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MISSOURI PUBLIC SERVICE COMMISSION

FINANCIAL AND BUSINESS ANALYSIS DIVISION

FINANCIAL ANALYSIS DEPARTMENT

REBUTTAL TESTIMONY

OF

SEOUNG JOUN WON, PhD

UNION ELECTRIC COMPANY,
d/b/a Ameren Missouri

CASE NO. ER-2022-0337

Jefferson City, Missouri
February 2023

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d/b/a Ameren Missouri

CASE NO. ER-2022-0337

Q. Please state your name and business address.

A. My name is Seoung Joun Won and my business address is P.O. Box 360, Jefferson City, Missouri 65102.

Q. Who is your employer, and what is your present position?

A. I am employed by the Missouri Public Service Commission ("Commission") as a member of Commission Staff ("Staff") and my title is Regulatory Compliance Manager for the Financial Analysis Department, in the Financial and Business Analysis Division.

Q. Are you the same Seoung Joun Won who filed Direct Testimony on January 10, 2023 in this proceeding?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony?

A. The purpose of my rebuttal testimony is to respond to the direct testimonies of Ann E. Bulkley, Darryl T. Sagel, and David Murray, regarding return on equity ("ROE"), capital structure, and rate of return ("ROR"). Ms. Bulkley and Mr. Sagel sponsored their testimonies on behalf of Union Electric Company, d/b/a Ameren Missouri ("Ameren Missouri" or the "Company"), which is a subsidiary of Ameren Corporation ("Ameren Corp." or the "Parent Company"). Mr. Murray sponsored his testimony on behalf of the Missouri Office of the Public Counsel ("OPC"). Staff's analyses and conclusions are supported by Staff's rebuttal workpapers.

I. EXECUTIVE SUMMARY

Q. What is the overview of your response to the testimonies of Ms. Bulkley and Mr. Sagel?

A. Staff's rebuttal will focus on Ms. Bulkley's proposed ROE and Mr. Sagel's capital structure and recommended ROR. For Ameren Missouri, Ms. Bulkley proposed an ROE of 10.20% within a range of 9.90% to 11.25%.[1] Mr. Sagel proposed an ROR of 7.186% based on what Ameren Missouri's standalone capital structure was projected to be on December 31, 2022 consisting of 51.928% common equity, 0.669% preferred stock, and 47.403% long-term debt with a cost of preferred stock of 4.180% and a cost of debt of 3.926%.[2]

During the audit review process, Staff discerned that Ms. Bulkley introduced a series of biased estimates for her cost of equity ("COE") which resulted in a recommendation of an overstated ROE.[3] Ms. Bulkley overestimated her COE by using inflated input data and improper estimation methods in her direct testimony. In this rebuttal testimony, Staff will provide a detailed explanation on how Ms. Bulkley used unreasonable upwardly biased input data in the Constant Growth form of the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Empirical Capital Asset Pricing Model ("ECAPM"), and the Bond Yield Plus Risk Premium ("BYPRP") analysis.[4]

Mr. Sagel's proposed ROR of 7.186% is based on Ameren Missouri's projected standalone capital structure and cost of debt as of December 31, 2022, with Ms. Bulkley's proposed ROE of 10.20%. Staff found that Ameren Missouri's actual common equity ratio of 51.84% as of

[1] Page 8, lines 5-12, Bulkley's Direct Testimony.
[2] Schedule DTS-D1, Sagel's Direct Testimony.
[3] Ms. Bulkley falsely used the terms ROE and COE interchangeably. As explained in footnote No.4 of Won's Direct Testimony, COE is the return required by investors; ROE is the return set by a regulatory utility commission.
[4] Page 6, lines 3-5, and page 37, lines 18-19, Bulkley's Direct Testimony.

September 31, 2022, is slightly different from Mr. Sagel's projected common equity ratio of 51.93% as of December 31, 2022.[5] At this time, Staff will not address any major issues with the projected standalone capital structures of Ameren Missouri. Currently, the changes to Ameren Missouri's capital structures from September to December 2022 are under review. Staff will make a final recommendation in later testimony filings after investigating the reason(s) for Ameren Missouri's actual capital structure changes.

Q. What is the overview of your response to the testimony of Mr. Murray?

A. Mr. Murray recommended an ROE of 9.25% within a range of 8.40% to 9.25% and an ROR of 6.21% based on his recommended capital structure of 43.00% common equity, 0.69% preferred stock, and 56.31% long-term debt and applying a cost of preferred stock of 4.18% and a cost of long-term debt of 3.91%.[6] Mr. Murray's recommended ROE of 9.25% is the same as the Commission's most recent authorized ROE of 9.25% in July 2020 for an electric utility,[7] and it is lower than the Commission's most recent authorized ROE for Ameren Missouri of 9.53% in April 2015.[8] Mr. Murray's recommended common equity to total capital ratio ("equity ratio") of 43.00% is more than 800 basis points lower than the actual Ameren Missouri common equity ratio of 51.84% as of September 30, 2022.[9] Mr. Murray's recommended common equity ratio is based on his analysis of Ameren Corp.'s consolidated common equity ratio.[10] Staff expresses concern with Mr. Murray's recommended capital structure using Ameren Corp.'s capital structure ratio instead of Ameren Missouri's standalone capital structure.

[5] Schedule SJW-d16, Won's Direct Testimony.
[6] Schedule DM-D-7, Murray's Direct Testimony.
[7] *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.
[8] *Report and Order* issued April 29, 2015, in Case No. ER-2014-0258.
[9] Schedule SJW-d16, Won's Direct Testimony.
[10] Page 2, lines 8-11, Murray's Direct Testimony.

II. RESPONSE TO TESTIMONY OF AMEREN MISSOURI'S WITNESSES

Q. What are the specific areas in which Staff is responding to Ameren Missouri's witnesses?

A. Staff is responding to the testimonies of Ms. Bulkley and Mr. Sagel. The areas in which Staff addresses issues of Ms. Bulkley's direct testimony include:

- Proposed ROE,
- Proxy Group Criteria,
- Growth Rates for DCF Model,
- Market Risk Premium for CAPM,
- Empirical CAPM Method,
- BYPRP Analysis, and
- Risks and Authorized ROE.

Then, Staff will address Mr. Sagel's recommended capital structure. Staff will discuss each issue in turn, below.

1. Proposed ROE

Q. Please explain Ms. Bulkley's proposed ROE in this proceeding.

A. Ms. Bulkley proposed an ROE of 10.20%, within a range of 9.90% to 11.25%, for ratemaking of Ameren Missouri in this proceeding.[11] Ms. Bulkley determined her proposed ROE from a range of the results of her COE estimates. Ms. Bulkley calculated a COE estimate range of 8.11% to 12.03%.[12] For her proposed ROE, Ms. Bulkley considered company-specific risk factors along with current and prospective capital market conditions.[13] However, Ms. Bulkley did not precisely state her procedure for selecting her proposed ROE point estimation of 10.20% or

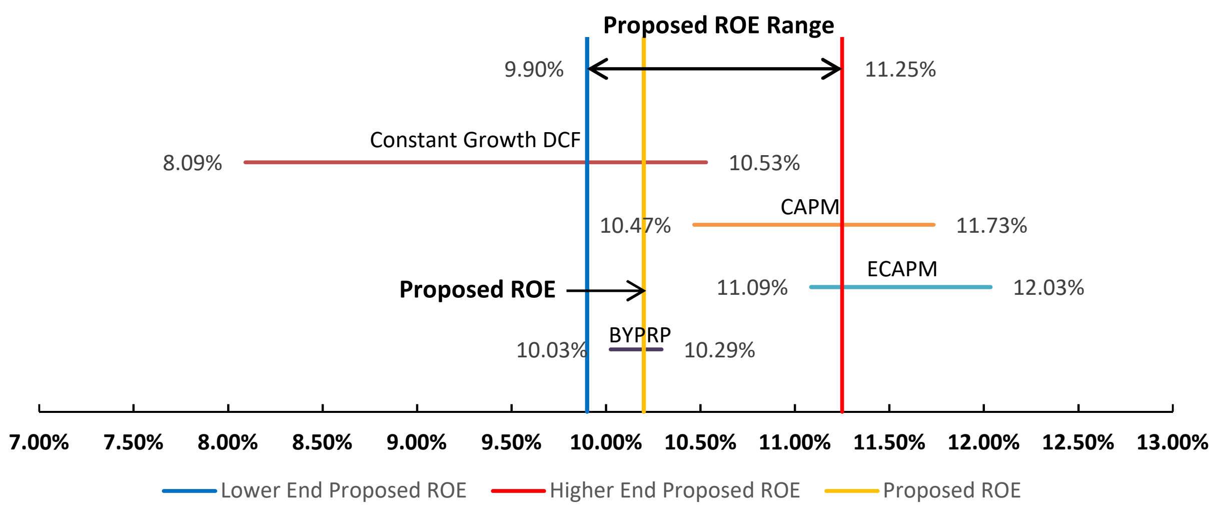
[11] Page 8, lines 4-12, Bulkley's Direct Testimony.
[12] Page 7, Figure 1, Bulkley's Direct Testimony.
[13] Page 7, lines 4-7, Bulkley's Direct Testimony.

the endpoints of her reasonable COE range of 9.90% to 11.25% from within her COE estimate analytic results of 8.09% to 12.03%.[14]

Q. How did Ms. Bulkley estimate her COE?

A. Ms. Bulkley applied COE estimation models such as the constant-growth DCF, the CAPM, the ECAPM, and the BYPRP to her electric utility proxy group.[15] Ms. Bulkley's COE estimates for each analysis method and recommended ROE are summarized in Figure 1:[16]

Figure 1. Ms. Bulkley's COE Estimates and proposed ROE



Q. What are Staff's concerns with Ms. Bulkley's proposed ROE?

A. Staff's concern is that Ms. Bulkley's proposed ROE of 10.20% is too high compared to the national average authorized ROE of 9.55% in electric utility rate cases completed in the year 2022.[17] Staff is not aware of persuasive evidence that Ameren Missouri's authorized ROE in this proceeding should be materially higher than the ROEs authorized for its peer utilities

[14] Pages 6-8, Bulkley's Direct Testimony.
[15] Pages 6, lines 3-5, Bulkley's Direct Testimony.
[16] 1 Summary, Won's Rebuttal Workpaper.
[17] S&P Capital IQ Pro, Retrieved on January 3, 2022.

in the U.S. Ms. Bulkley proposed an ROE based on her overstated COE estimates. Ms. Bulkley presented unreasonable COE estimation procedures using exaggerated input values for her COE estimation models. Ms. Bulkley utilized a variety of data sources and analysis methods to produce inflated input values. The following summarizes the steps that led to Ms. Bulkley's overestimation of her COE: (1) Selecting inappropriate biased data, (2) Producing overestimated input values, and (3) Utilizing inadequate estimation methods. Staff will describe how each of Ms. Bulkley's COE estimates are overstated by presenting detailed investigation results later in this testimony.

