm's assets, the company's growth, depreciation policy, and inflation. To illustrate, the book

return of a utility with aged assets will exceed that of a company with relatively new assets, all else remaining constant.[2]

Several academic studies, notably by Solomon (1970), Solomon and Laya (1967), and Fisher and McGowan (1983), have confirmed that the strong disparity between accounting and true economic return and the biases inherent in book returns are systematic and do not cancel out in the averaging process. It was suggested earlier that the reference group of companies be made up of unregulated companies in order to avoid the circularity problem. But, given that rates are set on the basis of a book value rate base in most jurisdictions, the economic value of a utility is likely to be in closer concordance with its book value. Thus, the biases in book returns of unregulated firms are inherently more serious than the biases for regulated firms.

Risk Adjustment

The risk comparability of the two groups can be verified by comparing the summary risk statistics of the utility group and the industrials group. Typically, if the risk filter is constructed correctly, no adjustment to the comparable earnings result is necessary for any risk differential between utilities and the industrial group. If the risk filter is valid, the industrial group will be, by definition, virtually identical to the utility group.

If risk differences between the utility and the unregulated group do exist, perhaps because of the scarcity of low-risk industrial companies and/or because of liberal screening criteria, a risk adjustment may be in order. There are several ways to quantify the risk adjustment. One way is to compare the average beta of the two groups and use the CAPM to quantify the return differences implied by the differences in the betas between the two groups. For example, if the difference in beta between the utility group and the industrials group is 0.05, the return differential is given by 0.05 times the excess return on the market, ($R_M - R_F$). Using an estimate of 6% for ($R_M - R_F$), the return adjustment is 30 basis points. Assuming the industrial group has the higher average beta, the Comparable Earnings result is therefore adjusted downward by 30 basis points.

Another method is to estimate the DCF cost of equity implied by the relative price/earnings (P/E) ratios of the two groups. Because P/E ratio differences between the two groups are due to differences in growth and risk, and because growth differentials can be factored out, the difference in DCF cost of equity

[2] See Brealey, Myers, Allen (2006) Chapter 12 for an excellent discussion of economic vs accounting returns. See also Bodie (1982).

reflects the difference in risk. The following DCF formula using the dividend payout, D/E , reconciles the cost of common equity with the observed P/E ratio[3] and takes growth differentials into account:

$$K = \frac{D/E}{P/E} + g \qquad (13\text{-}1)$$

The DCF return for each group can be calculated using the above formula. The return differential between the two groups will determine the magnitude of the adjustment to the industrial returns.

A third method is based on market-to-book (M/B) ratios. If the average M/B ratio for the group of comparable-risk companies is reasonably close to 1.0, if there is no inflation, and if the standard DCF model is applicable to the companies in the group, then the sample companies are earning their cost of capital. This is because in an inflation-free, competitive environment, firm market values are driven to book values. If the average M/B ratio exceeds 1.0, the industrial group may be suspected of earning monopolistic returns in excess of the cost of capital, and the group's average book return is not an adequate measure of cost of capital. One way to circumvent this problem is to eliminate from the sample those industries that are characterized by high concentrations of market share.

This argument is valid only if actual realized book returns are, in fact, reflective of expected book returns and if inflation is absent. In the absence of inflation, if realized book returns averaged over a long time period for a large aggregate of comparable-risk companies are taken as valid surrogates for expected book returns, then it is appropriate to compute M/B ratios in order to gauge whether these companies are expected to earn an amount more, less, or equal to their cost of capital. To maximize the possibility that the average book returns of the reference companies are in fact reflective of their cost of capital, a specified M/B ratio constraint can be applied on the sample companies as an additional screening criterion.

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[3] The following equation transforms the observed P/E ratio into the investor's required return on equity. From the formal DCF statement of the value of a share of common stock, from Chapter 8, Equation 8-7:

$$P = D_1/(K - g)$$

but $D_1 = E_1(1 - b)$. Substituting and dividing both sides by E:

$$P/E = (1 - b)/(K - g)$$

Dividing both sides of the equation by P/E and solving for K:

$$K = (1 - b)/P/E + g$$

But the payout ratio, $(1 - b)$, equals D/E. So, $K = D/E / P/E + g$

The picture changes when inflation is introduced. For unregulated firms, the natural forces of competition will ensure over the long run that the ratio of the market value of these firms' securities equals the replacement cost of their assets, and not their book value. As discussed in Chapter 12, this suggests that a fair and reasonable price for a public utility's common stock is one that produces equality between the market price of its common equity and the replacement cost of its physical assets. The latter circumstance will not necessarily occur when the M/B ratio is 1.0. Therefore, an M/B in excess of 1.0 is not necessarily indicative of monopoly returns.

The appropriate manner of testing for the existence of monopoly profits is therefore to determine the Q-ratio of the industrial firms. If the Q-ratio exceeds 1.0, excess returns are indicated, and vice versa. If the Q-ratio is reasonably close to 1.0, the firms in the comparable group are indeed competitive and earning fair returns equal to the cost of capital. McShane (2005) suggests an expedient technique for computing the Q-ratio. Because reliable replacement cost data are unavailable for industrial firms, the common equity is repriced by adding annual increments to book value to reflect cumulative inflation, using the Consumer Price Index of Gross Domestic Product Deflator. The market value of the equity is then compared to its restated book value to determine if the Q-ratio differs significantly from 1.0. In the absence of any evidence of monopolistic returns, no adjustment to the industrial returns is warranted due to high M/B ratios. If the Q-ratio departs significantly from 1.0, a return adjustment is required.

Some Comparable Earnings enthusiasts argue that the achieved ROEs can be used to determine the cost of capital, and to that end, they adjust the industrial ROEs to a value that would produce an M/B ratio of 1.0. In other words, these analysts take the position that because current M/B ratios are in excess of 1.0, this indicates that companies are expected by investors to be able to earn more than their cost of capital, and that the regulating authority should lower the authorized return on equity, so that the stock price will decline to book value. Chapter 12 offered several reasons why this view of the role of M/B ratios in regulation should be avoided. The fundamental goal of regulation should be to set the expected economic profit for a public utility equal to the level of profits expected to be earned by firms of comparable risk, in short, to emulate the competitive result.

Case Study 13-1

In this case study drawn from an actual rate case, a sample of comparable-risk industrials and public utilities was composed using four risk measures

as screening guides. Only those companies whose risk and variability characteristics were at the low end of the risk spectrum survived the stringent screening process. The first risk measure was the beta coefficient, a market-oriented measure. The second, third, and fourth risk measures, which are accounting-oriented, were the standard deviation of achieved book returns on equity (STDROE), the coefficient of variation of book equity returns (CVROE), and total interest coverage. The book equity returns in the last 10 years were averaged for each company. Both the STDROE and the CVROE were then computed for each company. The CVROE was obtained by dividing the STDROE by the mean.

The interest coverage ratio measures the ability of a firm's earnings to meet its fixed obligations, and is an important determinant of creditworthiness scrutinized by bond rating agencies and by the investment community. Total interest coverage figures were obtained from Standard & Poor's Research Insight database.[4]

The initial screening process to derive the sample of comparable-risk, publicly traded industrial and utility companies evolved as follows:

(1) Companies listed in The Value Line Investment Survey and for which information was available on Standard & Poor's Research Insight database yielded an initial sample of 1,475 companies.

