Exhibit No.:	
Issue:	Rate of Return
Witness:	Christopher C. Walters, CFA
Type of Exhibit:	Rebuttal Testimony
Sponsoring Party:	Missouri Industrial Energy Consumers
Case No.:	ER-2019-0335
Date Testimony Prepared:	January 21, 2020

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Decrease Its Revenues for Electric Service.	)	**Case No. ER-2019-0335**

Rebuttal Testimony of

Christopher C. Walters, CFA

On behalf of

Missouri Industrial Energy Consumers

January 21, 2020

BRUBAKER & ASSOCIATES, INC.

Project 10842

MIEC Exhibit No. 455
Date 3/4/20 Reporter SMB
File No. ER-2019-0335

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In the Matter of Union Electric Company d/b/a Ameren Missouri's Tariffs to Decrease Its Revenues for Electric Service.	)	**Case No. ER-2019-0335**

STATE OF MISSOURI	)	
	)	SS
COUNTY OF ST. LOUIS	)	

Affidavit of Christopher C. Walters

Christopher C. Walters, being first duly sworn, on his oath states:

1. My name is Christopher C. Walters. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 16690 Swingley Ridge Road, Suite 140, Chesterfield, Missouri 63017. We have been retained by the Missouri Industrial Energy Consumers in this proceeding on their behalf.

2. Attached hereto and made a part hereof for all purposes is my rebuttal testimony which was prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. ER-2019-0335.

3. I hereby swear and affirm that the testimony is true and correct and that it shows the matters and things that it purports to show.

Christopher C. Walters

Subscribed and sworn to before me this 21st day of January, 2020.

Notary Public

MARIA E. DECKER
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis City
My Commission Expires: May 5, 2021
Commission # 13706793

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Rebuttal Testimony of Christopher C. Walters

I. INTRODUCTION

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Christopher C. Walters. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q ARE YOU THE SAME CHRISTOPHER C. WALTERS THAT FILED DIRECT TESTIMONY ON BEHALF OF MISSOURI INDUSTRIAL ENERGY CONSUMERS ("MIEC")?

A Yes, I am.

Q WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A My rebuttal testimony will address my concerns with the direct testimony, analyses, and return on equity ("ROE") recommendations offered by Ameren Missouri witness Mr. Robert B. Hevert.

My silence with respect to any position taken by Ameren Missouri, Staff or any other party in direct testimony in this proceeding should not be interpreted as an endorsement of that position.

II. SUMMARY

Q PLEASE SUMMARIZE YOUR REBUTTAL TESTIMONY.

A In Section III of this testimony, I will respond to the testimony, analyses, and recommendations offered by Ameren Missouri witness Mr. Hevert. Mr. Hevert recommends a cost of equity of 9.95%. I show that his estimates are overstated and do not represent an accurate estimate of the current market cost of equity for the Company.

III. RESPONSE TO AMEREN MISSOURI WITNESS MR. ROBERT HEVERT

III.A. Summary of the Response to Mr. Hevert

Q WHAT RATE OF RETURN ON COMMON EQUITY IS AMEREN MISSOURI REQUESTING IN THIS PROCEEDING?

A Ameren Missouri is requesting a return on common equity of 9.95%, which is within Mr. Hevert's recommended range of 9.80% to 10.60%.[1]

Q IN YOUR OPINION, ARE MR. HEVERT'S ROE ESTIMATES REASONABLE?

A No. Mr. Hevert's estimated ROE is substantially overstated and should be rejected by the Commission. Mr. Hevert's analyses produce excessive results for various reasons, including the following:

1. Mr. Hevert's recommended ROE is not reflective of the changes in the cost of capital that have taken place since Ameren Missouri's most recently awarded ROE of 9.53%.

2. His constant growth DCF results based on the high growth rates are unsustainable and therefore unreasonable;

3. His CAPM is based on inflated market risk premiums.

[1]Hevert Direct at 2.

4. His ECAPM shares the same flaws as his traditional CAPM, as well as incorrectly relies on an adjusted beta.

5. His Bond Yield Plus Risk Premium studies are based on inflated utility equity risk premiums.

Q PLEASE SUMMARIZE MR. HEVERT'S ROE ESTIMATES.

A Mr. Hevert's ROE estimates are summarized in Table 1 below. In Column 2, I show the results with prudent and sound adjustments to correct the flaws referenced above. With such adjustments to his DCF, CAPM, and Risk Premium return estimates, Mr. Hevert's own studies show that my recommended ROE of 9.20% for Ameren Missouri is reasonable.

