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MISSOURI PUBLIC SERVICE COMMISSION

FINANCIAL AND BUSINESS ANALYSIS DIVISION

FINANCIAL ANALYSIS DEPARTMENT

DIRECT TESTIMONY

OF

SEOUNG JOUN WON, PhD

UNION ELECTRIC COMPANY,
d/b/a AMEREN MISSOURI

CASE NO. ER-2024-0319

Jefferson City, Missouri
December 3, 2024

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d/b/a AMEREN MISSOURI

CASE NO. ER-2024-0319

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. What is your educational and employment background?

A. I received my Bachelor of Arts, Master of Arts, and Doctor of Philosophy in Mathematics from Yonsei University and my Bachelor of Business Administration in Financial Accounting from Seoul Digital University in Seoul, South Korea, and earned my Doctor of Philosophy in Economics from the University of Missouri - Columbia. In addition, I passed several certificate examinations for Finance Specialist in South Korea for Accounting Management, Financial Risk Manager, Enterprise Resource Planning Accounting Consultant, Derivatives Investment Advisor, Securities Investment Advisor, and Financial Planner. Prior to joining the Commission, I taught both undergraduate and graduate level mathematics at the Korean Air Force Academy and Yonsei University for 13 years. I served as the Director of the Education and Technology Research Center in NeoEdu for five years. A more detailed account

of my educational background and occupational experience appears in Appendix 1, attached to this Direct Testimony.

Q. Have you previously filed testimony before the Commission?

A. Yes, I have appeared previously before the Commission. I have testified on rate of return ("ROR"), cost of capital, capital structure, finance issuance, financial capability, feasibility study, and valuation analysis on mergers and acquisitions, etc. Please refer to Appendix 1, attached to this Direct Testimony, for a list of my testimony, recommendations, or memorandums previously filed with the Commission and the associated issues.

Q. On behalf of whom are you testifying in this proceeding?

A. I am testifying in this Direct Testimony before the Commission on behalf of Staff.

Q. What is the purpose of your direct testimony?

A. In this testimony, Staff presents evidence and provides a recommendation regarding the appropriate ROR to be used in establishing the electric service rates of Union Electric Company, d/b/a Ameren Missouri ("Ameren Missouri"), a wholly-owned subsidiary of Ameren Corporation ("Ameren Corp").

Staff's analyses and conclusions are supported by the data presented in the attached Confidential Appendix 2, Schedules SJW-d2 through SJW-d17. Staff's workpapers will be provided to the parties at the time of the filing of this Direct Testimony. Staff will make any additional source documents of specific interest available upon the request of any party to this case or the Commission.

I. EXECUTIVE SUMMARY

Q. Please provide a summary of your methodology and findings concerning the ROR that should be utilized in setting rates for Ameren Missouri's electric utility operations in this proceeding.

A. To recommend Ameren Missouri's just and reasonable ROR in this proceeding, Staff estimated cost of capital components such as an authorized return on equity ("ROE"), a cost of preferred stock, a cost of debt ("COD"), and a ratemaking capital structure of Ameren Missouri. Regarding the estimation of authorized ROE of Ameren Missouri in this proceeding, Staff estimated the market-based cost of common equity ("COE") for Ameren Missouri using well-respected COE estimation methodologies such as the discounted cash flow ("DCF") model, the capital asset pricing model ("CAPM"), and the bond yield plus risk premium ("BYPRP") method.[1] Staff's analysis also considers changes in economic and capital market conditions over time, as well as Ameren Missouri's relative risk compared to an electric utility proxy group. By utilizing estimated COEs, Staff calculated a reasonable range of authorized ROEs and recommended a just and reasonable ROE for Ameren Missouri.[2]

Q. Please summarize the result of Staff's ROR analysis and your recommendation in this proceeding.

A. Staff's recommendation of a 9.74% authorized ROE will fairly compensate Ameren Missouri for its current market COE and balance the interests of all stakeholders, particularly considering that the current market COE estimates for Ameren Missouri are

[1] FERC ¶ 61,154 (2020), *order on reh'g*, Opinion No. 569-B, 173 FERC ¶ 61,159 (2020).
[2] COE is the return required by investors; ROE is the return set by a regulatory utility commission. Although some experts contend that COE and ROE are synonymous, Staff's position is that they need not be. Observed utility COEs have been generally significantly lower than authorized ROEs in recent years.

presently in the range of 9.49% to 9.99%.[3] Staff also recommends that the Commission use Ameren Missouri's actual stand-alone capital structure as of June 30, 2024, which is composed of 51.80% common equity, 0.57% preferred stock, and 47.63% long-term debt, for the purpose of setting Ameren Missouri's ROR in this proceeding.[4] Consistent with Staff's capital structure recommendation, Staff also recommends at this time that the Commission use Ameren Missouri's embedded cost of debt value of 4.24% as of June 30, 2024, resulting in the overall midpoint ROR of 7.09%, taken from the calculated range of 6.96% to 7.22%.[5]

Q. Please explain how your direct testimony is organized.

A. The rest of Staff's testimony is organized into six sections. In Section II, Staff discusses the regulatory principles regarding the cost of capital and ROR analysis that supports the determination of just and reasonable rates for Ameren Missouri's electric utility services. In Section III, Staff reviews the current economic environment and capital market conditions that impact the ROR analysis in this proceeding. In Section IV, Staff investigates the corporate analysis of Ameren Missouri and its parent company, Ameren Corp, including their business and financial risk profiles, as well as their credit ratings. In Section V, Staff determines the ratemaking capital structure for Ameren Missouri's ROR, examining the financial relationship between Ameren Missouri and Ameren Corp. In Section VI, Staff explains its ROR analysis for Ameren Missouri, including proxy group selection, models for estimating the COE and ROE, recommended authorized ROE, and other components of the cost of capital. In Section VII, Staff concludes with the recommendation of Ameren Missouri's allowed ROR for ratemaking purposes in this proceeding.

[3] Schedule SJW-d16, Won's Direct Testimony.
[4] Staff's Data Request No. 0107.
[5] Schedule SJW-d16, Won's Direct Testimony.

II. REGULATORY PRINCIPLES

Q. Please describe the regulatory principles that guide the determination of a just and reasonable ROR for a regulated utility.

A. The determination of a fair ROR is guided by principles of economic and financial theory, as well as certain minimum constitutional standards. Investor-owned public utilities, such as Ameren Missouri, are considered private property that the state may not confiscate without appropriate compensation.

The United States Supreme Court has described the minimum characteristics of a constitutionally acceptable ROR in two frequently-cited cases: *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia* and *Federal Power Commission v. Hope Natural Gas Co.*[6]

From these two decisions, Staff derives and applies the following principles to guide its recommendation of a just and reasonable ROR:

1. A return consistent with returns on investments of comparable risk;
2. A return that allows the utility to attract capital on reasonable terms; and
3. A return sufficient to assure confidence in the utility's financial integrity.

Embodied in these three principles is the economic theory of the opportunity cost of investment. This opportunity cost represents the return that investors forgo in order to invest in similar risk investment opportunities, which may vary depending on market and business conditions.

[6] *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679, 43 S.Ct. 675, 67 L.Ed. 1176 (1923); *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 64 S.Ct. 281, 88 L.Ed. 333 (1944).

Regulatory environments and methodologies of financial analysis have advanced significantly since the *Bluefield* and *Hope* decisions.[7] Furthermore, today's utilities compete for capital in a global market rather than a local one. Nevertheless, the parameters established in those cases are easily met using current methods and theories. The principle of a commensurate return is rooted in the concept of risk. Risk is a measure of the likelihood that an investment will not yield the expected returns. Financial theory posits that the return an investor anticipates corresponds to the level of risk inherent in the investment. Each line of business carries its own set of risks. Therefore, the return expected by Ameren Missouri's shareholders is comparable to that required by shareholders of utility companies with similar risk profiles.

Q. How did Staff estimate a just and reasonable authorized ROE considering commensurate return and comparable risk?

A. Staff employed COE and ROE estimation methods using a proxy group for recommending a just and reasonable authorized ROE. COE represents the minimum return investors are willing to accept for their investment in a company, compared to returns on other available investments, and can be directly estimated using market data. In contrast, an authorized ROE is determined by the Commission for monopoly industries, granting them the opportunity to earn just and reasonable compensation for their investments in the rate base. While stock market data cannot directly determine an authorized ROE, Staff can estimate a just and reasonable authorized ROE anticipated by the financial market by using previous

[7] Neither the Discounted Cash Flow ("DCF") nor the Capital Asset Pricing Model ("CAPM") methods were in use when those decisions were issued.

Commission-determined ROEs and estimated COEs measured for a comparable group of companies with similar risks.

Q. What conclusions has Staff drawn regarding the regulatory principles guiding the determination of a just and reasonable ROE in this proceeding?

A. Staff primarily relied on the analysis of a comparable group of companies to estimate the COE for Ameren Missouri. This was done by applying the comparable-company approach using both the DCF method and the CAPM analysis. Properly utilized and applied in appropriate circumstances, both the DCF and CAPM methods can provide accurate estimates of utilities' COE. It is widely accepted in economic theory that a company earning its cost of capital will be able to attract capital and maintain financial integrity.[8]

To recommend a specific authorized ROE and a range of reasonable ROEs for ratemaking in this proceeding, Staff also utilized a BYPRP method to directly estimate ROE using the 10-year historical data of the relationship between authorized ROEs and utility bond yields of similar risk to Ameren Missouri and comparable to the COE estimation results of Staff's DCF and CAPM analysis. Considering all Staff methodology and procedures, the authorized ROE recommended by Staff should be commensurate with returns on investments in other companies of comparable risk. Therefore, Staff's recommendation of an authorized ROE, based on a COE derived from the comparison of peer companies, aligns with the principles established in the *Bluefield* and *Hope* decisions.

[8] Whittaker, W. (1991). The Discounted Cash Flow Methodology: Its Use in Estimating a Utility's Cost of Equity. Energy LJ, 12, 265.

III. MARKET ANALYSIS

Q. Why is consideration of economic and capital market conditions important for rate of return analysis?

A. Ensuring that an authorized ROE, recommended by COE estimations, is just and reasonable necessitates a thorough understanding of current economic and capital market conditions. The reason is that input values for COE estimate models are significantly influenced by these conditions. For example, higher interest rates and lower stock prices can result in an overestimation of COE in the CAPM and DCF models, respectively. Therefore, Staff emphasizes that an estimate of a utility's COE, which affects an authorized ROE recommendation, should align with common sense considerations of broader economic and capital market conditions.

1. Economic Condition

Q. Please summarize the current economic conditions regarding the COE.

A. To estimate the COE of Ameren Missouri, it is necessary to understand how economic conditions have changed over the past several years. The COVID-19 pandemic profoundly impacted global economies, leading to significant shifts in financial markets and investment dynamics. As economies recover, proper assessment of the current state of the COE for the ROR analysis in this proceeding is essential, requiring an understanding of the post-COVID-19 economic changes. Supply chain disruptions were exacerbated by COVID-19-related lockdowns in China and the Russian invasion of Ukraine.[9] The fragility of

[9] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 21, 2022, https://www.federalreserve.gov/newsevents/pressreleases/monetary20220921a.htm.

the world's supply chains has continued, further fueled by escalating tensions in the Red Sea.[10]

In the U.S., recent indicators suggest that economic activity has been expanding at a solid pace, with job gains since early 2023 remaining strong alongside a low unemployment rate.[11] Although inflation has eased over the past year, it remains elevated. However, the Federal Open Market Committee ("FOMC") has gained greater confidence that inflation is moving sustainably toward 2%, and judges that the risks to achieving its employment and inflation goals are roughly in balance.[12] One of the most important factors in the economic conditions that impact the COE is the interest rate, orchestrated by the Federal Reserve ("Fed") monetary policy. The Fed sets goals of achieving maximum employment and returning inflation to a rate of two percent over the longer run.[13] In light of the progress on inflation and the balance of risks, on September 18, 2024, the FOMC decided to lower the target range for the federal funds rate by a half percentage point, from 5.25%–5.50%, as set by the FOMC on July 26, 2023, to 4.75%–5.00%.[14]

Q. Please explain the economic conditions over the past several years using U.S. Gross Domestic Product ("GDP").

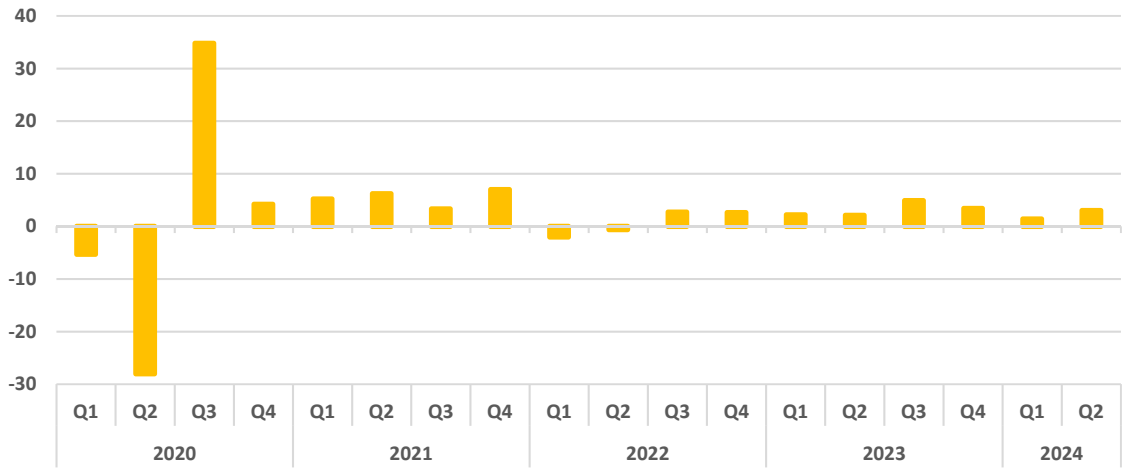
A Since 2020, the economy has experienced enormous volatility. Real GDP fell by 32.9% in the second quarter of 2020, after a 5% decline in the first quarter.[15] The third and

[10] Forbes, Most Surveyed Companies Are Vulnerable To Another Supply Chain Crisis, published January 28, 2024.
[11] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published July 31, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240731a1.pdf.
[12] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240918a1.pdf.
[13] Boards of Governors of the Federal Reserve System, Statement on Longer-Run Goals and Monetary Policy Strategy, https://www.federalreserve.gov/monetarypolicy/files/FOMC_LongerRunGoals_202201.pdf.
[14] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240918a1.pdf.
[15] Real GDP is GDP adjusted for inflation. Percentage change from the preceding quarter.

fourth quarters of 2020 saw real GDP increase by 33.4% and 4.3%, respectively.[16] Subsequently, in 2021, the quarterly real GDP growth rates were 6.3%, 6.7%, 2.3%, and 6.9%.

Real GDP decreased at an annual rate of 1.4% and 0.9% in the first and second quarters of 2022, respectively.[17] Starting from Q3 2022, real GDP growth rates remained relatively stable through Q2 2023, consistently ranging between 2% and 3%.[18] Real GDP had corresponding growth rates of 4.9% and 3.4% in the third and fourth quarters of 2023, and it increased at an annual rate of 1.6% and 3.0% in the first and second quarters of 2024, respectively.[19]

Figure 1. Real GDP – Percentage Change from Preceding Quarter



[16] Bureau of Economic Analysis, retrieved October 20, 2022, https://www.bea.gov/news/2021/gross-domestic-product-first-quarter-2021-advance-estimate.
[17] Bureau of Economic Analysis, Gross Domestic Product, Second Quarter 2022, Retrieved October 20, 2022, https://www.bea.gov/news/2022/gross-domestic-product-second-quarter-2022-advance-estimate.
[18] FRED, Economic Data, Real Gross Domestic Product (A191RL1Q225SBEA), https://fred.stlouisfed.org/series/A191RL1Q225SBEA.
[19] Bureau of Economic Analysis, Gross Domestic Product, First Quarter 2024 (Advance Estimate), Embargoed until release at 8:30 a.m. EDT, Thursday, October 30, 2024, https://www.bea.gov/sites/default/files/2024-10/gdp3q24-adv.pdf.

In June 2024, the Congressional Budget Office ("CBO") projected growth rates for real GDP of 1.8% to 2.2% and for real potential GDP of 2.0% over the next decade.[20] The CBO also projected a long-term nominal GDP growth rate of 3.90%.[21] This will be used to calculate the projected growth rate in the DCF model. All else being equal, the current projection of a relatively higher long-term nominal GDP growth rate will lead to inflated COE estimates.

Q. Please explain the economic conditions over the past several years using U.S. inflation rates.

A. While GDP growth rates and unemployment rates have returned to pre-COVID-19 levels, inflation rates have not yet reached the Fed's target level of 2%. When COVID-19 hit in 2020, it caused massive volatility in the financial markets.[22] As shown above, GDP fell sharply, followed by an equally sharp recovery through 2020.[23] Regarding COVID-19, there has been increased availability of vaccines, higher vaccination rates, and in March 2022, the Fed provided assurances that indicators of economic activity and employment continued to strengthen.[24] The recovery from the COVID-19 pandemic spurred fears of higher inflation and, consequently, increased market risk.[25] This heightened market risk was particularly notable for utilities, as investors could have believed that regulators might not adjust revenues fast enough to compensate for rising input costs.

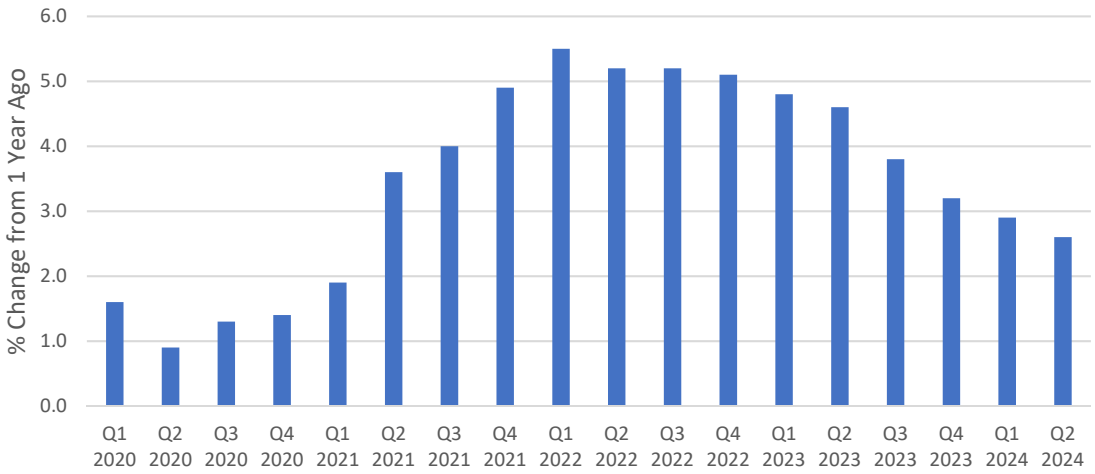
[20] Congressional Budget Office, The Budget and Economic Outlook: 2024 to 2034, Table 2-2 (p.49) and Table 2-3 (p.55), https://www.cbo.gov/system/files/2024-02/59710-Outlook-2024.pdf?ftag=YHFa5b931b.
[21] Congressional Budget Office, An Update to the Budget and Economic Outlook:2024 to 2034, Table 2-3 (p.37), https://www.cbo.gov/publication/60419.
[22] Federal Reserve Economic Data, retrieved October 20, 2022, https://fred.stlouisfed.org/series/VIXCLS.
[23] Bureau of Economic Analysis, U.S. Department of Commerce, retrieved October 12, 2022, https://www.bea.gov/news/2022/gross-domestic-product-first-quarter-2022-advance-estimate.
[24] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, March 16, 2022, https://www.federalreserve.gov/monetarypolicy/files/monetary20220316a1.pdf.
[25] S&P Global, Markets in Motion, retrieved October 12, 2022, https://www.spglobal.com/en/research-insights/featured/inflation.

In June 2022, the consumer price index soared at an annual rate of 9.1%, a new 40-year high driven by increases in the cost of energy, mainly due to a 98% increase in fuel oil prices.[26] On June 15, 2022, the Fed stated that:

> Inflation remains elevated, reflecting supply and demand imbalances related to the pandemic, higher energy prices, and broader price pressures. The invasion of Ukraine by Russia is causing tremendous human and economic hardship. The invasion and related events are creating additional upward pressure on inflation and are weighing on global economic activity. In addition, COVID-related lockdowns in China are likely to exacerbate supply chain disruptions.[27]

The quarterly percent change from a year ago in personal consumption expenditures, excluding food and energy, is shown in Figure 2.

Figure 2. Change of Personal Consumption Expenditures[28]



[26] Bureau of Labor Statistics, Consumer Price Index News Release, published July 13, 2022, https://www.bls.gov/news.release/archives/cpi_07132022.htm.
[27] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published June 15, 2022, https://www.federalreserve.gov/newsevents/pressreleases/monetary20220615a.htm.
[28] U.S. Bureau of Economic Analysis, Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index) [BPCCRO1Q156NBEA], retrieved from FRED, Federal Reserve Bank of St. Louis, https://fred.stlouisfed.org/series/BPCCRO1Q156NBEA.