(2) Companies that did not have current year interest coverage data and companies with negative interest coverage were omitted from the sample, reducing the sample size to 1,352.

(3) Companies that did not have ROE data for each of the last 10 years and companies with negative mean ROEs were omitted from the sample, reducing the sample size to 967.

(4) Companies with STDROE greater than 100 and CVROE greater than 10 were deleted from the sample, leaving a total of 953 companies ready to be screened.

(5) Finally, to simulate the coverage environment of the utility industry, companies with total interest coverage of less than 1.00 and greater than 4.00 were eliminated from the sample, leaving a total sample of 551 companies.

[4] The definition of total interest coverage is "income before extraordinary items" (the income of a company after all expenses, but before provisions for common and/or preferred dividends), plus "interest expense" (the periodic expense to the company of securing short- and long-term debt).

The companies were then further screened as follows. The average beta and total interest coverage of the sample of 551 companies were 0.97 and 2.20, respectively. The third and fourth risk measures yielded an average STDROE and CVROE for the sample of 6.45 and 0.7744, respectively. All companies with market risk and total interest coverage less than or equal to the average and whose STDROE and CVROE measures of risk were less than or equal to half the average were retained, that is, companies with a beta less than or equal to 0.97, total interest coverage less than or equal to 2.20, STDROE less than or equal to 3.22 and CVROE less than or equal to 0.3872.

Table 13-1 shows the list of companies and the summary statistics for the 46 companies that survived the screens. It is interesting to note that several utilities appear in the surviving sample, attesting to its comparability, reasonableness, and accuracy. Of the 46 surviving companies, 18 are industrials and 28 are utilities, 8 of which are gas distribution companies.

Table 13-2 shows the summary statistics for the 18 industrials that survived the stringent screening process. The group of 18 comparable-risk companies experienced a mean return on book equity of 13.13% over the last 10 years. As indicated at the bottom of the various columns, the average adjusted beta for this sample of low-risk industrials is 0.84. The average total interest coverage is 1.41, the average CVROE is 0.1588, and the average STDROE is 1.80. To place the results for the industrial group in perspective, the statistics for the entire screened database of 551 companies were the following: average beta = 0.97, average total interest coverage = 2.20, average CVROE = 0.7744, and average STDROE = 6.45.

Another way of constructing the screen is to rank the companies on each of the risk criteria, and then array the companies by their composite ordinal risk score, as illustrated in Chapter 14, Table 14-3.

13.3 Assessment

On the plus side of the ledger, the Comparable Earnings standard is easy to calculate relative to the market-based techniques (DCF, CAPM, etc), and the amount of subjective judgment required is minimal. The method avoids several of the subjective factors involved in other cost of capital methodologies. For example, the DCF approach requires the determination of the growth rate contemplated by investors, which is a subjective factor. The CAPM requires the specification of several expectational variables, such as market return and beta. In contrast, the Comparable Earnings approach makes use of simple, readily available accounting data. Return on book equity data are widely

TABLE 13-1
AVERAGE RETURN ON EQUITY AND RISK MEASURES

	Company	Status	10-Year Mean ROE	STDROE	CVROE	Beta	Interest Cover
1	Amer. Elec Pwr	R	12.71	1.21	0.0954	0.75	2.16
2	Amer. Water Wks	R	12.77	1.55	0.1211	0.65	1.70
3	Ameron, Inc.	U	8.12	2.14	0.2635	0.50	1.50
4	Amsouth Bancorp	U	14.03	1.49	0.1063	0.90	1.34
5	Atlanta Gas Lt	R	12.52	1.69	0.1352	0.65	2.12
6	BCE Inc.	R	12.55	1.56	0.1245	0.60	1.67
7	Boatmen's Bncsh	U	13.68	2.78	0.2033	0.95	1.30
8	Calif Water	R	13.55	1.68	0.1236	0.50	2.05
9	Canon Inc (ADR)	U	8.52	3.18	0.3728	0.75	1.68
10	Commerce Bancsh	U	12.68	1.15	0.0911	0.75	1.35
11	Conn. Energy	R	11.60	1.34	0.1156	0.55	1.89
12	Conn. Nat Gas	R	13.14	1.38	0.1052	0.60	2.11
13	Consumers Water	R	13.82	2.91	0.2107	0.50	1.70
14	Fifth Third Bnc	U	17.38	0.82	0.0470	0.95	1.55
15	First Alabama	U	14.43	0.82	0.0569	0.95	1.42
16	First of Amer.	U	15.45	1.16	0.0753	0.95	1.23
17	First Tenn Natl	U	13.79	2.79	0.2020	0.85	1.32
18	Hawaiian Elec.	R	12.24	1.77	0.1445	0.70	1.42
19	Hitachi, Ltd.	U	8.25	3.09	0.3740	0.75	1.68
20	Houston Inds.	R	12.96	2.27	0.1750	0.60	1.91
21	Huntington Banc	U	13.89	2.55	0.1838	0.90	1.34
22	Idaho Power	R	11.30	2.86	0.2533	0.60	2.08
23	IES Industries	R	12.36	2.89	0.2339	0.55	2.11
24	Interstate Pwr	R	10.87	2.32	0.2136	0.55	2.14
25	Liberty Nat'l	U	14.07	0.86	0.0612	0.85	1.30
26	Marshall&Ilsley	U	15.57	1.33	0.0856	0.95	1.52
27	Nat'l Fuel Gas	R	11.82	2.24	0.1896	0.60	2.00
28	Northeast Util	R	14.41	2.91	0.2020	0.65	2.06
29	NW Natural Gas	R	10.98	2.84	0.2589	0.60	1.59
30	Ohio Edison	R	12.50	2.78	0.2222	0.80	1.98
31	Old Kent Fin'l	U	15.98	1.25	0.0785	0.90	1.37
32	Oneok Inc.	R	8.78	2.70	0.3077	0.80	1.90
33	Phila. Suburban	R	10.88	0.75	0.0686	0.60	1.71
34	Public Svc (CO)	R	13.33	1.72	0.1291	0.65	2.09
35	Public Svc Ent.	R	12.77	1.36	0.1061	0.70	2.02
36	Sierra Pacific	R	11.13	1.68	0.1513	0.55	1.80
37	Sony Corp.(ADR)	U	8.49	3.12	0.3675	0.75	1.40
38	South Jersey IN	R	11.63	1.49	0.1278	0.50	1.95
39	Star Banc Corp.	U	13.41	0.62	0.0463	0.85	1.33
40	Synovus Fin'l	U	17.37	1.33	0.0767	0.65	1.32
41	Textron, Inc.	U	11.18	1.86	0.1663	0.95	1.44
42	United Water	R	11.97	1.88	0.1570	0.70	1.63
43	Utilicorp Untd.	R	13.35	3.05	0.2283	0.60	1.53
44	Washington Ener	R	9.56	3.07	0.3208	0.55	1.45
45	Westc'st Energy	R	9.95	1.52	0.1529	0.50	1.46
46	Wicor, Inc.	R	11.61	3.18	0.2736	0.60	2.14
	Average		**12.46**	**1.98**	**0.1697**	**0.70**	**1.69**