TABLE 1

Hevert's Return on Equity Estimates

Description	Mean[1] (1)	Adjusted[2] (2)
Constant Growth DCF		
30-Day Average	8.89%	8.89%
90-Day Average	8.96%	8.96%
180-Day Average	9.08%	9.08%
Average Constant Growth DCF	8.98%	8.98%
CAPM Results (Bloomberg Beta)		
Current 30-Yr Treasury (BB – 2.85%)	8.18%	9.13%
Current 30-Yr Treasury (*VL* – 2.85%)	8.68%	9.13%
Near-Term Projected 30-Yr Treasury (BB – 3.03%)	8.36%	9.13%
Near-Term Projected 30-Yr Treasury (VL – 3.03%)	8.86%	9.13%
CAPM Results (*Value Line* Beta)		
Current 30-Yr Treasury (BB – 2.85%)	9.35%	9.13%
Current 30-Yr Treasury (*VL* – 2.85%)	9.97%	9.13%
Near-Term Projected 30-Yr Treasury (BB – 3.03%)	9.53%	9.13%
Near-Term Projected 30-Yr Treasury (VL – 3.03%)	10.14%	9.13%
ECAPM Results (Bloomberg Beta)		
Current 30-Yr Treasury (BB – 2.85%)	9.60%	Reject
Current 30-Yr Treasury (*VL* – 2.85%)	10.24%	Reject
Near-Term Projected 30-Yr Treasury (BB – 3.03%)	9.78%	Reject
Near-Term Projected 30-Yr Treasury (VL – 3.03%)	10.42%	Reject
ECAPM Results (*Value Line* Beta)		
Current 30-Yr Treasury (BB – 2.85%)	10.47%	Reject
Current 30-Yr Treasury (*VL* – 2.85%)	11.20%	Reject
Near-Term Projected 30-Yr Treasury (BB – 3.03%)	10.65%	Reject
Near-Term Projected 30-Yr Treasury (VL – 3.03%)	11.38%	Reject
Risk Premium		
Current 30-Yr Treasury (2.85%)	9.91%	9.49%
Near-Term Projected 30-Yr Treasury (3.03%)	9.92%	9.49%
Long-Term Projected 30-Yr Treasury (3.70%)	10.06%	Reject
Range	9.8% to 10.6%	8.8% to 9.5%
Recommended ROE	9.95%	9.2%

Sources: Direct Testimony of Robert Hevert at 18-19.

III.B. Initial Comments

Q DO YOU HAVE ANY INITIAL COMMENTS REGARDING MR. HEVERT'S RECOMMENDATIONS IN THIS CASE?

A Yes. Mr. Hevert's recommended range of 9.8% to 10.6% and his recommended ROE of 9.95% are at odds with observable changes in the cost of capital since Ameren's last ROE of 9.53% was awarded in Case No. ER-2014-0258. As shown in Table 2, I compare the 13-week average 30-Year Treasury yields, A-rated and Baa-rated utility bond yields for the periods ending July 3, 2014 and April 29, 2015[2] to the same average yields for the 13-week period ending January 10, 2020.

TABLE 2

Changes in Interest Rates Since ER-2014-0258

Date	Treasury Yield	A-Rated Utility Yield	Baa-Rated Utility Yield
13-Week Avg as of:			
7/3/2014	3.42%	4.30%	4.73%
4/29/2015	2.76%	3.91%	4.66%
1/10/2020	2.28%	3.40%	3.73%
Difference from:			
7/3/2014	**-1.14%**	**-0.90%**	**-1.00%**
4/29/2015	**-0.48%**	**-0.51%**	**-0.93%**

Relative to July 3, 2014 and April 29, 2015, Treasury yields have fallen between 0.48% and 1.14%. Similarly, utility bond yields have fallen between 0.51% and 1.00%.

[2]These dates mark the beginning and the end of Ameren Missouri's last fully litigated rate case, ER-2014-0258.

Q HAVE THERE BEEN SIMILAR CHANGES IN PROJECTED INTEREST RATES?

A Yes. As shown in Table 3, I have provided the consensus projected 30-year Treasury yields published in the July 2014, April 2015, and January 2020 issues of *Blue Chip Financial Forecasts*. In similar fashion to the yields identified above in Table 2, projected Treasury yields experienced a significant decline of 1.10% to 1.80%.

TABLE 3

Changes in Projected Interest Rate Since ER-2014-0258

	Blue Chip Financial Forecasts		
Description	**Jan 2020**	**Apr 2015**	**Jul 2014**
Projected Yield	2.60%	3.70%	4.40%
Change		-1.10%	-1.80%

Q CAN YOU DESCRIBE WHAT HAS HAPPENED TO AUTHORIZED ROES OVER THE SAME TIME PERIOD?

A Yes. The average authorized ROE for vertically integrated electric utilities was 9.87% for the period of July 2014 through April 2015. The average authorized ROE for vertically integrated electric utilities was 9.73% in 2019. This represents a decline of 0.14%. It should be noted that in December 2019, the California Public Utilities Commission issued an order in the consolidated General Cost of Capital proceeding that established ROEs for the State's major energy utility companies such as Southern California Edison Company, Pacific Gas and Electric Company, and San Diego Gas & Electric Company. These three utilities were awarded ROEs of 10.3%, 10.25%, and 10.2%, respectively. While the 2019 average of 9.73% includes these three ROEs, it would be reasonable to exclude them given the wildfire crisis and the Chapter 11

Bankruptcy filing by Pacific Gas and Electric Company's parent company, PG&E. The 2019 average of 9.73 also includes a December 2019 authorized ROE of 10.5% for Georgia Power Company. Georgia Power Company was significantly impacted by the bankruptcy filing of Westinghouse, the primary contractor for constructing its Vogtle nuclear units, in the midst of the project. S&P has placed Georgia Power Company on a negative outlook for its exposure and project execution risk. S&P states as follows:

> The negative outlook on GPC mirrors S&P Global Ratings' negative outlook on parent Southern Co., which reflects the company's construction and project execution risks mainly stemming from the company's cost estimate assumptions, potential change to the project's scope, missed productivity targets, and the potential inability to attract skilled workers, all of which could result in material cost overruns. In addition, longer-term regulatory risks are likely to persist at least until the Vogtle units 3 and 4 nuclear power plants are completed on schedule and placed into base rates.[3]

Removing these four ROEs from the observations in 2019 would lower the average from 9.73% to 9.62%. This would represent a decrease in the authorized ROE for vertically integrated electric utilities of 0.25%.