Q. Do you agree with Ms. Bulkley that ROE estimates based in whole or in part on current market conditions will understate the ROE during the future period that the Company's rates will be in effect?[18]

A. No, I do not. Ms. Bulkley's assertion is a pure speculation. On the contrary, in my professional opinion there is more possibility that both ROE and COE are currently overestimated because of the current market conditions reflecting the published Fed's monetary policy to increase interest rates until the inflation rate returns back to its target rate of 2%.[19]

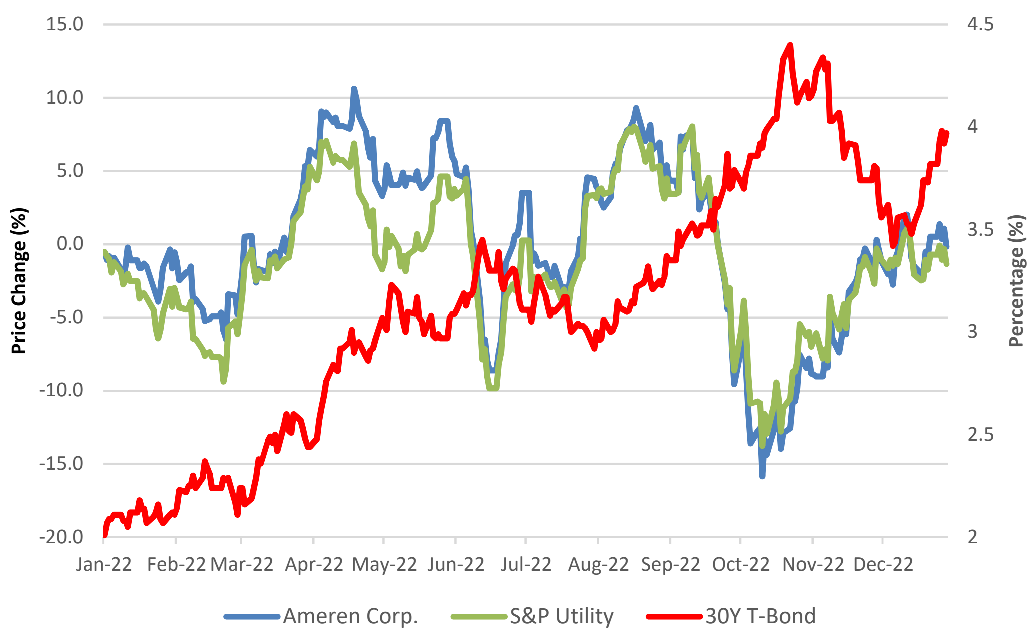
Q. Do you agree with Ms. Bulkley that the utility sector will underperform over the near-term because investors will begin to rotate back into government bonds as the yields on long-term government bonds continue to increase, thus resulting in a decrease in the share prices of utilities?[20]

A. No, I do not. Ms. Bulkley falsely assumed that the long-term government bonds yields would continue to increase. The fact is, the 30-year Treasury bond yield is 3.55% as of

[18] Page 16, lines 11-13, Bulkley's Direct Testimony.
[19] Federal Reserve Press Release, Published December 14, 2022, (https://www.federalreserve.gov/monetarypolicy/files/monetary20221214a1.pdf).
[20] Page 28, lines 7-11, Bulkley's Direct Testimony.

February 2, 2023, decreased from 4.40% as of October 24, 2022; a decline of 85 basis points.[21] In addition, there is no certainty a higher government bond yield must result in a lower share price of utilities. As shown in Figure 2, both the 30-year Treasury bond yield and share price of Ameren Corp. and S&P Utility increased March –April and August 2022:

Figure 2. Share Price and the 30-year Treasury Bond Yield in 2022



2. Proxy Group Criteria

Q. What is Ms. Bulkley's proxy group for estimating Ameren Missouri's COE?

A. Ms. Bulkley selected fourteen (14) electric utility companies for her proxy group for Ameren Missouri's COE estimation.[22] Ms. Bulkley's electric utility proxy group was selected from 36 publicly-traded electric distribution utility companies classified by Value Line as electric

[21] Fed, St Louis, FRED Economic Data, https://fred.stlouisfed.org/series/DGS30.
[22] Schedule AEB-D2, Bulkley's Direct Testimony.

utilities.[23] The following is the list of Ms. Bulkley's electric utility proxy group and associated ticker symbols:

Table 1. Electric Utility Proxy Group and Ticker[24]

	Electric Utility Proxy	Ticker
1	ALLETE, Inc.	ALE
2	Alliant Energy Corporation	LNT
3	American Electric Power Company, Inc.	AEP
4	Duke Energy Corporation	DUK
5	Entergy Corporation	ETR
6	Evergy, Inc.	EVRG
7	IDACORP, Inc.	IDA
8	NextEra Energy, Inc.	NEE
9	NorthWestern Corporation	NWE
10	OGE Energy Corporation	OGE
11	Otter Tail Corporation	OTTR
12	Portland General Electric Company	POR
13	Southern Company	SO
14	Xcel Energy Inc.	XEL

Q. What is Staff's concern with the selection criteria of Ms. Bulkley's proxy group?

A. Ms. Bulkley excluded Pinnacle West Capital Corporation ("PNW") from her electric utility proxy group because the stock price of PNW decreased approximately 24 percent over a one-month period from October to November of 2021 resulting from a negative regulatory decision for its largest operating company, Arizona Public Service Company.[25] Staff disagrees with her exclusion of PNW. The highest price of PNW stock in October of 2021 was $74.18 on October 6, 2021. The stock price of PNW fell to a low of $63.36 on November 9, 2021, but then

[23] Pages 34 and 35, Bulkley's Direct Testimony.
[24] Figure 8, Bulkley's Direct Testimony.
[25] Page 35, lines 2-6, Bulkley's Direct Testimony.

rebounded to $80.49 by April 6, 2022, exceeding its October 2021 high.[26] Considering PNW's stock price changes, Ms. Bulkley's argument of excluding PNW in her electric utility proxy group is unwarranted.

In addition, Ms. Bulkley included some inappropriate companies in her proxy group such as ALLETE, Inc. ("ALL"), NextEra Energy, Inc. ("NEE"), and Otter Tail Corporation ("OTTR"). The proxy group companies ALL, NEE and OTTR should not be considered comparable to Ameren Missouri for ratemaking purposes. According to the Edison Electric Institute ("EEI"), ALL and NEE are not in the category of "regulated company" because less than 80% of their holding company assets are regulated.[27] ALL also has unique characteristics that differentiate it from other rated utility companies in the US because it has significant exposure to cyclical industrial and commercial customers totaling about 80% of its utility retail revenue.[28] NEE's higher-risk businesses expose NEE to significant liquidity needs and low margins because lower-risk regulated electric operations account for only about 70% of its consolidated earnings before interest, taxes, depreciation, and amortization ("EBITDA").[29] OTTR has exposure to higher-risk nonutility plastics and manufacturing operations.[30] In 2021, OTTR reported about 60% of its consolidated operating revenue from non-electric business.[31] Using her incomparable electric proxy group companies, Ms. Bulkley overstated her COE estimates and proposed ROE.

3. Growth Rates for Discounted Cash Flow Models

Q. What is Staff's concern with Ms. Bulkley's constant-growth DCF model?

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[26] S&P Capital IQ Pro.
[27] Pages 29-30, 2021 Financial Review, EEI.
[28] ALLETE Inc., S&P Global Ratings, published in May 18, 2021.
[29] NextEra Energy Inc., S&P Global Ratings, published in January 26, 2021.
[30] Otter Trail Corp., S&P Global Ratings, published in September 17, 2021.
[31] SEC 10-K Form, reported in February 16, 2022.

A. Ms. Bulkley used unreasonably high growth rates in her constant-growth DCF model, which overstated her COE estimates. Ms. Bulkley exclusively used projected earnings growth rates (Thomson First Call, Zacks, and Value Line), which she erroneously called long-term earnings growth rates.[32] Analysts' projected growth rates are for periods of only 3 to 5 years, which are considered short given the infinite investment horizon assumed in the DCF. Because of overstated growth rates, Ms. Bulkley's DCF COE estimates are unreasonably upward biased.

Q. What is wrong with using exclusively projected earnings growth rates for Ms. Bulkley's constant-growth DCF COE estimates?