Source: S&P Research Insight and Value Line Investment Analyzer

TABLE 13-2
AVERAGE RETURN ON EQUITY AND RISK MEASURES

Company	Status	10-Year Mean ROE	STDROE	CVROE	Beta	Interest Cover
1 Ameron, Inc.	U	8.12	2.14	0.2635	0.50	1.50
2 Amsouth Bancorp	U	14.03	1.49	0.1063	0.90	1.34
3 Boatmen's Bncsh	U	13.68	2.78	0.2033	0.95	1.30
4 Canon Inc (ADR)	U	8.52	3.18	0.3728	0.75	1.68
5 Commerce Bancsh	U	12.68	1.15	0.0911	0.75	1.35
6 Fifth Third Bnc	U	17.38	0.82	0.0470	0.95	1.55
7 First Alabama	U	14.43	0.82	0.0569	0.95	1.42
8 First of Amer.	U	15.45	1.16	0.0753	0.95	1.23
9 First Tenn Natl	U	13.79	2.79	0.2020	0.85	1.32
10 Hitachi, Ltd.	U	8.25	3.09	0.3740	0.75	1.68
11 Huntington Banc	U	13.89	2.55	0.1838	0.90	1.34
12 Liberty Nat'l	U	14.07	0.86	0.0612	0.85	1.30
13 Marshall&Ilsley	U	15.57	1.33	0.0856	0.95	1.52
14 Old Kent Fin'l	U	15.98	1.25	0.0785	0.90	1.37
15 Sony Corp.(ADR)	U	8.49	3.12	0.3675	0.75	1.40
16 Star Banc Corp.	U	13.41	0.62	0.0463	0.85	1.33
17 Synovus Fin'l	U	17.37	1.33	0.0767	0.65	1.32
18 Textron, Inc.	U	11.18	1.86	0.1663	0.95	1.44
Average		**13.13**	**1.80**	**0.1588**	**0.84**	**1.41**

available on computerized data bases for most public companies and for a wide variety of market indices.

The method is easily understood, and is firmly anchored in regulatory tradition. The method is not influenced by the regulatory process to the same extent as market-based methods, such as DCF and CAPM. The return estimate from the Comparable Earnings standard is applied to the utility's book common equity, in contrast to the return estimate from the market-based techniques which is applied to the stock price. Stock price can be influenced by the actions of regulators and investor expectations of those actions. The utility's book common equity on the other hand is much less vulnerable to regulatory influences than stock price.

Although the analyst possesses a fair amount of latitude in selecting risk criteria to define the sample of comparable-risk companies, it is easier to generate a set of comparable-risk companies than it is to measure accurately the input quantities required in alternate cost of capital estimating techniques, such as DCF and CAPM. As a practical matter, although different risk measures may produce different groups of comparable companies, many of the same companies are selected over a wide range of risk measures.

Another positive attribute of the method is that it avoids the problem of overstating or understating investor return requirements when prices and book values are materially different from unity. Use of the comparable earnings method eliminates the problem of material differences in price and book value.

On the minus side of the ledger, the Comparable Earnings approach rests on a particular notion of opportunity cost, namely that a utility should be allowed to earn what it would have earned had its capital been invested in other firms of comparable risk. A goal of fairness is said to be achieved by this. This particular interpretation of returns stands in contrast to financial theory, which interprets returns as forward-looking, market-determined returns. Accounting rates of return are not opportunity costs in the economic sense, but reflect the average returns earned on past investments, and hence reflect past regulatory actions. The denominator of accounting return, book equity, is a historical cost-based concept, which is insensitive to changes in investor return requirements. Only stock market price is sensitive to a change in investor requirements. Investors can only purchase new shares of common stock at current market prices and not at book value.

More simply, the Comparable Earnings standard ignores capital markets. If interest rates go up 2% for example, investor requirements and the cost of equity should increase commensurably, but if regulation is based on accounting returns, no immediate change in equity cost results. Investors capitalize expected future cash flows and not current earnings, and what was earned on book value is not directly related to current market rates.

Another conceptual anomaly is that when the utility's current book rate of return is compared to that of firms of comparable risk, it is assumed that there is a fundamental theoretical relationship between accounting returns and risk. But no such relationship exists in financial theory. The risk-return tradeoff found in financial theory is expressed in terms of market values rather than in terms of accounting values. Only if long time periods are examined and broad aggregates are used can an empirical relationship between risk and accounting return be found.

Another blemish of the Comparable Earnings method is that comparisons of book rates of return among companies are computationally misleading because of differences among companies in their accounting procedures. Despite the umbrella of generally acceptable accounting principles, areas of difference include the treatment of inventory valuation, depreciation, investment tax credits, deferred taxes, and extraordinary items. The lack of accounting homogeneity is exacerbated by the necessity of studying nonregulated companies, which are likely to exhibit greater accounting differences. As a practical matter, such differences are relatively minor in comparison to the problems of risk estimation and time period discussed earlier, and may be attenuated

by employing reasonably diverse aggregates in the reference group and by excluding groups with vastly different asset and financing compositions from utilities, such as financial institutions and natural resource companies. If the companies in a particular reference group have clear identifiable differences in accounting treatment, the latter should be used as an additional screening criterion to eliminate such companies, or the accounting rates of return should be restated on a consistent comparable basis.

More fundamentally, the basic premise of the Comparable Earnings approach is that regulation should emulate the competitive result. It is not clear from this premise which is the proper level of competition being referenced. Is the norm the perfect competition model of economics where no monopolistic elements exist, or is it the degree of competition actually prevailing in the economy? A strong case for the latter can be made on grounds of fairness alone.

Although the Comparable Earnings test does not square well with economic theory, the approach is nevertheless meritorious. If the basic purpose of comparable earnings is to set a fair return rather than determine the true economic return, then the argument is academic. If regulators consider a fair return as one that equals the book rates of return earned by comparable-risk firms rather than one that is equal to the cost of capital of such firms, the Comparable Earnings test is relevant. This notion of fairness, rooted in the traditional legalistic interpretation of the *Hope* language, validates the Comparable Earnings test.

Moreover, if regulation is a substitute for competition, and if the cost of capital is to play the same role in the utility industry as in unregulated industries, then the allowed rate of return should be set in excess of the cost of capital. The reason has to do with the economic criterion employed by corporations in their investment decisions. This criterion is that the expected marginal return on new projects be greater than the cost of capital. Corporations rank investment projects in descending order of profitability, and successively adopt all investment projects to the point where the least attractive project has a return equal to the cost of capital. The average return on all new investment projects will then exceed the cost of capital. If the average, rather than the marginal, return is set equal to the cost of capital as is the case with Comparable Earnings, the implication is that a company also accepts investment projects that are less profitable than the cost of capital, so that the average return on all projects accepted is equal to the cost of capital. Corporate investment would largely cease under such a scheme. Moreover, if unregulated companies were to pursue such an investment policy, a serious misallocation of economic resources would ensue.

The Comparable Earnings approach is far more meaningful in the regulatory arena than in the sphere of competitive firms. Unlike industrial companies,

the earnings requirement of utilities is determined by applying a percentage rate of return to the book value of a utility's investment, and not on the market value of that investment. Therefore, it stands to reason that a different percentage rate of return than the market cost of capital be applied when the investment base is stated in book value terms rather than market value terms. In a competitive market, investment decisions are taken on the basis of market prices, market values, and market cost of capital. If regulation's role was to duplicate the competitive result perfectly, then the market cost of capital would be applied to the current market value of rate base assets employed by utilities to provide service. But because the investment base for ratemaking purposes is expressed in book value terms, a rate of return on book value, as is the case with Comparable Earnings, is highly meaningful.

