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Witness:	Pauline M. Ahern
Exhibit Type:	Surrebuttal Testimony
Sponsoring Party:	Laclede Gas Company, d/b/a MGE
Case No.:	GR-2014-0007
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MISSOURI GAS ENERGY

GR-2014-0007

SURREBUTTAL TESTIMONY

OF

PAULINE M. AHERN, CRRA

APRIL 2014

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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 to the Missouri Public Service Commission ("MOPSC" or "the Commission") in this proceeding?

A. Yes, I am.

Purpose

Q. What is the purpose of this testimony?

A. The purpose of this testimony is to respond to the rebuttal testimonies of the Missouri Public Service Commission Staff ("Staff", "Staff Witness Zephania Marevangepo"), as well as the direct testimony of Mr. Michael P. Gorman, Witness for the Office of Public Counsel ("OPC"). Specifically, I will address Staff's use of the incremental debt cost rate associated with the debt issued to finance the acquisition of Missouri Gas Energy ("MGE" or "the Company"), Staff's use of the latest authorized returns on common equity for electric companies in Missouri as well as criticisms of my common equity cost rate analysis. I will also address criticisms of the OPC relative to 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-21 through PMA-23.

Summary

Q. Please briefly summarize your testimony.

A. The first section of this testimony focuses upon Staff's misplaced recommendation to use a 3.12% long-term cost rate associated with the MGE acquisition related debt relative to the recommendation of the consolidated Laclede Group's ("LG" or "the Parent") long-term debt ratio.

The second section focuses on the cost of common equity, specifically Mr. Marevangepo's comments relative to my use of multiple cost of common equity models, his misplaced use of the stale authorized returns on common equity for Ameren Missouri ("Ameren"), Kansas City Power & Light Company ("KCP&L") and KCP&L Greater Missouri Operations ("GMO") as informative for assessing an appropriate cost of equity for MGE and his misplaced use of the analyses of Laclede Gas Company's ("Laclede Gas") financial advisors to determine the fair value price for acquiring MGE. I will also address Staff's criticisms of my common equity cost rate analysis, specifically Staff's erroneous claim that the Predictive Risk Premium Model^{TM} is neither used commonly in other regulatory jurisdictions nor easily verified.

The third section of this testimony focuses upon OPC's misplaced criticisms of my recommended common equity cost rate. I will first address OPC's

discussion of market-to-book ratios and the Discounted Cash Flow Model ("DCF"), demonstrating that market-to-book ratios are indeed relevant. I will also comment upon its invalid comparison of the Predictive Risk Premium Model™ ("PRPM™") derived equity risk premiums for the proxy group of natural gas distribution companies with Ibbotson Associates' arithmetic mean equity risk premium on large company common stocks. Next, I will refute OPC's stated issue regarding my estimation of the equity risk premiums over Moody's A rated public utility bonds. I will also address OPC's criticism of my use of yields, or income returns, in estimating equity risk premiums. In addition, I will address OPC's criticisms of my use of projected yields in my Risk Premium Model ("RPM") and Capital Asset Pricing Model ("CAPM"), criticisms that have been made notwithstanding the fact that both the cost of capital, including the cost of common equity, and ratemaking are prospective in nature. I will also address Mr. Gorman's concerns with my empirical CAPM (ECAPM) analysis, demonstrating that the use of adjusted betas is not equivalent to the ECAPM. Finally, I will address OPC's criticisms of my non-price regulated utility analysis demonstrating that the non-price regulated group is indeed of similar risk to the proxy group of natural gas distribution companies, and hence, MGE.

Staff Witness Zephania Marevangepo

Long-Term Debt Cost Rate

Q. On page 4, line 8 through page 7, line 3 of its rebuttal testimony, Staff continues to support the use of the 3.12% cost rate of the long-term debt issued by Laclede Gas for setting rates in this proceeding for MGE. Please comment.

A. As discussed in my rebuttal testimony at page 3, line 10 through page 4, line 23, applying Staff's proposed 3.12% long-term debt cost rate to Staff's proposed consolidated LG long-term debt ratio is a mismatch which unnecessarily and inappropriately lowers Staff's recommended overall rate of return. As also discussed in my rebuttal testimony, such a mismatch violates both financial and ratemaking theory, because it is incorrect to use the 3.12% cost of only a selected portion of the debt that is used to determine LG's long-term debt ratio, and is presumed to be financing MGE's rate base, and apply that cost rate to all of LG's long-term debt in its debt-equity ratio. It is the updated 4.16% long-term debt cost rate of LG which is the true cost of the debt outstanding, and hence, Staff's proposed long-term debt ratio improperly reflects only the lower cost debt associated with Laclede Gas' more recent debt offerings.

Moreover, as Steven P. Rasche, witness for MGE, outlines in his rebuttal testimony, legal counsel has advised that the use of the debt cost rate associated with the additional debt issued to finance the acquisition "is inconsistent with the terms of the Stipulation and Agreement in Laclede's most recent rate case (GR-2013-0171) because it effectively seeks to re-trade

the result that was negotiated in that case." Laclede witness Glenn Buck discusses in his rebuttal testimony why it is fundamentally inappropriate to not only try and identify the value of single item behind a settlement that resolved many issues, as Staff has done, but then to also seek to make subsequent rate adjustments that would retroactively alter what the parties bargained for in that settlement. I also concur with Mr. Rasche who noted in his rebuttal testimony that the 3.12% debt cost rate attributed to the MGE acquisition related debt is inconsistent with the fact that the MGE assets purchased by Laclede Gas come under Laclede Gas' mortgage indenture whereby the assets of the entire Laclede Gas serve as collateral for the acquisition related debt. In other words, the debt service, i.e., principal and interest payments, are supported by the consolidated cash flows and assets of the entire entity: Laclede Gas and MGE. Therefore, Staff's recommended 3.12% long-term debt cost rate should be rejected because the true cost of debt is the updated 4.16% supported by Glenn W. Buck, witness for MGE.

Common Equity Cost Rate

Q. On page 3, lines 14 - 16, of its rebuttal testimony, Staff cites stale awarded returns on common equity for Ameren, KCP&L and GMO. Please comment.