The resurgence of aggregate demand in late 2021, coupled with a tight labor market and disruptions of energy supplies and in supply chains for other inputs in subsequent years, may have all contributed to the persistently elevated inflation.[29] Following the Fed's intervention in March 2022, the annual inflation rate in the U.S. fell to 2.7% in the second quarter of 2024, which still exceeded the Fed's target level of 2.0%.[30]

In response to rapid inflation, central banks raised interest rates.[31] The effects of the COVID-19 pandemic and high inflation fears have increased market risk. Increased market volatility, sectoral shifts in investor expectations, and changes in correlations among assets have heightened the sensitivity of utility assets' returns to overall market changes, as represented by the Beta in the CAPM framework. Consequently, this has pushed the estimate of utilities' COE higher. In other words, all else being equal, a high market risk leads to an overstated CAPM COE estimate.[32]

Furthermore, utilities often underperform the broader market during economic recovery, leading to a higher COE estimate for utilities.[33] This trend is compounded by current concerns regarding sustained inflation rates exceeding the Fed's target of 2.0%. As a result, the share prices of electric utility equities are currently depressed, resulting in increased dividend yields and elevated COE estimates of the discount rate used in DCF analysis.[34]

[29] Gordon, Matthew V., and Todd E. Clark. 2023. "The Impacts of Supply Chain Disruptions on Inflation." Federal Reserve Bank of Cleveland, Economic Commentary 2023-08. https://doi.org/10.26509/frbc-ec-202308.
[30] FRED, Economic Data, Source: U.S. Bureau of Economic Analysis, https://fred.stlouisfed.org/series/BPCCRO1Q156NBEA.
[31] World Economic Forum, Financial and Monetary Systems, published August 16, 2022, https://www.weforum.org/agenda/2022/08/central-banks-hike-interest-rates-inflation-pressures/.
[32] The relationship between CAPM COE estimate and interest rate will be explained in the CAPM section.
[33] Morningstar, As Long as Inflation Worries Persist, We Expect Utilities to Underperform, published on July 6, 2022, https://www.morningstar.com/economy/long-inflation-worries-persist-we-expect-utilities-underperform.
[34] The relationship between DCF COE estimate and stock price will be explained in the DCF section.

Notably, the inflation rate for electric utility services remains high. Residential electric rates nationwide increased by an average of 4.5% year-over-year in October 2024, compared with October 2023.[35] This is a faster increase than the overall Consumer Price Index ("CPI"), which was up 2.5% year-over-year.[36] The gap between the two was 1.4%.

Q. Please explain the economic conditions over the past several years using U.S. interest rates and Fed monetary policy.

A. The Fed has a dual mandate: maximum employment and stable prices.[37] In early 2020, the emergence of the COVID-19 pandemic led to an unprecedented economic downturn, marked by widespread business closures, job losses, and financial market volatility.[38] In April 2020, the unemployment rate spiked to 14.8% from 3.5% in February 2020.[39] In response to the pandemic's adverse economic effects, which included pushing interest rates higher, the Fed intervened in March 2020 by cutting the federal discount rate to a range of 0% to 0.25%.[40] This move was part of a broader strategy by the Fed, which swiftly lowered interest rates to near zero and implemented massive stimulus measures. These measures included asset purchases and lending programs aimed at supporting the economy and

[35] News Release, The U.S. Bureau of Labor Statistics, published November 13, 2024, https://www.bls.gov/news.release/pdf/cpi.pdf.
[36] CPI Home, The U.S. Bureau of Labor Statistics, retrieved September 18, 2024, https://www.bls.gov/cpi/.
[37] Fed, What economic goals does the Federal Reserve seek to achieve through its monetary policy? https://www.federalreserve.gov/faqs/what-economic-goals-does-federal-reserve-seek-to-achieve-through-monetary-policy.htm.
[38] BLS, Monthly Labor Review, COVID-19 ends longest employment recovery and expansion in CES history, causing unprecedented job losses in 2020, June 2021, https://www.bls.gov/opub/mlr/2021/article/covid-19-ends-longest-employment-expansion-in-ces-history.htm.
[39] Federal Reserve Economic Data, Unemployment Rate, Percent, Monthly, Seasonally Adjusted, https://fred.stlouisfed.org/series/UNRATE/.
[40] Federal Reserve, Press Release, March 15, 2020, https://www.federalreserve.gov/monetarypolicy/files/monetary20200315a1.pdf.

stabilizing financial markets.[41] Additionally, the Fed provided forward guidance, indicating that interest rates would remain low for an extended period to facilitate the recovery.[42]

As vaccination efforts progressed and economic activity resumed, the U.S. experienced a strong rebound in growth in 2021.[43] However, this recovery was accompanied by rising inflationary pressures, driven by supply chain disruptions, pent-up demand, and fiscal stimulus measures.[44] In response to concerns about inflation, the Fed began signaling plans to taper its asset purchases and eventually tighten monetary policy by raising interest rates, aiming to achieve its dual mandate of maximum employment and price stability while avoiding overheating the economy.[45]

The Fed held the federal funds rate at around zero as recently as the first quarter of 2022, despite 40-year highs in various measures of U.S. inflation.[46] Before the FOMC decided to raise the target range for the federal funds rate on March 17, 2022, it was at 0.00% to 0.25%.[47] In July 2022, the unemployment rate went back down to 3.5%. Once the Fed made the decision

[41] Fed, Monetary Policy and Central Banking in the Covid Era, published on June 3, 2021, https://www.federalreserve.gov/econres/feds/files/2021035pap.pdf.
[42] Federal Reserve Bank of Cleveland, Wesley Janson and Chengcheng Jia, Forward Guidance during the Pandemic: Has It Changed the Public's Expectations?, published on December 1, 2020, https://www.clevelandfed.org/publications/economic-commentary/2020/ec-202027-forward-guidance-during-the-pandemic.
[43] Fiori, Giuseppe, and Matteo Iacoviello (2021). "What Did we Learn from 2 billion jabs? Early Cross-Country Evidence on the Effect of COVID-19 Vaccinations on Deaths, Mobility, and Economic Activity," FEDS Notes. Washington: Board of Governors of the Federal Reserve System, published on September 01, 2021, https://doi.org/10.17016/2380-7172.2984.
[44] Ana Maria Santacreu and Jesse LaBelle (2022). "Global Supply Chain Disruptions and Inflation During the COVID-19 Pandemic," Federal Reserve Bank of St. Louis Review. https://research.stlouisfed.org/publications/review/2022/02/07/global-supply-chain-disruptions-and-inflation-during-the-covid-19-pandemic.
[45] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published on November 3, 2021, https://www.federalreserve.gov/monetarypolicy/files/monetary20211103a1.pdf,
The New York Times, Fed Officials Tamp Down Overheating Worries as Investors Fret, May 5, 2021. https://www.nytimes.com/2021/05/05/business/economy/federal-reserve-overheating-worries.html.
[46] Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024, https://www.forbes.com/advisor/investing/fed-funds-rate-history/.
[47] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published March 16, 2022, https://www.federalreserve.gov/monetarypolicy/files/monetary20220316a1.pdf.

to raise the target range for the federal funds rate, the FOMC raised the Fed funds rate by more than 5% over the course of 16 months.[48] Table 1 displays the 11 instances when the FOMC decided to raise the fed funds rate in order to tame the inflation rate. On July 31, 2024, the Fed remained attentive to the risks on both sides of its dual mandate—to achieve maximum employment and maintain inflation at a rate of 2% over the longer run—and the FOMC decided to maintain the target range for the federal funds rate at 5.25% to 5.50%.[49]

Table 1: Fed Rate Hikes 2022-2023[50]

FOMC Meeting Date	Rate Change (bps)	Federal Funds Rate
July 26, 2023	25	5.25% to 5.50%
May 3, 2023	25	5.00% to 5.25%
March 22, 2023	25	4.75% to 5.00%
February 1, 2023	25	4.50% to 4.75%
December 14, 2022	50	4.25% to 4.50%
November 2, 2022	75	3.75% to 4.00%
September 21, 2022	75	3.00% to 3.25%
July 27, 2022	75	2.25% to 2.50%
June 16, 2022	75	1.50% to 1.75%
May 5, 2022	50	0.75% to 1.00%
March 17, 2022	25	0.25% to 0.50%

On September 18, 2024, the Fed voted to lower interest rates by a half-percentage point, opting for a bolder start in making its first reduction since 2020.[51] On November 7, 2024, the

[48] New York Times, Fed Raises Rates Again, published on July 26, 2023, https://www.nytimes.com/live/2023/07/26/business/fed-interest-rates.
[49] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published July 31, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240731a1.pdf.
[50] Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024, https://www.forbes.com/advisor/investing/fed-funds-rate-history/.
[51] Wall Street Journal, Fed Cuts Rates by Half Percentage Point, published September 18, 2024, https://www.wsj.com/economy/central-banking/fed-cuts-rates-by-half-percentage-point-03566d82?mod=article_inline.

FOMC decided to lower the target range for the federal funds rate by 0.25 percentage points to 4.50%–4.75% and to continue reducing its holdings of Treasury securities, agency debt, and agency mortgage-backed securities to support maximum employment and return inflation to its 2% objective.[52]

Q. Please explain how Fed monetary policy impacts COE estimation.

A. After COVID-19, the Fed's monetary policy significantly impacted the U.S. financial market, including interest rates such as 30-Year Treasury yields that are used for the risk-free rate in CAPM. The aggregate effect of the Fed's actions was an increase in 30-Year Treasury yields from 1.69% on December 3, 2021, to a high of 5.09% on October 25, 2023.[53] The difference between the two is 340 basis points. Although the Fed cut its benchmark interest rate by an unusually large half-point on September 18, 2024,[54] 30-year Treasury yields were 4.53% on October 28, 2024; that is greater than 284 basis points compared to 1.69% on December 3, 2021.[55] Hence, all else being equal, a high inflation rate leads to an overstated CAPM COE estimate due to the elevated interest rate determined by Fed monetary policy.[56]

2. Capital Market Condition

Q. Why is the consideration of capital market conditions important for COE analyses?

A. The capital market conditions are important for estimating COE because they directly impact input values in COE models. A utility company's cost of capital reflects its mix

[52] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published November 7, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20241107a1.pdf.
[53] Federal Reserve Economic Data, Market Yield on U.S. Treasury Securities at 30-Year Constant Maturity, https://fred.stlouisfed.org/series/DGS30.
[54] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240918a1.pdf.
[55] Federal Reserve Economic Data, Market Yield on U.S. Treasury Securities at 30-Year Constant Maturity, https://fred.stlouisfed.org/series/DGS30.
[56] The relationship between CAPM COE estimate and interest rate will be explained in the CAPM section.

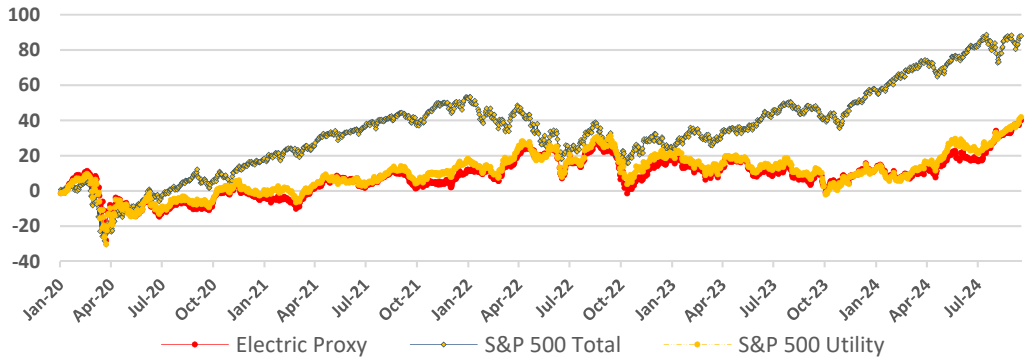
of equity and debt financing, so it is affected by the equity and debt markets. For example, equity market conditions have a direct impact on input values such as dividend yields in the DCF model, and debt market conditions directly affect the input values such as the risk-free rate of 30-Year Treasury bond yields in the CAPM method.

2.1 Utility Equity Market

Q. Please explain the current utility equity market conditions.

A. After the 2020 stock market crash caused by the COVID-19 pandemic, the utilities sector underperformed the broader market. At the onset of the economic shutdown in March 2020, the index-value of the Standard and Poor's ("S&P") 500 and the Dow Jones Industrial Average fell approximately 12.5% and 13.74%, respectively.[57] Since the beginning of the COVID-19 recovery, utilities, including electric utilities, have underperformed the market. This suggests that U.S. utility valuations remain relatively weak, even amid elevated inflation, rising interest rates, and global geopolitical uncertainty. Figure 3 shows the volatility experienced by the stock market since January 2020:

Figure 3. Total Return 2020-2024[58]



[57] S&P Capital IQ Pro.
[58] Won's Direct Workpaper.

The total return of the electric utility proxy group decreased from the point of reference on January 2, 2020, to an approximate loss of twenty-eight percent (-28%) by March 23, 2020. It then rebounded to a gain of approximately twenty-eight percent (28%) by August 19, 2022, over the point of reference on January 2, 2020. A detailed analysis of the performance of the equity market since January 2020 reveals tremendous volatility. After January 2023, as shown in Figure 3, there is a clear trend indicating that the S&P 500 Utility and Staff's proxy group underperformed the S&P 500. As of April 1, 2024, the S&P 500, S&P 500 Utilities, and Staff's proxy group had total returns of 73.88%, 17.99%, and 15.93%, respectively, over the point of reference on January 2, 2020. S&P stated that the financial performance and ratings of U.S. public power could weaken in 2024 due to a confluence of factors, including inflation and a developing trend of weakening financial margins.[59]

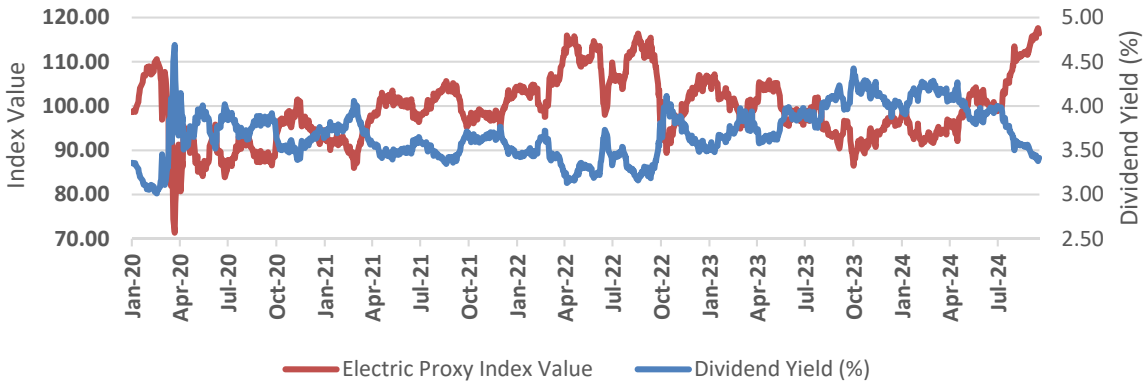
Q. Please explain how current utility equity market conditions affect the DCF COE estimation.

A. The combined effect of the utility sector's incline in 2024 following its unusual decline in 2020 and subsequent sluggish recovery is that it has been relatively undervalued since the COVID-19 recession. As shown in Figure 3, the average stock price for Staff's electric utility proxy group has underperformed compared to the S&P 500 Index. A lower stock price, all else remaining the same, implies a higher COE estimate in the DCF model.[60]

[59] S&P Capital IQ Pro, U.S. Public Power and Electric Cooperative Utilities 2024 Outlook: Mandates, Rising Costs, And Diminishing Affordability, published January 23, 2024, https://www.spglobal.com/ratings/en/research/articles/240123-u-s-public-power-and-electric-cooperative-utilities-2024-outlook-mandates-rising-costs-and-diminishing-aff-12968567.

[60] The relationship between stock price and DCF COE will be explained in the section of DCF.

Figure 4. Staff Electric Proxy Index Value and Dividend Yield 2020-2024[61]



Before the COVID-19 pandemic, the index value of Staff's electric utility proxy group (referred to as the "SEU Index") reached 109.74 on February 2, 2020. However, due to the impact of COVID-19, the U.S. stock market experienced a significant downturn, causing the SEU Index to drop by 35% to 71.40 on March 23, 2020. After recovering from the COVID-19 shock, the SEU Index experienced an upward trend, reaching 115.44 on September 12, 2022. Compared to the S&P 500 Index, which has enjoyed a continued bullish market, the SEU Index experienced a sluggish downturn, reaching 93.24 on March 4, 2024. On October 23, 2024, the SEU Index shows 119.87.[62] As shown in Figure 4, the changes in dividend yield mirror the changes in the Index value due to their reciprocal relationship. Because of the relatively higher dividend yield of Staff's electric utility proxy group, DCF COE estimates are overstated compared to the overall market COE.

2.2 Utility Debt Market

Q. Please explain the current utility debt market conditions.

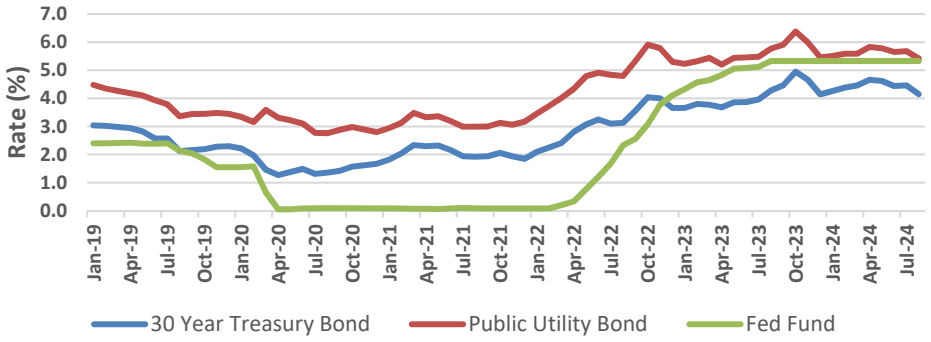
A. The utility debt market has experienced significant volatility in terms of bond yield changes. Average public utility bond yields decreased from 4.48% in January 2019 to

[61] Won's Direct Workpaper.
[62] S&P Capital IQ Pro.

2.76% in August 2020.[63] However, this downward trend in public utility bond yields reversed after the Fed initiated its Treasury bond-buying activity.[64] Between March 2022 and July 2023, the Fed raised the target range for the federal funds rate 525 basis points to its current level between 5.25% and 5.50% after being maintained between 0.00% and 0.25% for the prior two years.[65] Consequently, public utility bond yields increased by 362 basis points to 6.38% in October 2023 compared to the 2.76% yield in August 2020.[66]

As shown in Figure 5, the changes in public utility bond yields closely mirrored the fluctuations in 30-Year Treasury bond yields. Historically, with a few exceptions, 30-Year Treasury bond yields have exhibited a positive correlation with public utility bond yields. In the past two years, the primary driver of interest rates has been the concern over sustained higher inflation. The Fed has explicitly stated that the FOMC is strongly committed to returning inflation to its 2.0% target. Consequently, it intends to maintain the current level of the federal fund rate until achieving the desired inflation rate.[67]

Figure 5. 30-Year Treasury Bond, Public Utility Bond and Fed Fund[68]



[63] Schedule SJW-d4-1, Won's Direct Testimony.
[64] Brookings, The Hutchins Center Explains, https://www.brookings.edu/research/fed-response-to-covid19/.
[65] Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024, https://www.forbes.com/advisor/investing/fed-funds-rate-history/.
[66] Schedule SJW-d4-1, Won's Direct Testimony.
[67] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240918a1.pdf.
[68] Won's Direct Workpaper.

Q. Is there a correlation between utility debt yields and stock prices?

A. Yes, there can be a correlation between utility debt yields and stock prices, although it is not always direct or consistent. Generally, when utility debt yields rise, it could indicate increased perceived risk or a higher cost of borrowing for the utility company. This could lead to a decrease in stock prices due to concerns about the company's financial health or profitability. Inversely, when utility debt yields fall, it may signal lower perceived risk or cheaper borrowing costs, which could lead to higher stock prices as investors become more optimistic about the company's prospects. Although utilities' COEs are not perfectly correlated to changes in utility debt yields, it is widely recognized in the investment community that regulated utility stocks are a close alternative to bond investments. In general, as interest rates increase, utility stock prices decrease, pushing COE up as investors substitute stocks with bonds in search of higher yields.[69]

Q. Please explain how the current utility debt market conditions affect COE estimation.

A. In the past, interest rates were typically one of the main drivers of COE changes. Higher interest rates would normally mean higher COEs, all other things being equal. Currently, we observe higher COEs due to historically high interest rates in recent decades. The combined net result of the rise in interest rates and changes in overall market conditions is an increase in COE. Staff's COE estimates for the electric proxy group have also increased. The current COE, as estimated by the DCF and CAPM methods, is overstated when considering utility bond market conditions. Therefore, Staff is cautious about using COE estimates from DCF and CAPM to recommend a specific authorized ROE in this proceeding, as demonstrated later in this testimony.

[69] Forbes Advisor, How To Invest When Interest Rates Are Low, Updated: Apr 15, 2022 and retrieved October 20, 2022, https://www.forbes.com/advisor/investing/low-interest-rates/#:~:text=While%20bond%20prices%20are%20directly%20affected%20by%20interest,mean%20companies%20may%20borrow%20less%20to%20fund%20growth.