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Comparable Earnings: New Life for an Old Precept

by
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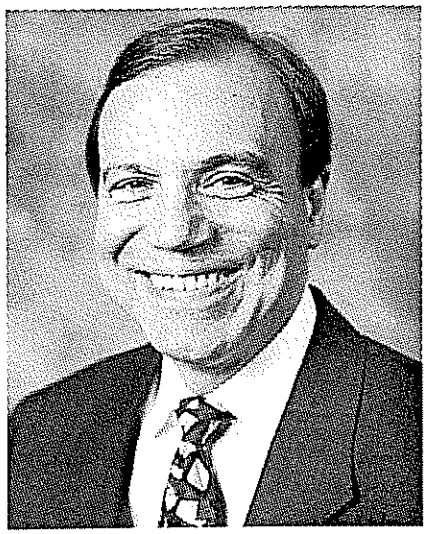
Comparable Earnings: New Life for an Old Precept

Accelerating deregulation has greatly increased the investment risk of natural gas utilities. As a result, the authors believe it more appropriate than ever to employ the comparable earnings model. We believe our application of the model overcomes the greatest traditional objection to it — lack of comparability of the selected non-utility proxy firms. Our illustration focuses on a target gas pipeline company with a beta of 0.96 — almost equal to the market's beta of 1.00.



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Introduction

The comparable earnings model used to determine a common equity cost rate is deeply rooted in the standard of "corresponding risk" enunciated in the landmark *Bluefield* and *Hope* decisions of the U.S. Supreme Court.[1] With such solid grounding in the foundations of rate of return regulation, comparable earnings should be accepted as a principal model, along with the currently popular market-based models, provided that its most common criticism, non-comparability of the proxy companies, is overcome.

Our comparable earnings model overcomes the non-comparability issue of the non-utility firms selected as a proxy for the target utility, in this example, a gas pipeline company. We should note that in the absence of common stock prices for the target utility (as with a wholly-owned subsidiary), it is appropriate to use the average of a proxy group of similar risk gas pipeline companies whose common stocks are actively traded. As we will demonstrate, our selection process results in a group of domestic, non-utility firms that is comparable in total risk, the sum of business and financial risk, which reflects both non-diversifiable systematic, or market, risk as well as diversifiable unsystematic, or firm-specific, risk.

Embedded in the Landmark Decisions

As stated in *Bluefield* in 1922: "A public utility is entitled to such rates as will permit it to earn a return ... on investments in other business undertakings which are attended by corresponding risks and uncertainties ..."

In addition, the court stated in *Hope* in 1944: "By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."

Thus, the "corresponding risk" precept of *Bluefield* and *Hope* predates the use of such market-based cost-of-equity models as the Discounted Cash Flow (DCF) and Capital Asset Pricing (CAPM), which were developed later and are currently popular in rate-base/rate-of-return regulation. Consequently, the comparable earnings model has a longer regulatory and judicial history. However, it has far greater relevance now than ever before in its history because significant deregulation has substantially increased natural gas utilities' investment risk to a level similar to that of non-utility firms. As a result, it is

Comparable Earnings *from page 4*

more important than ever to look to similar-risk non-utility firms for insight into common equity cost rate, especially in view of the deficiencies inherent in the currently popular market-based cost of common equity models, particularly the DCF model.

Despite the fact that the landmark decisions are still regarded as having set the standards for determining a fair rate of return, the comparable earnings model has experienced decreased usage by expert witnesses, as well as less regulatory acceptance over the years. We believe the decline in the popularity of the comparable earnings model, in large measure, is attributable to the difficulty of selecting non-utility proxy firms that regulators will accept as comparable to the target utility. Regulatory acceptance is difficult to gain when the selection process is arbitrary. Our application of the model is objective and consistent with fundamental financial tenets.

Principles of Comparable Earnings

Regulation is a substitute for the competition of the marketplace. Moreover, regulated public utilities compete in the capital markets with all firms, including unregulated non-utilities. The comparable earnings model is based upon the opportunity cost principle; i.e., that the true cost of an investment is the return that could have been earned on the next best available alternative investment of similar risk. Consequently, the comparable earnings model is consistent with regulatory and financial principles, as it is a surrogate for the competition of the marketplace, and investors seek the greatest available rate of return for bearing similar risk.

The selection of comparable firms is the most difficult step in applying the comparable earnings model, as noted by Phillips[2] as well as by Bonbright, Danielsen and Kamerschen.[3] The selection of non-utility proxy firms should result in a sufficiently broad-based group in order to minimize the effect of company-specific aberrations. However, if the selection process is arbitrary, it likely would result in a proxy group that is too broad-based, such as the Standard & Poor's 500 Composite Index or the Value Line Industrial Composite. The use of such groups would require subjective adjustments to the comparable earnings results to reflect risk differences between the group(s) and the target utility, a gas pipeline company in this example.

Authors' Selection Criteria

We base the selection of comparable non-utility firms on market-based, objective, quantitative measures of risk resulting from market prices that subsume investors' assessments of all elements of risk. Thus, our approach is based upon the principle of risk and return; namely, that firms of comparable risk should be expected to earn comparable returns. It is also consistent with the "corresponding risk" standard established in *Bluefield* and *Hope*. We measure total investment risk as the sum of non-diversifiable systematic and diversifiable unsystematic risk. We use the unadjusted beta as a measure of systematic risk and the standard error of the estimate (residual standard error) as a measure of unsystematic risk. Both the unadjusted beta and the residual standard error are derived from a regression of the target utility's security returns relative to the market's returns, which takes the general form:

$r_{it} = a_i + b_i r_{mt} + e_{it}$

where:

- r_{it} = tth observation of the ith utility's rate of return
- r_{mt} = tth observation of the market's rate of return
- e_{it} = tth random error term
- a_i = constant least-squares regression coefficient
- b_i = least-squares regression slope coefficient, the unadjusted beta.

As shown by Francis,[4] the total variation or risk of a firm's return, Var (r_i), comes from two sources:

Var (r_i) = total risk of ith asset
= var($a_i + b_i r_m + e$)
substituting ($a_i + b_i r_m + e$) for r_i
= var($b_i r_m$) + var (e) since var(a_i) = 0
= b_i^2 var(r_m) + var (e) since var($b_i r_m$) = b_i^2 var(r_m)
= systematic + unsystematic risk

Francis[5] also notes: "The term $\sigma^2(r_i|r_m)$ is called the *residual variance around the regression line* in statistical terms or *unsystematic risk* in capital market theory language. $\sigma^2 (r_i|r_m)$ = ... = var (e). The residual variance is the squared standard error in regression language, a measure of unsystematic risk." Application of these criteria results in a group of non-utility firms whose average total investment risk is indeed comparable to that of the target gas pipeline.