A. My rebuttal testimony at page 24, lines 1 – 11, demonstrates that these cases are not relevant to determining a rate of return on common equity for MGE, a gas distribution utility, because they relate to electric operations, a point to which Staff implicitly agreed when it did not include Ameren's and

KCP&L's publicly traded parent holding companies in its proxy group. Nevertheless, if the Commission wishes to use these decisions to aid in assessing the appropriate common equity cost rate to authorize in this proceeding, the Commission must take note of the increased level of interest rates since these cases were decided: Ameren, ER-2012-0116, authorized a 9.8% return on equity on December 12, 2012; KCP&L, ER-2012-0174, authorized a 9.7% return on equity on January 9, 2013; and, GMO, ER-2012-175, authorized a 9.7% return on equity on January 8, 2013.

Page 1 of Schedule PMA-21 demonstrates that yields on 30-year U.S. Treasury securities and on Moody's A rated public utility bonds have risen since these returns were authorized in late 2012 and early 2013. Numerous studies have determined that equity risk premiums vary inversely with the level of interest rates[1]. As interest rates rise or fall, the equity risk premiums move inversely, falling when interest rates rise and rising when interest rates fall. These studies have determined that for every 100 basis point change in interest rates, the equity risk premium changes an average of approximately 50 basis points in the opposite direction.[2]

As shown on page 1 of Schedule PMA-21, the average yields on 30-year U.S. Treasury bonds has risen from 2.80% for November 2012 just before the Ameren case was decided and from 2.88% in December 2012 just before the KCP&L and GMO cases were decided to 3.66% in February 2014,

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

or 86 and 78 basis points, respectively. Likewise, average yields on Moody's A rated public utility bonds rose from 3.74% in November 2012 and 4.00% in December 2012 to 4.53% in February 2014, or 69 and 53 basis points, respectively.

Line No. 3 on page 2 of Schedule PMA-21 shows that Ameren's return on common equity of 9.8%, authorized on December 12, 2012, implies equity risk premiums of 7.00% over the average November 2012 2.80% yield on 30-year U.S. Treasury Bonds and 5.96% over the average November 2012 3.84% yield on Moody's A rated public utility bonds. Line No. 4 on page 1 shows that KCP&L's and GMO's return on common equity of 9.7% authorized on January 9, 2013 implies equity risk premiums of 6.82% over the average December 2012 2.88% yield on 30-year U.S. Treasury Bonds and 5.70% over the average December 2012 4.00% yield on Moody's A rated public utility bonds.

Line Nos. 5 and 6 on page 2 show the increase in 30-year U.S. Treasury and Moody's A rated public utility bond yields between November / December 2012 and February 2014. Using the inverse relationship between interest rates and equity risk premiums of approximately 50 basis points, or ½, for each 100 basis points discussed above, the Ameren, and KCP&L / GMO equity risk premiums discussed above reduce to 6.57% and 6.43%, respectively, over 30-year U.S. Treasury bonds and 5.62% and 5.44%,

[2] Morin, 129.

respectively, over Moody's A rated public utility bonds as shown on Line Nos. 9 and 10.

As shown in Lines No. 11 and 12 on page 2, when these reduced equity risk premiums are added to the recent yields on 30-year U.S. Treasury bonds, common equity cost rates of 10.23% and 10.09% result and cost rates of 10.15% to 9.97% result relative to Moody's A rated public utility bonds. Notwithstanding that these electric companies are not "enterprises having corresponding risks" as noted in my rebuttal testimony on page 24, the authorized common equity cost rates relative to the Ameren, KCP&L and GMO decisions relied upon by Staff, when adjusted for current interest levels, actually support the reasonableness of the Company's requested 9.7% return on common equity.

Response to Staff Witness Marevangepo's Rebuttal Testimony

Q. Please comment on Staff's implication concerning your use of several methods to estimate the cost of common equity on page 7, lines 10 - 11 of its rebuttal testimony.

A. Staff states that I seem "to imply" that my use of multiple common equity cost rate models makes my "results more accurate and reliable." This is a mischaracterization of my direct testimony. First, in support of the use of multiple methodologies, I did not use the word accurate. Second, I did not "imply" greater reliability, I specifically state it. At page 6, lines 15 – 19 of my direct testimony actually reads: "Just as the use of market data for the

proxy group adds reliability to the informed expert judgment used in the use of multiple common equity cost rate models also adds reliability when arriving at a recommended common equity cost rate." In other words, it takes informed expert judgment coupled with the use of proxy group data and the application of multiple cost of common equity models which enhances the reliability of the estimate. Since each model brings something different to the estimation of investors' required return, more information, in the form of more cost of common equity results, increases the reliability of the final recommendation.

Q. **

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Q. At page 10, lines 14 - 15 of its rebuttal testimony, Staff comments that your cost of common equity estimates are "inconsistent with the average of the allowed ROEs as reported by Regulatory Research Associates ("RRA")." Do you have any comment?

A. Yes. I find it puzzling that Staff would rely on RRA data at all given the degree to which it clearly demonstrates the inadequacy of Staff's own ROE recommendations in this case. Schedule PMA-22 presents the average and median authorized returns on common equity as published by RRA as of March 14, 2014 for the year 2013 and to date in 2014 for natural gas distribution companies. As shown, the average is 9.64% and the median is a nearly identical 9.63%. My recommended common equity cost rate of 10.25% is 61-62 basis points higher than the average / median authorized returns. In contrast, the midpoint of Staff's range of common equity cost rate, 8.4% is 123 – 124 basis points <u>below</u> the average / median authorized ROEs. Even the high end of his recommended range, 8.9% is 73 – 74 basis points <u>below</u> the average / median authorized returns for natural gas distribution companies. Moreover, the Company's requested return on common equity is within 6 – 7 basis points of the average / median returns. Hence, Staff is incorrect. In addition, as previously discussed in this surrebuttal testimony and shown on Schedule PMA-21, interest rates have risen significantly throughout 2013 and into 2014.

While my recommended common equity cost rate is higher than the average / median authorized returns, it is closer than even the high end of Staff's range of common equity cost rate. Moreover, the Company's requested ROE is nearly identical to the authorized returns on common equity for natural gas distribution companies for the year 2013 and to date in 2014. Staff's comments, along with its recommended return, should be disregarded.