A. Analysts' projected earnings growth rates are not suitable for use, exclusively, in the constant-growth DCF model because the growth rates that Ms. Bulkley utilized are not perpetual growth rates and are shorter than five-year projected growth rates. The constant-growth DCF model assumes a perpetual investment horizon. By exclusively using these analysts' projected growth rates in the context of the constant-growth DCF model, Ms. Bulkley makes an unreasonable assumption that electric utilities will grow at these often high and precarious shorter term growth rates, in perpetuity.

Analysts are of the consensus that long-term growth rates for utilities will eventually converge to the level of long-term gross domestic product ("GDP").[33] Staff has consistently held the view that while it is possible that a company or industry would grow at a rate faster than the GDP in the short to medium term, no company or industry will do so in perpetuity. Currently, the nominal GDP is projected to grow at a longer run rate of 3.80% and 3.90% reported by the Federal Open Market Committee ("FOMC") and the Congressional Budget Office ("CBO"),

[32] Pages 45-46, Bulkley's Direct Testimony.
[33] Morin, R. A. (2006), New Regulatory Finance. Public Utilities Reports, page 302.

respectively.[34] An example of Ms. Bulkley's unreasonably high growth rates is the 12.50% Value Line EPS growth rate with 180-day average stock price used to produce NextEra Energy, Inc.'s mean and high DCF COE estimates of 12.61% and 14.90%, respectively.[35] Such unreasonably high growth rates should not be used in constant-growth DCF COE estimates.

Q. What growth rates should Ms. Bulkley have used?

A. As Staff alluded to above, appropriate growth rates for use in the constant-growth DCF model should consider the long-term growth rates, represented by the projected long-term nominal GDP growth rates of 3.90%.[36] For example, the Federal Energy Regulatory Commission ("FERC") incorporates long-term GDP growth rates into calculations within the constant-growth DCF by using a ratio of 80% analyst projected long-term growth rates to 20% long-term GDP growth rates.[37] If Ms. Bulkley had used an approach similar to Staff's to calculate a long-term growth rate with a proper GDP growth rate in the constant-growth DCF model, her DCF COE estimate would be 7.87% as opposed to 8.71%.[38] Therefore, reasonable DCF COE results are much lower than Ms. Bulkley's estimations.

4. Market Risk Premium for Capital Asset Pricing Models

Q. Please explain Ms. Bulkley's CAPM COE estimation methods.

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[34] Federal Open Market Committee, retrieved on June 17, 2022, (https://www.federalreserve.gov/monetarypolicy/files/fomcprojtabl20220615.pdf).
An Update to the Economic Outlook: 2022 to 2032, Congressional Budget Office, June 2, 2022, (https://www.cbo.gov/system/files/2022-05/57950-Outlook.pdf).
[35] Schedule AEB-D2, Bulkley's Direct Testimony.
[36] Page 134, An Update to the Economic Outlook: 2022 to 2032, Congressional Budget Office, May 2022, (https://www.cbo.gov/system/files/2022-05/57950-Outlook.pdf).
[37] *Entergy Arkansas, Inc*., Opinion No. 575, 175 FERC ¶ 61,136 (2021).
[38] 2 Constant DCF, Won's Rebuttal Workpaper.

A. Ms. Bulkley employed the traditional CAPM and the empirical CAPM ("ECAPM") using Value Line Beta, Bloomberg Beta and the Value Line long-term average Beta with three different risk-free rates of 3.18%, 3.74% and 3.80% and a total market return of 12.94% resulting in three different market risk premiums ("MRP") of 9.76%, 9.20% and 9.14%.[39] For her electric utility proxy group, the ranges of Ms. Bulkley's CAPM and ECAPM COE estimates are 10.47% to 11.73% and 11.09% to 12.03%, respectively.[40]

Q. What is Staff's concern with Ms. Bulkley's CAPM and ECAPM COE estimates?

A. Ms. Bulkley's CAPM and ECAPM COE estimates are too high. Even compared to her average COE estimate of 9.31% using the constant-growth DCF, Ms. Bulkley's average CAPM and ECAPM COE estimates of 11.18% and 11.62%, respectively, are too high.[41] Staff found that Ms. Bulkley's CAPM and ECAPM COE estimates are too high mainly because she used unreasonably high MRPs. Ms. Bulkley's MRPs of 9.76%, 9.20% and 9.14% are much higher than the regular US financial service industry's MRP estimates of around 4.00% to 7.00%.[42]

Q. How were Ms. Bulkley's MRPs estimated?

A. Ms. Bulkley calculated her MRPs as the difference between the expected market return on the S&P 500 Index and the risk-free rate.[43] For estimating expected market return, Ms. Bulkley conducted several steps of calculations. First, using the data of companies on the S&P 500 Index, Ms. Bulkley calculated an estimated weighted average dividend yield of 1.83% and an estimated weighted average long-term growth rate of 11.02%.[44] Second, using the constant

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[39] Schedules AEB-D2, Attachment 3, Bulkley's Direct Testimony.
[40] Schedule AEB-D2, Attachment 3, Bulkley's Direct Testimony.
[41] 1 Summary, Won's Rebuttal Workpaper.
[42] See Figure 2, Page 14. "MRP and corresponding COE".
[43] Page 49, lines 15-18, Bulkley's Direct Testimony.
[44] Schedule AEB-D2, Attachment 5, Pages 1-6, Bulkley's Direct Testimony.

growth DCF model with her estimated dividend yield and growth rate, Ms. Bulkley estimated the required market return of 12.94%.[45] Finally, Ms. Bulkley calculated implied MRPs by estimating the difference between the implied expected equity market returns and the various risk-free rates. Ms. Bulkley's implied MRP over the current 30-day average of the 30-year U.S. Treasury bond yield, and projected yields on the 30-year U.S. Treasury bond, range from 9.14% to 9.76%.[46] Table 2 shows Ms. Bulkley's three estimation methods and their associated MRP estimates:[47]

Table 2. Bulkley's Market Risk Premium Estimation

	Estimate Method	MRP
[1]	Current 30-day average of 30-year U.S. Treasury bond yield	9.76%
[2]	Near-term projected 30-year U.S. Treasury bond yield	9.20%
[3]	Blue Chip Projected 30-year U.S. Treasury bond yield	9.14%
	Average	9.37%

Q. What is wrong with Ms. Bulkley's constant-growth DCF model estimation of the required market return of 12.94%?

A. Ms. Bulkley's constant-growth DCF procedure has two critical faults. First, for her expected total market return estimation using the DCF model, Ms. Bulkley's data set included companies that do not pay dividends or for which dividend information was not available. Dividend yield information is essential to utilizing the DCF model.[48] Second, consistent with Staff's position that the DCF model assumes a long-term investment horizon, Staff further finds that the growth rates that Ms. Bulkley used are too short-term. This makes the growth rates

[45] Page 49, lines 19-21, Bulkley's Direct Testimony.
[46] Schedule AEB-D2, Attachment 6, Page 3 of 3, Bulkley's Direct Testimony.
[47] 3.1 CAPM, Won's Workpaper.
[48] David C. Parcell in The Cost of Capital – A Practitioner's Guide prepared for SURFA.

unsuitable for the constant-growth DCF model Mr. Bulkley used to estimate her expected market return. Staff recalculated an expected total return including only companies with available dividend yields and found a reasonable total market return of 9.57%.[49] Taking into account all three risk-free rates that Ms. Bulkley used results in Ms. Bulkley's estimated MRPs being less than 8.5%.[50]

Q. What are other financial institutions' current MRP estimates?

A. Other financial institutions' MRP estimates range from 4.61% to 6.71%.[51] According to a 2021 research survey based on 1,794 responses from business and economic professors, the North America average MRP estimate was 5.55%.[52] The American Appraisal Risk Premium Quarterly, Value Line, and Duff & Phelps (now Kroll) calculated MRPs of 6.0%, 5.5%, and 5.0%, respectively.[53] Kroll's current MRPs range from 4.61% (geometric average), to 6.03% (arithmetic average) using the historical Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset from 1926 to 2021.[54] Professor Aswath Damodaran of NYU Stern School of Business, a noted equity valuation professor, currently estimates MRPs in the range of 5.13% (geometric average) to 6.71% (arithmetic average):[55]

[49] 5 Market Return, Won's Rebuttal Workpaper.
[50] 3 CAPM, Won's Rebuttal Workpaper.
[51] 3.1 CAPM, Won's Rebuttal Workpaper.
[52] Fernandez, P., Bañuls, S., & Fernandez Acin, P. (2021). Survey: Market Risk Premium and Risk-Free Rate used for 88 countries in 2021. SSRN-Social Science Research Network, 1–17.
[53] FERC Opinion No. 569, 169 FERC ¶ 61,129.
[54] Kroll, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[55] Risk Premium, Damodaran Online, Stern School of Business of New York University, updated January 5, 2022.