As a measure of systematic risk, we use the Value Line unadjusted beta. Beta measures the extent to which market-wide or macro-economic events affect a firm's stock price. We use the unadjusted beta of the target utility as a starting point because it results from the regression of the target utility's security returns relative to the market's returns. Thus, the resulting standard deviation of beta relates to the unadjusted beta. We use the standard deviation of the unadjusted beta to determine the range around it as the selection criterion based on systematic risk.

We use the residual standard error of the regression as a measure of unsystematic risk. The residual standard error reflects the extent to which events specific to the firm's operations affect a firm's stock price. Thus, it is a measure of diversifiable, unsystematic, firm-specific risk.

An Illustration of Authors' Approach

Step One: We begin our approach by establishing the selection criteria as a range of both unadjusted beta and residual standard error of the target gas

continued on page 6

Comparable Earnings *from page 5*

pipeline company.

As shown in table 1, our target gas pipeline company has a Value Line unadjusted beta of 0.90, whose standard deviation is 0.1250. The selection criterion range of unadjusted beta is the unadjusted beta plus (+) and minus (-) three of its standard deviations. By using three standard deviations, 99.73 percent of the comparable unadjusted betas is captured.

Three standard deviations of the target utility's unadjusted beta equals 0.38 (0.1250 x 3 = 0.3750, rounded to 0.38). Consequently, the range of unadjusted betas to be used as a selection criteria is 0.52 - 1.28 (0.52 = 0.90 - 0.38) and (1.28 = 0.90 + 0.38).

Likewise, the selection criterion range of residual standard error equals the residual standard error plus (+) and minus (-) three of its standard deviations. The standard deviation of the residual standard error is defined as: $\sigma/\sqrt{2N}$.

As also shown in table 1, the target gas pipeline company has a residual standard error of 3.7867. According to the above formula, the standard deviation of the residual standard error would be 0.1664 ($0.1664 = 3.7867/\sqrt{2(259)} = 3.7867/22.7596$, where 259 = N, the number of weekly price change observations over a period of five years). Three standard deviations of the target utility's residual standard error would be 0.4992 (0.1664 x 3 = .4992). Consequently, the range of residual standard errors to be used as a selection criterion is 3.2875 - 4.2859 (3.2875 = 3.7867 - 0.4992) and (4.2859 = 3.7867 + 0.4992).

Step Two: The step one criteria are applied to Value Line's data base of nearly 4,000 firms for which Value Line derives unadjusted betas and residual standard errors on a weekly basis. All firms with unadjusted betas and residual standard errors within the criteria ranges are then selected.

Step Three: In the regulatory ratemaking environment, authorized common equity return rates are applied to a book-value rate base. Thus, the earnings rates on book common equity, or net worth, of competitive, non-utility firms are highly relevant provided those firms are indeed comparable in total risk to the target gas pipeline. The use of the return rates of other utilities has no relevance because their allowed, and hence subsequently achieved, earnings rates are dependent upon the regulatory

table 1

Summary of the Comparable Earnings Analysis for the Proxy Group of 248 Non-Utility Companies Comparable in Total Risk to the Target Gas Pipeline Company[1]

	1	2	3	4	5	6	7	8
			residual	rate of return on net worth				
	adj. beta	unadj. beta	standard error	3-year average[2]	4-year average[2]	5-year average[2]	5-year projected[3]	
average for the proxy group of 248 non-utility companies comparable in total risk to the target gas pipeline company	0.97	0.92	3.7705					
target gas pipeline company	0.96	0.90[4]	3.7867					
median				11.7%	12.0%	12.6%	15.5%	
average of the median historical returns					12.1%			
conclusion[5]								13.8%

[1]The criteria for selection of the non-utility group was that the non-utility companies be domestic and included in *Value Line Investment Survey*. The non-utility group was selected based on an unadjusted beta range of 0.52 to 1.28 and a residual standard error range of 3.2875 to 4.2859.
[2]Ending 1992.
[3]1996-1998/1997-1999.
[4]The average standard deviation of the target gas pipeline company's unadjusted beta is 0.1250.
[5]Equal weight given to both the average of the 3-, 4- and 5-year historical medians (12.1%) and 5-year projected median rate of return on net worth (15.5%). Thus, 13.8% = (12.1% + 15.5% / 2).
Source: Value Line Inc., March 15, 1994
Value Line Investment Survey

Comparable Earnings *from page 6*

process. Consequently, we believe all utilities must be eliminated to avoid circularity. Moreover, we believe non-domestic firms must be eliminated because their reporting methods differ significantly from U.S. firms.

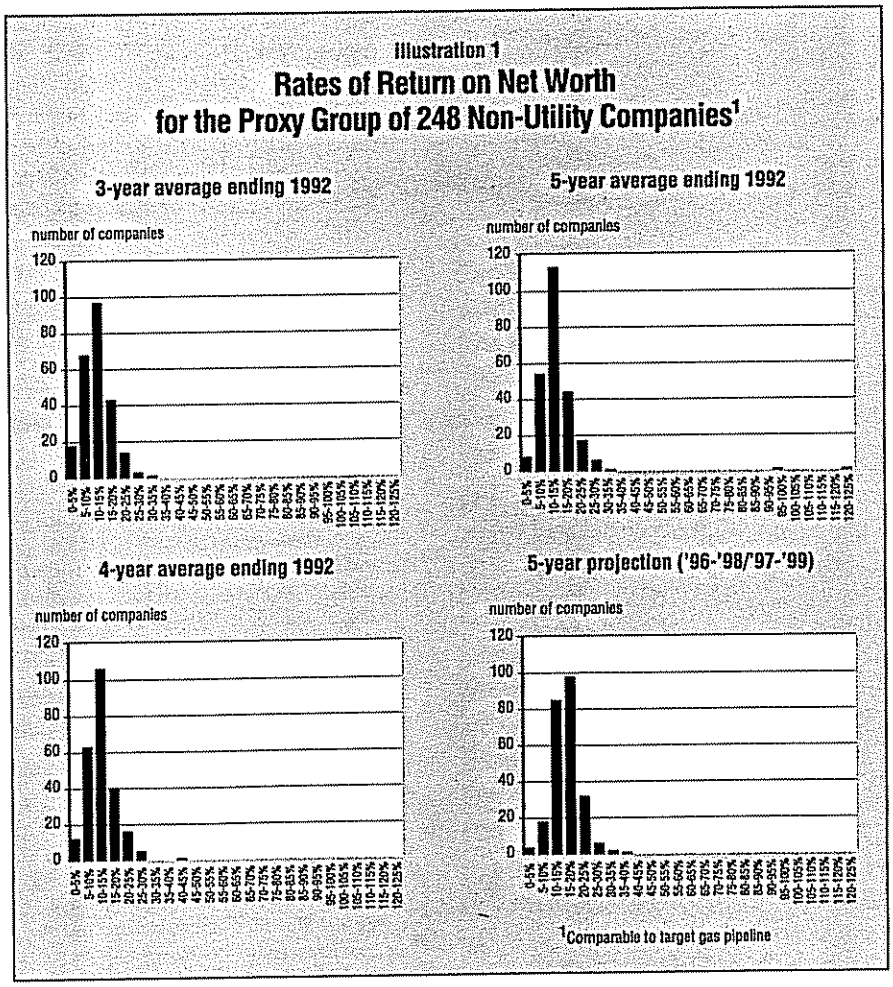
Step Four: We then eliminated those firms for which Value Line does not publish a "Ratings & Report" in *Value Line Investment Survey* so that the historical and projected returns on net worth[6] are from a consistent source. We use historical returns on net worth for the most recent five years, as well as those projected three to five years into the future. We believe it is logical to evaluate both historical and projected return rates because it is reasonable to assume that investors avail themselves of both when they are available from widely disseminated information services, such as Value Line Inc. The use of Value Line's return rates on net worth understates the common equity return rates for two reasons. First, preferred stock is included in net worth. Second, the net worth return rates are as of the end of each period. Thus, the use of average common equity return rates would yield higher results.