Q. Also on page 10, Staff takes issue with your use of the Predictive Risk Premium Model™ ("PRPM™"). Please comment.

A. Staff is incorrect when it states that the PRPM™ "is not commonly used in the practice of cost of equity estimation in utility ratemaking in other jurisdictions" on page 11, lines 1 – 2. Page 1 of Schedule PMA-23 demonstrates that since early 2012, approximately two years ago, the PRPM™ has been presented in thirty-six (36) rate cases before seventeen (17) state regulatory agencies. Neither Staff nor I can know whether any equity analysts specifically use the PRPM™ in the analysis of utility stocks for purposes of advising investors, as the specific methodologies of such advisors are proprietary and not publicly divulged. However, the GARCH methodology has existed since the 1980s when Robert F. Engle, Ph.D. first developed "methods of analyzing economic times series with time-varying volatility ("ARCH")[3]" with "ARCH" standing for autoregressive conditional heteroskedasticity, sharing the Nobel Prize in Economics in 2003 for his

[3] www.nobelprize.org

work. I have been informed by one of my co-authors, Richard A. Michelfelder, Ph.D. that while the PRPM^{TM} may not be specifically used by investment analysts, ARCH and GARCH methodologies are used by Wall Street analysts and hedge / portfolio fund managers among other investment advisors.

In addition, the PRPM^{TM} is in the public domain, being the subject of many articles, two of which I have co-authored as shown on page 4 of Schedule PMA-23. In addition, pages 2 and 3 of Schedule PMA-23 show the many venues in which the PRPM^{TM} or research based upon the PRPM^{TM} have been presented, ranging from regulatory commission task forces; to Wall Street; to NARUC; to the Rutgers University's Center for Research in Regulatory Industries; to the Financial Research Institute – University of Missouri's Hot Topic Hotline; and, elsewhere. In addition, the co-authors have granted permission for the PRPM^{TM} to be included in Roger Morin's next edition of "New Regulatory Finance". The PRPM^{TM} will also be included in Cost of Capital: Applications and Examples (5th Ed.), Wiley & Sons, Shannon Pratt and Roger Grabowski (editors) and The Lawyers' Guide to Cost of Capital, ABA Publishing, Shannon Pratt and Roger Grabowski (editors), both of which will be published in 2015.

Staff also expresses concern that the cost of equity estimates based on the PRPM^{TM} cannot be verified. This is not true. It is entirely possible to verify the estimates using reasonably priced commercial statistical software,

such as EView, SAS, STATA, NCCS, etc. which contain GARCH methodology modules capable of calculating the necessary coefficients with which to derive a PRPM™ cost of equity using monthly stock return data and monthly risk-free rate data. The reason AUS Consultants is not able to provide remote access to our EViews software is a technological and copyright issue which prohibits AUS Consultants from providing a copy of the software to outside parties.

Q. On page 13, lines 6 - 14 of its rebuttal testimony, Staff has recalculated the results of your common equity cost rate models, excluding the results of the PRPM™. Please comment.

A. Excluding the results of the PRPM™, Staff calculates an average of 9.53% which he states would be my cost of equity estimate. This is incorrect, as in arriving at my 10.25% recommended common equity cost rate I relied upon the median of the results of the four common equity cost rate models. The median of the results of Staff's re-calculation, excluding the PRPM™ results, is 9.66%, again nearly identical to the Company's requested 9.7% common equity cost rate. Even excluding the PRPM™ results, my cost of common equity analysis demonstrates the reasonableness of the Company's request.

Response to OPC Witness Michael P. Gorman's Rebuttal Testimony

Q. At page 5, lines 4 – 18 of OPC's rebuttal testimony, OPC discusses its disagreement with your "conclusion with respect to the market-to-book ratio and the reasonableness of the DCF results". Please comment.

A. OPC is indeed correct when it states on lines 4 – 5 "that the DCF model measures the incremental cost of capital for a utility." OPC also states that "on the margin, or on an incremental basis, the book value and market value of a utility's equity investments are always equal to 1" which holds true only relative to incremental book equity. The disconnect or mismatch arises when in rate base / rate of return regulation, the allowed rate of return which may be based, in whole or in part, upon a DCF analysis is applied to legacy, not incremental, capital. Under those circumstances, the allowed rate of return will be applied to the common equity portion of the Company's jurisdictional rate base which is typically based upon net original cost, i.e., book value, and not market, or fair value. As discussed in my direct testimony at page 17, line 16 through page 18, line 18, however, market-to-book values are rarely at unity, or 1, relative to current market value and the book value of a given utility's entire common equity. As a result, legacy as well as incremental, market-to-book values as they relate to the applicability of the DCF model in establishing a cost of common equity for MGE, or any public utility, are relevant. Thus, my conclusion is not "without merit."

Q. At page 6, line 21 through page 7, line 3 of its rebuttal testimony, OPC compares the indicated average and median risk premiums based upon the PRPM^{TM} for your proxy group of natural gas distribution companies with Morningstar's estimated market risk premium. Please comment.

A. It is invalid to compare the average 7.83% and median 7.77% proxy group specific PRPM^{TM} derived equity risk premiums with the 6.7% Morningstar estimated risk premium relative to the Standard & Poor's ("S&P") 500 for two reasons. First, Morningstar's estimated risk premium of 6.7% is based upon annual observations, while the PRPM^{TM} derived proxy group specific equity risk premiums are based upon monthly observations.

Second, the 6.7% Morningstar equity risk premium is the difference between the simple arithmetic mean of each annual total return for large company common stocks minus the arithmetic mean annual income return on long-term government bonds. In contrast, the PRPM^{TM} derived proxy group equity risk premiums are based upon a GARCH analysis of the monthly equity risk premiums for each company in the proxy group. An arithmetic mean does not reflect the conditional, or intertemporal, volatilities which are present in historical time series of returns and equity risk premiums, as discovered by Dr. Engle and discussed previously.