Q WHAT SHOULD THE COMMISSION TAKEAWAY FROM THESE COMPARISONS OF BOND YIELDS AND AUTHORIZED ROES SINCE ER-2014-0258?

A The clear takeaway is that under no circumstance has there been an increase in the cost of capital since Ameren Missouri's ROE was last established in Case No. ER-2014-0258 at 9.53%. Mr. Hevert's recommended ROE of 9.95% represents an increase of 0.42%. Mr. Hevert's proposed increase in the ROE is unsupported, and at odds with the clear observed changes in the cost of capital described above.

[3]S&P Global Ratings, "Ratings Direct – Summary: Georgia Power Co.," October 12, 2018 at 3.

III.C. Mr. Hevert's Constant Growth DCF

Q PLEASE DESCRIBE MR. HEVERT'S CONSTANT GROWTH DCF RETURN ESTIMATES.

A Mr. Hevert's constant growth DCF returns are developed on his Schedule RBH-D1. His constant growth DCF models are based on consensus growth rates published by Zacks and First Call, and individual growth rate projections made by *Value Line*.

He relied on dividend yield calculations based on average stock prices over three different time periods: 30-day, 90-day, and 180-day ending May 31, 2019 – all reflecting one-half year dividend growth adjustments.

Q ARE THE CONSTANT GROWTH DCF RESULTS PRODUCED BY MR. HEVERT REASONABLE?

A Mr. Hevert's constant growth DCF mean results generally support a ROE no higher than 9.0%. However, Mr. Hevert relies on the highest growth rate estimates to support an unreasonably high ROE. Mr. Hevert's "high ROE" results are based on the highest growth rate for each company provided by each of his sources. The average of his "high" growth rates is 6.51%, and are as high as 10.00%. The average growth rate of 6.51% is approximately 240 basis points higher than the expected growth of 4.1% for the US economy.

As I described in detail in my Direct testimony, it is unreasonable to expect a company to outgrow the economy in which it sells goods and services in perpetuity, which happens to be the time period assumed in the constant growth DCF model. A growth rate of 10.0% is more than 2.4x the expected growth rate of 4.1%. Should the Commission give weight to any of Mr. Hevert's DCF analyses, it should be those that

rely on his mean ROE results. Under no circumstances should the Commission give weight to Mr. Hevert's DCF results based on the highest growth rate estimates.

III.D. Mr. Hevert's CAPM Studies

Q PLEASE DESCRIBE MR. HEVERT'S CAPM ANALYSIS.

A As I indicated in my Direct testimony, the CAPM is based upon the theory that the market required rate of return for a security is equal to the risk-free rate, plus a risk premium associated with the specific security. The risk premium associated with the specific security is expressed mathematically as:

Bi x (Rm - Rf) where:

Bi = Beta - Measure of the risk for stock
Rm = Expected return for the market portfolio
Rf = Risk-free rate

Mr. Hevert develops his CAPM on his Schedule RBH-D4. He relies on two different beta coefficients of 0.484 and 0.591 from Bloomberg and Value Line, respectively, market risk premium estimates of 11.0% and 12.04% from Bloomberg and Value Line, respectively, as well as a current 30-year Treasury yield of 2.85% and a projected 30-year Treasury yield of 3.03%. Mr. Hevert's traditional CAPM estimates range from 8.18% to 10.14%.

Q PLEASE DESCRIBE THE MAIN ISSUES YOU HAVE WITH MR. HEVERT'S CAPM STUDY.

A I have two primary issues with Mr. Hevert's CAPM study. First, I believe the market risk premiums he used in all of his CAPM studies are overstated because they do not reflect a reasonable estimate of the expected return on the market while relying on unsustainable growth rates. My second concern, specifically with the market risk

premium used in Mr. Hevert's CAPM return estimates using a projected risk-free rate, is that he does not measure the market risk premium in relationship to the projected risk-free rate. Rather, all his market risk premium estimates are based on his current risk-free rate estimate of 2.85%. This causes a significant mismatch in the market risk premium estimates used in Mr. Hevert's CAPM analyses that are based on a projected risk-free rate.

Q PLEASE DESCRIBE MR. HEVERT'S MARKET RISK PREMIUMS.

A Mr. Hevert derived his two market risk premiums by conducting a DCF analysis for the market. He calculates the DCF-derived expected return on the market using data from Bloomberg and data from *Value Line*. Mr. Hevert's market risk premiums of 11.00% (Bloomberg) and 12.04% (*Value Line*) are based on constant growth DCF returns of 13.85% and 14.90%, respectively, less the current 30-year Treasury bond yield of 2.85%.