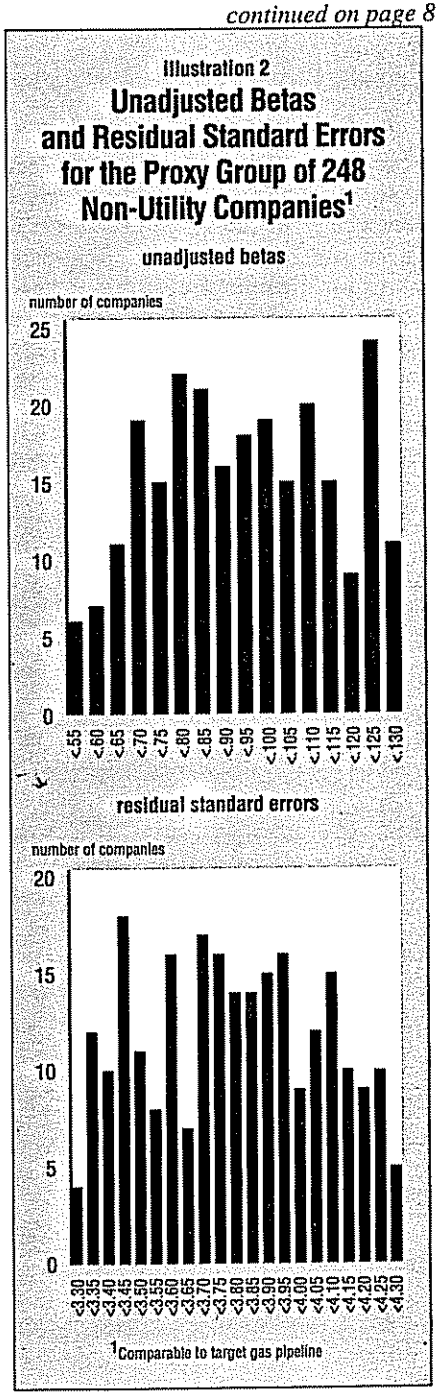
Step Five: Median returns based on the historical average three, four and five years ending 1992 and projected 1996-1998 or 1997-1999 rates of return on net worth are then determined as shown in columns 4 through 7 of table 1. The median is used due to the wide variations and skewness in rates of return on net worth for the non-utility firms as evidenced by the frequency distributions of those returns as shown in illustration 1.

However, we show the average unadjusted beta, 0.92, and residual standard error, 3.7705, for the proxy group in columns 2 and 3 of table 1 because their frequency distributions are not significantly skewed, as shown in illustration 2.

Step Six: Our conclusion of a com-

continued on page 8





Comparable Earnings *from page 7*

parable earnings cost rate is based upon the mid-point of the average of the median three-, four- and five-year historical rates of return on net worth of 12.1 percent as shown in column 5 and the median projected 1996-1998/1997-1999 rate of return on net worth of 15.5 percent as shown in column 7 of table 1. As shown in column 8, it is 13.8 percent.

Summary

Our comparable earnings approach demonstrates that it is possible to select a proxy group of non-utility firms that is comparable in total risk to a target utility. In our example, the 13.8 percent comparable earnings cost rate is very conservative as it is an expected achieved rate on book common equity (a regulatory allowed rate should be greater) and because it is based on end-of-period net worth. A similar rate on average net worth would be about 20 to 40 basis points higher (i.e., 14.0 to 14.2 percent) and still understate the appropriate regulatory allowed rate of return on book common equity.

Our selection criteria are based upon measures of systematic and unsystematic risk, specifically unadjusted beta and residual standard error. They provide the basis for the objective selection of comparable non-utility firms. Our selection criteria rely on changes in market prices over approximately five years. We compare the aggregate total risk, or the sum of systematic and unsystematic risk, which reflects investors' aggregate assessment of both business and financial risk. Thus, no adjustments are necessary to the proxy group results to compensate for the differences in business risk and financial risk, such as accounting practices and debt/equity ratios. Moreover, it is inappropriate to attempt a comparison of the target utility with any individual firm, or subset of firms, in the proxy group because only the average firm of the group is relevant.

Because the comparable earnings model is firmly anchored in the "corresponding risk" precept established in the landmark court decisions, it is worthy of consideration as a principal model for use in estimating the cost rate of common equity capital of a regulated utility. Our approach to the comparable earnings model produces a proxy group that is indeed comparable in total risk because the selection process is objective and quantitative. It therefore overcomes criticism linked to arbitrary selection processes.

All cost-of-common-equity models, including the DCF and CAPM, are fraught with deficiencies, usually stemming from the many necessary but unrealistic assumptions that underlie them. The effects of the deficiencies of individual models can be mitigated by using more than one model when estimating a utility's common equity cost rate. Therefore, when the non-comparability issue is overcome, the comparable earnings model deserves to receive the same consideration as a primary model, as do the currently popular market-based models. ■

[1] *Bluefield Water Works Improvement Co. v. Public Service Commission*. 262 U.S. 679 (1922) and *Federal Power Commission v. Hope Natural Gas Co.* 320 U.S. 519 (1944).

[2] Charles F. Phillips Jr., The Regulation of Public Utilities: Theory and Practice. Public Utilities Reports Inc. 1988. p. 379.

[3] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen. Principles of Public Utilities Rates. 2nd edition. Public Utilities Reports Inc. 1988, p. 329.

[4] Jack Clark Francis, Investments: Analysis and Management, 3rd edition. McGraw-Hill Book Co., 1980, p. 363.

[5] Id., p. 548.

[6] Returns on net worth must be used when relying on Value Line data because returns on book common equity for non-utility firms are not available from Value Line.

Report Lists Pipeline, Storage Projects

More than $9 billion worth of projects to expand the nation's natural gas pipeline network are in various stages of development, according to an A.G.A. report. These projects involve nearly 8,000 miles of new pipelines and capacity additions to existing lines and represent 15.3 billion cubic feet (Bcf) per day of new pipeline capacity.

During 1993 and early 1994, construction on 3,100 miles of pipeline was completed or under way, at a cost of nearly $4 billion, says A.G.A. These projects are adding 5.4 Bcf in daily delivery capacity nationwide.

Among the projects completed in 1993 were Pacific Gas Transmission Co.'s 805 miles of looping that allows increased deliveries of Canadian gas to the West Coast; Northwest Pipeline Corp.'s addition of 433 million cubic feet of daily capacity for customers in the Pacific Northwest and Rocky Mountain areas; and the 156-mile Empire State Pipeline in New York.

In addition, major construction projects were started on the systems of Texas Eastern Transmission Corp. and Algonquin Gas Transmission Co. — both subsidiaries of Panhandle Eastern Corp. — and along Florida Gas Transmission Co.'s pipeline.