Figure 3. MRP and corresponding COE

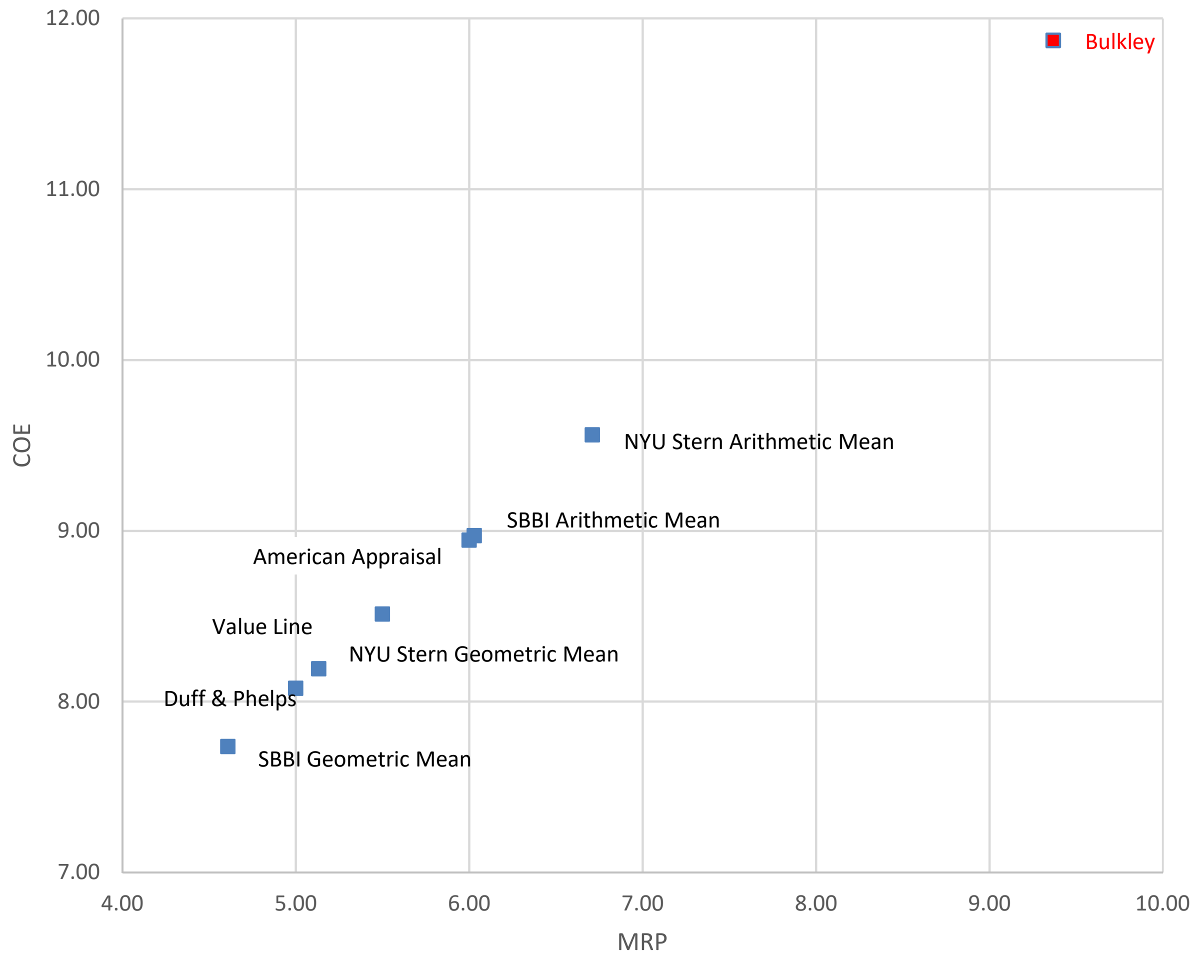

Figure 3 compares COE estimates with their corresponding MRPs, for Ms. Bulkley's electric proxy group, calculated with other reputable financial institution's reasonable MRPs and Ms. Bulkley's unreasonable MRPs, assuming the same projected 30-Year U.S. Treasury bond yield of 3.74% used in Ms. Bulkley's estimation.[56] As shown in Figure 3, Ms. Bulkley's CAPM COE estimate of 11.87%, with her corresponding average MRP of 9.37%, is an extreme outlier

[56] Schedule AEB-D2, Attachment 3, Bulkley's Direct Testimony.

when compared with the other reliable published estimates. This clearly indicates that Ms. Bulkley's MRPs are too high and, consequently, her COE estimates are too high as well.

Q. Please summarize your concern with Ms. Bulkley's MRPs.

A. As presented in Table 2, Ms. Bulkley used three MRP estimates based on three 30-year U.S. Treasury bond yields of 3.18%, 3.74% and 3.80%, and her overestimated S&P 500 market return of 12.94%. As Staff already pointed out, all three MRP estimates are too high compared to other widely accepted MRP estimates in the financial industry. An example, according to the most recent report by Cost of Capital Resource Center of Kroll, an independent provider of risk and financial advisory solutions, the recommended MRP is 6.0% with a normalized risk-free rate of 3.5% in the US.[57] Therefore, Ms. Bulkley's MRPs of 9.14%, 9.20% and 9.76% are more than 300 basis points higher than Kroll's MRP estimate of 6.00% and Staff's MRP estimate of 5.50%.

Q. What would Ms. Bulkley's CAPM COE estimates be if she used proper input data?

A. With reasonable assumptions, an MRP of 5.50%, and a risk-free rate of 3.74%,[58] Ms. Bulkley's average CAPM COE estimate would be 8.51%.[59] This is well within the range of Staff's COE estimates of 7.30% to 8.79%, which are much lower than Ms. Bulkley's original average CAPM COE estimate of 11.18%. Staff's recalculation of Ms. Bulkley's CAPM COE estimate of 8.51% is within Staff's recalculation of Ms. Bulkley's DCF COE estimated range of

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[57] Kroll, Impact of High Inflation and Market Volatility on Cost of Capital Assumptions – October 2022 Update, Retrieved, January 22, 2023, https://www.kroll.com/-/media/cost-of-capital/impact-high-inflation-market-volatility-coc-assumptions-2022.pdf.
[58] The assumption of the estimated MRP of 5.51% is the average of the eight MRP estimates in Figure 2. The risk free rate of 2.26% is an average of 30-year Treasury bond at yields of three months ending June 2021.
[59] 3 CAPM, Won's Rebuttal Workpaper.

7.87% to 8.71%.[60] Staff notes that Ms. Bulkley's original DCF COE range (8.09%-10.53%) and CAPM COE range (10.47%-11.43%) were not comparable.

5. Empirical Capital Asset Pricing Model

Q. What is your concern with Ms. Bulkley's ECAPM method?

A. Like her average CAPM COE estimate of 11.18%, Ms. Bulkley's average ECAPM COE estimate of 11.62% assumes too high an MRP.[61] In addition, the ECAPM model itself overestimates COE because of an adjustment to account for the supposed tendency of the CAPM method to underestimate COE for companies with low Beta coefficients.

Q. How did Ms. Bulkley adjust her CAPM COE to ECAPM COE?

A. Ms. Bulkley multiplied 75% of her MRPs by the Beta coefficient and added the remaining 25% MRPs, unadjusted.[62] This adjustment is consistent with Dr. Roger Morin's formula.[63] Dr. Morin's formula was based on his finding, with data between 1926 and 1984, that the regular CAPM underestimated returns by about 2.00%. However, there is no evidence that Dr. Morin's adjustment factor of 25% would hold true with data after 1984.[64] Furthermore, Dr. Morin also cited other studies that found that the CAPM produced returns between -9.61% and 13.56%, meaning that the CAPM actually overestimated COE in some instances.[65] Such variations in findings do not lend credibility to Ms. Bulkley's adjustment to the ECAPM.

Q. What is Staff's conclusion regarding Ms. Bulkley's ECAPM method?

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[60] 1 Summary, Won's Rebuttal Workpaper.
[61] 1 Summary, Won's Rebuttal Workpaper.
[62] CAPM COE estimate equals Risk-Free Rate + Beta × MRP but ECAMP COE estimate equals Risk-Free Rate + 0.25 × MRP + 0.75 × Beta × MRP or Risk-Free Rate + Alpha + Beta × (MRP – Alpha) where Alpha = 0.25 × MRP.
[63] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 190.
[64] Ibid.
[65] Ibid.

A. Staff recommends that the Commission discard Ms. Bulkley's ECAPM method and COE estimate as unreliable information in determining a just and reasonable authorized ROE for Ameren Missouri.

6. Bond Yield Plus Risk Premium Analysis

Q. What is the BYPRP analysis?

A. The conventional BYPRP analysis is based on the idea that since investors in stocks take greater risks compared to investors in bonds, the former expect to earn a return on a stock investment that reflects a premium over and above the return they expect to earn on a bond investment.[66] This premium required by investors for an investment in common stock over an investment in corresponding debt is called the risk premium.[67] Multiple approaches have been developed, but Ms. Bulkley's BYPRP is different from the conventional method.

Q. What is Ms. Bulkley's BYPRP method?

A. Ms. Bulkley's BYPRP used a regression analysis based on authorized ROEs for utility companies relative to risk-free rates (30-year Treasury bond yields).[68] Ms. Bulkley used monthly data of risk-free rates and authorized ROEs derived from electric utility rate cases from 1992 through June 2022 as reported by Regulatory Research Associates ("RRA").[69] Ms. Bulkley's regression analysis results in the following equation:

$$\text{Risk Premium (\%)} = 8.67\% - 0.57 \text{ Risk-Free Rate (\%)}.$$[70]

[66] Brigham, E. F., Shome, D. K., & Vinson, S. R. (1985). The risk premium approach to measuring a utility's cost of equity. Financial Management, 33-45.
[67] Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports, page 108.
[68] Page 55, lines 10-11, Bulkley's Direct Testimony.
[69] Page 55, lines 15-17, Bulkley's Direct Testimony.
[70] Schedule AEB-D2, Attachment 5, Bulkley's Direct Testimony.

Because Ms. Bulkley defined the risk premium as the authorized ROE minus the risk-free rate, Ms. Bulkley's BYPRP ROE estimates are only determined by 30-year Treasury bond yields. In contrast, DCF and CAPM can be used to estimate COE using multiple input variables. For example, Ms. Bulkley's CAPM COE estimates are determined by not only the risk-free rate (30-year Treasury bond yield) but also the total market risk (MRP) and a stock's risk (Beta).

Q. What are Ms. Bulkley's BYPRP ROE estimates?

A. Ms. Bulkley's BYPRP ROE estimates range from 10.03% to 10.29%, with a mean of 10.20%.[71] For her BYPRP ROE estimation, Ms. Bulkley used three risk-free rates: 30-day average of the 30-year U.S. Treasury bond yield (i.e., 3.18%), the near-term (Q4 2022 – Q4 2023) projections of the 30-year U.S. Treasury bond yield (i.e. 3.74%), and a longer-term (2023 – 2027) projection of the 30-year U.S. Treasury bond yield (i.e., 3.80%).