IV. CORPORATE ANALYSIS

Q. Why is corporate analysis important for rate of return analysis?

A. According to the regulatory principle of return consistent with returns on investments of comparable risk, the regulatory agency should ensure that the authorized ROE provides investors with returns that align with those available from investments with similar levels of risk. Corporate analysis helps in identifying and evaluating various risks such as financial risk, operational risk, and business risk. By understanding these risks, the Commission can make an informed decision about determining a just and reasonable ROR for Ameren Missouri, considering the commensurate risk of the electric utility industry. Therefore, to recommend the proper rate-making capital structure and cost of capital in this proceeding, it is essential to understand the corporate structure, cost framework, financial quality, risk profile, and market performance of Ameren Corp and Ameren Missouri through corporate analysis.

Q. Why is corporate analysis necessary for both Ameren Corp and Ameren Missouri?

A. Understanding the relationship between the parent company and its subsidiaries is crucial for properly assessing the risks faced by the operating subsidiary. This includes considering the consolidated risk of the parent company and its other subsidiaries. By conducting corporate analysis, one can gain insights into the interconnectedness of various entities within the corporate structure and the potential impact of their actions on each other.

In the utility ratemaking process, if only the stand-alone risk of the operating subsidiary is considered, the determination of return may not accurately reflect the actual risk faced by the utility. Since the financial and business risks of an operating subsidiary are not stand-alone in

the real world, overlooking the broader corporate context could lead to the mispricing of risk and inadequate returns.

Major rating agencies consider the risks of the parent company and its other subsidiaries when determining the credit rating of a subsidiary.[70] Thus, to fully understand the risk profile and creditworthiness of Ameren Corp and Ameren Missouri, it is essential to analyze not only their individual financial and business profiles but also their positions within the broader corporate framework.

For instance, S&P lowered its issuer credit ratings one notch on Evergy Inc. and its subsidiaries, including Evergy Missouri West, Inc. on November 29, 2023, after the Kansas Corporation Commission ("KCC") adopted a settlement in the rate cases of Evergy Inc.'s Kansas subsidiaries, Evergy Kansas Central Inc. and Evergy Metro Inc., on November 21, 2023.[71] This serves as a compelling example of how a stand-alone approach can be naive and underscores the importance of considering the risks of the parent company and its other subsidiaries when assessing the risk of an operating subsidiary.

Q. Please provide the corporate profile of Ameren Missouri.

A. According to its 10-K reported to the SEC and S&P Company Description, Ameren Missouri operates a rate-regulated electric generation, transmission, and distribution business; and a rate-regulated natural gas distribution business in Missouri. Ameren Missouri is a subsidiary of Ameren Corp. Ameren Missouri supplies electric and natural gas service to a 24,000-square-mile area in central and eastern Missouri, including the Greater St. Louis area. The company supplies electric service to 1.2 million customers and natural gas service to

[70] S&P RatingDirect, How We Rate Non-Financial Corporate Entities, February 19, 2021.
[71] S&P Global Ratings, Evergy Inc. And Subsidiaries Downgraded By One Notch On Weakening Financials; Outlook Revised To Stable, Published November 29, 2023.

100,000 customers. Ameren Missouri is a transmission-owning member of the Midcontinent Independent System Operator, Inc. ("MISO"). Ameren Missouri's electric supply is primarily generated from its energy centers.

Ameren Missouri files a long-term nonbinding integrated resource plan with the Commission every three years. The plan targets cleaner and more diverse sources of energy generation, including solar, wind, hydro, and nuclear power; and supports increased investment in new energy technologies. It also includes expanding renewable sources by adding 3,100 megawatts ("MW") of renewable generation by the end of 2030 and a total of 5,400 MW of renewable generation by 2040, inclusive of the High Prairie Renewable and Atchison Renewable energy centers, the expectation that Ameren Missouri will seek Nuclear Regulatory Commission ("NRC") approval for an extension of the operating license for the Callaway Energy Center, expanding customer energy-efficiency programs, adding demand response programs, and retiring the remaining coal-fired energy centers as they reach the end of their useful lives.[72] The addition of a renewable generation facility is subject to obtaining necessary project approvals, including Federal Energy Regulatory Commission ("FERC") approval and the issuance of a certificate of convenience and necessity by the Commission as applicable.

Ameren Missouri owns energy centers that rely on a diverse fuel portfolio, including coal, nuclear, and natural gas, as well as renewable sources of generation, which include hydroelectric, wind, methane gas, and solar. The Callaway nuclear energy center began operation in 1984 and is licensed to operate until 2044. Ameren Missouri has entered into uranium, uranium conversion, uranium enrichment, and fabrication contracts to procure the fuel supply for its Callaway Energy Center. Ameren Missouri has inventories and supply contracts

[72] Integrated Resource Plan Annual Update Report, Ameren Missouri, File No. EO-2023-0121.

sufficient to meet all of its uranium (concentrate and hexafluoride), conversion, and enrichment requirements at least through the 2026 refueling.

Ameren Missouri has an ongoing need for coal as fuel for generation, and pursues a price-hedging strategy consistent with this requirement. Ameren Missouri has agreements in place to purchase and transport coal to its energy centers. Ameren Missouri has an additional coal supply under contract through 2025. The Powder River Basin coal transport agreements that Ameren Missouri has with Union Pacific Railroad and Burlington Northern Santa Fe Railway are set to expire at the end of 2024. Ameren Missouri burned approximately 16.5 million tons of coal in 2021. About 98% of Ameren Missouri's coal is purchased from the Powder River Basin in Wyoming, which has a limited number of suppliers. The remaining coal is typically purchased from the Illinois Basin.

Ameren Missouri must receive FERC approval to enter into various transactions, such as issuing short-term debt securities and conducting certain acquisitions, mergers, and consolidations involving electric utility holding companies. Ameren Missouri is also subject to mandatory reliability standards, including cybersecurity standards adopted by the FERC, to ensure the reliability of the bulk electric power system. These standards are developed and enforced by the North American Electric Reliability Corporation ("NERC"), pursuant to authority delegated to it by the FERC. The company is a member of the Southeast Reliability Corporation ("SERC"), one of the regional electric reliability councils organized for coordinating the planning and operation of the nation's bulk power supply. The SERC is one of six regional entities representing all or portions of 16 central and southeastern states under authority from the NERC for the purpose of implementing and enforcing reliability standards

approved by the FERC. The regional entities of the NERC work to safeguard the reliability of the bulk power systems throughout North America.

Ameren Missouri's hydroelectric Osage Energy Center and pumped-storage hydroelectric Taum Sauk Energy Center, as licensed projects under the Federal Power Act, are subject to FERC regulations affecting, among other aspects, the general operation and maintenance of the projects. The licenses for the Osage Energy Center and the Taum Sauk Energy Center expire in 2047 and 2044, respectively. Ameren Missouri's Keokuk Energy Center and its dam on the Mississippi River between Hamilton, Illinois, and Keokuk, Iowa, are operated under authority granted by an Act of Congress in 1905. Ameren Missouri was founded in 1881, under the name of Union Electric Company, and was incorporated in Missouri in 1922.[73]

Q. Please provide the corporate profile of Ameren Corp.

A. According to its 10-K reported to the SEC and S&P Company Description, Ameren Corp operates as a public utility holding company whose primary assets are its equity interests in its subsidiaries. Ameren Corp's principal subsidiaries are Ameren Missouri, Ameren Illinois Electric Distribution, Ameren Illinois Natural Gas, and Ameren Transmission. The Ameren Missouri segment includes all of the operations of Ameren Missouri. Ameren Illinois Electric Distribution consists of the electric distribution business of Ameren Illinois. Ameren Illinois Natural Gas consists of the natural gas business of Ameren Illinois. Ameren Transmission primarily consists of the aggregated electric transmission businesses of Ameren Illinois and Ameren Transmission Company of Illinois ("ATXI"). ATXI operates a FERC rate-regulated electric transmission business in MISO.

[73] S&P Capital IQ Pro, Union Electric Company. Corporate Profile, Retrieved August 29, 2024.

Ameren Corp owns an integrated transmission system that is composed of the transmission assets of Ameren Missouri, Ameren Illinois, and ATXI. Ameren also operates two MISO balancing authority areas: AMMO and AMIL.[74] The AMMO balancing authority area includes the load and most energy centers of Ameren Missouri, and had a peak demand of 7,836 MWs in 2023. The AMIL balancing authority area includes the load of Ameren Illinois and certain natural gas-fired energy centers of Ameren Missouri, and had a peak demand of 8,859 MWs in 2023. The Ameren transmission system directly connects with 15 other balancing authority areas for the exchange of electric energy. Ameren Missouri sells nearly all of its capacity to MISO and purchases the capacity it needs to supply its native load sales from MISO. In the April 2023 MISO capacity auction, Ameren Missouri's generation resources exceeded its native load capacity requirements for the June 2023 through May 2024 period.

Q. What are the business and financial risk profiles of Ameren Missouri and Ameren Corp?

A. According to S&P, both Ameren Missouri and Ameren Corp. are showing an excellent business risk profile based on their regulated utility services. Ameren Missouri and Ameren Corp. demonstrate financial risk that is approximately at the midpoint of the benchmark range. The stable outlook on Ameren Missouri reflects that of parent Ameren Corp.'s consolidated S&P's adjusted funds from operations ("FFO") to debt will remain between 16%-17% through 2026.[75] Capital spending at Ameren Missouri accounts for about 60% of parent Ameren Corp.'s 2024-2028 capital spending plan. Ameren Corp. plans

[74] MISO Allocation Factors: State Level and MISO Local Resource Zone. https://www.purdue.edu/discoverypark/sufg/docs/publications/2014%20July%20Workshop%20-%20LRZ%20Allocation%20Factors.pdf.
[75] S&P Global Ratings, Union Electric Co. d/b/a Ameren Missouri, Published March 20, 2024.

on funding its spending in a balanced manner, including equity issuances of $300 million in 2024 and $600 million per year for the 2025-2028 period.[76]

Q. What is the credit rating for Ameren Corp and Ameren Missouri?

A. Ameren Corp and Ameren Missouri are currently rated by Moody's and S&P. Moody's assigned a 'Baa1' rating for the most recent long-term issuer of Ameren Corp. and Ameren Missouri.[77] S&P assigned its issuer credit ratings on Ameren Corp and Ameren Missouri to 'BBB+' with 'stable' credit watch outlook.[78]

Q. What is the implication of credit ratings to Ameren Corp. and Ameren Missouri for their estimated COE and authorized ROE?

A. The electric utilities have average bond ratings of 'Baa1' and 'BBB+' provided by Moody's and S&P, respectively.[79] The overall agency ratings of Ameren Corp. and Ameren Missouri are comparable to those of the average electric utilities in the U.S.[80] This means Ameren Corp. and Ameren Missouri are perceived to have similar credit risks as the average electric utilities in the U.S. Considering the fundamental financial principle that similar risks demand similar returns, investors expect a similar cost of equity for a company with a comparable credit rating.[81] This comparison of credit ratings suggests that Ameren Missouri's authorized ROE should fall within a reasonable range compared to the average authorized ROE of electric utility companies in the U.S.

[76] S&P Global Ratings, Ameren Corp., Published March 20, 2024.
[77] According to S&P Capital IQ Pro, the most recent dates for the long-term issuer ratings of Ameren Corp and Ameren Missouri are March 28, 2019.
[78] S&P Global Ratings, Ameren Corp. and Union Electric, Published March 20, 2024.
[79] S&P Capital IQ Pro.
[80] Schedule SJW-d8, Won's Direct Testimony.
[81] Arditti, F. D. (1967). Risk and the required return on equity. The Journal of Finance, 22(1), 19-36.

V. CAPITAL STRUCTURE

Q. Why is the ratemaking capital structure important for this rate proceeding?

A. Because it directly impacts the determination of a fair and reasonable ROR that Ameren Missouri can charge its ratepayers, the ratemaking capital structure is crucial for this rate proceeding. Here are more detailed reasons why it is important.

First, the capital structure is a key component in calculating the Ameren Missouri's overall cost of capital, which is the allowed ROR required by investors (both debt and equity holders) of Ameren Missouri. This cost of capital is used in the rate-setting process to determine the allowed return on investment, which the company needs to recover through its tariff rates.

Second, the ratemaking capital structure should appropriately reflect Ameren Missouri's actual financial risk by accounting for the proportion of debt and equity used to finance its operations. A structure that accurately represents this risk ensures that the rates set will appropriately cover the company's cost of capital, aligning with the risk profile faced by Ameren Missouri.

Third, a well-considered capital structure helps ensure that Ameren Missouri remains financially stable. If the rates reflect the actual cost of capital, the company will have sufficient revenue to meet its financial obligations, maintain its creditworthiness, and invest in necessary infrastructure and services.

To sum up, the ratemaking capital structure is a foundational element in this rate proceeding because it directly affects the financial health of Ameren Missouri, the fairness of the rates charged to its customers, and the overall regulatory stability of the process.

Q. What issues did Staff consider to determine its ratemaking capital structure for Ameren Missouri?

A. Ameren Missouri's ratemaking capital structure should be representative of its risk profile, considering its financing components such as common equity, preferred stock, long-term debt, and short-term debt. Staff considered three major issues in determining the capital structure for Ameren Missouri.

First, whose capital structure should be used for ratemaking in this proceeding: the parent company Ameren Corp.'s consolidated capital structure or the operating company Ameren Missouri's standalone capital structure? Second, which capital structure should be used for ratemaking in this proceeding: actual capital structure, hypothetical capital structure, or projected capital structure? Third, what amount of short-term debt, if any, should be included in the ratemaking capital structure?

To provide a proper recommendation on these issues, Staff reviewed the financial relationship between Ameren Missouri and Ameren Corp., assessed which capital structure most appropriately reflects the new rates, and examined how Ameren Missouri's short-term debt was utilized. For regulatory consistency, Staff also reviewed the Commission's previous decisions on these issues in Ameren Missouri rate proceedings.

Q. Please explain the Commission's past decisions regarding capital structures used for the purpose of ratemaking.

A. Over the past five years, there have been three fully-litigated rate cases: The Empire District Electric Company ("Empire") rate proceeding, Case No. ER-2019-0374 (the "2019 Empire Case"), the 2021 Spire Missouri Inc. ("Spire Missouri") rate proceeding, Case No. GR-2021-0108 (the "2021 Spire Case"), and the Confluence Rivers Utility Operating Company, Inc. ("Confluence Rivers") rate proceeding, Case No. WR-2023-0006 (the "2023 Confluence Case").

In the 2019 Empire Case, the Commission concluded that the adjusted actual capital structure (46% common equity and 54% long-term debt) of Empire's parent company, Liberty Utilities Co. ("LUCo"), was appropriate for setting rates in that case because it is more economical than Empire's, based on the finding that it is appropriate to utilize Empire's consolidated capital structure, including LUCo's off-balance sheet debt.[82]

In the 2021 Spire Case, the Commission ordered that Spire Missouri's standalone actual capital structure (49.86% common equity, 41.99% long-term debt and 8.15% short-term debt) be used for the purpose of ratemaking.[83] Regarding the issue of short-term debt in its capital structure, the Commission concluded in the 2021 Spire Case that the average short-term debt in excess of short-term assets over the 13-month period, excluding both short-term assets and short-term debt related to Winter Storm Uri, should be included in the rate making capital structure.[84]

In the 2023 Confluence Case, the Commission found that a hypothetical capital structure of 50% equity and 50% debt was appropriate in that case, reasoning that ratepayers would benefit from having rates calculated with a 50% debt ratio, as debt is a cheaper cost than equity, while shareholders would benefit from rates calculated with a 50% equity ratio, as equity generates a greater return than debt; so, a 50/50 capital structure will produce just and reasonable rates.[85]

Q. Do you think there are inconsistencies in the Commission's decision on the capital structure issue?

[82] On page 38-39, *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.
[83] Accounting Schedule:12, *Staff Accounting Schedules*, December 13, 2021, in Case No. GR-2021-0108.
[84] On page 96, *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.
[85] On page 46, *Report and Order* issued October 25, 2023, in Case No. WR-2023-0006.

A. No, I do not. The Commission's decisions on the capital structure issue in each rate proceeding is based on principles established in the *Bluefield* and *Hope* decisions. In addition, for each rate proceeding, the Commission considered the unique characteristics of equity and debt financing of the associated company in relation to specific issues regarding ratemaking capital structure.

In the 2019 Empire Case, Condition 5 of the Merger Stipulation approved in File No. EM-2016-0213 required Empire to provide evidence in its rate cases as to why its per-book capital structure is the most economical for determining a fair and reasonable allowed rate of return.[86] The Commission found that LUCo's adjusted capital structure is appropriate to use for setting rates in that case because it is more economical than Empire's.[87]

In the 2021 Spire Case, the Commission ordered that the ratemaking capital structure should be determined based on Spire Missouri's actual standalone capital structure of common equity and long-term debt as of May 31, 2021, and the average short-term debt in excess of short-term assets over the 13-month period ending May 31, 2021, excluding both short-term assets and short-term debt related to Winter Storm Uri during March, April, and May 2021.[88] In this decision, the Commission recognized that the Society of Utility and Regulatory Financial Analysts ("SURFA") lists four guidelines for determining when to use a parent company's capital structure in its guidebook, *Cost of Capital – A Practitioner's Guide*.[89]

In the 2023 Confluence Case, the Commission found that a hypothetical capital structure was appropriate for ratemaking due to Confluence Rivers' large negative retained earnings

[86] On page 22, *Order Approving Stipulations and Agreements and Authorizing Merger Transaction issued* September 7, 2016, EM-2016-0213.
[87] On page 39, *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.
[88] On page 96, *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.
[89] Paragraph 273, *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.

balance of approximately $9.5 million at year-end 2022, and its unique corporate structure, which relies directly on affiliates for external capital support and Confluence Rivers' size.[90]

Q. What was the Staff's recommended ratemaking capital structure for Ameren Missouri in their most recent past rate case?

A. In Ameren Missouri's most recent rate case, Case No. ER-2022-0337, Staff recommended Ameren Missouri's actual standalone capital structure as of December 31, 2022, the end of the true-up period, which consisted of 51.91% common equity, 0.67% preferred stock, and 47.42% long-term debt.[91]

Q. Have there been any significant changes in Ameren Missouri's capital structure that should alter Staff's recommendation of using Ameren Missouri's targeted stand-alone capital structure for the purpose of ratemaking?

A. There have not been any discernible changes to Ameren Missouri's or Ameren Corp's capital structure policies since the last rate case to cause Staff to change its recommendation.

Q. Please explain the financial relationship between Ameren Corp. and Ameren Missouri regarding capital structure for the purpose of ratemaking in this proceeding.

A. Ameren Missouri operates as an independent entity when considering Ameren Missouri's procurement of financing and the cost of that financing. Ameren Corp. is not the primary source of long-term financing for Ameren Missouri and this continues to be the case.[92] Since January 2022, Ameren Missouri has not received long-term financing from Ameren Corp. or other Ameren Corp. subsidiaries.[93]

[90] On page 45-46, *Report and Order* issued October 25, 2023, in Case No. WR-2023-0006.
[91] On page 4, lines 9-13, Won's True-Up Rebuttal Testimony, Case No. ER-2022-0337.
[92] Staff's Data Request No. 0108.
[93] No.1, Staff's Data Request No. 0125.

Ameren Missouri is an operating subsidiary of Ameren Corp. and has separate credit ratings issued by Moody's and S&P.[94] Ameren Missouri's stand-alone capital structure supports its own credit rating.[95] The debt is rated by credit rating agencies based on the stand-alone credit quality of Ameren Missouri.[96] Therefore, the cost of any debt that Ameren Missouri has will be based on Ameren Missouri's creditworthiness. The corporate credit ratings assigned by Moody's and S&P to both Ameren Missouri and Ameren Corp. are 'Baa1' and 'BBB+', respectively.[97]

Ameren Corp. provides all equity and no debt financing to Ameren Missouri.[98] Ameren Corp. assets do not secure Ameren Missouri debt and Ameren Missouri assets do not secure Ameren Corp. debts.[99] Ameren Missouri receives or provides short-term advances from or to Ameren Corp. through its regulated money-pool.[100] The management members of Ameren Corp. are included as part of the ultimate financial decision makers for Ameren Missouri.[101] These financial relationships between Ameren Corp. and Ameren Missouri are normal in the utilities sector.

Ameren Corp. has raised significant equity capital in recent years to support higher capital expenditures at Ameren Missouri, including any necessary equity contribution into the utility, but no proceeds from Ameren Corp. long-term debt issuances have been used to infuse

[94] S&P Capital IQ Pro.
[95] No.4, Staff's Data Request No. 0125.
[96] Rating Direct, S&P Capital IQ.
[97] S&P Capital IQ Pro.
[98] No.1, Staff's Data Request No. 0125.
[99] No.6, Staff's Data Request No. 0125.
[100] No.3, Staff's Data Request No. 0125.
[101] No.7, Staff's Data Request No. 0125.

equity into Ameren Missouri.[102] Therefore, Staff does not find evidence that Ameren Corp. has used "double leverage" for investing in Ameren Missouri.[103]

In addition, Ameren Corp.'s non-utility assets are around 1.3% of its total assets.[104] Hence, there are no significant concerns about the financial relationship between Ameren Missouri's regulated utility service and Ameren Corp.'s non-regulated business.

Q. What are the components of capital structure commonly considered for the purpose of ratemaking in general rate proceedings?