Q WHAT ISSUES DO YOU HAVE WITH MR. HEVERT'S DCF-DERIVED MARKET RISK PREMIUM ESTIMATES?

A Mr. Hevert's DCF-derived market risk premiums are based on market returns of approximately 13.85% and 14.90%. These expected market returns are predicated on growth rates of approximately 11.79% and 12.75% and a market-weighted expected dividend yield of approximately 2.06% and 2.15%, respectively. As discussed in my Direct testimony with respect to my own DCF model, the constant growth DCF model requires a long-term sustainable growth rate. Mr. Hevert's market growth rates of approximately 11.79% and 12.75% are far too high to be a rational outlook for sustainable long-term market growth.

As an initial matter, Mr. Hevert's growth rates are more than 2.8x the expected long-term growth rate of the US economy. In fact, Mr. Hevert's DCF-based expected return on the market using Bloomberg data includes individual company growth rates as high as 83.89% (National Oilwell Varco, Inc.). To put a growth rate of 83.89% into perspective, it would take less than 13 years for this company's reported market capitalization of $8.0 billion to exceed to the most recently reported GDP of the United States of $21.54 trillion, and just under 14 years to outgrow the US economy assuming the economy grew at 4.1% year over year. In other words, assuming the long-term growth rate of 4.1%, US GDP would reach a nominal level of $37.8 trillion in 2033. Assuming a growth rate of 83.89% for National Oilwell Varco as Mr. Hevert has done, its market capitalization will reach $40.7 trillion in 2033, exceeding the US GDP by $2.9 trillion. This is simply an impossible outcome, rendering Mr. Hevert's assumptions unreasonable and economically and financially unfeasible.

From another perspective, 293 of the growth rates provided by Bloomberg, and relied on by Mr. Hevert, exceed 8.2%, or 2x the projected growth of the US economy. As pointed out in my example above, it simply is not reasonable to believe individual companies, and as a result the overall market, can sustain growth rates as high as Mr. Hevert has assumed.

As a result of these unreasonably high long-term market growth rate estimates, Mr. Hevert's market DCF returns used within his CAPM analysis are inflated and not reliable. Consequently, Mr. Hevert's 11.00% and 12.04% market risk premiums should be given no weight in estimating the Company's CAPM-based cost of common equity.

Q IN YOUR OPINION, ARE MR. HEVERT'S DCF-DERIVED EXPECTED RETURNS ON THE MARKET SUSTAINABLE ESTIMATES?

A No. Mr. Hevert's DCF-derived market return estimates of 13.85% and 14.90% are not sustainable, therefore, unreasonable. In fact, I have compared the market's achieved compound returns over rolling 5, 10, 20, and 50 year periods for the period of 1926 through 2018. In Table 4, I summarize the comparison of Mr. Hevert's average expected return of 14.38%[4] to the observed returns for each of those rolling periods. As shown on Table 4, of the 89 observed rolling 5-year averages, 56 (or 62.9%) of them were less than Mr. Hevert's average expected market returns 14.38%. This comparison is more revealing as the rolling-averages for longer periods are observed. It should be noted that Mr. Hevert's projected returns on the market exceed all of the 44 observed rolling 50-years averages.

TABLE 4

Observed Geometric Total Returns on the Market Compared to Mr. Hevert's Expected Market Return of 14.38%

	Rolling Period Compound Returns				Total
	5-Year	10-Year	20-Year	50-Year	93-Year
Rolling periods observed	89	84	74	44	1
Rolling periods w/ returns less than 14.38%	56	59	59	44	1
Percent of periods less than 14.38%	62.9%	70.2%	79.7%	100.0%	100.0%

[4](13.85% + 14.90%) ÷ 2 = 14.38%.

Q HOW DO YOUR EXPECTED RETURNS ON THE MARKET COMPARE TO THESE SAME ROLLING AVERAGE PERIODS?

A As Shown on Table 5, I have compared my average expected return on the market of 11.45%[5] to the same rolling periods of 5, 10, 20, 50, years. On a rolling 5-year basis, my average expected return on the market of 11.45%, or higher, occurred 49.4% of the time. Importantly, my average expected market return of 11.45%, or higher, occurred 50% of the time relative to the achieved returns on a rolling 20-year basis. For these reasons, it is clear that Mr. Hevert's expected returns on the market are unsustainable, excessive, and inconsistent with achieved returns on the market. As a result, Mr. Hevert's expected returns on the market should be rejected.

TABLE 5

Observed Geometric Total Returns on the Market Compared to Mr. Walters' Expected Market Return of 11.45%

	Rolling Period Compound Returns				Total
	5-Year	10-Year	20-Year	50-Year	93-Year
Rolling periods observed	89	84	74	44	1
Rolling periods w/ returns less than 11.45%	45	48	37	29	1
Percent of periods less than 11.45%	50.6%	57.1%	50.0%	65.9%	100.0%

[5](12.81% + 10.57% + 10.98%) ÷ 3 = 11.45%.

Q PLEASE EXPLAIN WHY YOU BELIEVE MR. HEVERT CALCULATED HIS MARKET RISK PREMIUM ESTIMATES IN ERROR, CAUSING A MISMATCH BETWEEN THE MARKET RISK PREMIUM AND THE RISK-FREE RATE.