Q. What is Staff's concern with Ms. Bulkley's BYPRP ROE estimates?

A. Staff has multiple concerns with Ms. Bulkley's BYPRP model. First, Ms. Bulkley used projected risk-free rates.[72] It is Staff's position that projecting interest rates has been proven to be very difficult, which renders the use of projected risk-free rates unreliable. Especially considering the current financial market situation that results in unstable interest rates, Ms. Bulkley's use of projected interest rates is not acceptable for ratemaking purposes.

Second, intending to combat the highest inflation in four decades, the Federal Reserve ("Fed") has been increasing interest rates with unusual speed.[73] This results in unreliable BYPRP

[71] Page 57, Figure 13, Bulkley's Direct Testimony.
[72] Page 56, lines 5-8, Bulkley's Direct Testimony.
[73] Visual Capitalist, Comparing the Speed of U.S. Interest Rate Hikes (1988-2022), published October 6, 2022, https://www.visualcapitalist.com/comparing-the-speed-of-u-s-interest-rate-hikes/.

ROE estimates because Ms. Bulkley's estimates are literally only determined by the 30-year Treasury yield.

Third, Ms. Bulkley's regression analysis for BYPRP was conducted based on an approximately 30-year time period of 1992–2022.[74] Staff has not found any theoretical justification for the conclusions that the relationship between the 30-year Treasury yield and authorized ROEs is constant over time. These stale authorized ROEs might not provide a proper up to date COE.

Fourth, Ms. Bulkley's regression analysis for BYPRP did not consider the downward trend of authorized ROEs of electric utilities in the US. The regression model including the trend of historical authorized ROEs (less than 0.0000001 P value) explained more variability because its regression R-squared of 0.87 is higher compared to Bulkley's regression R-squared of 0.83.[75] This low P value and high R-squared combination indicates that the model with the trend variable has a higher explanatory power of the response variability.[76] If Ms. Bulkley considered the downward trend of the authorized ROE of electric utilities in the U.S., Ms. Bulkley's average BYPRP ROE estimate would be 9.34%.[77] This is the lower end of Staff's ROE range of estimates of 9.34% to 9.84%, and is much lower than Ms. Bulkley's average BYPRP ROE estimate of 10.20%.[78]

Q. What is Staff's conclusion regarding Ms. Bulkley's BYPRP method?

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[74] Page 55, lines 5-6, Bulkley's Direct Testimony.
[75] 6. Risk Prem, Won's Rebuttal Workpaper.
[76] Minitab, How to Interpret a Regression Model with Low R-squared and Low P values, Retrieved January 29, 2023, How to Interpret a Regression Model with Low R-squared and Low P values (minitab.com).
[77] 6. Risk Prem, Won's Rebuttal Workpaper.
[78] Schedule AEB-D2, Attachment 6, Bulkley's Direct Testimony.

A. Staff agrees with FERC that the BYPRP is likely to provide a less accurate current COE estimate than the DCF or CAPM models because it relies on previous ROE determinations, whose resulting ROE may not necessarily be directly determined by a market-based method.[79] Ms. Bulkley's use of a projected risk-free rate without considering a historical trend of authorized ROE should be rejected because it introduces an upward bias in an allowed return in ratemaking. In conclusion, Staff recommends the Commission to disregard Ms. Bulkley's BYPRP COE estimate as reliable information in determining a just and reasonable authorized ROE.

7. Recalculated Ms. Bulkley's COE Estimates

Q. Please summarize Staff's recalculated estimates of Ms. Bulkley's COE and ROE for Ameren Missouri using proper inputs and models.

A. Ms. Bulkley used two COE estimation methods, DCF and CAPM, and one ROE estimation method, BYPRP. Staff's recalculated estimates of Ms. Bulkley's COE and ROE using proper inputs and models are summarized in Table 3:

Table 3. Bulkley's Estimation and Staff's Recalculation[80]

	Cost of Equity	
COE Estimation Methods	Bulkley' Estimate	Staff Recalculation
Discounted Cash Flow	9.31%	8.29%
Capital Asset Pricing Model	11.18%	8.51%

	Return on Equity	
ROE Estimation Methods	Bulkley' Estimate	Staff Recalculation
Bond Yield Plus Risk Premium	10.20%	9.34%

[79] Paragraph 342, FERC Opinion No. 569, 169 FERC ¶ 61,129.
[80] 1 Summary, Won's Rebuttal Workpaper.

As is evident in Table 3, Ms. Bulkley's COE estimates are too high compared to Staff's recalculated COE. Although DCF and CAPM are reliable COE estimation methods, Ms. Bulkley's COE estimates are unreasonably high due to her choice of biased input values in the model. In addition, Ms. Bulkley's COE estimates using DCF and CAPM are not consistent with each other. Staff recommends that Ms. Bulkley's COE estimates using DCF and CAPM methods, and ROE estimation result using BYPRP method should not be utilized for calculating a just and reasonable authorized ROE.

8. Risks and Authorized ROE

Q. What adjustments of COE did Ms. Bulkley make to her recommendation of authorized ROE regarding Ameren Missouri's regulatory, business and financial risks?

A. Ms. Bulkley states she considered the effect of Ameren Missouri's regulatory, business and financial risks but it is unclear how she made specific adjustments to the COE in her recommendation of an authorized ROE.[81] Ms. Bulkley stated that she considered regulatory, business and financial risks to determine where Ameren Missouri's required ROE falls within the range of COE estimates based on her analytic results.[82] Ms. Bulkley recommended an authorized ROE of 10.20%, but her recommended ROE is much higher than the average authorized ROE of 9.37% in electric utility rate cases completed in the first three quarters of 2022, which in turn is largely in line with the 9.38% average for full year 2021.[83] As of December 31, 2022, there were 54 electric utility rate cases completed, and the average authorized ROE was 9.55%.[84] Even if we

[81] Page 8, lines 2-5, Bulkley's Direct Testimony.
[82] Page 5, line 14, Bulkley's Direct Testimony.
[83] S&P Capital IQ Pro, RRA Regulatory Focus, US energy ROE authorizations hit all-time lows as macroeconomic pressures mount, published on October 31, 2022.
[84] 11 Authorized ROE, Won's rebuttal Workpaper.

only consider the 23 vertically integrated electric utilities in 2022, the average authorized ROE was 9.72%.[85]

Q. Do you agree with Ms. Bulkley that Ameren Missouri has relatively greater risks of timely cost recovery and earnings potential as compared to her proxy group companies because of their capital expenditure requirements?[86]

A. No, I do not. Ms. Bulkley cited S&P's explanation of the importance of regulatory support for utilities' significant capital expenditures.[87] Ms. Bulkley also stated, "Therefore, to the extent that Ameren Missouri's rates do not continue to permit the recovery its capital investments on a regular basis, the Company would face increased recovery risk and thus increased pressure on its credit metrics".[88] Although Staff generally agrees with S&P's explanation, Staff disagrees with Ms. Bulkley's argument that Ameren Missouri should have a higher authorized ROE because of higher capital expenditure requirements.[89] Staff's reasons to disagree with Ms. Bulkley are as follows:

> First, the ratio of Ameren Missouri's expected capital expenditure as a percentage of net utility plant ("capital expenditure ratio") of approximately 50% is not significantly higher than the average ratio of capital expenditures for Ms. Bulkley's proxy group companies of 50.51%.[90]

Second, Ameren Missouri, like other utilities in Missouri, has in recent years benefited from an improved regulatory environment as defined under the S&P criteria. In 2018, Ameren Missouri elected to use Plant in Service Accounting ("PISA"), which allows electric utilities in

[85] S&P Capital IQ Pro, Retrieved on January 3, 2022.
[86] Page 65, lines 3-4, Bulkley's Direct Testimony.
[87] Pages 59, lines 3-19, Bulkley's Direct Testimony.
[88] Page 59, lines 20-22, Bulkley's Direct Testimony.
[89] Page 58, lines 2-16, Bulkley's Direct Testimony.
[90] 10 CapEX, Won's Rebuttal Workpaper.

Missouri to defer for future recovery 85% of their depreciation expense and returns from plant and equipment placed in service between rate cases.[91] PISA allows Ameren Missouri substantial earnings protection from the addition of plant in service in between general rate cases. While the Commission does not allow all possible cost recovery mechanisms included in Ms. Bulkley's Schedule AEB-D2, Attachment 7, Staff disagrees with Ms. Bulkley's position that the use of PISA and the Renewable Energy Standard Rate Adjustment Mechanism ("RESRAM") has not reduced Ameren Missouri's regulatory risk relative to its peers.[92] Ameren Missouri takes advantage of several additional alternative regulatory mechanisms such as an Energy Efficiency Adjustment Charge, Fuel Adjustment Clause ("FAC"), PISA and RESRAM.[93] It is true there is still some regulatory lag in Missouri, but that is true of all (or almost all) regulated utilities and regulatory jurisdictions in the U.S. Staff does not find any evidence that Ameren Missouri has a significantly greater risk than the proxy group due to Missouri ratemaking practices that would justify an upward adjustment to the ROE to reflect any incremental risk. The topic of Ameren Missouri's regulatory lag is also addressed in the rebuttal testimony of Staff witness Keith Majors.