A. In general, a ratemaking capital structure could be a mixture of debt and equity including some or all of the following components: common stock, preferred stock, long-term debt, and short-term debt. For short-term debt, the portion of short-term debt that supports long-term capital may be included in the capital structure. In other words, the amount of short-term debt exceeding the amount to support short-term assets and construction work in progress ("CWIP"), may be considered a capital structure component.

Q. What was the Commission's decision on short-term debt for the ratemaking capital structure in previous rate cases?

A. In Spire East's and Spire West's rate cases, Case Nos. GR-2017-0215 and GR-2017-0216, the Commission determined that short-term debt should not be included in Spire Missouri's ratemaking capital structures when the average level of CWIP and other short-term assets exceeds the amount of short-term debt.[105] In 2021 Spire Case, the

[102] Staff's Data Request No. 0128.
[103] Double leverage occurs when a holding company conducts a debt offering to acquire a large equity stake in a subsidiary. Financial authorities have frequently raised concerns about the issue of double leverage because of this type of intra-firm financing.
[104] No. 8, Staff's Data Request No. 0125.
[105] On pages 44-45, *Amended Report and Order* issued March 7, 2018, in Case Nos. GR-2017-0215 and GR-2017-0216.

Commission determined that an appropriate amount of short-term debt should be included in Spire Missouri's ratemaking capital structure because Spire Missouri was using some short-term debt to finance long-term assets.[106]

Q. What is the average amount of Ameren Missouri short-term debt used to finance its long-term assets for a reasonable time-period?

A. Ending June 30, 2024, the 12-month average amount of Ameren Missouri's projected short-term debt and CWIP are approximately $259 million and $1,271 million, respectively.[107] The short-term debt in the Ameren Missouri ratemaking capital structure is 0%. Staff will continue monitoring Ameren Missouri's short-term debt levels through the remainder of this proceeding and, if appropriate, will state any change in position on this capital structure issue no later than Staff's true-up direct testimony.

Q. Have Ameren Missouri and Ameren Corp. indicated to Staff that they would target specific capital structures in the future for Ameren Missouri and Ameren Corp.?

A. Ameren Missouri's response to Staff's Data Request No. 0112 states Ameren Missouri and Ameren Corp. have neither internally identified nor externally communicated a targeted capital structure.[108] According to its witness, "Ameren Missouri specifically and continuously maintains the balance of debt and equity in its capital structure to minimize its overall cost of capital and, at the same time, maintain financial strength and stability."[109]

[106] On page 97, *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.
[107] Staff's Data Request No. 0106.
[108] Staff's Data Request No. 0112.
[109] Page 6, lines 10-12, Sagel's Direct Testimony.

Q. What is the actual capital structure of Ameren Missouri and Ameren Corp.?

A. The capital structure as of June 30, 2024, for Ameren Missouri is approximately 51.80% common equity, 0.57% preferred stock, and 47.63% long-term debt.[110] Table 2 below shows the average capital structures of Ameren Corp. and Ameren Missouri for Q3 2023 through Q2 2024.[111]

Table 2: Comparison Average Capital Structure Q3 2023 – Q2 2024[112]

	Ameren Corp.	Ameren Missouri
Common Equity	41.31%	51.57%
Preferred Stock	0.47%	0.60%
Long-Term Debt	58.22%	47.83%

Q. What is Staff's recommended ratemaking capital structure in this proceeding?

A. Considering Ameren Missouri's financial relationship with Ameren Corp., and to be consistent with the Commission's previous ratemaking decisions, Staff recommends that the Commission set Ameren Missouri's ROR based on its most recent actual standalone capital structure. The ratemaking capital structure Staff used for its analysis in this case is Ameren Missouri's stand-alone capital structure composed of 51.80% common equity, 0.57% preferred stock, and 47.63% long-term debt, based on Ameren Missouri's actual capital structure as of June 30, 2024. Schedules SJW-5-1 and SJW-5-2 to this testimony, and incorporated by reference herein, present Ameren Corp. and Ameren Missouri's historical capital structures and the associated capital ratios. Staff will keep monitoring Ameren Corp. and Ameren Missouri's updated capital structures through the end of the true-up period, through December 31, 2024, and will update its final recommendation to actual values at that time.

[110] Schedule SJW-d6, Won's Direct Testimony.
[111] Staff's Data Request No. 0107.
[112] Schedule SJW-d5-2, Won's Direct Testimony.

VI. RATE OF RETURN

Q. Please summarize the procedure that Staff used in its ROR analysis.

A. In order to arrive at Staff's recommended ROR, Staff calculated the weighted average cost of capital of Ameren Missouri by investigating the cost of each capital component of its ratemaking capital structure. Staff specifically examined: (1) the estimated COEs using DCF and CAPM for the selected electric companies in the proxy group; (2) the authorized ROE estimated by the BYPRP method; (3) the recent national average authorized ROEs for electric utilities; (4) Staff's recommended ROE for the current Ameren Missouri rate case; (5) the current embedded cost of debt; and (6) the allowed ROR for the purpose of ratemaking in this proceeding. For this procedure, Staff started with the selection of an electric proxy group.

1. Proxy Group

Q. How did you select the electric proxy group for Staff's ROR analysis?

A. Staff used a proxy group consisting of U.S. utilities that the Edison Electric Institute (EEI) classifies as Electric Utilities.[113] Staff screened thirty-eight (38) companies for the following criteria:

- Stock publicly traded;
- 80% of assets U.S. regulated;
- At least investment grade credit rating from two sources;
- Long-term growth rates from at least two sources;
- Positive dividend payout since 2019;
- At least 60% of regulated income from electric utility operations;
- At least 50% of plant from electric utility; and
- No pending merger or acquisitions.

Q. What is Staff's electric proxy group for its ROR analysis?

[113] EEI, 2022 Financial Review: Annual Report of the U.S. Investor-Owned Electric Utility Industry.

A. The fourteen (14) electric utilities that met these criteria are in Table 3 below:

Table 3: Electric Utility Proxy Group

Electric Utility Companies	Ticker
Alliant Energy Corporation	LNT
American Electric Power Company, Inc.	AEP
Avista Corporation	AVA
CMS Energy Corporation	CMS
Duke Energy Corporation	DUK
Entergy Corporation	ETR
Evergy, Inc.	EVRG
IDACORP, Inc.	IDA
Northwestern Corporation	NWE
OGE Energy Corp.	OGE
Pinnacle West Capital Corporation	PNW
Portland General Electric Company	POR
The Southern Company	SO
Xcel Energy Inc.	XEL

The detailed screening procedure and results, utilizing the above criteria, are presented in Schedules SJW-d8 and SJW-d9.

2. Cost of Common Equity

Q. Please explain how Staff conducted its COE estimation.

A. Staff conducted its COE estimation for Ameren Missouri by examining the market data of the second quarter of 2024 ("Q2 2024") using the proxy group of electric utility companies as shown in Table 3.[114] The analysis Staff used to estimate Ameren Missouri's COE

[114] The test year for this case ends on March 31, 2024, with updates through June 30, 2024.

consisted of Staff's DCF COE and CAPM COE analyses. These two analyses are widely accepted in the financial industry as a means to determine a fair and reasonable rate of return for regulated utility companies.[115] Staff agrees with the FERC that conducting the COE analysis using DCF and CAPM is the most appropriate method for generating a composite zone of reasonableness to determine the recommended ROE to be presented to the Commission for Ameren Missouri.[116] Staff used the result of a BYPRP method to recommend an authorized ROE comparable to the reasonable range of COEs for the proxy group, as determined through its DCF and CAPM analyses.

Q. Please explain the DCF model used for Staff's COE estimation.

A. The DCF model used for Staff's COE estimation is a widely used model by investors to evaluate stable-growth investment opportunities, such as regulated utility companies. The premise of the DCF model is that an investment in common stock is worth the present value of the infinite stream of dividends discounted at a market rate commensurate with the investment's risk. Using the following formula for the DCF model, investors determine a common stock price:

$$P = D/(k - g),$$

where P is the common stock price,
D is the current dividend,
k is investors' required return from the stock, and
g is the expected growth rate in dividends.

[115] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).
[116] Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc., Opinion No. 569-A, 171 FERC ¶ 61,154 (2020) ("Opinion 569-A").

The common stock prices of Staff's proxy group in Q2 2024 are presented in Schedule SJW-d12. Staff uses an adjusted dividend yield $(1 + 0.5g)D$ to account for the fact that the dividends are paid on a quarterly basis.[117] For the growth rate, Staff used the average of analysts' projected earnings per share ("EPS"), dividends per share ("DPS"), and book value per share ("BVPS") and the projected nominal GDP growth rate.[118] The average projective growth rate in Q2 2024 for Staff's proxy group is 4.57%.[119] The average long-term sustainable growth rate for the DCF model is 4.44% with the projected nominal GDP growth rate of 3.90%.[120]

It is important that the growth rate used in Staff's constant-growth DCF model reflects the long-term investment horizon assumption implied in the constant-growth DCF model. FERC also agreed as much when it ruled, in Opinion 569, that the exclusive use of analysts' short-term growth rates in the constant-growth DCF was inappropriate.[121] The detailed procedure of the growth rate calculation for Staff's DCF model is presented in Schedule SJW-d12.

The formulation of the COE using the constant-growth DCF formula is:

$$k = (1 + 0.5g)D \,/\, P \; + \; g.$$

Q. What is the result of the COE estimation using the DCF model?

A. For the current rate case, Staff's DCF estimation of the COE for electric utility companies in its proxy group ranges from 7.49% to 9.70%, with an average DCF COE estimate

[117] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).
[118] *Entergy Arkansas, Inc*., Opinion No. 575, 175 FERC ¶ 61,136 (2021).
[119] Schedule SJW-d10, Won's Direct Testimony.
[120] Table 2-4, Congress Budget Office (CBO), Budget Economic Outlook, Published February 2024.
[121] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).

of 8.60%, based on the proxy group of electric utility companies presented in Table 3.[122] The detailed calculation procedure of Staff's DCF analysis is presented in Schedule SJW-d12.

Q. Please explain the CAPM used for Staff's COE estimation.

A. The CAPM used for Staff's COE estimation is another widely used financial model that describes the relationship between risk and expected return. According to CAPM, the expected return on an investment is determined by the risk-free rate of return (typically the yield on government bonds) and a risk premium that reflects the riskiness of the investment compared to the overall market. The CAPM is built on the premise that the variance in returns over time is the appropriate measure of risk, but only the non-diversifiable variance (systematic risk) is rewarded. Systematic risks, also called market risks, are unanticipated events that affect almost all assets to some degree because the effects are economy wide. Systematic risk in an asset, relative to the average, is measured by the beta of that asset.[123] Unsystematic risks, also called asset-specific risks, are unanticipated events that affect single assets or small groups of assets. Because unsystematic risks can be freely eliminated by diversification, the appropriate reward for bearing risk depends on the level of systematic risk.

The CAPM shows that the expected return for a particular asset depends on the pure time value of money (measured by the risk-free rate), the amount of the reward for bearing systematic risk (measured by the market risk premium ("MRP")), and the amount of systematic risk incurred by the asset (measured by beta). Specifically, the CAPM methodology estimates the COE by taking the risk-free rate and adding the MRP multiplied by beta.[124] The MRP is

[122] Schedule SJW-d12, Won's Direct Testimony.
[123] Beta is a measure of the volatility—or systematic risk—of a security or portfolio compared to the market as a whole. (Investopedia, retrieved October 13, 2022).
[124] Roger A. Morin, New Regulatory Finance (Public Utilities Reports, Inc. 2006).

calculated by subtracting the risk-free rate from the expected market return. The general formula of the CAPM is as follows:

$$k = R_f + \beta(R_m - R_f)$$

where, k is the expected return on equity for a security,
R_f is the risk-free rate,
R_m is the expected market return,
β is beta, and
$R_m - R_f$ is the MRP.

For the risk-free rate of each time period, Staff used the average yield on 30-Year U.S. Treasury bonds which was 4.57% for the Q2 2024. For Staff's CAPM estimation, it relied on betas provided by Value Line.[125] For the MRP estimate, Staff relied on four sets of data for the Q2 2024. The first data set is the long-term geometric mean of historical return differences between large company stocks and long-term government bonds from 1926-2023, resulting in MRP estimates of 4.54%.[126] The second data set is the long-term arithmetic mean of historical return differences between large company stocks and long-term government bonds from 1926-2023, resulting in MRP estimates of 5.94%.[127] The third data set is the long-term geometric mean of historical return differences between S&P 500 and long-term government bonds from 1928-2023, resulting in MRP estimates of 5.23%.[128] The fourth data set is the long-term arithmetic mean of historical return differences between S&P 500 and long-term government bonds from 1928-2023, resulting in MRP estimates of 6.80%.[129]

[125] Value Line, https://valueline.com/?msclkid=4ed36370d16911eca58154b129389016.
[126] Kroll, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[127] Ibid.
[128] Risk Premium, Damodaran Online, Stern School of Business, NYU.
[129] Ibid.

Q. What is the result of Staff's CAPM COE estimation?

A. For the current rate case, Staff's CAPM estimation of the COE for electric utility companies in its proxy group ranges from 9.06% to 10.42%, with an average CAPM COE estimate of 9.74%, based on the proxy group of electric utility companies presented in Table 3.[130] The detailed calculation procedure of Staff's CAPM analysis its summary results are presented in Schedule SJW-d13.

3. Bond Yield Plus Risk Premium

Q. Please explain the BYPRP model used for recommending ROE.

A. The BYPRP model is widely accepted in academia and regulatory proceedings to estimate ROE.[131] The BYPRP model is built on the premise that investors demand a greater return in exchange for taking on higher levels of risk; for instance, a company's common stock equity is riskier than its corporate bonds because equity holders have residual claims on a company's assets and earnings, which means they are not guaranteed fixed returns and may face greater volatility in their investment. According to the Chartered Financial Analyst ("CFA") study guide, BYPRP estimates the ROE of a company by adding its equity risk premium to the yield-to-maturity ("YTM") of the subject company's long-term debt.[132]

In contrast to DCF and CAPM estimates of the COE for recommending an authorized ROE, Staff's BYPRP method is designed to directly estimate an authorized ROE. Staff's BYPRP method involves estimating an authorized ROE by adding an associated risk premium

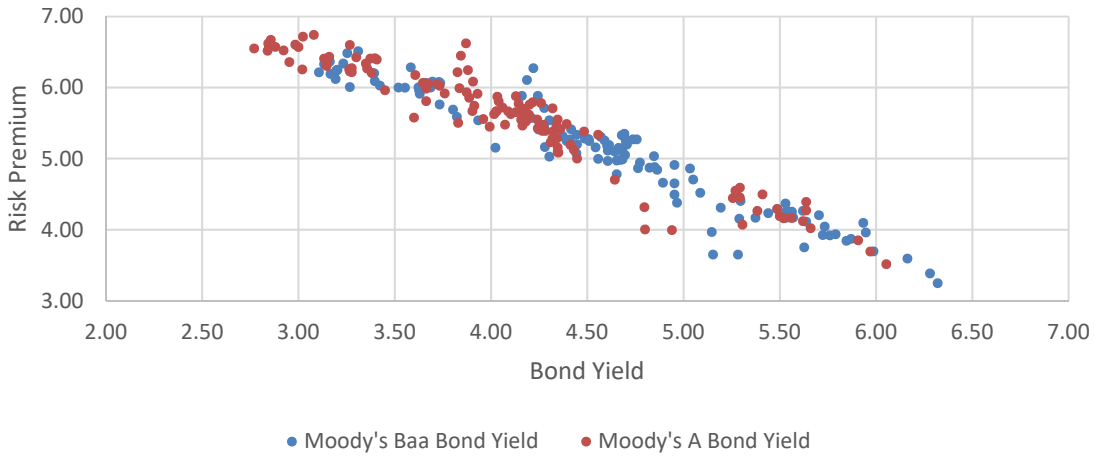
[130] Schedule SJW-d13, Won's Direct Testimony.
[131] Paragraph 146, Opinion No. 531, 147 FERC ¶ 61,234.
[132] Stowe, J. D., Robinson, T. R., Pinto, J. E., & McLeavey, D. W. (2002) Analysis of Equity Investment: Valuation. Association for Investment Management and Research.

to the utility bond yields. The relationship between ROE and Risk Premium can be expressed as follows:

ROE = Bond Yield + Risk Premium.

Staff utilized Moody's A-rated and Baa-rated public utility bond yields and defined the difference between the authorized ROE and the utility bond yield as the Risk Premium. Staff's BYPRP analysis considered 100 authorized ROEs of vertically integrated electric utilities over a 10-year period from 2014 to 2023.[133] To determine a risk premium for a given bond yield, Staff relied on the negative relationship between risk premiums and bond yields, as shown in Figure 6.

Figure 6. Bond Yield and Risk Premium (2014-2023)



Staff determined Risk Premiums for each of those months by subtracting the 3-month moving average yield of A-rated and Baa-rated public utility bonds from the 3-month moving average authorized ROE for vertically integrated electric utilities in each month. To account for the inverse relationship between bond yields and risk premiums, Staff performed a

[133] S&P Capital IQ Pro, Rate Case History (Past Rate Cases).

regression analysis between the utility bond yields and monthly risk premiums during the 2014-2023 study period. Using a regression analysis, Staff obtained the following equation:

Risk Premium (%) = 9.4665% – 0.9515 Bond Yield (%).[134]

In Staff's regression model, the results showed an R-squared value of 0.92 and a p-value associated with the regression coefficient of less than 0.0001. This indicates that approximately 92% of the variability in the Risk Premium can be explained by the Bond Yield and suggests that the Bond Yield has a significant effect on the Risk Premium. In the second and third quarters of 2024, the average yields of A and BBB-rated utility bonds were 5.56% and 5.78%, respectively.[135] Using these yields and the equation of the regression analysis result listed above, Staff's BYPRP analysis indicates that the vertically integrated electric utility's estimated ROE is 9.74% as illustrated in Staff's Schedule SJW-d14-1.

4. Authorized Return on Equity

Q. What is Staff's recommendation of authorized ROE in this proceeding based on the results of COE and ROE estimation analyses?

A. Staff conducted two COE estimation analyses using DCF and CAPM. In addition, Staff directly estimated an authorized ROE using the BYPRP method. Based on Staff's estimation analyses described above, Staff estimates Ameren Missouri's current market COE to be in the range of 8.28% to 10.06% summarized in Table 4. Staff recommends that the Commission grant Ameren Missouri an authorized ROE of 9.74% within a reasonable range of 9.49% to 9.99%

[134] Schedule SJW-d14-2, Won's Direct Testimony.
[135] Schedule SJW-d14-1, Won's Direct Testimony.

Table 4: Summary Result of COE and ROE Estimation

	COE Estimation		
	Lower	Mean	Upper
DCF	7.49%	8.60%	9.70%
CAPM	9.06%	9.74%	10.42%
	8.28%	9.17%	10.06%

	ROE Estimation		
	Lower	Mean	Upper
BYPRP	9.72%	9.74%	9.76%

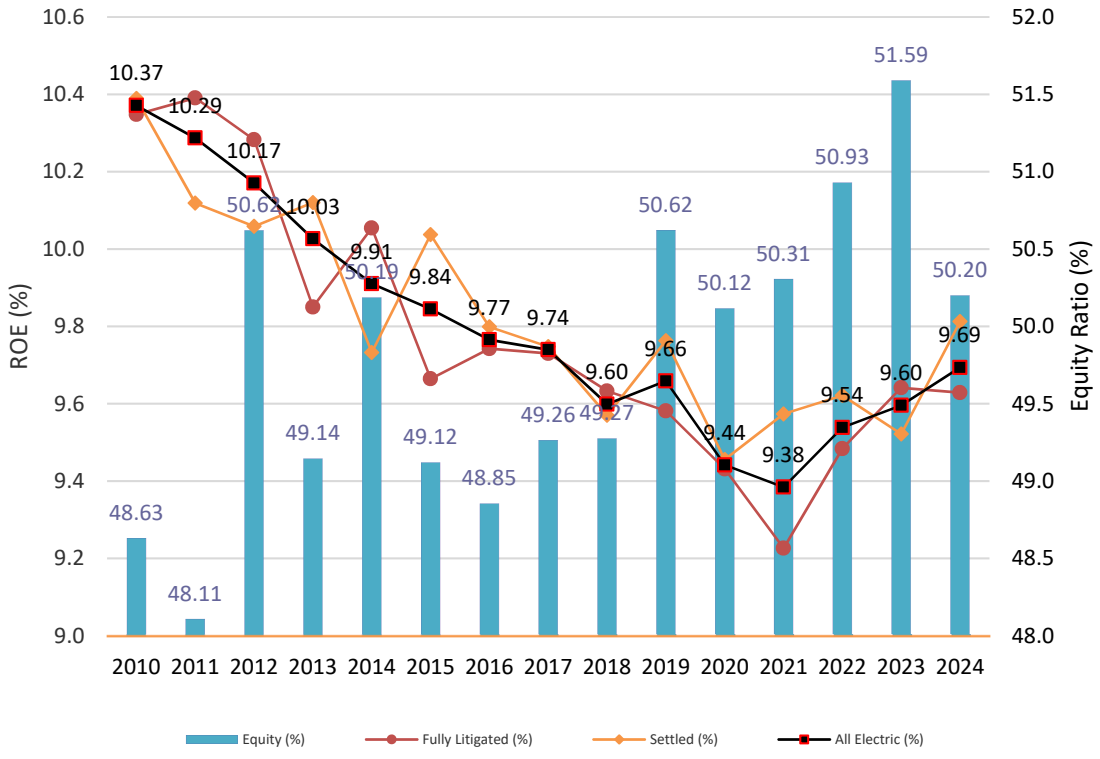
Q. Does Staff have any supporting evidence the Commission can consider to determine the reasonableness of Staff's ROE recommendation?