A He measures the market risk premium based on his DCF return on the market less his current risk-free rate estimate of 2.85%,[6] and then relies on the market risk premiums of 11.00% and 12.04% as risk premium estimates used in his CAPM study on his Schedule RBH-D4. The error in his calculation is that the market risk premium that corresponds with a risk-free rate of 2.85% should not be the same as the market risk premium that corresponds with a risk-free rate of 3.03% as he uses on his Schedule RBH-D4. Rather, the market risk premium that corresponds with a risk-free rate of 3.03% should be the difference between his market return estimate of 13.85% (Bloomberg) and 3.03%, or 10.82%, and his market return estimate of 14.90% (Value Line) less his 3.03% risk-free rate, or 11.87%. In other words, Columns 3 and 4 of lines "Near-Term Projected 30-Year Treasury" of Mr. Hevert's Schedule RBH-D4 are overstated. Overstating the market risk premium in his CAPM study where he uses a projected Treasury bond yield produces a flawed and erroneous result that overstates a fair CAPM return estimate for Ameren Missouri in this proceeding.

Q CAN MR. HEVERT'S CAPM ANALYSIS BE CORRECTED?

A Yes. Even using his unsustainable expected returns on the market of 13.85% and 14.90%, had Mr. Hevert correctly calculated the market risk premium to correspond with the his projected risk-free rate, his near-term projected CAPM results would produce an average CAPM return of 8.52% using Bloomberg's beta coefficient, and an

[6]Schedule RBH-D2.

average CAPM return estimate of 9.73% using the Value Line beta coefficient. The midpoint of these two corrected estimates is 9.13%, which is consistent with my recommended range.

III.E. Mr. Hevert's ECAPM Studies

Q PLEASE DESCRIBE MR. HEVERT'S ECAPM ANALYSIS.

A Mr. Hevert relies on empirical tests of the traditional CAPM model to modify it in such a way to attempt to *correct* the original CAPM for some deficiencies inherent in the original model. Empirical tests show that the expected return line, or security market line, predicted by the CAPM are not as steep as the model would have us believe. In other words, the traditional CAPM understates the expected return for securities with betas less than 1, and overstates the expected return for securities with betas greater than 1. In order to correct for this empirical finding, Mr. Hevert modifies the traditional CAPM model as follows:

$$R_i = R_f + 0.75 \times B_i \times (R_m - R_f) + 0.25 \times B_m \times (R_m - R_f)$$ where:

R_i = Required return for stock i
R_f = Risk-free rate
R_m = Expected return for the market portfolio
B_m = Beta of the market
B_i = Beta - Measure of the risk for stock

Q WHAT ISSUES DO YOU TAKE WITH MR. HEVERT'S ECAPM ANALYSIS?

A Mr. Hevert's ECAPM suffers from the same flaws identified in my response to his traditional CAPM above. In addition to those material defects, Mr. Hevert's ECAPM analysis is further flawed by his use of an adjusted beta as published by *Value Line*. For example, the impact of Mr. Hevert's ECAPM adjustments increases his adjusted

Value Line beta estimate of 0.591 to 0.69.[7] The weighting adjustments of 0.25 and 0.75 employed by Mr. Hevert is mathematically the same as adjusting beta since the inputs are all multiplicative as shown in the formula above.

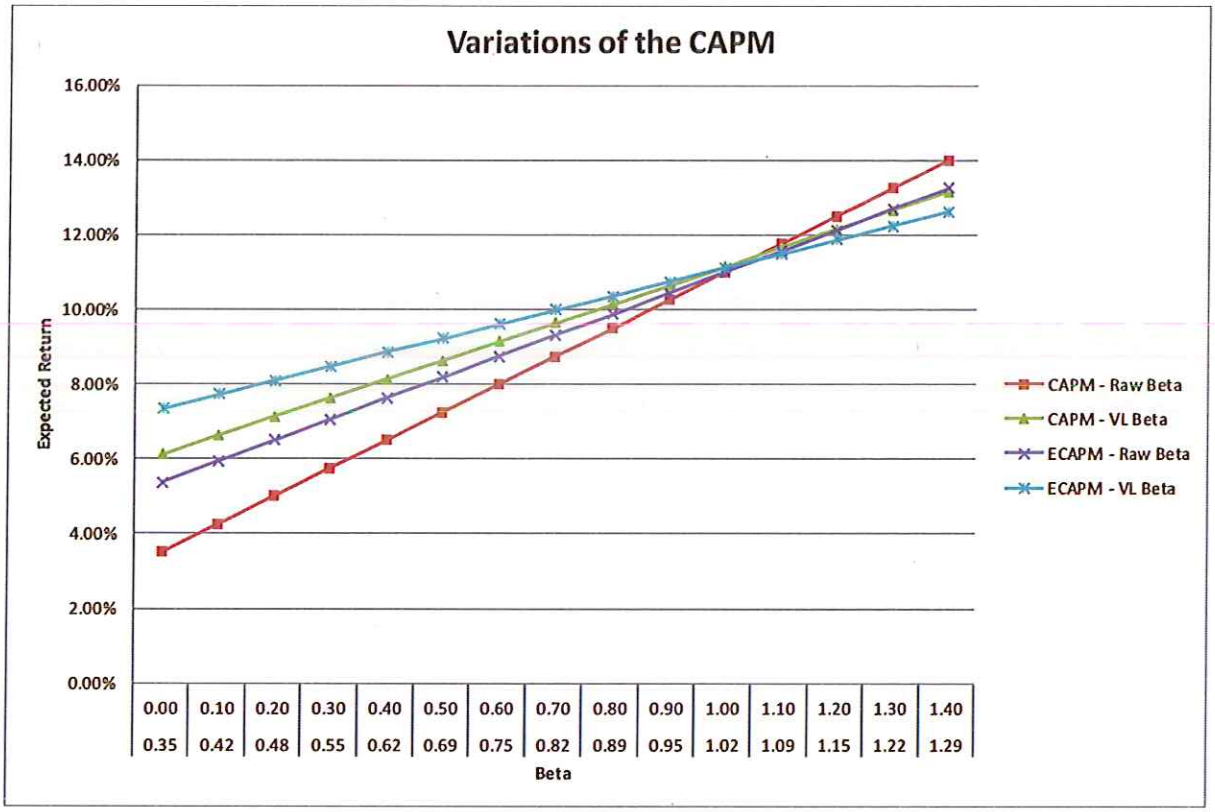
Further, Mr. Hevert's reliance on an adjusted beta in his ECAPM study is inconsistent with the academic research that I am aware of.[8] The end result of using adjusted betas in the ECAPM is essentially an expected return line that has been flattened by two adjustments. In other words, the vertical intercept has been raised twice and the security market line has been flattened twice: once through the adjustments *Value Line* made to the raw beta, and again when weighting the risk-adjusted market risk premium as Mr. Hevert has done. In addition to the many adjustments employed by Mr. Hevert, he further increases the intercept and flattens the security market line by using projected long-term Treasury yields.