The proper comparison is between the 7.83% and7.77% proxy group specific PRPM^{TM} derived equity risk premiums and the 10.30% PRPM^{TM} derived market equity risk premium based upon Morningstar's monthly returns for large company common stocks minus each month's income return on long-term government bonds. Hence, my "estimated risk premium over Treasury bonds applicable to [my] proxy group" is <u>not</u> "considerably higher

than Ibbotson found appropriate for the overall market." It is quite the opposite. Therefore, the risk premiums are not suspect.

Q. At page 7, lines 10 – 14 of its rebuttal testimony, OPC compares the PRPM^{TM} derived 5.24% premium over Moody's A rated public utility bonds with the 4.16% premium derived from "actual historical achieved return of utility stocks versus 'A' rated utility bonds estimated by Morningstar." Please comment.

A. OPC is incorrect for two reasons. First, the 4.16% risk premium was not estimated nor derived from Morningstar. It was based upon the AUS Risk Premium Study (AUS Consultants, 2013) conducted annually which estimates an equity risk premium based upon the historical total returns on the S&P Utility Index minus the historical yields on Moody's A rated public utility bonds.

Second, it is invalid to compare the average 5.24% PRPM^{TM} derived equity risk premium with the 4.16% risk premium relative to the S&P Utility Index. In addition, the 4.16% equity risk premium relative to the S&P Utility Index is the difference between the arithmetic mean of each monthly total return for the S&P Utility Index minus the arithmetic mean monthly income return on long-term government bonds. In contrast, the PRPM^{TM} derived proxy group equity risk premium of 5.24% is based upon a GARCH analysis of the monthly equity risk premiums for the S&P Utility Index. As stated above, an arithmetic mean does not reflect the conditional, or intertemporal,

volatilities which are present in historical time series of returns and equity risk premiums, discovered by Dr. Engle as discussed previously.

Q. At page 8, line 1 through page 11, line 24 of its rebuttal testimony, OPC criticizes your use of the income return on U.S. Treasury bonds in your PRPM™ analysis. Please comment.

A. OPC's criticisms are invalid and unfounded. OPC suggests that by using the income returns I am biasing the resultant risk premiums because I am not recognizing the return volatility realized by changes in bond prices. To recognize the return volatility realized by changes in bond prices renders the use of 30-year U.S. Treasury bonds risky and <u>not</u> risk-free.

On page 9, line 24 through page 10, line 4, of its testimony, OPC states:

> The standard deviations on total returns on the stock market and total returns on the bonds are 4.27% and 3.47%, respectively. Variations are very similar to one another. However, the standard deviation of monthly returns on income bonds in only 0.07%. Hence, income returns are quite stable because they do not reflect any changes in the market value of the bond price.

OPC is correct when it states on page 9, lines 23-24, that "[t]he impact in standard deviation (a variability [or risk] measure) of the monthly returns makes this illustration quite clear. In contrast to OPC's interpretation, these statements fully support the risk-free nature of the income returns on long-term government bonds and hence, the propriety of their use as the risk-free rate.

Ibbotson Associates[4] corroborate my use of the income returns on long-term government bonds when they state:

> Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return, and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.[2 (footnote omitted)]
>
> * * * *
>
> Anticipated changes in yields are assessed by the market and figured into the price of a bond. Future changes in yields that are not anticipated will cause the price of the bond to adjust accordingly. Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. Therefore, the total return on the bond series does not represent the riskless rate of return. The income return better represents the unbiased estimate of the purely riskless rate of return, since an investor can hold a bond to maturity and be entitled to the income return with no capital loss.

Additionally, in an article entitled "Equity Risk Premium Article"[5] Annin and Falaschetti state on page 7:

[4] Ibbotson Associates, 55 - 56.

> Yields have been rising generally over the period 1926-1996 causing negative capital appreciation on the long-term bond series. This negative return is due to the risk of unanticipated yield changes. Any anticipated changes in yields will already be priced by the market into the bond. Therefore, the total return on the bond series does not represent the riskless rate of return. It includes the effects of unanticipated interest rate changes. The income return better represents the riskless rate of return since an investor can hold a bond to maturity and be certain of obtaining the income return and return of principal with no capital loss.

Hence, it is appropriate to use the income return and not the total return on long-term U.S. government bonds as the risk-free rate for cost of capital purposes.

Q. At page 13, lines 3 – 5 of its rebuttal testimony, OPC criticizes your use of projected yields in your estimation of a Risk Premium Model ("RPM") derived cost of common equity. Please comment.

A. OPC's first issue is my reliance upon projected bond yields. As discussed in my rebuttal testimony at page 13, line 17 through page 14, line 7, both the determination of the cost of capital and ratemaking are prospective in nature. Therefore, events that affect the future, impact market activity, volatility and investor expectations and are therefore 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

[5] "Equity Risk Premium Article", Michael Annin, CFA and Dominic Falaschetti, CFA, Ibbotson Associates.

forecasted interest rates in both an RPM and a Capital Asset Pricing Model ("CAPM") analysis.

OPC also takes issue with my use of the PRPM™ based market equity risk premium. I have previously discussed the merits of the PRPM™ in both this surrebuttal testimony and in my direct testimony. I will not repeat my comments here. However, OPC is incorrect when it states at lines 14 and 15 that the PRPM™ "mismatches volatility from the past with projected bond yield in the future." As is clear from the article "A New Approach for Estimating the Equity Risk Premium for Public Utilities", co-authored with Frank J. Hanley and Richard A. Michelfelder, Ph.D., Rutgers University, The Journal of Regulatory Economics (December 2011), 40:261-278, the PRPM™ estimates an predicted/ expected / forecasted / projected equity risk premium which, when added to a projected bond yield, will yield a cost of common equity. Adding a projected risk premium to a projected bond yield, is not a mismatch. It is also curious that OPC discusses Ibbotson as an independent source, because it is the source of the large company stock returns and income returns on long-term government bonds in my determination of a PRPM™ derived equity risk premium. In addition, S&P is the source of the returns and the Mergent Bond Record (and before that the Moody's Bond Record) is the source of the bond yields used to determine the PRPM™ derived equity risk premium for the S&P Utility Index. Finally, the Center in Research in Security Prices ("CRSP") of the University of Chicago and Yahoo! is

the source of the individual proxy group company returns. Therefore, the implication that the PRPM^{TM} does not use independent sources is misleading.