Third, according to a recently published S&P Global Ratings article, "Developments In North American Utility Regulatory Jurisdictions" – Mar 24, 2022, Missouri is classified in the category of "Very Credit Supportive," with a "Strong and Adequate" utility regulatory environment in jurisdictions among U.S. states and Canadian provinces.[94] Furthermore, as previously discussed, the Commission has allowed several favorable regulatory mechanisms for

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[91] Section 393.1400.2(1) and related provisions of the Missouri Revised Statutes.
[92] Pages 64, lines 18-20, Bulkley's Direct Testimony.
[93] Page, 69, lines 1-30, Bulkley's Direct Testimony.
[94] S&P Global Ratings, Developments In North American Utility Regulatory Jurisdictions: https://www.spglobal.com/ratings/en/research/articles/220324-developments-in-north-american-utility-regulatory-jurisdictions-from-storm-cost-recovery-to-clean-energy-pla-12304308.

Ameren Missouri's electric utility service. Considering the series of favorable regulatory mechanisms and accounting authority orders granted by the Commission to Ameren Missouri, and listed above, Ms. Bulkley's arguments alleging unusually high regulatory risk for the Company are baseless.

Fourth, Ameren Missouri's credit rating is determined by considering all of its risks including its business, regulatory, and financial risks.[95] For example, Moody's assigns regulatory risk a 40% weighting in the overall assessment of business and financial risk for regulated utilities.[96] Ameren Missouri is currently rated by Moody's and Standard & Poor's ("S&P") and is assigned corresponding ratings of 'Baa1' and 'BBB+'.[97] These ratings are equal to electric utilities' average bond ratings 'Baa1' and 'BBB+' characterized by Moody's and S&P, respectively.[98] Therefore, Ms. Bulkley's consideration of regulatory risk is unnecessary because Ameren Missouri's credit ratings are already reflective of its regulatory risk.

9. Ratemaking Capital Structure for ROR

Q. What capital structure and ROR did Mr. Sagel propose for Ameren Missouri in this proceeding?

A. For Ameren Missouri, Mr. Sagel proposed an authorized ROR of 7.186%, calculated using Ms. Bulkley's recommended ROE of 10.20%, a cost of preferred stock of 4.180%, and a cost of debt of 3.926%, applied to a projected capital structure, as of December 31, 2022, consisting of 51.928% common equity, 0.669% preferred stock and 47.403% long-term debt.[99]

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[95] Corporate Rating Methodology, S&P.
[96] Moody's Investors Service, Rating Methodology: Regulated Electric and Gas Utilities, at 3 (April 13, 2022).
[97] Rating Direct, S&P Capital IQ.
[98] EEI, 2022_Q3_Credit_Ratings.
[99] Schedule DTS-D1, Sagel Direct Testimony.

Q. Does Staff have concerns with the capital structure proposed by Ameren Missouri's witness?

A. As of September 2022, Ameren Missouri's capital structure was approximately 51.84% common equity, 0.66% preferred stock and 47.50% long-term debt.[100] There are some minor differences between Mr. Sagel's projected capital structure as of December 31, 2022, and the actual capital as of September 30, 2022, of Ameren Missouri. Currently, Staff is reviewing the changes in Ameren Missouri's actual capital structure and cost of debt from September 30, 2022, through December 31, 2022, the end of the true-up period. Staff will likely recommend use of Ameren Missouri's actual capital structure as of December 31, 2022, for ratemaking purposes later in this case. Staff will address its final recommended capital structure in its surrebuttal and true-up testimony at a later point in the case.

III. RESPONSE TO TESTIMONY OF OPC WITNESS

Q. What are the specific areas in which Staff is responding to OPC's witness?

A. Staff is responding to the testimony of Mr. Murray. The areas in which Staff addresses issues within Mr. Murray's direct testimony include:

- Recommended ROE, and
- Ratemaking Capital Structure.

Staff will discuss each in turn, below.

1. Recommended ROE

Q. What is Mr. Murray's recommended ROE for use in this proceeding?

[100] Staff Data Request No. 0191.

A. Mr. Murray recommended that the Commission set Ameren Missouri's authorized ROE at 9.25% based on a range of 8.40% to 9.25%.[101]

Q. Please explain how Mr. Murray's recommended ROE was determined.

A. Mr. Murray asserted that his ROE recommendation is based on his COE analysis and awareness of capital market conditions, investor expectations, and recent average allowed ROEs for electric utilities including Ameren Illinois' electric utility operations.[102] Mr. Murray estimated Ameren Missouri's COE of 7.0% to 7.5% using a multi-stage DCF approach as well as a CAPM analysis and checked their reasonableness with a straightforward BYPRP method.[103] Mr. Murray mentioned past Ameren Missouri rate cases' authorized ROEs and Illinois's ROE formula,[104] but he did not explain how his recommended ROE of 9.25% is calculated from his estimated COE range 7.0% to 7.5%.[105]

Q. What are Staff's concerns with Mr. Murray's recommended ROE?

A. Staff's concern is that Mr. Murray's recommended ROE of 9.25% is too low compared to the national average authorized ROE of 9.55% in electric utility rate cases completed during the year 2022.[106] Specifically, Mr. Murray's recommended ROE of 9.25% is 47 basis points lower than the average authorized ROE of 9.72% in vertically integrated electric utility rate cases completed during the year 2022.[107] Staff is not aware of persuasive evidence that Ameren Missouri's authorized ROE should be materially lower than the ROEs authorized for it peer electric utilities across the U.S. More fundamentally, most of the evidence, including data and

[101] Page 2, lines 18-19, Murray's Direct Testimony.
[102] Page 6, lines 1-13, Murray's Direct Testimony.
[103] Page 5, lines 14-15, and page 7, lines 8-18, Murray's Direct Testimony.
[104] Page 2, line 17, to page 3, line 5, Murray's Direct Testimony.
[105] Staff checked all 21 places where Mr. Murray mentioned ROE of 9.25% in his direct testimony.
[106] S&P Capital IQ Pro, Retrieved on January 3, 2023.
[107] 11 Authorized ROE, Won's Rebuttal Workpaper.

analysis employed by Mr. Murray, does not support his recommended ROE of 9.25%. In other words, Mr. Murray's conclusion does not match his findings and analysis. Staff will explain using some examples of the inconsistency between Mr. Murray's analysis and his conclusion.

Q. What market analyses in Mr. Murray's direct testimony are indicating a current inclined trend of COE for electric utilities?

A. Mr. Murray presented several examples of an inclined trend of COE for electric utilities. First, Mr. Murray stated that capital market conditions of the utility industry indicate an increase in the COE since the Commission set The Empire District Electric Company ("Empire")'s ROE at 9.25%,[108] which was determined in the Commission's most recent, fully litigated electric rate case, Case No. ER-2019-0374 ("2019 Empire rate case").[109]

In addition, Mr. Murray recognized that the COE has inclined since the 2019 Ameren Missouri rate case, Case No. ER-2019-0355, ("2019 Ameren rate case"), because he currently estimates Ameren Missouri's COE to be in the range of 7.0% to 7.5%, but he estimated a COE range of 5.5% to 6.5% in the 2019 Ameren rate case.[110] It is interesting that Mr. Murray recommended the same authorized ROE of 9.25% in both the current rate case and 2019 Ameren rate case, even though he estimated the COE to be much higher for this rate case compared to the 2019 Ameren rate case.[111]

Second, Mr. Murray recognized that current investment grade utility bond yields are higher than yields over the last three years.[112] Bond yields are one of the most important indicators of investors' required COE for utility companies. All other things being equal, a higher bond yield

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[108] Page 2, lines 19-20, Murray's Direct Testimony.
[109] *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.
[110] Page 5, line 15, & Page 8, lines 7-8, Murray's Direct Testimony.
[111] Page 8, lines 3-4, Murray's Direct Testimony.
[112] Page 9, lines 1-4, Murray's Direct Testimony.

indicates a higher required COE.[113] For instance, Moody's 'Baa' corporate bond yield of 3.16% in December of 2020 has risen 310 basis points to 6.26% in October of 2022.[114]

Third, Mr. Murray illustrated that from the beginning of 2015, Ameren Corp.'s P/E ratio traded in-line with the electric utility industry except for a brief period at the end of 2015.[115] This implies Ameren Corp.'s cost of capital may be generally consistent with the industry average. The national average authorized ROE in electric utility rate cases completed during the year 2022 was 9.55%.[116] Mr. Murray recognized the average electric utility authorized ROE during the 12-months ending through September 30, 2022 was 9.376%.[117] Therefore, Mr. Murray should know that there is a current inclined trend of ROEs for electric utilities including Ameren Missouri.

Fourth, Mr. Murray cited the Wall Street Journal that indicated interest rates have recently risen swiftly, not because investors are betting on an economic surge, but because accelerating inflation is forcing the Federal Reserve to act quickly to rein in price pressures.[118] All other things being equal, a higher interest rate indicates a higher required COE.[119]

Fifth, Mr. Murray cited another Wall Street Journal article that said utility stocks tend not to take well to rising interest rates for two reasons: one is utilities have large debt burdens, and the other is utility stocks are a bond substitute.[120] These reasons imply that utility investors require a higher return from utilities stock. All these examples listed above from Mr. Murray's direct testimony show that his market analyses indicate a current inclined COE trend.

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[113] Brigham, E. F., Shome, D. K., & Vinson, S. R. (1985). The risk premium approach to measuring a utility's cost of equity. Financial Management, 33-45.
[114] FRED, Economic Data, St. Louis Federal Reserve, https://fred.stlouisfed.org/series/DBAA.
[115] Page 12, lines 6-11, Murray's Direct Testimony.
[116] S&P Capital IQ Pro, Retrieved on January 3, 2023.
[117] Staff Data Request No. 0470.
[118] Page 16, lines 30-31 & Page 17, lines 1-2, Murray's Direct Testimony.
[119] Morin, R. A. (2021). Modern Regulatory Finance: Utilities Cost of Capital, PUR Books, (Page 144).
[120] Page 18, lines 10-31, Murray's Direct Testimony.