The report goes on to discuss another $5 billion in proposed projects, which, if completed, will add nearly 5,000 miles of pipeline and 9.8 Bcf per day in capacity, much of it serving Florida and West Coast markets.

A.G.A. also identifies 47 storage projects and says that if all of them are built, existing storage capacity will increase by more than 500 Bcf, or 15 percent.

For a copy of *New Pipeline Construction: Status Report 1993-94* (#F00103), call A.G.A. at (703) 841-8490. Price per copy is $6 for employees of member companies and associates and $12 for other customers.

Missouri-American Water Company
Authorized Returns on Common Equity and
Common Equity Ratios for Electric and Gas Distribution Companies
from January 2011 through January 2012

Date	Company	Type of Utility	State	Authorized Return on Common	Authorized Common Equity Ratio	Yield on Moody's A Rated Public Utility Bonds (1)	Spread
1/5/2011	Public Service Co. of OK	Electric	Oklahoma	10.20	45.84	5.37	4.83
1/6/2011	SEMCO Energy Inc.	Natural Gas	Michigan	10.40	NA	5.37	5.03
1/12/2011	Madison Gas and Electric Co.	Electric	Wisconsin	10.30	58.06	5.56	4.74
1/12/2011	Madison Gas and Electric Co.	Natural Gas	Wisconsin	10.30	58.06	5.56	4.74
1/13/2011	Wisconsin Public Service Corp	Electric	Wisconsin	10.30	51.65	5.56	4.74
1/13/2011	Wisconsin Public Service Corp	Natural Gas	Wisconsin	10.30	51.65	5.56	4.74
1/18/2011	Delmarva Power & Light Co.	Electric	Delaware	10.00	47.52	5.56	4.44
1/19/2011	Union Electric Co.	Natural Gas	Missouri	10.00 (2)	52.92	5.56	4.44
1/20/2011	Niagara Mohawk Power Corp.	Electric	New York	9.30	48.00	5.56	3.74
1/20/2011	Texas-New Mexico Power Co	Electric	Texas	10.10	45.00	5.56	4.54
1/31/2011	Western Massachusetts Electric	Electric	Massachusetts	9.60	50.70	5.56	4.04
2/3/2011	CenterPoint Energy Houstor	Electric	Texas	10.00	45.00	5.56	4.44
2/25/2011	Hawaiian Electric Co.	Electric	Hawaii	10.00	55.81	5.57	4.43
3/10/2011	EnergyNorth Natural Gas Inc	Natural Gas	New Hampshire	8.30	NA	5.57	2.73
3/10/2011	Avista Corp.	Natural Gas	Oregon	10.10	50.00	5.57	4.53
3/22/2011	Virginia Electric & Power Co	Electric	Virginia	12.30	49.37	5.68	6.62
3/22/2011	Virginia Electric & Power Co	Electric	Virginia	12.30	49.37	5.68	6.62
3/25/2011	PacifiCorp	Electric	Washington	9.80	49.10	5.68	4.12
3/30/2011	Appalachian Power Co.	Electric	West Virginia	10.00	42.20	5.68	4.32
3/31/2011	New England Gas Company	Natural Gas	Massachusetts	9.50	50.17	5.68	3.82
4/12/2011	Kansas City Power & Light	Electric	Missouri	10.00	46.30	5.56	4.44
4/18/2011	CenterPoint Energy Resources	Natural Gas	Texas	10.10	55.44	5.56	4.54
4/21/2011	Washington Gas Light Co.	Natural Gas	Virginia	10.00	55.70	5.56	4.44
4/25/2011	Otter Tail Power Co.	Electric	Minnesota	10.70	51.70	5.56	5.14
4/26/2011	Unitil Energy Systems Inc.	Electric	New Hampshire	9.70 (2)	45.45	5.56	4.14
4/27/2011	Southern Indiana Gas & Elec Co	Electric	Indiana	10.40	43.46	5.56	4.84
5/4/2011	KCP&L Greater Missouri Op Co.	Electric	Missouri	10.00	46.58	5.56	4.44
5/4/2011	KCP&L Greater Missouri Op Co.	Electric	Missouri	10.00	46.58	5.56	4.44
5/13/2011	Pacific Gas and Electric Co.	Electric	California	11.40	52.00	5.55	5.85
5/13/2011	Pacific Gas and Electric Co.	Natural Gas	California	11.40	52.00	5.55	5.85
5/24/2011	Commonwealth Edison Co.	Electric	Illinois	10.50	47.28	5.55	4.95
5/26/2011	Consumers Energy Co.	Natural Gas	Michigan	10.50 (2)	NA	5.55	4.95
6/8/2011	MDU Resources Group Inc.	Electric	North Dakota	10.80 (2)	53.34	5.55	5.25
6/16/2011	Orange & Rockland Utlts Inc.	Electric	New York	9.20	48.00	5.32	3.88
6/17/2011	Oklahoma Gas and Electric Co.	Electric	Arkansas	10.00	34.90	5.32	4.68
6/21/2011	Delmarva Power & Light Co.	Natural Gas	Delaware	10.00 (2)	NA	5.32	4.68
6/29/2011	Yankee Gas Services Co.	Natural Gas	Connecticut	8.80	52.20	5.32	3.48
7/13/2011	Union Electric Co.	Electric	Missouri	10.20	52.24	5.26	4.94
8/1/2011	Fitchburg Gas & Electric Light	Electric	Massachusetts	9.20	42.88	5.26	3.94
8/1/2011	Fitchburg Gas & Electric Light	Natural Gas	Massachusetts	9.20	42.88	5.26	3.94
8/8/2011	Public Service Co. of NM	Electric	New Mexico	10.00 (2)	51.28	5.26	4.74
8/11/2011	PacifiCorp	Electric	Utah	10.00	51.90	5.27	4.73
8/12/2011	Interstate Power & Light Co.	Electric	Minnesota	10.40	47.74	5.27	5.13
8/19/2011	Oncor Electric Delivery Co	Electric	Texas	10.30	40.00	5.27	5.03
9/1/2011	Public Service Co. of CO	Natural Gas	Colorado	10.10 (2)	56.00	5.27	4.83
9/22/2011	PacifiCorp	Electric	Wyoming	10.00 (2)	52.30	4.69	5.31
9/30/2011	South Carolina Electric & Gas	Electric	South Carolina	11.00	54.67	4.69	6.31
10/12/2011	Kentucky Utilities Co.	Electric	Virginia	10.30 (2)	53.37	4.48	5.82
10/20/2011	Detroit Edison Co.	Electric	Michigan	10.50	40.26	4.48	6.02
11/8/2011	Northern Utilities Inc.	Natural Gas	Maine	9.99 (2)	NA	4.48	5.51
11/14/2011	Washington Gas Light Co.	Natural Gas	Maryland	9.60	57.88	4.52	5.08
11/30/2011	Appalachian Power Co.	Electric	Virginia	10.90	42.69	4.52	6.38
12/13/2011	Southwest Gas Corp.	Natural Gas	Arizona	9.50	52.30	4.25	5.25
12/14/2011	Columbus Southern Power Co.	Electric	Ohio	10.00 (2)	50.64	4.25	5.75
12/14/2011	Ohio Power Co.	Electric	Ohio	10.30 (2)	53.79	4.25	6.05
12/20/2011	Upper Peninsula Power Co.	Electric	Michigan	10.20 (2)	45.74	4.25	5.95
12/20/2011	Virginia Natural Gas Inc	Natural Gas	Virginia	10.00	45.36	4.25	5.75
12/21/2011	Northern IN Public Svc Co	Electric	Indiana	10.20	46.53	4.25	5.95
12/22/2011	Black Hills Colorado Electric	Electric	Colorado	9.90	49.10	4.25	5.65
12/22/2011	Northern States Power Co - WI	Electric	Wisconsin	10.40	52.59	4.25	6.15
12/22/2011	Northern States Power Co - WI	Natural Gas	Wisconsin	10.40	52.59	4.25	6.15
12/23/2011	Nevada Power Co.	Electric	Nevada	10.20	44.38	4.25	5.95
12/30/2011	Idaho Power Co.	Electric	Idaho	7.90 (2)	NA	4.25	3.65
1/3/2012	Appalachian Power Co.	Electric	Virginia	11.40	NA	4.25	7.15
1/10/2012	Ameren Illinois	Natural Gas	Illinois	9.10	53.27	4.25	4.85
1/10/2012	North Shore Gas Co.	Natural Gas	Illinois	9.50	50.00	4.25	5.25
1/10/2012	Peoples Gas Light & Coke Co.	Natural Gas	Illinois	9.50	49.00	4.25	5.25
	Average - All Cases			10.14 %	49.38 %	5.16 %	4.98 %
	Average - Litigated Cases			10.13 %	48.96 %	5.17 %	4.96 %