Q. On page 14, line 12 through page 17, line 6 of its rebuttal testimony, OPC criticizes your application of the CAPM. Please comment.

A. Once again, OPC criticizes my use of the PRPM^{TM} in estimating an equity risk premium, in this instance, a market equity risk premium. Since I have addressed the merits of the PRPM^{TM} in both this surrebuttal testimony and in my direct testimony, I will not repeat my comments here. Once again, however, I would note that although OPC states that "the PRPM^{TM} risk premium is significantly higher than the risk premium derived from independent market participants", one of which OPC identified as Ibbotson Associates earlier in its rebuttal testimony, the PRPM^{TM} itself uses Ibbotson Associates historical market return and long-term Treasury bond yield data in its estimation.

Q. At page 15, line 19 through page 17, line 6 of its rebuttal testimony, OPC expresses "concerns" with your empirical CAPM analysis ("ECAPM:). Please comment.

A. OPC "concerns" arise from 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 53, line 25 through page 34, line 2 and in my rebuttal testimony at page 22, line 1

through page 23, line 8, 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.

OPC claims at page 16, lines 3 - 5 that the use of the ECAPM "is redundant with the use of *Value Line's* adjusted betas and, therefore, is unreasonable. In view of this comment, my rebuttal testimony does bear repeating here. Using adjusted betas in a CAPM analysis is not equivalent to the ECAPM. Betas are adjusted because of the regression tendency of betas to converge toward 1.0 over time, i.e., over successive calculations of beta. As discussed previously, numerous studies have determined that the SML described by the CAPM formula at any given moment in time is not as steeply sloped as the predicted SML. In corroboration, Morin[6] states:

> Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend [sic], an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated.

[6] Morin 191.

> Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary.

Moreover, the slope of the SML should not be confused with beta. As noted by Eugene F. Brigham, finance professor emeritus and the author of many financial textbooks states[7] :

> The slope of the SML reflects the degree of risk aversion in the economy – the greater the average investor's aversion to risk, then (1) the steeper is the slope of the line, (2) the greater is the risk premium for any risky asset, and (3) the higher is the required rate of return on risky assets.
>
> Students sometimes confuse beta with the slope of the SML. This is a mistake. As we saw earlier in connection with Figure 6-8, and as is developed further in Appendix 6A, beta does represent the slope of a line, but not the Security Market Line. This confusion arises partly because the SML equation is generally written, in this book and throughout the finance literature, as ki = RF + bi(kM – RF), and in this form bi looks like the slope coefficient and (kM – RF) the variable. It would perhaps be less confusing if the second term were written (kM – RF)bi, but this is not generally done.

Thus, the ECAPM is 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. OPC's "concerns" are unfounded, unsupported and meaningless.

[7] Brigham, Eugene F., Financial Management – Theory and Practice, 4th Ed. (The Dryden Press, 1985) 203.

Q. At page 17, line 7 through page 18 line 2 of its rebuttal testimony, OPC discusses its issues with your non-price regulated company analysis. Please comment.

A. OPC claims that I have "not proved that these companies are risk comparable to MGE" and that "[w]hile these companies may have comparable beta estimates" I have not "shown that they have comparable business and operating risk to a low-risk regulated utility company" OPC is incorrect.

First, OPC mischaracterizes my selection criteria for the non-price regulated companies as beta was not the only selection criterion used. I also used a second selection criterion, namely, the residual standard error of the regression which gave rise to those betas. Combining beta, a measure of systematic risk, with the residual standard error of the regression, which is a measure of non-systematic risk, results in selection criteria based upon total comparable risk, i.e., systematic plus non-systematic / business and financial risk.

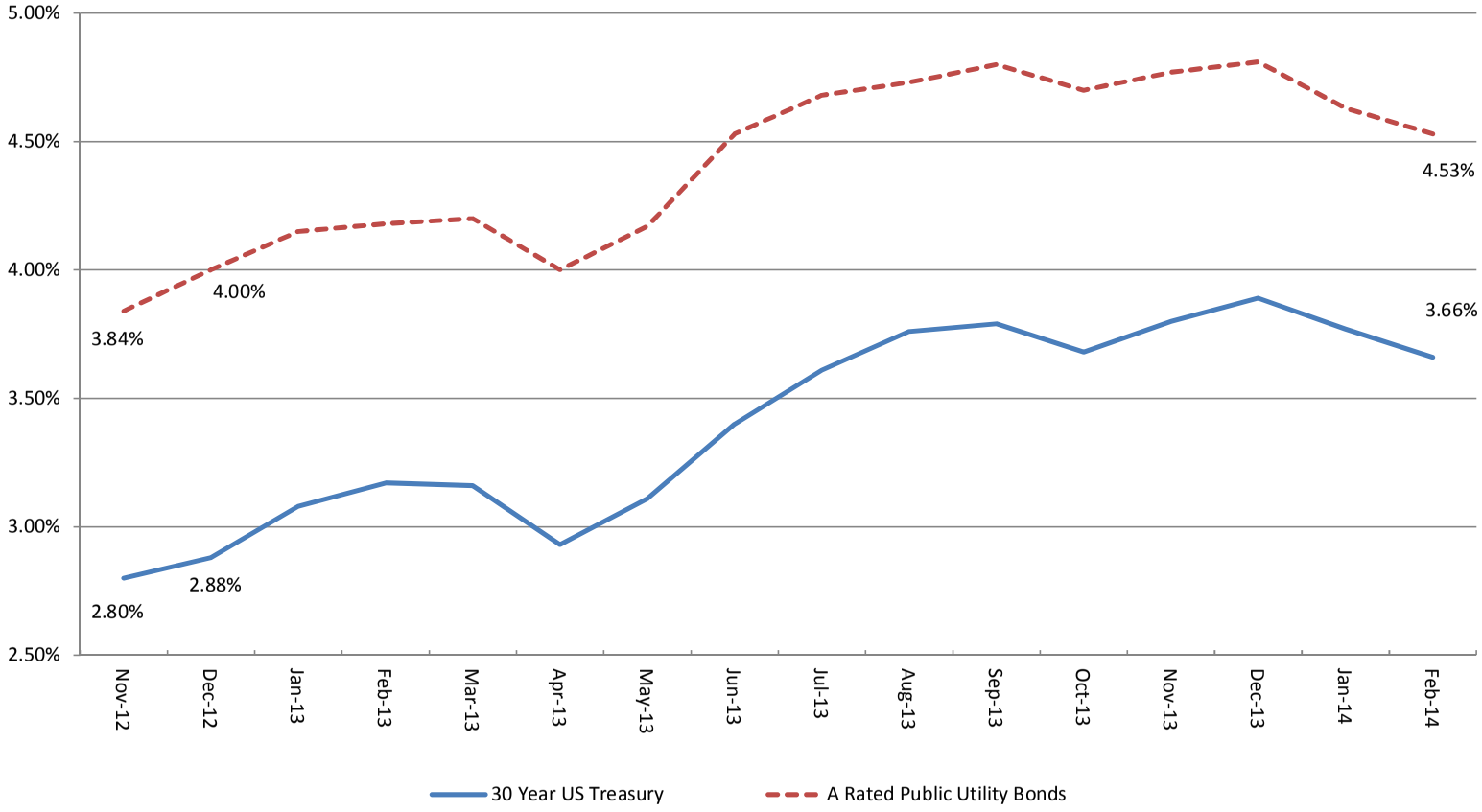
Hence, OPC's statement that the non-price regulated companies cannot serve as proxies for MGE is incorrect. These selection criteria are derived from the "corresponding risk" standard of the landmark cases of the U.S. Supreme Court. Therefore, they are consistent with the *Hope* doctrine that the return to the equity investor should be commensurate with returns on investments in other firms having corresponding risks.