Q. Please explain Mr. Murray's COE estimation methods and results for Ameren Missouri.

A. Mr. Murray performed a company-specific COE analysis on Ameren Corp. as well as a proxy group COE analysis.[121] Mr. Murray used a multi-stage DCF approach as well as a CAPM approach and then tested the reasonableness of his COE estimates by using a straight-forward bond-yield-plus-risk-premium ("BYPRP") method.[122] It should be noted that Mr. Murray's BYPRP method discussed in the CFA curriculum is different from Ms. Bulkley's BYPRP method. Mr. Murray's BYPRP COE is calculated by summing a company's bond yield with a company's equity risk premium. In contrast, Ms. Bulkley's BYPRP COE is estimated using a regression analysis.

Mr. Murray estimated, using Ameren Corp.'s most recent 3-month average ending December 31, 2022, stock price of approximately $84, the implied DCF COE for Ameren Corp. to be approximately 7.3% to 7.6%.[123] Using a proxy group of 39 electric utilities classified by the EEI,[124] Mr. Murray estimated a DCF COE range of 7.65% to 7.90%.[125] Mr. Murray's current CAPM COE estimates of 8.50% to 8.80% are over 200 basis points higher than his CAPM COE estimates of approximately 6.50% to 6.90% from the 2021 Ameren Missouri rate case, Case No. ER-2021-0240, ("2021 Ameren rate case").[126]

In addition, adding a 3% risk premium to recent Yields to Maturities of approximately 5.00% to 5.25% on Ameren Missouri's long-term bonds, Mr. Murray estimated a BYPRP COE of

[121] Page 26, lines 21-22, Murray's Direct Testimony.
[122] Page 26, lines 22-24, Murray's Direct Testimony.
[123] Page 31, lines 6-9 and Schedule DM-D-2, Murray's Direct Testimony.
[124] Page 32, lines 3-4, Murray's Direct Testimony.
[125] Page 33, lines 3-5 and Schedule DM-D-3, page 1, Murray's Direct Testimony.
[126] Page 36, lines 10-12, Murray's Direct Testimony.

8.00% to 8.25%.[127] Mr. Murray recognized that Ameren Missouri's COE has increased by 225 to 250 basis points since 2021 Ameren rate case,[128] but he only gave an increase in ROE of 25 basis points over his recommendation of 9.0% in the 2021 Ameren rate case.[129]

Q. Please explain what factors were considered when Mr. Murray recommended ROEs for Ameren Missouri?

A. Mr. Murray stated he considered the following:[130]

1) Ameren Corp.'s Implied COE (7.30% to 7.60%),[131]
2) Murray's proxy group's COE (7.65% to 7.90%),[132]
3) Investor expectations on allowed ROEs,
4) Average electric utility authorized ROE,[133] and
5) Ameren Missouri's affiliate allowed ROR.

Q. Does Staff agree with Mr. Murray that based on the listed factors his recommended ROE range of 8.40% to 9.25% would be justified with 9.25% being reasonable for Ameren Missouri to attract capital?

A. No. First, Mr. Murray did not explicitly explain in his direct testimony how these factors are able to produce his recommended ROE of 9.25% with a range of 8.40% to 9.25%. Mr. Murray provided a significant amount of pages in his testimony about his P/E ratio analysis without any clear explanation about how his listed factors are related.[134] According to his response to Staff's data request, Mr. Murray did not analyze P/E ratios for purposes of directly estimating

[127] Page 37, lines 10-16, Murray's Direct Testimony.
[128] Page 37, lines 15-16, Murray's Direct Testimony.
[129] Page 2, line 13-14, Murray's Direct Testimony, ER-2021-0240.
[130] Page 38, lines 10-23, Murray's Direct Testimony.
[131] Page 31, lines 8-9, Murray's Direct Testimony.
[132] Page 33, lines 3-4, Murray's Direct Testimony.
[133] Page 6, lines 6-7, Murray's Direct Testimony.
[134] Page 38, lines 17-23, Murray's Direct Testimony. (used 'P/E ratio' 44 times in pages 10-43).

the COE, but analyzed P/E ratios for purposes of assessing the relative value being assigned to electric utility stocks as compared to changes in long-term interest rates.[135] Staff wants to note that P/E ratios are one of multiple important factors of the COE estimation, but authorized ROEs cannot be decided only considering P/E ratios.

Second, it is unclear how Mr. Murray calculated his recommended ROE range of 8.40% to 9.25% from his COE estimated ranges. Mr. Murray estimated Ameren Corp.'s COE ranges of 7.30% to 7.60%,[136] and his proxy group's COE ranges of 7.65% to 7.75%.[137] However, as explained above, Mr. Murray's explanation on how he determined his ROE range of 8.40% to 9.25% from his past rate case analysis was inconsistent with his analysis of market conditions,[138] and it is unclear how the explanation is related to his COE ranges. According to his response to Staff's data request, Mr. Murray insisted that estimating the COE is not a mathematical exercise.[139]

Third, in the year 2022, the national average authorized ROE for vertically integrated electric utilities was 9.72%.[140] Mr. Murray claimed the recent average of authorized ROEs was approximately 9.40%, but in his direct testimony, he did not explain how he got this information.[141] According to his response to Staff's data request, Mr. Murray stated, "Mr. Murray simply rounded to 9.4% for purposes of his testimony."[142] Therefore, although Mr. Murray insisted otherwise, there is no evidence that he properly considered the recent average electric utility authorized ROE

[135] Staff's Data Request No. 0472.
[136] Page 31, lines 11-15, Murray's Direct Testimony.
[137] Page 33, lines 3-4, Murray's Direct Testimony.
[138] Page 6, lines 5-9, Murray's Direct Testimony.
[139] Staff's Data Request No. 0469.
[140] S&P Capital IQ Pro, retrieved in January 3, 2022.
[141] Page 6, lines 6-7, Murray's Direct Testimony.
[142] Staff's Data Request No. 470.

in the U.S.[143] As Staff noted above, the overall national average electric utility authorized ROE was 9.55% in 2022.[144]

Fourth, Mr. Murray insisted that recent increases in interest rates would cause Ameren Illinois' electric utility authorized ROE to be closer to 9.0%.[145] Ameren Missouri's sister company Ameren Illinois' authorized ROE is determined by a prescribed ROE formula with the 50 basis point collar of authorized ROE,[146] so it is inappropriate to compare Ameren Illinois's formula determined ROE rate directly with the Commission's authorized ROE.

Q. Does Staff agree with Mr. Murray's listed reasons that he thinks his recommended 9.25% ROE strikes a fair balance?[147]

A. No. First, Mr. Murray stated, "it appropriately reduces Ameren Missouri's 9.53% ROE which was awarded when the electric utility industry's COE was higher."[148] However, nowhere in his direct testimony did Mr. Murray report how the electric utility industry's COE was higher when Ameren Missouri's 9.53% ROE was determined in Case No. ER-2014-0258 in 2015. Furthermore, the 2015 rate case decision is inappropriate to use as a benchmark of a comparative COE analysis because underlying market conditions have fundamentally changed in the past 7 years.

Second, Mr. Murray stated, "it recognizes that Ameren Missouri's business risk has declined since 2015." Staff agrees with Mr. Murray because of Ameren Missouri's reduced business-risk profile due to its ability to elect PISA ratemaking treatment, which it did in

143 Page 6, lines 1-13, Murray's Direct Testimony.
144 S&P Capital IQ Pro, Retrieved on January 3, 2023.
145 Page 2, line 28, to page 3, line 1, Murray's Direct Testimony.
146 Illinois Commerce Commission, Ameren Illinois Company d/b/a Ameren Illinois, Docket No. 13-0501.
147 Page 54, lines 12-18, Murray's Direct Testimony.
148 Page 54, lines 13-14, Murray's Direct Testimony.

September 2018.[149] However, in the 2019 Ameren rate case, Mr. Murray estimated Ameren Missouri's COE range to be 5.50% to 6.50% and recommended an ROE of 9.25% considering a declining Ameren Missouri business risk.[150] Currently, Mr. Murray has recommended an ROE of 9.25% but estimated a higher Ameren Missouri COE rage of 7.00% to 7.50%.[151] Therefore, a decline in Ameren Missouri's business risk over time does not justify his same recommended ROE of 9.25% under present conditions.

Third, Mr. Murray stated, "it puts Ameren Missouri at closer parity to Ameren Illinois's electric utility current ROR authorizations." However, Ameren Illinois' ROE, which was determined by formula rates, is not comparable with Ameren Missouri's authorized ROE.[152] It has been alleged that the use of formula rates increases the likelihood of a utility passing through excess and imprudent costs to customers.[153]

Fourth, Mr. Murray stated, "the increase to 9.25% from my 9.00% recommendation in the 2021 Ameren rate case recognizes an implied increase to the electric utility industry's COE during early Fall of 2022." There is no objective evidence that his recommended ROE of 9.00% in 2021 was just and reasonable because it is not the Commission's decision and only Mr. Murray's opinion, so Mr. Murray's self-justification of his recommended ROE of 9.25% is baseless.

Q. Does Staff have any concerns on his COE estimation methods such as the multi-stage DCF or CAPM models?

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149 Page 25, lines 10-11, Murray's Direct Testimony.
150 Page 8, lines 3-8, Murray's Direct Testimony.
151 Page 5, lines 14-15, Murray's Direct Testimony.
152 Securities and Exchange Commission,, Electric Service Regulatory Rate Review, Retrieved January 23, 2023, https://www.sec.gov/Archives/edgar/data/18654/000100291021000103/R9.htm.
153 ELCON, Formula Rate, Retrieved January 16, 2023, https://elcon.org/formula-rates/.