The use of an adjusted beta has the effect of increasing CAPM return estimates for companies with betas less than 1, and decreasing the CAPM return estimates for companies with betas greater than 1, similar to other adjustments within the CAPM such as adjusted betas and long-term Treasury bond yields. I have modeled the expected return line resulting from the application of the various forms of the CAPM/ECAPM in Figure 1.

[7] 75% x 0.591 + 25% x 1 = 0.69.

[8] *See* Black, Fischer, "Beta and Return," *The Journal of Portfolio Management,* Fall 1993, 8-18; and Black, Fischer, Michael C. Jensen and Myron Scholes, "The Capital Asset Pricing Model: Some Empirical Tests," 1972.

FIGURE 1



Along the horizontal axis in Figure 1, I have provided the raw unadjusted beta (top row) and the corresponding adjusted *Value Line* beta (bottom row). *As* shown in Figure 1, the CAPM using a *Value Line* beta compared to the CAPM using an unadjusted beta shows that the *Value Line* beta raises the intercept point and flattens the slope of the security market line. As shown in the figure above, the two variations with the most similar slope are the CAPM with the *Value Line* beta, and the ECAPM with a raw beta. This evidence shows that the ECAPM adjustment has a very similar impact on the expected return line as a *Value Line* beta. Another observation that can be made from the figure above is the magnifying effect that the ECAPM using a *Value Line* beta has on raising the vertical intercept and flattening the slope relative to all other variations. There is simply no legitimate basis to use an adjusted beta within an

ECAPM because it unjustifiably alters the security market line and materially inflates a CAPM return for a company with a beta less than 1, such as utility stocks.

The premise of the ECAPM is to raise the intercept (i.e., the required return for a risk-free asset), and flatten the slope of the security market line. As I have explained, and shown above, the use of adjusted betas do just that. In addition to adjusted betas, the use of higher projected interest rates as the input for the risk-free rate also accomplish this. However, Mr. Hevert's ECAPM model relying on a projected interest rate further exacerbates the flattening of the security market line and raising of the intercept because he calculates his market risk premium estimates using the current, lower yield on the 30-year Treasury bond.

For these reasons, Mr. Hevert's ECAPM has completely departed from what the actual ECAPM is and should be rejected in its entirety.

III.F. Mr. Hevert's Bond Yield Plus ("BYP") Risk Premium

Q PLEASE DESCRIBE MR. HEVERT'S BYP RISK PREMIUM METHODOLOGY.

A As shown on his Schedule RBH-D5, Mr. Hevert constructs a risk premium ROE estimate based on the premise that equity risk premiums are inversely related to interest rates. He estimates that the average electric equity risk premiums are 4.68% over the period January 1980 through May 23, 2019. Then he applies a regression formula to the current, near-term, and long-term projected 30-year Treasury bond yields of 2.85%, 3.03%, and 3.70% to produce electric equity risk premiums of 7.05%, 6.89%, and 6.36%, respectively. Adding these equity risk premiums to the corresponding Treasury yields produces cost of equity estimates of 9.91%, 9.92%, and 10.06%, respectively.

Q IS MR. HEVERT'S BYP RISK PREMIUM METHODOLOGY REASONABLE?