Consequently, because the non-price regulated companies are comparable in total risk, the costs of common equity derived from the application of the DCF, RPM, and CAPM are indeed relevant to the determination of a cost of common equity for MGE. Once again, Mr. Gorman's criticisms are unfounded and should be disregarded.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

30 Year US Treasury and A Rated Public Utility Bond Yields
November 2012 through February 2014



Source: Mergent Bond Record, March 2014
Federal Reserve Statistical Analysis FRB H15

Missouri Gas Energy, Inc.
Calculation of the Implied ROE at February 2014 of
the Ameren UE and KCP&L Authorized ROEs

Line No.			
	Authorized Return on Equity:		
1.	Ameren UE Rate Order (1)	9.80%	
2.	KCP&L Rate Orders (2)	9.70%	
	Implied Equity Risk Premium:	Over 30 Year US Treasury Bonds	Over A Rated Public Utility Bonds
3.	Ameren UE Rate Order (3)	7.00%	5.96%
4.	KCP&L Rate Orders (4)	6.82%	5.70%
	Change in Yield:		
5.	December 2012 - February 2014	0.86%	0.69%
6.	January 2013 - February 2014	0.78%	0.53%
	Decline in Equity Risk Premium (5):		
7.	December 2012 - February 2014	-0.43%	-0.35%
8.	January 2013 - February 2014	-0.39%	-0.27%
	Implied Equity Risk Premium at Feburary 2014:		
9.	Based on Ameren Decision	6.57%	5.62%
10.	Based on KCP&L Decisions	6.43%	5.44%
	Implied Cost of Common Equity at February 2014 (6):		
11.	Based on Ameren Decision	10.23%	10.15%
12.	Based on KCP&L Decisions	10.09%	9.97%

Notes:

(1) Order for ER-2012-0166 on 12/12/2012 authorizing a 9.80% ROE.
(2) Orders for ER-2012-0174/0175 on 1/9/2013 authorizing a 9.70% ROE.
(3) Authorized ROE of 9.80% less yields on 30 year T-Bonds and A rated PU Bonds for December 2012, respectively.
(4) Authorized ROE of 9.70% less yields on 30 year T-Bonds and A rated PU Bonds for January 2013, respectively.
(5) Theory that an inverse relationship between interest rates and equity risk premium as explained in Ms. Ahern's surrebuttal testimony.
(6) Lines 9 and 10 added to the February 2014 30 year T-Bond yield and A rated PU bond yield, respectively.

Sources of Information:

Regulatory Research Associates
Mergent Bond Record
Federal Reserve Statistical Release

Missouri Gas Energy

Authorized Returns on Common Equity for Natural Gas Companies for 2013 and 2014 to Date