A. Yes. Staff recognizes that the Commission may be interested in recent authorized ROEs for other electric utility companies in the U.S. as a test of reasonableness of Staff's recommendation of authorized ROE. Comparing Staff's recommended ROE to those of similar electric utilities provides a benchmark for assessing whether the recommendation falls within a reasonable range. In addition, analyzing recent authorized ROEs for other electric utilities helps to gauge what is considered reasonable within the industry at a given time.

Table 5 presents information compiled and published by Regulatory Research Associates ("RRA") which details the average fully litigated and other authorized ROEs from Commissions around the U.S. in the years 2010 - 2024 along with the number of cases considered:

Table 5: Authorized ROE and Equity Ratio in the U.S. (2010-2024) [136]

	Fully Litigated			Settled			Electric Total		
Year	ROE (%)	Equity (%)	Case No.	ROE (%)	Equity (%)	Case No.	ROE (%)	Equity (%)	Case No.
2010	10.35	47.68	27	10.39	49.49	34	10.37	48.63	61
2011	10.39	48.17	26	10.12	48.01	16	10.29	48.11	42
2012	10.28	49.98	29	10.06	51.40	29	10.17	50.62	58
2013	9.85	48.25	17	10.12	49.70	32	10.03	49.14	49
2014	10.05	50.14	21	9.73	50.26	17	9.91	50.19	38
2015	9.66	48.98	16	10.04	49.28	15	9.84	49.12	31
2016	9.74	49.75	25	9.80	47.51	17	9.77	48.85	42
2017	9.73	49.23	24	9.75	49.30	29	9.74	49.26	53
2018	9.63	48.70	22	9.57	49.76	26	9.60	49.27	48
2019	9.58	51.07	27	9.76	49.66	20	9.66	50.62	47
2020	9.43	49.87	32	9.46	50.45	23	9.44	50.12	55
2021	9.23	50.71	30	9.57	49.79	25	9.38	50.31	55
2022	9.48	51.25	32	9.62	50.32	21	9.54	50.93	53
2023	9.64	52.10	39	9.52	50.57	24	9.60	51.59	63
2024	9.63	50.81	22	9.81	48.70	12	9.69	50.20	34



[136] S&P Capital IQ Pro: Regulatory Research Association, retrieved May 2, 2024.

In 2024 to date, the average authorized ROE of electric utilities for fully litigated and settled cases is 9.63% and 9.81%, respectively, for an overall average of 9.69% over 34 cases. Considering the current high interest rates, Staff's recommended authorized ROE of 9.74% is generally consistent with ROEs recently authorized for other electric utilities around the country. Even if Staff only considers the six fully litigated cases of vertically integrated electric utilities authorized in the first three quarters of 2024 in the U.S., the average authorized ROE is 9.68%, which is lower than Staff's recommended authorized ROE of 9.74%.[137] It is Staff's position that in order for Ameren Missouri to be competitive on the capital market, it needs to have the opportunity to earn an ROE that is reasonably consistent with ROEs awarded to other electric utilities around the country.

Q. What is the most recent authorized ROE determined by this Commission for an electric utility?

A. The Commission's most recent, fully-litigated electric rate case is The Empire District Electric Company's rate case, Case No. ER-2019-0374, ("2019 Empire rate case").[138] In the 2019 Empire Case, the Commission ordered an authorized ROE of 9.25%.

5. Costs of Debt and Preferred Stock

Q. What is the cost of preferred stock and COD for the purpose of ratemaking?

A. To recommend an allowed ROR, the cost of preferred stock and COD are essential components in calculating the cost of capital. The cost of preferred stock is the return that a company must provide to its preferred shareholders, which is essentially the dividend yield on preferred shares. Unlike common stock dividends, preferred stock dividends are

[137] Schedule SJW-d17, Won's Direct Testimony.
[138] *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.

usually predetermined. COD refers to the expenses a utility incurs from borrowing money through bonds, loans, or other debt instruments. These costs typically include interest payments and any associated fees. Estimating COD involves using embedded COD methodologies, such as calculating the weighted average cost of debt, analyzing interest rates on existing debt instruments, evaluating credit ratings, and comparing borrowing costs to industry benchmarks.

Q. What cost of preferred stock should the Commission authorize for Ameren Missouri in this proceeding?

A. At this time, Staff recommends that the Commission authorize the cost of preferred stock in this proceeding to be Ameren Missouri's cost of preferred stock as of June 30, 2024, which is 4.18%.[139] This cost of preferred stock has not changed from Ameren Missouri's last rate proceeding.[140] Staff will update its cost of preferred stock throughout this proceeding through the true-up period, as actual information becomes available.

Q. What COD should the Commission authorize for Ameren Missouri in this proceeding?

A. At this time, Staff recommends that the Commission authorize the ratemaking COD in this proceeding to be Ameren Missouri's embedded cost of debt as of June 30, 2024, which is 4.24%.[141] Staff will update its embedded cost of debt throughout this proceeding through the true-up period, as additional information becomes available.

[139] Staff's Data Request No. 0108.
[140] Schedule SJW-TR-1, Won's True-Up Rebuttal Testimony, ER-2022-0337.
[141] Staff's Data Request No. 0108.

VII. CONCLUSION

Q. What is Staff's conclusion?

A. Considering the current financial and economic markets, particularly the recent changes in the inflation rate and interest rates, as well as Ameren Missouri's risk profile, Staff's COE and ROE analysis supports a just and reasonable recommended ROE of 9.74%, which is the midpoint of a range from 9.49% to 9.99%, for Ameren Missouri. Because of the rapidly changing economic outlook, Staff will update its recommended ROE if there are significant changes in the economic outlook that necessitate an update.

Staff's recommended ROE of 9.74%, cost of preferred stock of 4.18%, and cost of debt of 4.24% for Ameren Missouri applied to a capital structure of 51.80% common equity, 0.57% preferred stock, and 47.63% long-term debt, results in an allowed ROR of 7.09%. Staff will continue to monitor Ameren Corp. and Ameren Missouri's capital structure and cost of debt through the true-up period and will make its final recommendation at that time.

Q. Does this conclude your direct testimony?

A. Yes, it does.

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-2024-0319

AFFIDAVIT OF SEOUNG JOUN WON, PhD

STATE OF MISSOURI	)	
	)	ss.
COUNTY OF COLE	)	

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 *Direct 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, 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 22nd day of November 2024.

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

Notary Public

Credentials and Background of

Seoung Joun Won, PhD

I am currently employed as a Regulatory Compliance Manager in the Financial Analysis Department of the Financial and Business Analysis Division of the Missouri Public Service Commission. I have been employed at the Missouri Public Service Commission since May 2010.

I received my Bachelor of Arts, Master of Arts, and Doctor of Philosophy in Mathematics from Yonsei University and my Bachelor of Business Administration in Financial Accounting from Seoul Digital University in Seoul, South Korea, and earned my Doctor of Philosophy in Economics from the University of Missouri - Columbia. Also, I passed several certificate examinations for Finance Specialist in South Korea such as Accounting Management, Financial Risk Manager, Enterprise Resource Planning Accounting Consultant, Derivatives Investment Advisor, Securities Investment Advisor, and Financial Planner.

Prior to joining the Commission, I taught both undergraduate and graduate level mathematics at the Korean Air Force Academy and Yonsei University for 13 years. I served as the director of the Education and Technology Research Center in NeoEdu for 5 years. Before starting my current position at the Missouri Public Service Commission, I had served as a regulatory economist in Tariff/Rate Design Department.

My current duties at the Commission include financial analysis of rate of return and cost of equity, valuation analysis on merger and acquisition, due diligence review and supporting economic and statistical analysis.

List of Previous Testimony Filed

Seoung Joun Won, PhD

Case Number	Company	Issue
GA-2024-0361	Spire Missouri, Inc. d/b/a Spire	Financial Capability
WM-2025-0017	Missouri-American Water Company	Merger and Acquisition
EA-2024-0237	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
GF-2025-0053	Spire Missouri, Inc. d/b/a Spire	Financing Authority
EF-2025-0047	Union Electric Co., d/b/a Ameren Missouri	Financing Authority
ER-2024-0212	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
WF-2024-0353	Missouri-American Water Company	Financing Authority
WA-2024-0325	Missouri-American Water Company	Financial Capability
ER-2024-0189	Evergy Missouri West, Inc. d/b/a Evergy Missouri West	Rate of Return, Capital Structure
GA-2024-0257	Spire Missouri, Inc. d/b/a Spire	Financial Capability
EO-2023-0448	Union Electric Co., d/b/a Ameren Missouri	Nuclear Decommissioning
GA-2024-0243	Spire Missouri, Inc. d/b/a Spire	Financial Capability
EA-2024-0147	Ameren Transmission Company of Illinois	Financial Capability
EA-2023-0131	Empire District Electric Company, d/b/a Liberty	Financial Capability
EF-2024-0192	Evergy Metro, Inc. d/b/a Evergy Missouri Metro	Financing Authority
WF-2024-0135	Liberty Utilities (Missouri Water) LLC d/b/a Liberty	Financing Authority

cont'd List of Previous Testimony Filed

Seoung Joun Won, PhD

Case Number	Company	Issue
EF-2024-0099	Union Electric Co., d/b/a Ameren Missouri	Financing Authority
GA-2024-0100	Spire Missouri, Inc. d/b/a Spire	Financial Capability
EA-2023-0286	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
GA-2023-0441	Spire Missouri, Inc. d/b/a Spire	Financial Capability
EF-2023-0425	Evergy Metro Inc., d/b/a Evergy Missouri Metro	Financing Authority
SA-2023-0435	Missouri-American Water Company	Financial Capability
WA-2023-0434	Missouri-American Water Company	Financial Capability
GA-2023-0389	Spire Missouri, Inc. d/b/a Spire	Financial Capability
GA-2023-0374	Spire Missouri, Inc. d/b/a Spire	Financial Capability
GF-2023-0280	Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty	Financing Authority
WA-2023-0345	Missouri-American Water Company	Financial Capability
EA-2023-0226	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
EA-2023-0017	Grain Belt Express LLC	Financial Capability
GA-2023-0038	Spire Missouri, Inc. d/b/a Spire	Financial Capability
EF-2022-0151	Union Electric Co., d/b/a Ameren Missouri	Financing Authority
EA-2022-0328	Evergy Missouri West, Inc. d/b/a Evergy Missouri West	Financial Capability
ER-2022-0337	Union Electric Co., d/b/a Ameren Missouri	Rate of Return, Capital Structure

cont'd List of Previous Testimony Filed

Seoung Joun Won, PhD

Case Number	Company	Issue
EA-2022-0245	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
EA-2022-0244	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
EA-2022-0234	NextEra Energy Transmission Southwest, LLC	Financial Capability
GR-2022-0179	Spire Missouri, Inc., d/b/a Spire	Rate of Return, Capital Structure
GF-2022- 0169	Spire Missouri, Inc.	Financing Authority
EF-2022-0164	Union Electric Co., d/b/a Ameren Missouri	Financing Authority
WF-2022-0161	Missouri-American Water Company	Financing Authority
ER-2022-0130	Evergy Missouri West, Inc., d/b/a Evergy Missouri West	Rate of Return, Capital Structure
ER-2022-0129	Evergy Metro Inc., d/b/a Evergy Missouri Metro	Rate of Return, Capital Structure
EF-2022- 0103	Evergy Missouri West, Inc.	Financing Authority
WF-2022-0066	Missouri American Water Company	Financing Authority
WF-2021-0427	Raytown Water Company	Financing Authority
GR-2021-0320	Empire District Gas Company	Rate of Return, Capital Structure
ER-2021-0312	Empire District Electric Company	Rate of Return, Capital Structure
GR-2021-0241	Union Electric Co., d/b/a Ameren Missouri	Rate of Return, Capital Structure
ER-2021-0240	Union Electric Co., d/b/a Ameren Missouri	Rate of Return, Capital Structure

Case Number	Company	Issue
GR-2021-0108	Spire Missouri, Inc.	Rate of Return, Capital Structure
EA-2021-0087	Ameren Transmission Company of Illinois	Financial Capability
EA-2020-0371	Union Electric Co., d/b/a Ameren Missouri	Financial Capability
SR-2020-0345	Missouri American Water Company	Rate of Return, Capital Structure
WR-2020-0344	Missouri American Water Company	Rate of Return, Capital Structure
EF-2020-0301	Evergy Missouri Metro	Financing Authority
WR-2020-0264	Raytown Water Company	Rate of Return, Capital Structure
WR-2020-0053	Confluence Rivers Utility Operating Company, Inc.	Rate of Return, Capital Structure
HM-2020-0039	Veolia Energy Kansas City, Inc. AIP Project Franklin Bidco	Merger and Acquisition
EO-2019-0133	KCP&L Greater Missouri Operations Company, Evergy Metro	Business Process Efficiency
EO-2019-0132	Kansas City Power & Light Company, Evergy Metro	Business Process Efficiency
GR-2019-0077	Union Electric Co., d/b/a Ameren Missouri	Weather & Normalization, Net System Input
GO-2019-0059	Spire West, Spire Missouri, Inc.	Weather Variables
GO-2019-0058	Spire East., Spire Missouri, Inc.	Weather Variables
ER-2018-0146	KCP&L Greater Missouri Operations Co.	Weather & Normalization, Net System Input
ER-2018-0145	Kansas City Power & Light Co.	Weather & Normalization, Net System Input
GR-2018-0013	Liberty Utilities (Midstates Natural Gas) Corp.	Weather Variables
GR-2017-0216	Missouri Gas Energy (Laclede), Spire Missouri, Inc.	Weather Variables
GR-2017-0215	Laclede Gas Co., Spire Missouri, Inc.	Weather Variables

Case Number	Company	Issue
ER-2016-0285	Kansas City Power & Light Co.	Weather & Normalization, Net System Input
ER-2016-0179	Union Electric Co., d/b/a Ameren Missouri	Weather & Normalization, Net System Input
ER-2016-0156	KCP&L Greater Missouri Operations Co.	Weather & Normalization, Net System Input
ER-2016-0023	Empire District Electric Company	Weather & Normalization, Net System Input
ER-2014-0370	Kansas City Power & Light Co	Weather & Normalization, Net System Input
ER-2014-0351	Empire District Electric Company	Weather & Normalization, Net System Input
ER-2014-0258	Union Electric Co., d/b/a Ameren Missouri	Weather & Normalization, Net System Input
EC-2014-0223	Noranda Aluminum, Inc., et al, Complaint v. Union Electric Co., d/b/a Ameren Missouri	Weather Variables
GR-2014-0152	Liberty Utilities (Midstates Natural Gas) Corp.	Weather Variables
GR-2014-0086	Summit Natural Gas of Missouri, Inc.	Weather Variables
HR-2014-0066	Veolia Energy Kansas City, Inc.	Weather Variables, Revenue
GR-2013-0171	Laclede Gas Co.	Weather Variables
ER-2012-0345	Empire District Electric Company	Weather Variables, Revenue
ER-2012-0175	KCP&L Greater Missouri Operations Co.	Weather Variables
ER-2012-0174	Kansas City Power & Light Co.	Weather Variables
ER-2012-0166	Union Electric Co., d/b/a Ameren Missouri	Weather Variables, Revenue
HR-2011-0241	Veolia Energy Kansas City, Inc.	Weather Variables
ER-2011-0028	Union Electric Co., d/b/a Ameren Missouri	Weather Variables, Revenue

Case Number	Company	Issue
ER-2011-0004	Empire District Electric Company	Weather Variables, Revenue
GR-2010-0363	Union Electric Co., d/b/a Ameren Missouri	Weather Variables
ER-2010-0356	KCP&L Greater Missouri Operations Co.	Weather Variables
ER-2010-0355	Kansas City Power & Light Co.	Weather Variables, Revenue

Work Related Publication

Won, Seoung Joun, X. Henry Wang, and Henry E. Warren. "Climate normals and weather normalization for utility regulation." *Energy Economics* (2016).

DIRECT TESTIMONY

FOR

UNION ELECTRIC COMPANY
D/B/A AMEREN MISSOURI

CASE NO. ER-2024-0319

APPENDIX 2

SCHEDULES

BY

Seoung Joun Won PhD

Financial Analysis

MISSOURI PUBLIC SERVICE COMMISSION

December 3, 2024

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

List of Schedules

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4-2	Average Yields on Thirty-Year U.S. Treasury Bonds
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Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Federal Reserve Discount Rate and Federal Reserve Funds Rate

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate	Date	Reserve Discount Rate	Reserve Funds Rate	Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
Jan 2001	5.52	5.50	Jan 2006	5.50	4.50	Jan 2011	0.75	0.13
Feb	5.00	5.50	Feb	5.50	4.50	Feb	0.75	0.13
Mar	4.81	5.00	Mar	5.75	4.75	Mar	0.75	0.13
Apr	4.28	4.50	Apr	5.75	4.75	Apr	0.75	0.13
May	3.73	4.00	May	6.00	5.00	May	0.75	0.13
Jun	3.47	3.75	June	6.25	5.25	Jun	0.75	0.13
Jul	3.25	3.75	July	6.25	5.25	Jul	0.75	0.13
Aug	3.16	3.50	Aug	6.25	5.25	Aug	0.75	0.13
Sep	2.77	3.00	Sep	6.25	5.25	Sep	0.75	0.13
Oct	2.02	2.50	Oct	6.25	5.25	Oct	0.75	0.13
Nov	1.58	2.00	Nov	6.25	5.25	Nov	0.75	0.13
Dec	1.33	1.75	Dec	6.25	5.25	Dec	0.75	0.13
Jan 2002	1.25	1.75	Jan 2007	6.25	5.25	Jan 2012	0.75	0.13
Feb	1.25	1.75	Feb	6.25	5.25	Feb	0.75	0.13
Mar	1.25	1.75	Mar	6.25	5.25	Mar	0.75	0.13
Apr	1.25	1.75	Apr	6.25	5.25	Apr	0.75	0.13
May	1.25	1.75	May	6.25	5.25	May	0.75	0.13
Jun	1.25	1.75	Jun	6.25	5.25	Jun	0.75	0.13
Jul	1.25	1.75	Jul	6.25	5.25	Jul	0.75	0.13
Aug	1.25	1.75	Aug	5.75	5.25	Aug	0.75	0.13
Sep	1.25	1.75	Sep	5.25	4.75	Sep	0.75	0.13
Oct	1.25	1.75	Oct	5.00	4.75	Oct	0.75	0.13
Nov	0.83	1.25	Nov	5.00	4.50	Nov	0.75	0.13
Dec	0.75	1.25	Dec	4.75	4.25	Dec	0.75	0.13
Jan 2003	2.25	1.25	Jan 2008	3.50	3.50	Jan 2013	0.75	0.13
Feb	2.25	1.25	Feb	3.50	3.00	Feb	0.75	0.13
Mar	2.25	1.25	Mar	2.50	2.25	Mar	0.75	0.13
Apr	2.25	1.25	Apr	2.25	2.25	Apr	0.75	0.13
May	2.25	1.25	May	2.25	2.00	May	0.75	0.13
Jun	2.00	1.25	Jun	2.25	2.00	Jun	0.75	0.13
Jul	2.00	1.00	Jul	2.25	2.00	Jul	0.75	0.13
Aug	2.00	1.00	Aug	2.25	2.00	Aug	0.75	0.13
Sep	2.00	1.00	Sep	2.25	2.00	Sept	0.75	0.13
Oct	2.00	1.00	Oct	1.25	1.25	Oct	0.75	0.13
Nov	2.00	1.00	Nov	1.25	1.25	Nov	0.75	0.13
Dec	2.00	1.00	Dec	0.50	0.13	Dec	0.75	0.13
Jan 2004	2.00	1.00	Jan 2009	0.50	0.13	Jan 2014	0.75	0.13
Feb	2.00	1.00	Feb	0.50	0.13	Feb	0.75	0.13
Mar	2.00	1.00	Mar	0.50	0.13	Mar	0.75	0.13
Apr	2.00	1.00	Apr	0.50	0.13	Apr	0.75	0.13
May	2.00	1.00	May	0.50	0.13	May	0.75	0.13
Jun	2.25	1.00	Jun	0.50	0.13	Jun	0.75	0.13
Jul	2.25	1.25	Jul	0.50	0.13	Jul	0.75	0.13
Aug	2.50	1.50	Aug	0.50	0.13	Aug	0.75	0.13
Sep	2.75	1.50	Sep	0.50	0.13	Sep	0.75	0.13
Oct	2.75	1.75	Oct	0.50	0.13	Oct	0.75	0.13
Nov	3.00	2.00	Nov	0.50	0.13	Nov	0.75	0.13
Dec	3.25	2.25	Dec	0.50	0.13	Dec	0.75	0.13
Jan 2005	3.25	2.25	Jan 2010	0.50	0.13	Jan 2015	0.75	0.13
Feb	3.50	2.50	Feb	0.75	0.13	Feb	0.75	0.13
Mar	3.75	2.50	Mar	0.75	0.13	Mar	0.75	0.13
Apr	3.75	2.75	April	0.75	0.13	Apr	0.75	0.13
May	4.00	3.00	May	0.75	0.13	May	0.75	0.13
Jun	4.25	3.00	Jun	0.75	0.13	Jun	0.75	0.13
Jul	4.25	3.25	Jul	0.75	0.13	Jul	0.75	0.13
Aug	4.50	3.50	Aug	0.75	0.13	Aug	0.75	0.13
Sep	4.75	3.75	Sep	0.75	0.13	Sep	0.75	0.13
Oct	4.75	3.75	Oct	0.75	0.13	Oct	0.75	0.13
Nov	5.00	4.00	Nov	0.75	0.13	Nov	0.75	0.13
Dec	5.25	4.25	Dec	0.75	0.13	Dec	1.00	0.38