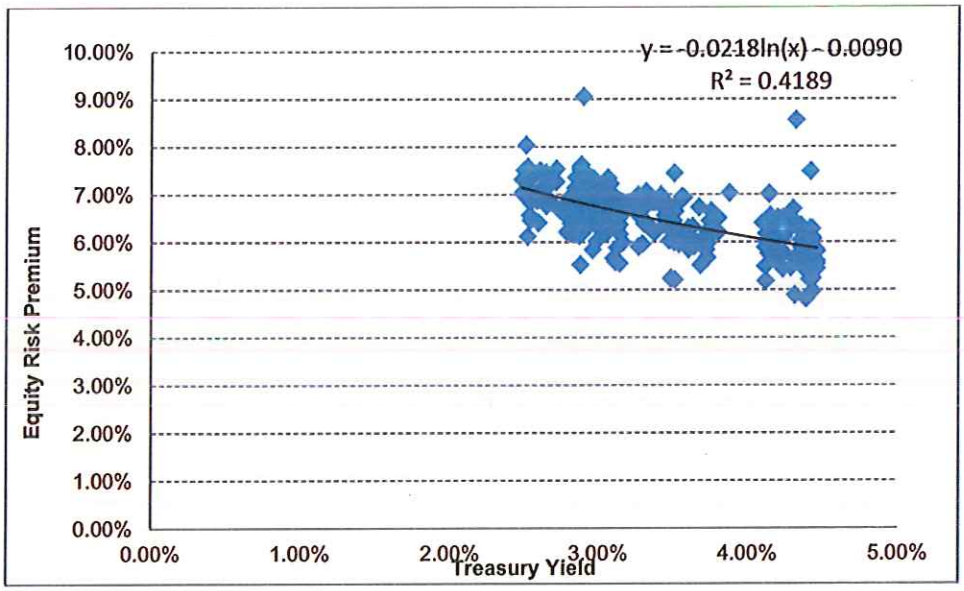
A No. Mr. Hevert's risk premium analysis is flawed for a couple reasons. First, his reliance on a long-term projected interest rate of 3.7% is significantly above any recent projection, or current level, and should be disregarded. A projected interest rate of no higher than 2.6% should be used. Second, the predictive strength of Mr. Hevert's regression model weakens in the post-recession time period. Third, Mr. Hevert's regression model significantly overestimates the cost of equity when looking at what ROE levels were being awarded at current and near-term projected interest rates.

Q DO YOU BELIEVE THE RELATIONSHIP SHOWN IN MR. HEVERT'S REGRESSION ANALYSIS IS APPLICABLE TO THE CURRENT CAPITAL MARKET ENVIRONMENT?

A No. The strength of a relationship between the dependent variable (risk premium) and the independent variable (nominal interest rates) in a regression analysis is best explained in the R-squared value. The R-squared value measures how much explanatory power changes in the independent variable has on changes in the dependent variable. A higher value indicates a stronger relationship.

As shown on Mr. Hevert's Schedule RBH-D5, the R-squared value is 74.25% when measuring the time period from January 1980 through May 2019. However, as shown below in Figure 2, when only measuring the relationship between the risk premium and interest rates over the 2010 through May 2019 post-recession time-period, the R-squared measure declines to 41.89%. A declining R-squared indicates a weakening of the statistical predictability produced from his regression analysis. For these reasons, Mr. Hevert's belief that equity risk premiums can be gauged by only changes in interest rates is simply not supported by his own regression analysis.

FIGURE 2



Q IS THERE REASON TO BELIEVE MR. HEVERT'S MODEL PRODUCES INACCURATE ESTIMATES OF THE COST OF EQUITY?

A Yes. A quick review of the underlying data in Mr. Hevert's regression analysis shows that his model produces inaccurate estimates for the cost of equity at various levels of interest rates. For example, Mr. Hevert's model predicts that the cost of equity at an interest rate level of 2.85%, is 9.91%. However, when we look at the ROEs that were authorized during periods when interest rates were near 2.85%, they were much lower than 9.91%. In order to get a large enough sample, I measured the average and median authorized ROE for each instance the interest rate was within 10 basis points of 2.85%, or between 2.75% and 2.95%. There were 111 observed ROEs that occurred within that range of interest rates. The average authorized ROE that occurred when interest rates were between 2.75% and 2.95% was 9.74% and the median authorized ROE was 9.71%. Similarly, 70 ROEs were authorized during periods when interest

rates were within the range of 2.93% to 3.13%. The average and median of those 70 observations are 9.68% and 9.73%, respectively.

These results are consistent with the significant decline in his model's predictive power in the post-recession era since 2010. For these reasons, Mr. Hevert's risk premium analysis should be rejected.

Q WHAT WOULD MR. HEVERT'S MODEL ESTIMATE THE COST OF EQUITY TO BE WITH A PROJECTED INTEREST RATE OF 2.6%?

A Mr. Hevert's model would estimate the cost of equity to be 9.90%.

Q IS AN ROE OF 9.90% CONSISTENT WITH WHAT ROES WERE BEING AUTHORIZED DURING PERIODS WHEN INTEREST RATES WERE NEAR 2.6%?

A No. Similar to the analysis described above, when looking at what ROEs were being awarded during periods when interest rates were between 2.5% and 2.7%, we can see that the average and median ROE was 9.6% and 9.61% respectively.

Q CAN MR. HEVERT'S BYP RISK PREMIUM ANALYSIS BE REVISED TO REFLECT CURRENT PROJECTIONS OF TREASURY YIELDS?