				Increase Authorized	
Company	Parent Company Ticker	Case Identification	Service	Date	Return on Equity (%)
Bay State Gas Company	NI	DPU 13-75	Natural Gas	2/28/2014	9.55
Questar Gas Co.	STR	D-13-057-05	Natural Gas	2/21/2014	9.85
Consolidated Edison Co. of NY	ED	C-13-G-0031	Natural Gas	2/20/2014	9.30
Columbia Gas of Maryland Inc	NI	C-9332 (STRIDE Rider)	Natural Gas	1/31/2014	NA
CT Natural Gas Corp.	UIL	D-13-06-08	Natural Gas	1/29/2014	9.18
Baltimore Gas and Electric Co.	EXC	C-9331 (STRIDE Rider)	Natural Gas	1/29/2014	NA
Atmos Energy Corp.	ATO	D-14-ATMG-221-TAR (GSRS)	Natural Gas	1/28/2014	NA
Avista Corp.	AVA	D-UG-246	Natural Gas	1/21/2014	9.65
MDU Resources Group Inc.	MDU	C-PU-13-803	Natural Gas	12/30/2013	10.00
Public Service Co. of CO	XEL	D-12AL-1268G	Natural Gas	12/23/2013	9.72
Peoples TWP LLC	-	D-R-2013-2355886	Natural Gas	12/19/2013	NA
Ameren Illinois	AEE	D-13-0192	Natural Gas	12/18/2013	9.08
Piedmont Natural Gas Co.	PNY	D-G-9, Sub 631	Natural Gas	12/17/2013	10.00
Sierra Pacific Power Co.	BRK.A	D-13-06003	Natural Gas	12/16/2013	9.70
Columbia Gas of Kentucky Inc	NI	C-2013-00167	Natural Gas	12/13/2013	NA
Baltimore Gas and Electric Co.	EXC	C-9326 (gas)	Natural Gas	12/13/2013	9.60
Consumers Energy Co.	CMS	C-U-17197	Natural Gas	12/6/2013	NA
Northern States Power Co - WI	XEL	D-4220-UR-119 (Gas)	Natural Gas	12/5/2013	10.20
Washington Gas Light Co.	WGL	C-9322	Natural Gas	11/22/2013	9.50
Kansas Gas Service Co.	OGS	D-14-KGSG-111-TAR (GSRS)	Natural Gas	11/21/2013	NA
Michigan Gas Utilities Corp	TEG	C-U-17273	Natural Gas	11/14/2013	10.25
Duke Energy Ohio Inc.	DUK	C-12-1685-GA-AIR	Natural Gas	11/13/2013	9.84
Wisconsin Public Service Corp.	TEG	D-6690-UR-122 (Gas)	Natural Gas	11/6/2013	10.20
Delmarva Power & Light Co.	POM	D-12-546	Natural Gas	10/22/2013	NA
Liberty Utilities (Midstates)	AQN	C-GO-2014-0006 (ISRS)	Natural Gas	10/16/2013	NA
Columbia Gas of Maryland Inc	NI	C-9316	Natural Gas	9/23/2013	9.60
Atmos Energy Corp.	ATO	C-2013-00304 (PRP)	Natural Gas	9/17/2013	NA
Madison Gas and Electric Co.	MGEE	D-3270-UR-119 (Gas)	Natural Gas	7/26/2013	NA
Laclede Gas Co.	LG	C-GR-2013-0171	Natural Gas	6/26/2013	NA
Puget Sound Energy Inc.	-	D-UG-130138	Natural Gas	6/25/2013	9.80
North Shore Gas Co.	TEG	D-12-0511	Natural Gas	6/18/2013	9.28
Peoples Gas Light & Coke Co.	TEG	D-12-0512	Natural Gas	6/18/2013	9.28
Brooklyn Union Gas Co.	-	C-12-G-0544	Natural Gas	6/13/2013	9.40
Columbia Gas of Kentucky Inc	NI	C-2013-00087 (AMRP)	Natural Gas	5/30/2013	NA
Columbia Gas of Pennsylvania	NI	D-R-2012-2321748	Natural Gas	5/23/2013	NA
Washington Gas Light Co.	WGL	FC-1093	Natural Gas	5/10/2013	9.25
San Diego Gas & Electric Co.	SRE	AP-10-12-005 (gas)	Natural Gas	5/9/2013	NA
Southern California Gas Co.	SRE	AP-10-12-006	Natural Gas	5/9/2013	NA
Missouri Gas Energy	LG	C-GO-2013-0391 (ISRS)	Natural Gas	5/1/2013	NA
NorthWestern Corp.	NWE	D-D2012.9.94	Natural Gas	4/23/2013	9.80
Avista Corp.	AVA	C-AVU-G-12-07	Natural Gas	3/27/2013	9.80
Niagara Mohawk Power Corp.	-	D-12-G-0202	Natural Gas	3/14/2013	9.30
Laclede Gas Co.	LG	C-GO-2013-0352 (ISRS)	Natural Gas	3/13/2013	NA
SourceGas Distribution LLC	-	D-30022-192-GI-12	Natural Gas	3/5/2013	NA
Baltimore Gas and Electric Co.	EXC	C-9299 (gas)	Natural Gas	2/22/2013	9.60
Black Hills Kansas Gas Utility	BKH	D-13-BHCG-404-TAR (GSRS)	Natural Gas	2/8/2013	NA
				Average	9.64 %
				Median	9.63 %

Source of Information: Regulatory Research Associates, an SNL Company, downloaded on March 14, 2014

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Missouri Gas Energy

Use of Predictive Risk Premium Model (PRPM™) by AUS Consultants' Principals' Rate of Return Testimony

	Company	Jurisdiction	Date of Testimony Submission	Docket Number
1	Washington Gas Light Company	District of Columbia Public Service Commission	11-Feb-2012	1093
2	Arizona Water Company - Eastern Group	Arizona Corporation Commission	10-Apr-2012	W-01445A-11-0310
3	San Gabriel Valley Water Company	California Public Utilities Commission	1-May-2012	12-05-002
4	Arizona Water Company - Northern Group	Arizona Corporation Commission	1-Aug-2012	W-01445A-12-0348
5	Pinelands Water Company	New Jersey Board of Public Utilities	10-Aug-2012	WR12080735
6	Pinelands Wastewater Company	New Jersey Board of Public Utilities	10-Aug-2012	WR12080734
7	Pluris, LLC	North Carolina Utility Commission	13-Aug-2012	W-1282, SUB 8
8	United Water Toms River, Inc.	New Jersey Board of Public Utilities	19-Sep-2012	WR12080830
9	Tega Cay Water Services Inc.	Public Service Commission of South Carolina	19-Nov-2012	2012-177-WS
10	Jersey Central Power Light Company	New Jersey Board of Public Utilities	30-Nov-2012	ER12111052
11	Aquarion Water Co. of New Hampshire, Inc.	New Hampshire Public Utilities Commission	6-Mar-2013	DW 12-085
12	United Water New Jersey, Inc.	New Jersey Board of Public Utilities	8-Mar-2013	WR13030210
13	Aquarion Water Co. of Connecticut	Public Utilities Regulatory Authority - CT	28-Mar-2013	13-02-30
14	Arizona Water Company - Northern Group	Arizona Corporation Commission	12-Apr-2013	W-01445A-12-0348
15	Chaparral City Water Company	Arizona Corporation Commission	26-Apr-2013	W-02113A-13-0118
16	Washington Gas Light Company	Maryland Public Service Commission	28-Apr-2013	9322
17	Louisiana Water Service, Inc.	Louisiana Public Service Commission	June 2013	NA
18	United Water New York, Inc.	New York State Public Service Commission	2-Jul-2013	13-W-0295
19	Columbia Water Company	Pennsylvania Utilities Commission	12-Jul-2013	R-2013-236-0798
20	Jersey Central Power Light Company	New Jersey Board of Public Utilities	7-Aug-2013	ER12111052
21	Twin Lakes Utilities, Inc.	Indiana Utility Regulatory Commission	August 2013	44399
22	United Water Rhode Island, Inc.	Rhode Island Public Utilities Commission	12-Aug-2013	4434
23	United Utility Companies, Inc.	Public Service Commission of South Carolina	12-Sep-2014	2013-199-WS
24	Missouri Gas Energy	Missouri Public Service Commission	16-Sep-2013	GR-2014-0007
25	Utility Services of SC	Public Service Commission of South Carolina	19-Sep-2013	2013-201-WS
26	Pioneer Water LLC	Indiana Utility Regulatory Commission	3-Oct-2013	44309-U
27	Carolina Water Service, Inc. of NC.	North Carolina Utility Commission	21-Oct-2013	W-354 SUB 336
28	Carolina Water Service, Inc. of SC	Public Service Commission of South Carolina	19-Nov-2013	2013-275-WS
29	Middlesex Water Company	New Jersey Board of Public Utilities	8-Nov-2013	WR13111059
30	United Water New Rochelle / United Water West Chester	New York State Public Service Commission	27-Nov-2013	13-W-0539/13-W-564
31	Tidewater Utilities, Inc.	Delaware Public Service Commission	30-Nov-2013	13-466
32	United Water New York, Inc.	New York State Public Service Commission	6-Dec-2013	13-W-0295
33	Maine Water Company	Maine Public Service Commission	13-Dec-2013	2013-00362
34	Aqua North Carolina, Inc.	North Carolina Utility Commission	13-Dec-2013	W-218, Sub 363
35	Indiana American Water Company	Indiana Utility Regulatory Commission	24-Jan-2014	44450
36	EPCOR Water Arizona, Inc.	Arizona Corporation Commission	7-Mar-2014	W-01303A-14-