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Federal Reserve Discount Rate and Federal Reserve Funds Rate

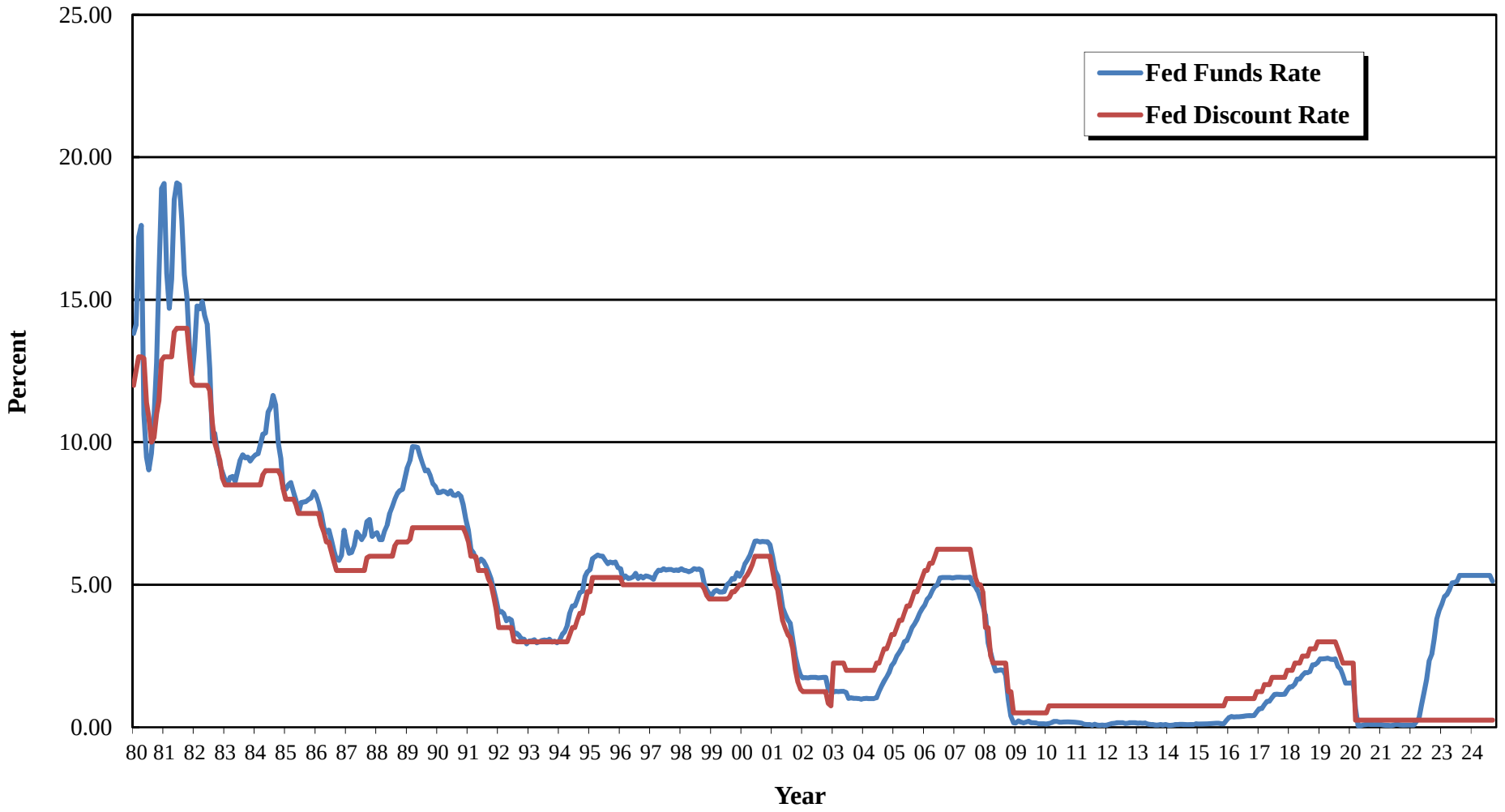
Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
Jan 2016	1.00	0.38
Feb	1.00	0.38
Mar	1.00	0.38
Apr	1.00	0.38
May	1.00	0.38
Jun	1.00	0.38
Jul	1.00	0.39
Aug	1.00	0.40
Sep	1.00	0.40
Oct	1.00	0.40
Nov	1.00	0.41
Dec	1.25	0.54
Jan 2017	1.25	0.65
Feb	1.25	0.66
Mar	1.50	0.79
Apr	1.50	0.90
May	1.50	0.91
Jun	1.75	1.04
July	1.75	1.15
Aug	1.75	1.16
Sep	1.75	1.15
Oct	1.75	1.15
Nov	1.75	1.16
Dec	2.00	1.30
Jan 2018	2.00	1.41
Feb	2.00	1.42
Mar	2.25	1.51
Apr	2.25	1.69
May	2.25	1.70
Jun	2.50	1.82
Jul	2.50	1.91
Aug	2.50	1.91
Sep	2.75	1.95
Oct	2.75	2.19
Nov	2.75	2.20
Dec	3.00	2.27
Jan 2019	3.00	2.40
Feb	3.00	2.40
Mar	3.00	2.41
Apr	3.00	2.42
May	3.00	2.39
Jun	3.00	2.38
Jul	3.00	2.40
Aug	2.75	2.13
Sept	2.50	2.04
Oct	2.25	1.83
Nov	2.25	1.55
Dec	2.25	1.55
Jan 2020	2.25	1.55
Feb	2.25	1.58
Mar	0.25	0.65
Apr	0.25	0.05
May	0.25	0.05
Jun	0.25	0.08
Jul	0.25	0.09
Aug	0.25	0.10
Sep	0.25	0.09
Oct	0.25	0.09
Nov	0.25	0.09
Dec	0.25	0.09

Date	Reserve Discount Rate	Reserve Funds Rate
Jan 2021	0.25	0.09
Feb	0.25	0.08
Mar	0.25	0.07
Apr	0.25	0.07
May	0.25	0.06
Jun	0.25	0.08
Jul	0.25	0.10
Aug	0.25	0.09
Sep	0.25	0.08
Oct	0.25	0.08
Nov	0.25	0.08
Dec	0.25	0.08
Jan 2022	0.25	0.08
Feb	0.25	0.08
Mar	0.25	0.20
Apr	0.25	0.33
May	0.25	0.77
Jun	0.25	1.21
Jul	0.25	1.68
Aug	0.25	2.33
Sep	0.25	2.56
Oct	0.25	3.08
Nov	0.25	3.78
Dec	0.25	4.10
Jan 2023	0.25	4.33
Feb	0.25	4.57
Mar	0.25	4.65
Apr	0.25	4.83
May	0.25	5.06
Jun	0.25	5.08
Jul	0.25	5.12
Aug	0.25	5.33
Sep	0.25	5.33
Oct	0.25	5.33
Nov	0.25	5.33
Dec	0.25	5.33
Jan 2024	0.25	5.33
Feb	0.25	5.33
Mar	0.25	5.33
Apr	0.25	5.33
May	0.25	5.33
Jun	0.25	5.33
Jul	0.25	5.33
Aug	0.25	5.33
Sep	0.25	5.13

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Federal Reserve Discount Rates and Federal Funds Rates
1980 - 2024



SCHEDULE SJW-d2-2

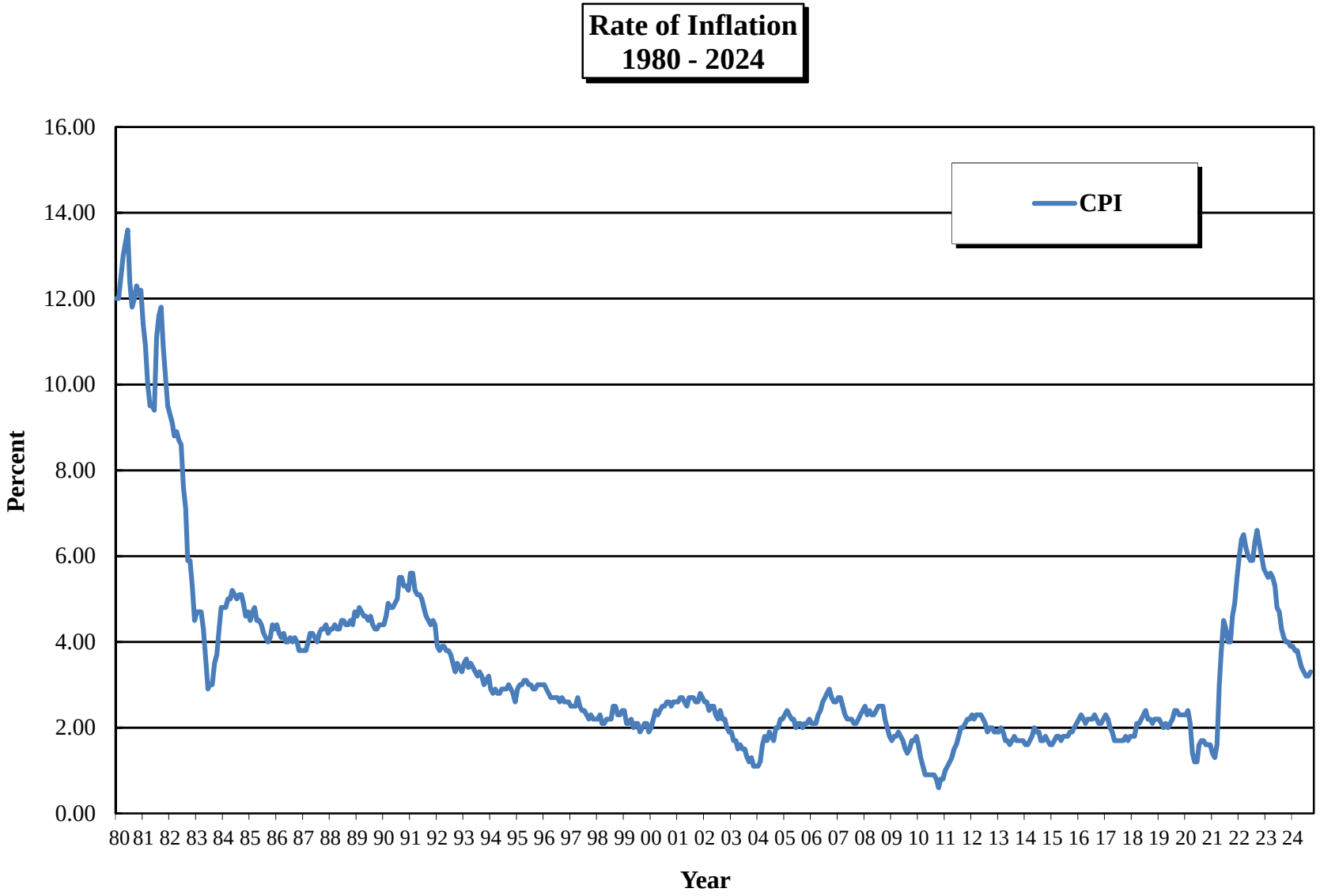
Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Rate of Inflation

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	12.00	Jan 1987	3.80	Jan 1994	2.90	Jan 2001	2.60	Jan 2008	2.50	Jan 2015	1.60	Jan 2022	6.00
Feb	12.00	Feb	3.80	Feb	2.80	Feb	2.70	Feb	2.30	Feb	1.70	Feb	6.40
Mar	12.50	Mar	4.00	Mar	2.90	Mar	2.70	Mar	2.40	Mar	1.80	Mar	6.50
Apr	13.00	Apr	4.20	Apr	2.80	Apr	2.60	Apr	2.30	Apr	1.80	Apr	6.20
May	13.30	May	4.20	May	2.80	May	2.50	May	2.30	May	1.70	May	6.00
Jun	13.60	Jun	4.10	Jun	2.90	Jun	2.70	Jun	2.40	Jun	1.80	Jun	5.90
Jul	12.40	Jul	4.00	Jul	2.90	Jul	2.70	Jul	2.50	Jul	1.80	Jul	5.90
Aug	11.80	Aug	4.20	Aug	2.90	Aug	2.70	Aug	2.50	Aug	1.80	Aug	6.30
Sep	12.00	Sep	4.30	Sep	3.00	Sep	2.60	Sep	2.50	Sep	1.90	Sep	6.60
Oct	12.30	Oct	4.30	Oct	2.90	Oct	2.60	Oct	2.20	Oct	1.90	Oct	6.30
Nov	12.10	Nov	4.40	Nov	2.80	Nov	2.80	Nov	2.00	Nov	2.00	Nov	6.00
Dec	12.20	Dec	4.20	Dec	2.60	Dec	2.70	Dec	1.80	Dec	2.10	Dec	5.70
Jan 1981	11.40	Jan 1988	4.30	Jan 1995	2.90	Jan 2002	2.60	Jan 2009	1.70	Jan 2016	2.20	Jan 2023	5.60
Feb	10.90	Feb	4.30	Feb	3.00	Feb	2.60	Feb	1.80	Feb	2.30	Feb	5.50
Mar	10.00	Mar	4.40	Mar	3.00	Mar	2.40	Mar	1.80	Mar	2.20	Mar	5.60
Apr	9.50	Apr	4.30	Apr	3.10	Apr	2.50	Apr	1.90	Apr	2.10	Apr	5.50
May	9.50	May	4.30	May	3.10	May	2.50	May	1.80	May	2.20	May	5.30
Jun	9.40	Jun	4.50	Jun	3.00	Jun	2.30	Jun	1.70	Jun	2.20	Jun	4.80
Jul	11.10	Jul	4.50	Jul	3.00	Jul	2.20	Jul	1.50	Jul	2.20	Jul	4.70
Aug	11.60	Aug	4.40	Aug	2.90	Aug	2.40	Aug	1.40	Aug	2.30	Aug	4.30
Sep	11.80	Sep	4.40	Sep	2.90	Sep	2.20	Sep	1.50	Sep	2.20	Sep	4.10
Oct	10.90	Oct	4.50	Oct	3.00	Oct	2.20	Oct	1.70	Oct	2.10	Oct	4.00
Nov	10.20	Nov	4.40	Nov	3.00	Nov	2.00	Nov	1.70	Nov	2.10	Nov	4.00
Dec	9.50	Dec	4.70	Dec	3.00	Dec	1.90	Dec	1.80	Dec	2.20	Dec	3.90
Jan 1982	9.30	Jan 1989	4.60	Jan 1996	3.00	Jan 2003	1.90	Jan 2010	1.60	Jan 2017	2.30	Jan 2024	3.90
Feb	9.10	Feb	4.80	Feb	2.90	Feb	1.70	Feb	1.30	Feb	2.20	Feb	3.80
Mar	8.80	Mar	4.70	Mar	2.80	Mar	1.70	Mar	1.10	Mar	2.00	Mar	3.80
Apr	8.90	Apr	4.60	Apr	2.70	Apr	1.50	April	0.90	Apr	1.90	Apr	3.60
May	8.70	May	4.60	May	2.70	May	1.60	May	0.90	May	1.70	May	3.40
Jun	8.60	Jun	4.50	Jun	2.70	Jun	1.50	Jun	0.90	Jun	1.70	Jun	3.30
Jul	7.60	Jul	4.60	Jul	2.70	Jul	1.50	Jul	0.90	July	1.70	Jul	3.20
Aug	7.10	Aug	4.40	Aug	2.60	Aug	1.30	Aug	0.90	Aug	1.70	Aug	3.20
Sep	5.90	Sep	4.30	Sep	2.70	Sep	1.20	Sep	0.80	Sep	1.70	Sep	3.30
Oct	5.90	Oct	4.30	Oct	2.60	Oct	1.30	Oct	0.60	Oct	1.80		
Nov	5.30	Nov	4.40	Nov	2.60	Nov	1.10	Nov	0.80	Nov	1.70		
Dec	4.50	Dec	4.40	Dec	2.60	Dec	1.10	Dec	0.80	Dec	1.80		
Jan 1983	4.70	Jan 1990	4.40	Jan 1997	2.50	Jan 2004	1.10	Jan 2011	1.00	Jan 2018	1.80		
Feb	4.70	Feb	4.60	Feb	2.50	Feb	1.20	Feb	1.10	Feb	1.80		
Mar	4.70	Mar	4.90	Mar	2.50	Mar	1.60	Mar	1.20	Mar	2.10		
Apr	4.30	Apr	4.80	Apr	2.70	Apr	1.80	Apr	1.30	Apr	2.10		
May	3.60	May	4.80	May	2.50	May	1.70	May	1.50	May	2.20		
Jun	2.90	Jun	4.90	Jun	2.40	Jun	1.90	Jun	1.60	Jun	2.30		
Jul	3.00	Jul	5.00	Jul	2.40	Jul	1.80	Jul	1.80	Jul	2.40		
Aug	3.00	Aug	5.50	Aug	2.30	Aug	1.70	Aug	2.00	Aug	2.20		
Sep	3.50	Sep	5.50	Sep	2.20	Sep	2.00	Sep	2.00	Sep	2.20		
Oct	3.70	Oct	5.30	Oct	2.30	Oct	2.00	Oct	2.10	Oct	2.10		
Nov	4.30	Nov	5.30	Nov	2.20	Nov	2.20	Nov	2.20	Nov	2.20		
Dec	4.80	Dec	5.20	Dec	2.20	Dec	2.20	Dec	2.20	Dec	2.20		
Jan 1984	4.80	Jan 1991	5.60	Jan 1998	2.20	Jan 2005	2.30	Jan 2012	2.30	Jan 2019	2.20		
Feb	4.80	Feb	5.60	Feb	2.30	Feb	2.40	Feb	2.20	Feb	2.10		
Mar	5.00	Mar	5.20	Mar	2.10	Mar	2.30	Mar	2.30	Mar	2.00		
Apr	5.00	Apr	5.10	Apr	2.10	Apr	2.20	Apr	2.30	Apr	2.10		
May	5.20	May	5.10	May	2.20	May	2.20	May	2.30	May	2.00		
Jun	5.10	Jun	5.00	Jun	2.20	Jun	2.00	Jun	2.20	Jun	2.10		
Jul	5.00	Jul	4.80	Jul	2.20	Jul	2.10	Jul	2.10	Jul	2.20		
Aug	5.10	Aug	4.60	Aug	2.50	Aug	2.10	Aug	1.90	Aug	2.40		
Sep	5.10	Sep	4.50	Sep	2.50	Sep	2.00	Sep	2.00	Sept	2.40		
Oct	4.90	Oct	4.40	Oct	2.30	Oct	2.10	Oct	2.00	Oct	2.30		
Nov	4.60	Nov	4.50	Nov	2.30	Nov	2.10	Nov	1.90	Nov	2.30		
Dec	4.70	Dec	4.40	Dec	2.40	Dec	2.20	Dec	1.90	Dec	2.30		
Jan 1985	4.50	Jan 1992	3.90	Jan 1999	2.40	Jan 2006	2.10	Jan 2013	1.90	Jan 2020	2.30		
Feb	4.70	Feb	3.80	Feb	2.10	Feb	2.10	Feb	2.00	Feb	2.40		
Mar	4.80	Mar	3.90	Mar	2.10	Mar	2.10	Mar	1.90	Mar	2.10		
Apr	4.50	Apr	3.90	Apr	2.20	Apr	2.30	Apr	1.70	Apr	1.40		
May	4.50	May	3.80	May	2.00	May	2.40	May	1.70	May	1.20		
Jun	4.40	Jun	3.80	Jun	2.10	June	2.60	Jun	1.60	Jun	1.20		
Jul	4.20	Jul	3.70	Jul	2.10	July	2.70	Jul	1.70	Jul	1.60		
Aug	4.10	Aug	3.50	Aug	1.90	Aug	2.80	Aug	1.80	Aug	1.70		
Sep	4.00	Sep	3.30	Sep	2.00	Sep	2.90	Sept	1.70	Sep	1.70		
Oct	4.10	Oct	3.50	Oct	2.10	Oct	2.70	Oct	1.70	Oct	1.60		
Nov	4.40	Nov	3.40	Nov	2.10	Nov	2.60	Nov	1.70	Nov	1.60		
Dec	4.30	Dec	3.30	Dec	1.90	Dec	2.60	Dec	1.70	Dec	1.60		
Jan 1986	4.40	Jan 1993	3.50	Jan 2000	2.00	Jan 2007	2.70	Jan 2014	1.60	Jan 2021	1.40		
Feb	4.20	Feb	3.60	Feb	2.20	Feb	2.70	Feb	1.60	Feb	1.30		
Mar	4.10	Mar	3.40	Mar	2.40	Mar	2.50	Mar	1.70	Mar	1.60		
Apr	4.20	Apr	3.50	Apr	2.30	Apr	2.30	Apr	1.80	Apr	3.00		
May	4.00	May	3.40	May	2.40	May	2.20	May	2.00	May	3.80		
Jun	4.00	Jun	3.30	Jun	2.50	Jun	2.20	Jun	1.90	Jun	4.50		
Jul	4.10	Jul	3.20	Jul	2.50	Jul	2.20	Jul	1.90	Jul	4.30		
Aug	4.00	Aug	3.30	Aug	2.60	Aug	2.10	Aug	1.70	Aug	4.00		
Sep	4.10	Sep	3.20	Sep	2.60	Sep	2.10	Sep	1.70	Sep	4.00		
Oct	4.00	Oct	3.00	Oct	2.50	Oct	2.20	Oct	1.80	Oct	4.60		
Nov	3.80	Nov	3.10	Nov	2.60	Nov	2.30	Nov	1.70	Nov	4.90		
Dec	3.80	Dec	3.20	Dec	2.60	Dec	2.40	Dec	1.60	Dec	5.50		