A Yes. Adding an equity risk premium of 6.77%, as described at page 40 of my Direct testimony, to a more recent near-term projection for the 30-year Treasury yield of 2.60%, produces a risk premium result of 9.37%. Similarly, giving some consideration to the 9.6%/9.61% ROE, produces a corrected risk premium range of 9.37% to 9.61%, with a midpoint of 9.49%. This is consistent with my recommended risk premium estimate and recommended range.

Q DID MR. HEVERT PERFORM AN ALTERNATIVE RISK PREMIUM ANALYSIS?

A Yes. Mr. Hevert performed an alternative risk premium analysis based on a multiple regression model where he included the credit spread of Moody's Baa-rated utility bond yields, as well as the level of the Cboe Options Exchange ("CBOE") Volatility Index ("VIX")[9] as additional independent variables in addition to the level of 30-year Treasury yields to estimate an equity risk premium. To estimate the equity risk premium, Mr. Hevert applied his multiple regression formula to his three levels of interest rates, the yield spread of Baa-rated utility bond yield of 4.49% less each of his three Treasury yields, and the 30 day trading average level of the VIX of 15.67. This method produced equity risk premiums of 6.85%, 6.69%, and 6.15% that correspond with his Treasury yields of 2.85%, 3.03%, and 3.70%, respectively. These Treasury yields and equity risk premiums produce ROE estimates of 9.71%, 9.72%, and 9.85% as shown on his Schedule RBH-D7.

Q DO YOU HAVE ANY CONCERNS WITH HIS ALTERNATIVE RISK PREMIUM ANALYSIS?

A Yes. Mr. Hevert's alternative analysis suffers from the same breakdown in explanatory power in the post-recession era since 2010. As shown on his Schedule RBH-D7, the Adjusted R-square is 70.24% for the period January 1980 through May 23, 2019. When only looking at the observations since 2010, the Adjusted R-square declines to 44.19%. In addition, his continued use of a projected Treasury yield of 3.7% is unreasonable as I explained above. For these reasons, Mr. Hevert's alternative analysis should be rejected as well.

[9]As Mr. Hevert explains at page 32 of his Direct testimony, the VIX is a market-based measure of expected volatility.

Q WHAT WOULD HIS MODEL ESTIMATE THE COST OF EQUITY TO BE IF UPDATED INTEREST RATES, CREDIT SPREADS, AND VIX LEVELS WERE USED?

A While I do not accept his alternative risk premium model as a reasonable method for estimating the cost of equity for the reasons I explained above, updating his model for current data produces results that are significantly below the 9.80% low end of his recommended range and 9.95% recommended ROE. For the period ending January 10, 2020, the 13-week average Treasury yield was 2.28%, the 13-week average Baa-rated utility yield was 3.73% (which produces a credit spread of 3.73% - 2.28% = 1.45%), and the 13-week average level of the VIX was 12.85. Using this more recent data produces an ROE of 9.62%. Using the near-term projected Treasury yield of 2.6%, the 13-week average Baa-rated utility yield was 3.73% (which produces a credit spread of 3.73% - 2.60% = 1.13%), and the 13-week average level of the VIX of 12.85, would produce an ROE of 9.59%.

III.G. Additional Factors

Q DID MR. HEVERT CONSIDER ADDITIONAL RISKS UNIQUE TO AMEREN MISSOURI AS SUPPORT FOR HIS RECOMMENDATION?

A Mr. Hevert identifies what he believes are additional factors that should be taken into consideration in assessing Ameren Missouri's risk profile and cost of equity: (1) Ameren Missouri's regulatory environment; (2) the Company's declining usage per residential customer, and (3) dilution to its operating income.[10]

[10]Hevert Direct at 42.

Q PLEASE RESPOND.

A In short, Mr. Hevert has cherry-picked these additional factors, or risks, potentially faced by Ameren Missouri without considering other unique risks faced by the proxy group companies and their operating utility subsidiaries. Mr. Hevert's concerns can be addressed in at least two ways.

First, to the extent ratings agencies deemed these particular risks detrimental, Ameren Missouri's ratings would have taken them into consideration. As I discussed in my Direct testimony, and show on my Schedule CCW-3 to that testimony, Ameren Missouri's ratings are identical to those of the proxy group. S&P and other credit rating agencies go through great detail in assessing a utility's business risk and financial risk in order to evaluate their assessment of its total investment risk. This total investment risk assessment of Ameren Missouri, in comparison to a proxy group, is fully considered in the market's perception of Ameren Missouri's risk, and therefore the proxy group fully captures the investment risk of Ameren Missouri.

In addition, financial theory generally, and the CAPM specifically, is predicated on the idea that investors should only be compensated for taking on market risk, i.e., beta, whereas specific business risk can and will be diversified away. Mr. Hevert recognizes this, and admits as much on page 17 of his Direct testimony. Mr. Hevert's attempt to compensate investors for a single business risk is contrary to his own testimony, and violates the underpinnings of the CAPM, a model which Mr. Hevert relies on heavily to support his recommended range. For these reasons, Mr. Hevert's concerns and additional factors should be disregarded.

Q DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?

A Yes, it does.