SPEAKING ENGAGEMENTS:

"Regulatory Training in Financing, Planning, Strategies and Accounting Issues for Publicly- and Privately-Owned Water and Wastewater Utilities", New Mexico State University Center for Public Utilities, October 13-18, 2013, Instructor (Cost of Capital).

"Comparative Evaluation of the Predictive Risk Premium Model, the Discounted Cash Flow Model and the Capital Asset Pricing Model for Estimating the Cost of Common Equity", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Advanced Workshop in Regulation and Competition, 32nd Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 17, 2013, Rutgers University, Shawnee on the Delaware, PA.

"Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

"Issues Surrounding the Determination of the Allowed Rate of Return", before the Staff Subcommittee on Electricity of the National Association of Regulatory Utility Commissioners, Winter 2013 Committee Meetings, February 3, 2013, Washington, DC.

"Regulatory Training in Financing Planning, Strategies and Accounting Issues for Publicly and Privately Owned Water and Wastewater Utilities", New Mexico State University Center for Public Utilities, October 14-19, 2012, Instructor (Cost of Financial Capital).

"Application of a New Risk Premium Model for Estimating the Cost of Common Equity", Co-Presenter with Dylan W. D'Ascendis, CRRA, AUS Consultants, Edison Electric Institute Cost of Capital Working Group, October 3, 2012, Webinar.

"Application of a New Risk Premium Model for Estimating the Cost of Common Equity", Co-Presenter with Dylan W. D'Ascendis, CRRA, AUS Consultants, Staff Subcommittee on Accounting and Finance of the National Association of Regulatory Commissioners, September 10, 2012, St. Paul, MN.

"Advanced Regulatory Training in Financing Planning, Strategies and Accounting Issues for Publicly and Privately Owned Water and Wastewater Utilities", New Mexico State University Center for Public Utilities, May 13-17, 2012, Instructor (Cost of Financial Capital).

"A New Approach for Estimating the Equity Risk Premium Applied to Public Utilities", before the Finance and Regulatory Committees of the National Association of Water Companies, March 29, 2012, Telephonic Conference.

"A New Approach for Estimating the Equity Risk Premium Applied to Public Utilities", (co-presenter with Frank J. Hanley, Principal and Director, AUS Consultants) before the Water Committee of the National Association of Regulatory Utility Commissioners' Winter Committee Meetings, February 7, 2012, Washington, DC.

"A New Approach for Estimating the Equity Risk Premium Applied to Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University and Frank J. Hanley, Principal and Director, AUS Consultants) before the Wall Street Utility Group, December 19, 2011, New York City, NY.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Hot Topic Hotline Webinar, December 3, 2010, Financial Research Institute of the University of Missouri.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) before the Indiana Utility Regulatory Commission Cost of Capital Task Force, September 28, 2010, Indianapolis, IN

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Advanced Workshop in Regulation and Competition, 29th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 20, 2010, Rutgers University, Skytop, PA

"A New Model for Estimating the Equity Risk Premium for Public Utilities" (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Spring 2010 Meeting of the Staff Subcommittee on Accounting and Finance of the National Association of Regulatory Utility Commissioners, March 17, 2010, Charleston, SC

"New Approach to Estimating the Cost of Common Equity Capital for Public Utilities" (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) - Advanced Workshop in Regulation and Competition, 28th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 14, 2009, Rutgers University, Skytop, PA

PAPERS:

"Empirical Tests of the Generalized Consumption Asset Pricing Model for Estimating the Cost of Common Equity Capital for Public Utilities", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, (Working Paper).

"Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, and Frank J. Hanley, The Electricity Journal, May, 2013.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", co-authored with Frank J. Hanley and Richard A. Michelfelder, Ph.D., Rutgers University, The Journal of Regulatory Economics (December 2011), 40:261-278.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri Gas Energy's Filing of Revised Tariffs to Increase its Annual Revenues For Natural Gas Service	)))	Case No. GR-2014-0007

AFFIDAVIT

STATE OF NEW JERSEY	)	
	)	SS.
COUNTY OF BURLINGTON	)	

Pauline M. Ahern, of lawful age, being first duly sworn, deposes and states:

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

2. Attached hereto and made a part hereof for all purposes is my surrebuttal testimony on behalf of Missouri Gas Energy.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Pauline M. Ahern

Pauline M. Ahern

Subscribed and sworn to before me this 2nd day of April, 2014.

Sharon M Keefe

Notary Public

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