Source: U.S. Dept. of Labor, Bureau of Labor Statistics, Consumer Price Index - All Urban Consumers less food and energy,
Change for 12-Month Period, Bureau of Labor Statistics,
https://www.bls.gov/cpi/data.htm

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319



SCHEDULE SJW-d3-2

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Average Yields on Moody's Public Utility Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	12.12	Jan 1987	8.77	Jan 1994	7.31	Jan 2001	7.76	Jan 2008	6.08	Jan 2015	3.83	Jan 2022	3.46
Feb	13.48	Feb	8.81	Feb	7.44	Feb	7.69	Feb	6.28	Feb	3.91	Feb	3.73
Mar	14.33	Mar	8.75	Mar	7.83	Mar	7.59	Mar	6.29	Mar	3.97	Mar	4.02
Apr	13.50	Apr	9.30	Apr	8.20	Apr	7.81	Apr	6.36	Apr	3.96	Apr	4.34
May	12.17	May	9.82	May	8.32	May	7.88	May	6.38	May	4.38	May	4.79
Jun	11.87	Jun	9.87	Jun	8.31	Jun	7.75	Jun	6.50	Jun	4.60	Jun	4.91
Jul	12.12	Jul	10.01	Jul	8.47	Jul	7.71	Jul	6.50	Jul	4.63	Jul	4.84
Aug	12.82	Aug	10.33	Aug	8.41	Aug	7.57	Aug	6.48	Aug	4.54	Aug	4.80
Sep	13.29	Sep	11.00	Sep	8.65	Sep	7.73	Sep	6.59	Sep	4.68	Sep	5.33
Oct	13.53	Oct	11.32	Oct	8.88	Oct	7.64	Oct	7.70	Oct	4.63	Oct	5.91
Nov	14.07	Nov	10.82	Nov	9.00	Nov	7.61	Nov	7.80	Nov	4.73	Nov	5.78
Dec	14.48	Dec	10.99	Dec	8.79	Dec	7.86	Dec	6.87	Dec	4.69	Dec	5.30
Jan 1981	14.22	Jan 1988	10.75	Jan 1995	8.77	Jan 2002	7.69	Jan 2009	6.77	Jan 2016	4.62	Jan 2023	5.23
Feb	14.84	Feb	10.11	Feb	8.56	Feb	7.62	Feb	6.72	Feb	4.44	Feb	5.32
Mar	14.86	Mar	10.11	Mar	8.41	Mar	7.83	Mar	6.85	Mar	4.40	Mar	5.44
Apr	15.32	Apr	10.53	Apr	8.30	Apr	7.74	Apr	6.90	Apr	4.16	Apr	5.20
May	15.84	May	10.75	May	7.93	May	7.76	May	6.83	May	4.06	May	5.44
Jun	15.27	Jun	10.71	Jun	7.62	Jun	7.67	Jun	6.54	Jun	3.93	Jun	5.46
Jul	15.87	Jul	10.96	Jul	7.73	Jul	7.54	Jul	6.15	Jul	3.70	Jul	5.48
Aug	16.33	Aug	11.09	Aug	7.86	Aug	7.34	Aug	5.80	Aug	3.73	Aug	5.77
Sep	16.89	Sep	10.56	Sep	7.62	Sep	7.23	Sep	5.60	Sep	3.80	Sep	5.91
Oct	16.76	Oct	9.92	Oct	7.46	Oct	7.43	Oct	5.64	Oct	3.90	Oct	6.38
Nov	15.50	Nov	9.89	Nov	7.40	Nov	7.31	Nov	5.71	Nov	4.21	Nov	5.99
Dec	15.77	Dec	10.02	Dec	7.21	Dec	7.20	Dec	5.86	Dec	4.39	Dec	5.46
Jan 1982	16.73	Jan 1989	10.02	Jan 1996	7.20	Jan 2003	7.13	Jan 2010	5.83	Jan 2017	4.24	Jan 2024	5.51
Feb	16.72	Feb	10.02	Feb	7.37	Feb	6.92	Feb	5.94	Feb	4.25	Feb	5.59
Mar	16.07	Mar	10.16	Mar	7.72	Mar	6.80	Mar	5.90	Mar	4.30	Mar	5.59
Apr	15.82	Apr	10.14	Apr	7.88	Apr	6.68	April	5.87	Apr	4.19	Apr	5.83
May	15.60	May	9.92	May	7.99	May	6.35	May	5.59	May	4.19	May	5.78
Jun	16.18	Jun	9.49	Jun	8.07	Jun	6.21	Jun	5.62	Jun	4.01	Jun	5.65
Jul	16.04	Jul	9.34	Jul	8.02	Jul	6.54	Jul	5.41	July	4.06	Jul	5.68
Aug	15.22	Aug	9.37	Aug	7.84	Aug	6.78	Aug	5.10	Aug	3.92	Aug	5.42
Sep	14.56	Sep	9.43	Sep	8.01	Sep	6.58	Sep	5.10	Sep	3.93	Sep	5.23
Oct	13.88	Oct	9.37	Oct	7.76	Oct	6.50	Oct	5.20	Oct	3.97		
Nov	13.58	Nov	9.33	Nov	7.48	Nov	6.44	Nov	5.45	Nov	3.88		
Dec	13.55	Dec	9.31	Dec	7.58	Dec	6.35	Dec	5.64	Dec	3.85		
Jan 1983	13.46	Jan 1990	9.44	Jan 1997	7.79	Jan 2004	6.23	Jan 2011	5.64	Jan 2018	3.91		
Feb	13.60	Feb	9.66	Feb	7.68	Feb	6.17	Feb	5.73	Feb	4.15		
Mar	13.28	Mar	9.75	Mar	7.92	Mar	6.01	Mar	5.62	Mar	4.21		
Apr	13.03	Apr	9.87	Apr	8.08	Apr	6.38	Apr	5.62	Apr	4.24		
May	13.00	May	9.89	May	7.94	May	6.68	May	5.38	May	4.36		
Jun	13.17	Jun	9.69	Jun	7.77	Jun	6.53	Jun	5.32	Jun	4.37		
Jul	13.28	Jul	9.66	Jul	7.52	Jul	6.34	Jul	5.34	Jul	4.35		
Aug	13.50	Aug	9.84	Aug	7.57	Aug	6.18	Aug	4.78	Aug	4.33		
Sep	13.35	Sep	10.01	Sep	7.50	Sep	6.01	Sep	4.61	Sep	4.41		
Oct	13.19	Oct	9.94	Oct	7.37	Oct	5.95	Oct	4.66	Oct	4.56		
Nov	13.33	Nov	9.76	Nov	7.24	Nov	5.97	Nov	4.37	Nov	4.65		
Dec	13.48	Dec	9.57	Dec	7.16	Dec	5.93	Dec	4.47	Dec	4.51		
Jan 1984	13.40	Jan 1991	9.56	Jan 1998	7.03	Jan 2005	5.80	Jan 2012	4.48	Jan 2019	4.48		
Feb	13.50	Feb	9.31	Feb	7.09	Feb	5.64	Feb	4.47	Feb	4.35		
Mar	14.03	Mar	9.39	Mar	7.13	Mar	5.86	Mar	4.59	Mar	4.26		
Apr	14.30	Apr	9.30	Apr	7.12	Apr	5.72	Apr	4.54	Apr	4.18		
May	14.95	May	9.29	May	7.11	May	5.60	May	4.36	May	4.10		
Jun	15.16	Jun	9.44	Jun	6.99	Jun	5.39	Jun	4.26	Jun	3.93		
Jul	14.92	Jul	9.40	Jul	6.99	Jul	5.50	Jul	4.12	Jul	3.79		
Aug	14.29	Aug	9.16	Aug	6.96	Aug	5.51	Aug	4.18	Aug	3.36		
Sep	14.04	Sep	9.03	Sep	6.88	Sep	5.54	Sep	4.17	Sept	3.44		
Oct	13.68	Oct	8.99	Oct	6.88	Oct	5.79	Oct	4.04	Oct	3.45		
Nov	13.15	Nov	8.93	Nov	6.96	Nov	5.88	Nov	3.95	Nov	3.48		
Dec	12.96	Dec	8.76	Dec	6.84	Dec	5.83	Dec	4.10	Dec	3.45		
Jan 1985	12.88	Jan 1992	8.67	Jan 1999	6.87	Jan 2006	5.77	Jan 2013	4.24	Jan 2020	3.34		
Feb	13.00	Feb	8.77	Feb	7.00	Feb	5.83	Feb	4.29	Feb	3.16		
Mar	13.66	Mar	8.84	Mar	7.18	Mar	5.98	Mar	4.29	Mar	3.59		
Apr	13.42	Apr	8.79	Apr	7.16	Apr	6.28	Apr	4.08	Apr	3.31		
May	12.89	May	8.72	May	7.42	May	6.39	May	4.24	May	3.22		
Jun	11.91	Jun	8.64	Jun	7.70	June	6.39	Jun	4.63	Jun	3.10		
Jul	11.88	Jul	8.46	Jul	7.66	July	6.37	Jul	4.78	Jul	2.77		
Aug	11.93	Aug	8.34	Aug	7.86	Aug	6.20	Aug	4.85	Aug	2.76		
Sep	11.95	Sep	8.32	Sep	7.87	Sep	6.03	Sept	4.90	Sep	2.88		
Oct	11.84	Oct	8.44	Oct	8.02	Oct	6.01	Oct	4.78	Oct	2.98		
Nov	11.33	Nov	8.53	Nov	7.86	Nov	5.82	Nov	4.86	Nov	2.89		
Dec	10.82	Dec	8.36	Dec	8.04	Dec	5.83	Dec	4.88	Dec	2.80		
Jan 1986	10.66	Jan 1993	8.23	Jan 2000	8.22	Jan 2007	5.96	Jan 2014	4.72	Jan 2021	2.94		
Feb	10.16	Feb	8.00	Feb	8.10	Feb	5.91	Feb	4.64	Feb	3.13		
Mar	9.33	Mar	7.85	Mar	8.14	Mar	5.87	Mar	4.64	Mar	3.48		
Apr	9.02	Apr	7.76	Apr	8.14	Apr	6.01	Apr	4.52	Apr	3.33		
May	9.52	May	7.78	May	8.56	May	6.03	May	4.37	May	3.36		
Jun	9.51	Jun	7.68	Jun	8.22	Jun	6.34	Jun	4.42	Jun	3.19		
Jul	9.19	Jul	7.53	Jul	8.17	Jul	6.28	Jul	4.35	Jul	2.99		
Aug	9.15	Aug	7.21	Aug	8.06	Aug	6.28	Aug	4.28	Aug	2.99		
Sep	9.42	Sep	7.01	Sep	8.15	Sep	6.24	Sep	4.40	Sep	3.00		
Oct	9.39	Oct	6.99	Oct	8.08	Oct	6.17	Oct	4.24	Oct	3.13		
Nov	9.15	Nov	7.30	Nov	8.03	Nov	6.04	Nov	4.29	Nov	3.06		
Dec	8.96	Dec	7.33	Dec	7.79	Dec	6.23	Dec	4.18	Dec	3.17		

Source:
https://fred.stlouisfed.org/series/DBAA

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

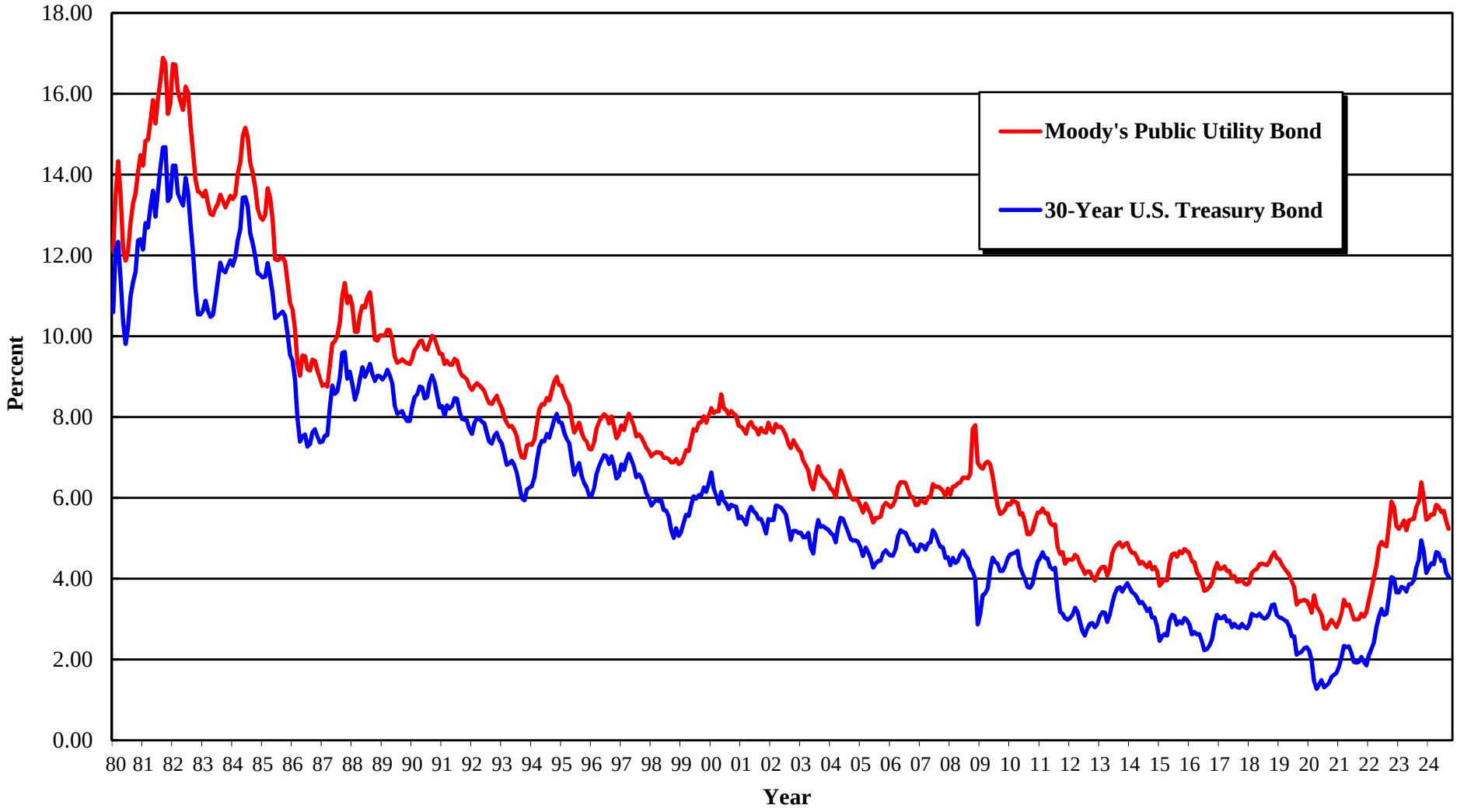
Average Yields on Thirty-Year U.S. Treasury Bonds

Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)	Mo/Year	Rate (%)
Jan 1980	10.60	Jul	7.27	Jan 1993	7.34	Jul	5.98	Jan 2006	4.57	Jul	2.59	Jan 2019	3.04
Feb	12.13	Aug	7.33	Feb	7.09	Aug	6.07	Feb	4.57	Aug	2.77	Feb	3.02
Mar	12.34	Sep	7.62	Mar	6.82	Sep	6.07	Mar	4.73	Sep	2.88	Mar	2.98
Apr	11.40	Oct	7.70	Apr	6.85	Oct	6.26	Apr	5.06	Oct	2.90	Apr	2.94
May	10.36	Nov	7.52	May	6.92	Nov	6.15	May	5.20	Nov	2.80	May	2.82
Jun	9.81	Dec	7.37	Jun	6.81	Dec	6.35	June	5.15	Dec	2.88	Jun	2.57
Jul	10.24	Jan 1987	7.39	Jul	6.63	Jan 2000	6.63	July	5.13	Jan 2013	3.08	Jul	2.57
Aug	11.00	Feb	7.54	Aug	6.32	Feb	6.23	Aug	5.00	Feb	3.17	Aug	2.12
Sep	11.34	Mar	7.55	Sep	6.00	Mar	6.05	Sep	4.85	Mar	3.16	Sept	2.16
Oct	11.59	Apr	8.25	Oct	5.94	Apr	5.85	Oct	4.85	Apr	2.93	Oct	2.19
Nov	12.37	May	8.78	Nov	6.21	May	6.15	Nov	4.69	May	3.11	Nov	2.28
Dec	12.40	Jun	8.57	Dec	6.25	Jun	5.93	Dec	4.68	Jun	3.40	Dec	2.30
Jan 1981	12.14	Jul	8.64	Jan 1994	6.29	Jul	5.85	Jan 2007	4.85	Jul	3.61	Jan 2020	2.22
Feb	12.80	Aug	8.97	Feb	6.49	Aug	5.72	Feb	4.82	Aug	3.76	Feb	1.97
Mar	12.69	Sep	9.59	Mar	6.91	Sep	5.83	Mar	4.72	Sept	3.79	Mar	1.46
Apr	13.20	Oct	9.61	Apr	7.27	Oct	5.80	Apr	4.87	Oct	3.68	Apr	1.27
May	13.60	Nov	8.95	May	7.41	Nov	5.78	May	4.90	Nov	3.80	May	1.38
Jun	12.96	Dec	9.12	Jun	7.40	Dec	5.49	Jun	5.20	Dec	3.89	Jun	1.49
Jul	13.59	Jan 1988	8.83	Jul	7.58	Jan 2001	5.54	Jul	5.11	Jan 2014	3.77	Jul	1.31
Aug	14.17	Feb	8.43	Aug	7.49	Feb	5.45	Aug	4.93	Feb	3.66	Aug	1.36
Sep	14.67	Mar	8.63	Sep	7.71	Mar	5.34	Sep	4.79	Mar	3.62	Sep	1.42
Oct	14.68	Apr	8.95	Oct	7.94	Apr	5.65	Oct	4.77	Apr	3.52	Oct	1.57
Nov	13.35	May	9.23	Nov	8.08	May	5.78	Nov	4.52	May	3.39	Nov	1.62
Dec	13.45	Jun	9.00	Dec	7.87	Jun	5.67	Dec	4.53	Jun	3.42	Dec	1.67
Jan 1982	14.22	Jul	9.14	Jan 1995	7.85	Jul	5.61	Jan 2008	4.33	Jul	3.33	Jan 2021	1.82
Feb	14.22	Aug	9.32	Feb	7.61	Aug	5.48	Feb	4.52	Aug	3.20	Feb	2.04
Mar	13.53	Sep	9.06	Mar	7.45	Sep	5.48	Mar	4.39	Sep	3.26	Mar	2.34
Apr	13.37	Oct	8.89	Apr	7.36	Oct	5.32	Apr	4.44	Oct	3.04	Apr	2.30
May	13.24	Nov	9.02	May	6.95	Nov	5.12	May	4.60	Nov	3.04	May	2.32
Jun	13.92	Dec	9.01	Jun	6.57	Dec	5.48	Jun	4.69	Dec	2.83	Jun	2.16
Jul	13.55	Jan 1989	8.93	Jul	6.72	Jan 2002	5.45	Jul	4.57	Jan 2015	2.46	Jul	1.94
Aug	12.77	Feb	9.01	Aug	6.86	Feb	5.45	Aug	4.50	Feb	2.57	Aug	1.92
Sep	12.07	Mar	9.17	Sep	6.55	Mar	5.81	Sep	4.27	Mar	2.63	Sep	1.94
Oct	11.17	Apr	9.03	Oct	6.37	Apr	5.79	Oct	4.17	Apr	2.59	Oct	2.06
Nov	10.54	May	8.83	Nov	6.26	May	5.76	Nov	4.00	May	2.96	Nov	1.94
Dec	10.54	Jun	8.27	Dec	6.06	Jun	5.68	Dec	2.87	Jun	3.11	Dec	1.85
Jan 1983	10.63	Jul	8.08	Jan 1996	6.05	Jul	5.59	Jan 2009	3.13	Jul	3.07	Jan 2022	2.10
Feb	10.88	Aug	8.12	Feb	6.24	Aug	5.28	Feb	3.59	Aug	2.86	Feb	2.25
Mar	10.63	Sep	8.15	Mar	6.60	Sep	4.96	Mar	3.64	Sep	2.95	Mar	2.41
Apr	10.48	Oct	8.00	Apr	6.79	Oct	5.18	Apr	3.76	Oct	2.89	Apr	2.81
May	10.53	Nov	7.90	May	6.93	Nov	5.18	May	4.23	Nov	3.03	May	3.07
Jun	10.93	Dec	7.90	Jun	7.06	Dec	5.13	Jun	4.52	Dec	2.97	Jun	3.25
Jul	11.40	Jan 1990	8.26	Jul	7.03	Jan 2003	5.14	Jul	4.41	Jan 2016	2.86	Jul	3.10
Aug	11.82	Feb	8.50	Aug	6.84	Feb	5.02	Aug	4.37	Feb	2.62	Aug	3.13
Sep	11.63	Mar	8.56	Sep	7.03	Mar	5.03	Sep	4.19	Mar	2.68	Sep	3.56
Oct	11.58	Apr	8.76	Oct	6.81	Apr	5.13	Oct	4.19	Apr	2.62	Oct	4.04
Nov	11.75	May	8.73	Nov	6.48	May	4.76	Nov	4.31	May	2.63	Nov	4.00
Dec	11.88	Jun	8.46	Dec	6.55	Jun	4.62	Dec	4.49	Jun	2.45	Dec	3.66
Jan 1984	11.75	Jul	8.50	Jan 1997	6.83	Jul	5.13	Jan 2010	4.60	Jul	2.23	Jan 2023	3.66
Feb	11.95	Aug	8.86	Feb	6.69	Aug	5.45	Feb	4.62	Aug	2.26	Feb	3.80
Mar	12.38	Sep	9.03	Mar	6.93	Sep	5.28	Mar	4.64	Sep	2.35	Mar	3.77
Apr	12.65	Oct	8.86	Apr	7.09	Oct	5.30	April	4.69	Oct	2.50	Apr	3.68
May	13.43	Nov	8.54	May	6.94	Nov	5.25	May	4.29	Nov	2.86	May	3.86
Jun	13.44	Dec	8.24	Jun	6.77	Dec	5.21	Jun	4.13	Dec	3.11	Jun	3.87
Jul	13.21	Jan 1991	8.27	Jul	6.51	Jan 2004	5.13	Jul	3.99	Jan 2017	3.02	Jul	3.96
Aug	12.54	Feb	8.03	Aug	6.58	Feb	5.08	Aug	3.80	Feb	3.03	Aug	4.28
Sep	12.29	Mar	8.29	Sep	6.50	Mar	4.90	Sep	3.77	Mar	3.08	Sep	4.47
Oct	11.98	Apr	8.21	Oct	6.33	Apr	5.28	Oct	3.87	Apr	2.94	Oct	4.95
Nov	11.56	May	8.27	Nov	6.11	May	5.51	Nov	4.19	May	2.96	Nov	4.66
Dec	11.52	Jun	8.47	Dec	5.99	Jun	5.48	Dec	4.42	Jun	2.80	Dec	4.14
Jan 1985	11.45	Jul	8.45	Jan 1998	5.81	Jul	5.31	Jan 2011	4.52	July	2.88	Jan 2024	4.26
Feb	11.47	Aug	8.14	Feb	5.89	Aug	5.15	Feb	4.65	Aug	2.80	Feb	4.38
Mar	11.81	Sep	7.95	Mar	5.95	Sep	4.98	Mar	4.51	Sep	2.78	Mar	4.36
Apr	11.47	Oct	7.93	Apr	5.92	Oct	4.94	Apr	4.50	Oct	2.88	Apr	4.66
May	11.05	Nov	7.92	May	5.93	Nov	4.95	May	4.29	Nov	2.80	May	4.62
Jun	10.45	Dec	7.70	Jun	5.70	Dec	4.91	Jun	4.23	Dec	2.77	Jun	4.44
Jul	10.50	Jan 1992	7.58	Jul	5.68	Jan 2005	4.77	Jul	4.27	Jan 2018	2.88	Jul	4.46
Aug	10.56	Feb	7.85	Aug	5.54	Feb	4.56	Aug	3.65	Feb	3.13	Aug	4.15
Sep	10.61	Mar	7.97	Sep	5.20	Mar	4.77	Sep	3.18	Mar	3.09	Sep	4.04
Oct	10.50	Apr	7.96	Oct	5.01	Apr	4.65	Oct	3.13	Apr	3.07		
Nov	10.06	May	7.89	Nov	5.25	May	4.49	Nov	3.02	May	3.13		
Dec	9.54	Jun	7.84	Dec	5.06	Jun	4.28	Dec	2.98	Jun	3.05		
Jan 1986	9.40	Jul	7.60	Jan 1999	5.16	Jul	4.38	Jan 2012	3.03	Jul	3.01		
Feb	8.93	Aug	7.39	Feb	5.37	Aug	4.44	Feb	3.11	Aug	3.04		
Mar	7.96	Sep 1992	7.34	Mar	5.58	Sep	4.45	Mar	3.28	Sep	3.15		
Apr	7.39	Oct	7.53	Apr	5.55	Oct	4.64	Apr	3.18	Oct	3.34		
May 1986	7.52	Nov	7.61	May	5.81	Nov	4.70	May	2.93	Nov	3.36		
Jun	7.57	Dec	7.44	Jun	6.04	Dec	4.62	Jun	2.70	Dec	3.10		