Prospective Yield on A Rated Public Utility Bonds (3) 4.67 %

Average spread between authorized returns on common equity and the yields on Moody's A-rated public utility bonds for Litigated Cases adjusted to reflect one-half the decline in bond yields (4) 5.21 (4)

Indicated Common Equity Cost Rate 9.88 %

NA = Not Available

Notes:
(1) Actual A rated yield represents the yield of the previous month if the order was issued on or after the 11th of each month, or the yield of two months prior if the order was issued on or before the 10th of each month. For example, the yield for 1/9/12 is the A rated Public Utility yield for November 2011 and the yield for 1/28/12 is the A rated Public Utility yield for December 2011
(2) Order followed full or partial stipulation settlement by the parties. Decision particulars not necessarily precedent- setting or specifically adopted by the regulatory body.
(3) From page 15 of Schedule PMA-39.
(4) As explained in detail in Ms. Ahern's Surrebuttal testimony.

Source of Information:

Major Rate Case Decisions - January 2011 - January 2012, Published by Regulatory Research Associates, Inc., An SNL Energy Company, January 25, 2011
Mergent Bond Record Monthly Update, January 2011, Vol. 79, No. 1.

Missouri Public Service Commission

Respond Data Request

Data Request No.	0287
Company Name	Missouri-American Water Company-(Water)
Case/Tracking No.	WR-2011-0337
Date Requested	1/12/2012
Issue	Rate of Return - Cost of Capital (Equity/Debt)
Requested From	John Reichart
Requested By	Matthew Barnes
Brief Description	Flotation Cost Adjustment
Description	1. In Table 2 on Page 5 of Ms. Ahern's Direct testimony, she makes an upward Flotation Cost Adjustment of 12 basis points to her return on equity. Staff understands that flotation costs for MAWC have historically been treated as an expense and recovered dollar for dollar and amortized over a certain period, typically 3 to 5 years. A. Did the Company recommend treatment for flotation costs as an expense other than an adjustment to ROE in this case? B. If not, why not? C. If so, are the flotation costs embedded in FERC Account 406 Amortized Intangible Financials on a total company basis? D. Please reconcile FERC Account 406 Amortized Intangible Financials by expense and dollar amount, i.e. Flotation Costs $XXX,XXX. As a reference, The Empire District Electric Company (W. Scott Keith, Page 12, Line 3) and Staff treated flotation costs as an expense and amortized over 5 years in the Company's last general rate case, File No. ER-2010-0130.
Response	A. No. B. MAWC does not have any unamortized flotation costs on its books as flotation costs from issuance of common stock by American Water Works are not allocated to its regulated subsidiaries. Therefore, they are neither expensed nor amortized by MAWC. Nevertheless, as explained in Ms. Ahern's direct testimony at page 65, line 5 through page 67, line 11, there is no other mechanism in the ratemaking paradigm with which such costs can be recovered. Because these costs are real and legitimate, recovery of these costs should be permitted. As the cost of common equity cost rate models used by Ms. Ahern do not reflect flotation costs, an adjustment to the cost rate of common equity developed from these models to reflect such costs is necessary. Since MAWC is a subsidiary of American Water Works, it is reasonable to use the cost of issuing American Water Works common stock to develop the flotation cost adjustment C. Not applicable. D. Not applicable.
Objections	NA

The attached information provided to **Missouri Public Service Commission** Staff in response to the above data information request is accurate and complete, and contains no material misrepresentations or omissions, based upon present facts of which the undersigned has knowledge, information or belief. The undersigned agrees to immediately inform the **Missouri Public Service Commission** if, during the pendency of Case No. **WR-2011-0337** before the Commission, any matters are discovered which would materially affect the accuracy or completeness of the attached information. If these data are voluminous, please (1) identify the relevant documents and their location (2)

make arrangements with requestor to have documents available for inspection in the **Missouri-American Water Company-(Water)** office, or other location mutually agreeable. Where identification of a document is requested, briefly describe the document (e.g. book, letter, memorandum, report) and state the following information as applicable for the particular document: name, title number, author, date of publication and publisher, addresses, date written, and the name and address of the person(s) having possession of the document. As used in this data request the term "document(s)" includes publication of any format, workpapers, letters, memoranda, notes, reports, analyses, computer analyses, test results, studies or data, recordings, transcriptions and printed, typed or written materials of every kind in your possession, custody or control or within your knowledge. The pronoun "you" or "your" refers to **Missouri-American Water Company-(Water)** and its employees, contractors, agents or others employed by or acting in its behalf.

Security : Public

Rationale : NA

Missouri-American Water Company
Table 9 (1)
Calculation of MAWC's Financial Risk Adjustment

	MAWC		**Proxy Group**	
(1)	**Debt**	49.36%	**Debt**	50.97%
(2)	**Equity**	50.64%	**Equity**	49.03%
(3)	**Beta**	0.7		
(4)	**Unlevered beta**	42%		
(5)	**Re-levered beta**	69% (2)		

	MAWC Version			**Financial Adjustment**
(6)	**RoE using CAPM where,**	9.47%	9.53%	-0.07%
	Beta	0.69	0.7	
	MRP	6.79%	6.79%	
	Risk free rate	4.78%	4.78%	
	BJC Corrected Version			
(7)	**RoE using CAPM where,**	9.97%	10.04%	-0.08%
	Beta	0.69	0.7	
	MRP	7.52%	7.52%	
	Risk free rate	4.78%	4.78%	

Notes:

(1) From page 19 of Ms. LaConte's Rebuttal Testimony and BJC Witness BSL Rebuttal workpapers.xlsx.
(2) Re-levered beta using the ROUND function in Excel.