A. No. However, Staff notes that his COE estimates using DCF and CAPM are approximately 50 basis points and 200 basis points higher compared to his electric utility industry COE estimate in the 2021 Ameren rate case, respectively.[154] At that time, Mr. Murray recommended an authorized ROE of 9.00%.[155]

Q. Please summarize Staff's response to Mr. Murray's direct testimony regarding Ameren Missouri's authorized ROE.

A. Staff agrees with most of Mr. Murray's market analysis and COE analysis. However, Staff does not agree with Mr. Murray's recommended ROE of 9.25% because his analyses indicate a higher ROE than the most recent Commission-authorized ROE of 9.25% for an electric utility.[156] Mr. Murray does not fully consider the fact that the Fed has decided to keep raising interest rates until they are able to reduce the inflation rate to its 2% objective.[157] As Staff explained above, the national average authorized ROE for vertically integrated electric utilities was 9.72% in 2022.[158] Considering current market conditions, Mr. Murray's recommended ROE of 9.25% should not be accepted as a reasonable ROE for Ameren Missouri.

2. Capital Structure

Q. What is Mr. Murray's recommended capital structure for use in this proceeding?

A. For Ameren Missouri, Mr. Murray recommends a capital structure that consists of approximately 43.00% common equity, 0.69% preferred stock and 56.31% long-term debt based

[154] Page 33, line 8, and page 36, line 10, Murray's Direct Testimony.
[155] Page 2, line 13-14, Murray's Direct Testimony, ER-2021-0240.
[156] *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.
[157] Fed, Federal Reserve issues FOMC statement, June 15, 2022. (https://www.federalreserve.gov/newsevents/pressreleases/monetary20220615a.htm)
[158] S&P Capital IQ Pro, retrieved in January 3, 2022.

on his analysis of Ameren Corp.'s capital structures that is in line with Ameren Corp.'s recent targeted consolidated capital structure.[159]

Q. What is Staff's concern with Mr. Murray's capital structure recommendation?

A. Staff has one major concern with Mr. Murray's recommendation. Mr. Murray recommended a capital structure that was developed and based on Ameren Corp.'s consolidated capital structure, instead of Ameren Missouri's standalone capital structure. Mr. Murray states that Ameren Corp.'s capital structure has had a common equity ratio of approximately 43.00%, net of short-term debt.[160] However, Ameren Missouri's capital structure as of September 30, 2022, indicates a common equity ratio of 51.84%.[161] Mr. Murray states the target capital structure of Ameren Missouri by Ameren Corp. is a common equity ratio of 52.00%.[162] Interestingly, according to Ameren Missouri, it has neither internally identified nor externally communicated a targeted capital structure.[163] Anyway, neither Ameren Missouri's actual capital structure nor Mr. Murray's assumed target capital structure support Mr. Murray's recommended common equity ratio of 43.00%. In addition, the 2022 average equity ratio for other electric utility companies throughout the U.S. is approximately 50.44%.[164]

Q. Please explain more about equity ratios used in other electric utility rate cases.

A. In 2022, the national average equity ratios from fully litigated and settled rate cases were 50.89% and 49.63%, respectively. The average equity ratio of all 51 electric rate cases was 50.44% in 2022. Considering the historical average equity ratio of approximately 50% used for

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[159] Page 39, lines 14-17, Murray's Direct Testimony.
[160] Page 49, lines 3-4, Murray's Direct Testimony.
[161] Staff's Data Request No. 0191.
[162] Page 3, lines 6-7, Murray's Direct Testimony.
[163] Staff's Data Request No. 0192.
[164] S&P Capital IQ Pro, retrieved in January 3, 2022.

calculating the allowed ROR for electric utility rate cases, Mr. Murray's recommended equity ratio of 43.00% is materially lower. Table 4 presents information compiled and published by Regulatory Research Associates ("RRA"), which details the average equity ratios from Commissions around the U.S. from 2012 to 2022, along with the number of cases considered:

Table 4. Equity Ratios of Electric Utility Rate Cases (2012-2022)[165]

	Electric Utility					
	Fully Litigated		Settled		Electric Total	
Year	Equity (%)	Case (No.)	Equity (%)	Case (No.)	Equity (%)	Case (No.)
2012	50.13	29	51.40	23	50.69	52
2013	48.58	17	49.70	26	49.25	43
2014	50.30	22	50.26	13	50.28	35
2015	49.20	17	49.28	14	49.23	31
2016	49.82	25	47.51	16	48.91	41
2017	49.23	24	48.57	24	48.90	48
2018	48.70	22	49.27	27	49.02	49
2019	51.07	26	47.84	14	49.94	40
2020	49.85	29	49.43	25	49.66	54
2021	50.69	28	49.25	22	50.06	50
2022	50.89	33	49.63	18	50.44	51

Q. Does Mr. Murray's recommendation to use the parent company's capital structure meet the standard of generally-accepted utility ratemaking procedures?

A. No. Mr. Murray's recommendation is not compatible with typical regulatory practices on when to use a parent company's capital structure instead of a subsidiary's own capital structure for the subsidiary's ratemaking. The Society of Utility and Regulatory Financial Analysts ("SURFA") lists the following four guidelines for determining when to use a parent company's capital structure, in its guidebook, The Cost of Capital – A Practitioner's Guide ("CRRA Guide"):

[165] S&P Capital IQ Pro, Retrieved on July 2, 2022.

1. Whether the subsidiary utility obtains **all** of its capital from its parent, or issues its own debt and preferred stock;
2. Whether the parent guarantees **any** of the securities issued by the subsidiary;
3. Whether the subsidiary's capital structure is independent of its parent (i.e., existence of double leverage, absence of proper relationship between risk and leverage of utility and **non**-utility subsidiaries); and,
4. Whether the parent (or consolidated enterprise) is diversified into **non**-utility operations.[166]

There is nothing in CRRA Guide that suggests it is appropriate to use Ameren Corp.'s (the parent company of Ameren Missouri) capital structure to set Ameren Missouri's ROR at this time.

For the first guideline, except for common stock and equity contributions, Ameren Missouri has not received any other long-term financing or preferred stock, from Ameren Corp.[167] Outside of the regulated money pool arrangement, Ameren Missouri has not directly received from or provided short-term debts to Ameren Corporation or its Subsidiaries.[168] A money pool arrangement is a common financial relationship between the holding company and its subsidiaries. In addition, Ameren Missouri's stand-alone capital structure supports its own bond rating.[169] Ameren Missouri and Ameren Corp. are both rated by S&P and Moody's.[170] Therefore, Ameren Missouri meets the first criterion.

[166] David C. Parcell in The Cost of Capital – A Practitioner's Guide prepared for SURFA.
[167] Staff's Data Request No. 0196 (1).
[168] Staff's Data Request No. 0196 (2)-(3).
[169] RatingDirect®, S&P Global Ratings, Union Electric Co. d/b/a/ Ameren Missouri, April 30, 2021.
[170] S&P Capital IQ Pro.

For the second guideline, neither Ameren Corp. nor Ameren Corp.'s other subsidiaries guarantee the securities issued by Ameren Missouri.[171]

For the third guideline, Staff has not found the existence of double leverage, or an absence of a proper relationship between risk and leverage of utility and non-utility subsidiaries because Ameren Missouri's common equity balance consists of common equity contributions from Ameren Corporation and retained Ameren Missouri's earnings.[172]

For the fourth guideline, according to Ameren Corp.'s consolidated balance sheet in 2022, Ameren Corp.'s non-utility assets make up 1.19% of Ameren Corp.'s total assets.[173] This is not concerning because Ameren Corp.'s non-utility operations are insignificant. Therefore, there is no reason to use Ameren Corp.'s consolidated capital structure for ratemaking capital structure of Ameren Missouri according to CRRA Guide upon which Staff relies.

IV. SUMMARY AND CONCLUSIONS

Q. Please summarize the conclusions of your rebuttal testimony.

A. Ms. Bulkley's recommended ROE of 10.20% for Ameren Missouri is not just and reasonable considering her inappropriate reliance on unreasonable inputs to her DCF and CAPM analyses. Staff also recognizes a single independent input of interest rate in Ms. Bulkley's BYPRP method is inappropriate for estimating proper ROE estimates. Staff has concerns with OPC witness Murray's recommended authorized ROE of 9.25% because it does not properly consider the Fed's current fight to reduce the inflation rate. Considering the current interest rate hike, Staff recommends that the reasonable authorized ROE to use in this proceeding is 9.59%, in a reasonable

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[171] Staff's Data Request No. 0196 (6).
[172] Staff's Data Request No. 0196.1.
[173] Staff's Data Request No. 0196 (8).

range of 9.34% to 9.84%. Currently, Staff is reviewing Ameren Missouri's true-up capital structure and cost of debt. Staff will make its final recommendation of ROR in its surrebuttal testimony and true-up testimony in this proceeding.

Q. Does this conclude your rebuttal testimony?

A. Yes.

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 Adjust Its Revenues for Electric Service	)))	Case No. ER-2022-0337

AFFIDAVIT OF SEOUNG JOUN WON, PhD

STATE OF MISSOURI COUNTY OF COLE	)))	ss.

COMES NOW SEOUNG JOUN WON, PhD and on his oath declares that he is of sound mind and lawful age; that he contributed to the foregoing *Rebuttal Testimony of Seoung Joun Won, PhD*; and that the same is true and correct according to his best knowledge and belief.

Further the Affiant sayeth not.

Seoung Joun Won

SEOUNG JOUN WON, PhD

JURAT

Subscribed and sworn before me, a duly constituted and authorized Notary Public, in and for the County of Cole, State of Missouri, at my office in Jefferson City, on this 9th day of February 2023.

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2025
Commission Number: 12412070

D. Suzie Mankin
Notary Public