Sources:
http://research.stlouisfed.org/fred2/data/GS30.txt

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

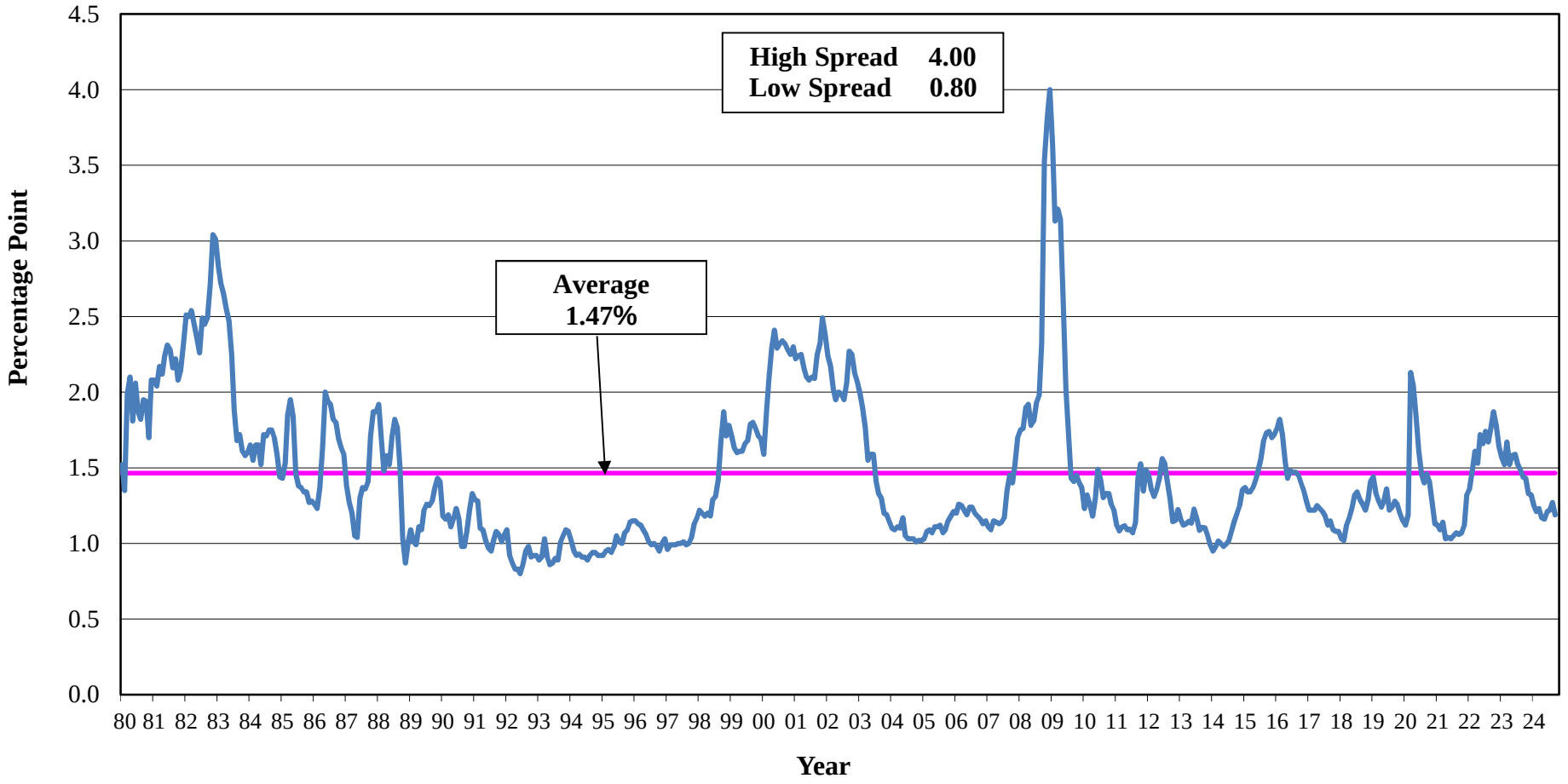
Average Yields on Mergent's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds (1980 - 2024)



SCHEDULE SJW-d4-3

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

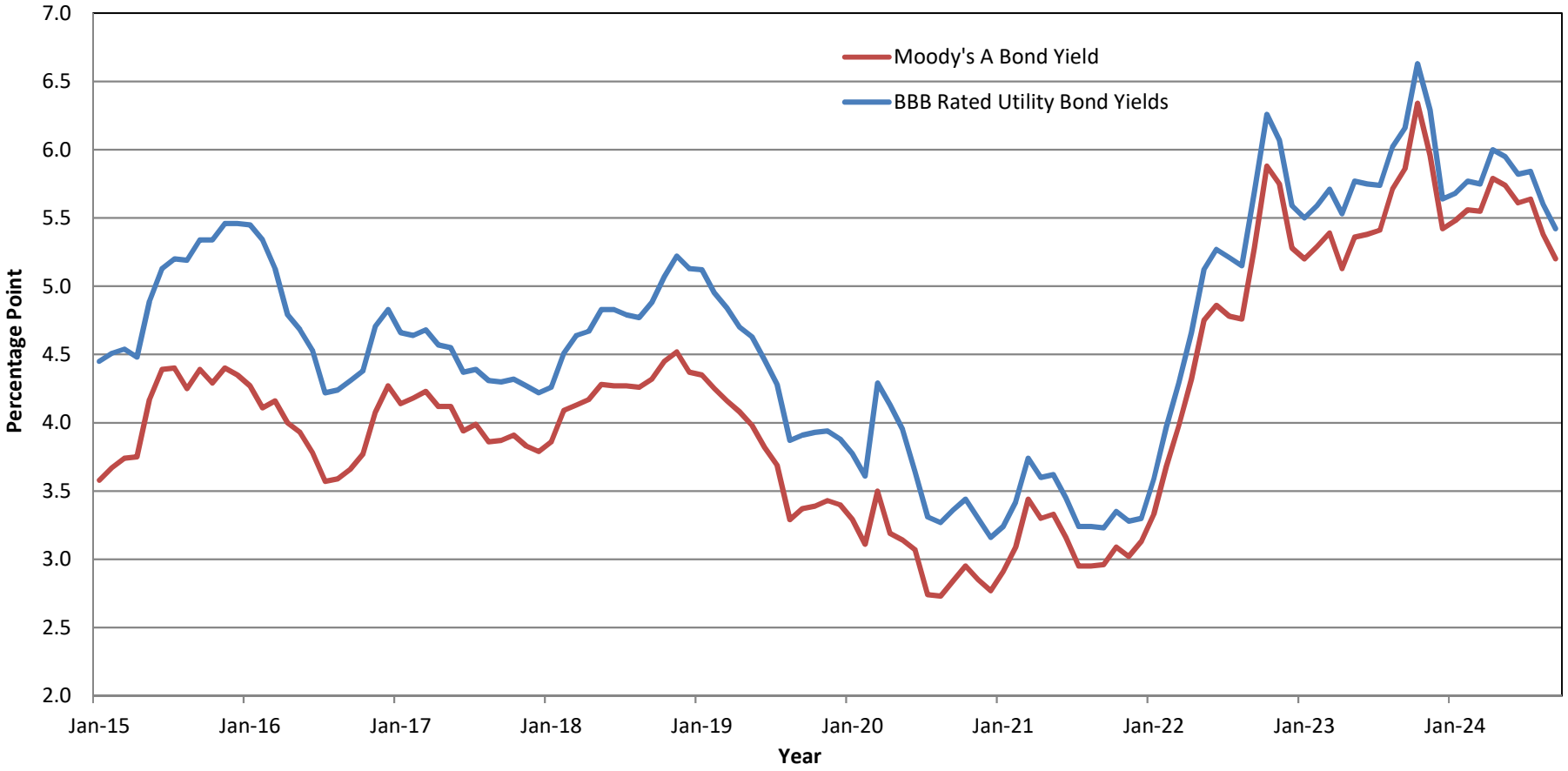
Monthly Spreads Between Yields on Moody's Public Utility Bonds and 30-Year U.S. Treasury Bonds (1980 - 2024)



SCHEDULE SJW-d4-4

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Average Yields on A and BBB rated Utility Bonds
(2015- 2024)



SCHEDULE SJW-d4-5

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Historical Consolidated Capital Structures for Ameren Corporation

(*Dollars in Millions)*

Capital Components	September 30, 2021	December 31, 2021	March 31, 2022	June 30, 2022
Common Equity	$9,685.2	$9,699.2	$9,804.7	$9,879.0
Preferred Stock	$129.6	$129.6	$129.6	$129.6
Long-Term Debt	$12,245.7	$12,818.7	$12,820.4	$13,341.7
Total Capitalization	$22,060.6	$22,647.6	$22,754.7	$23,350.4

Capital Components	September 30, 2022	December 31, 2022	March 31, 2023	June 30, 2023
Common Equity	$10,200.0	$10,507.9	$10,606.2	$10,696.6
Preferred Stock	$129.6	$129.6	$129.6	$129.6
Long-Term Debt	$13,484.1	$13,784.4	$14,281.1	$14,678.0
Total Capitalization	$23,813.7	$24,421.9	$25,016.9	$25,504.3

Capital Components	September 30, 2023	December 31, 2023	March 31, 2024	June 30, 2024
Common Equity	$11,043.6	$11,349.0	$11,443.1	$11,537.9
Preferred Stock	$129.6	$129.6	$129.6	$129.6
Long-Term Debt	$14,678.5	$15,970.2	$16,315.9	$17,079.4
Total Capitalization	$25,851.7	$27,448.8	$27,888.6	$28,746.8

Historical Consolidated Capital Structures for Ameren Missouri

(*Dollars in Millions)*

Capital Components	September 30, 2021	December 31, 2021	March 31, 2022	June 30, 2022
Common Equity	$5,845.4	$5,830.6	$5,880.1	$5,980.9
Preferred Stock	$81.8	$81.8	$81.8	$81.8
Long-Term Debt	$5,319.9	$5,321.4	$5,322.5	$5,842.7
Total Capitalization	$11,247.1	$11,233.8	$11,284.5	$11,905.5

Capital Components	September 30, 2022	December 31, 2022	March 31, 2023	June 30, 2023
Common Equity	$6,377.9	$6,347.1	$6,375.0	$6,476.7
Preferred Stock	$81.8	$81.8	$81.8	$81.8
Long-Term Debt	$5,844.4	$5,798.6	$6,294.4	$6,295.5
Total Capitalization	$12,304.1	$12,227.6	$12,751.2	$12,854.0

Capital Components	September 30, 2023	December 31, 2023	March 31, 2024	June 30, 2024
Common Equity	$6,887.6	$6,882.5	$6,907.5	$7,385.5
Preferred Stock	$81.8	$81.8	$81.8	$81.8
Long-Term Debt	$6,297.2	$6,298.9	$6,644.1	$6,790.2
Total Capitalization	$13,266.6	$13,263.2	$13,633.5	$14,257.5

Sources:
Form 10-Q, 10-K.

Staff Data Request No. 0107.

SCHEDULE SJW-d5-1

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Historical Consolidated Capital Structures for Ameren Corporation

(*Dollars in Millions)*

Capital Components	September 30, 2021	December 31, 2021	March 31, 2022	June 30, 2022
Common Equity	43.90%	42.83%	43.09%	42.31%
Preferred Stock	0.59%	0.57%	0.57%	0.56%
Long-Term Debt	55.51%	56.60%	56.34%	57.14%
Total Capitalization	100.00%	100.00%	100.00%	100.00%

Capital Components	September 30, 2022	December 31, 2022	March 31, 2023	June 30, 2023
Common Equity	42.83%	43.03%	42.40%	41.94%
Preferred Stock	0.54%	0.53%	0.52%	0.51%
Long-Term Debt	56.62%	56.44%	57.09%	57.55%
Total Capitalization	100.00%	100.00%	100.00%	100.00%

Capital Components	September 30, 2023	December 31, 2023	March 31, 2024	June 30, 2024
Common Equity	42.72%	41.35%	41.03%	40.14%
Preferred Stock	0.50%	0.47%	0.46%	0.45%
Long-Term Debt	56.78%	58.18%	58.50%	59.41%
Total Capitalization	100.00%	100.00%	100.00%	100.00%

Historical Consolidated Capital Structures for Ameren Missouri

(*Dollars in Millions)*

Capital Components	September 30, 2021	December 31, 2021	March 31, 2022	June 30, 2022
Common Equity	51.97%	51.90%	52.11%	50.24%
Preferred Stock	0.73%	0.73%	0.73%	0.69%
Long-Term Debt	47.30%	47.37%	47.17%	49.08%
Total Capitalization	100.00%	100.00%	100.00%	100.00%

Capital Components	September 30, 2022	December 31, 2022	March 31, 2023	June 30, 2023
Common Equity	51.84%	51.91%	50.00%	50.39%
Preferred Stock	0.67%	0.67%	0.64%	0.64%
Long-Term Debt	47.50%	47.42%	49.36%	48.98%
Total Capitalization	100.00%	100.00%	100.00%	100.00%

Capital Components	September 30, 2023	December 31, 2023	March 31, 2024	June 30, 2024
Common Equity	51.92%	51.89%	50.67%	51.80%
Preferred Stock	0.62%	0.62%	0.60%	0.57%
Long-Term Debt	47.47%	47.49%	48.73%	47.63%
Total Capitalization	100.00%	100.00%	100.00%	100.00%

Sources:

Form 10-Q, 10-K.

Staff Data Request No. 0107.

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Capital Structure as of June 30, 2024
Ameren Corporation
(Dollars in Millions)

Capital Component	Amount	Percentage of Capital
Common Stock Equity	$11,538	40.14%
Preferred Stock	$130	0.45%
Long-Term Debt	$17,079	59.41%
Total Capitalization	**$28,747**	**100.00%**

Capital Structure as of June 30, 2024
Ameren Missouri
(Dollars in Millions)

Capital Component	Amount	Percentage of Capital
Common Stock Equity	$7,386	51.80%
Preferred Stock	$82	0.57%
Long-Term Debt	$6,790	47.63%
Total Capitalization	**$14,258**	**100.00%**

Sources:
SEC Form 10-Q and 10-K
Staff Data Request No. 0107

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Cost of Long-Term Debt as of June 30, 2024

Ameren Corporation
(In millions)

Total Annual Cost:	$703.1
Total Carrying Value:	$17,026.7
Embedded Cost = Total Annual Cost/Total Carrying Value	4.129%

Ameren Missouri
(In millions)

Total Annual Cost:	$287.8
Total Carrying Value:	$6,790.2
Embedded Cost = Total Annual Cost/Total Carrying Value	4.238%

Note:
Source:
Staff Data Requests No. 0108

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Cost of Preferred Stock as of June 30, 2023

Ameren Corporation
(In millions)

Total Annual Cost:	N/A
Total Carrying Value:	N/A
Embedded Cost = Total Annual Cost/Total Carrying Value	N/A

Ameren Missouri
(In millions)

Total Annual Cost:	$3.4
Total Carrying Value:	$81.8
Embedded Cost = Total Annual Cost/Total Carrying Value	4.180%

Note:
Source:
Staff Data Request No. 0108

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

CRITERIA FOR SELECTING COMPARABLE UTILITY COMPANIES											
[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Edison Electric Institute (EEI) U.S. Investor-Owned Electric Utilities	Ticker	Stock Publicly Traded?	80% of Assets U.S. Regulated?	At Least Investment Grade Credit Rating? (S&P)	At Least Investment Grade Credit Rating? (Moody's)	Long-Term Growth Rates From at Least 2 Sources?	Positive Dividend Payout Since 2019?	At Least 60% of Income from Regulated Electric Utility Operations?	At least 50% of Plant from Electric Utility?	No Pending Merger or Acquisitions?	Comparable Company Met All Criteria?
ALLETE, Inc.	ALE	Yes	No								
Alliant Energy Corporation	**LNT**	**Yes**	**Yes**	**Yes (A-)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Ameren Corporation	**AEE**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa1)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
American Electric Power Company, Inc.	**AEP**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Avangrid, Inc.	AGR	Yes	No								
Avista Corporation	**AVA**	**Yes**	**Yes**	**Yes (BBB)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Black Hills Corporation	BKH	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	Yes	No			
CenterPoint Energy, Inc.	CNP	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	No				
CMS Energy Corporation	**CMS**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Consolidated Edison, Inc.	ED	Yes	Yes	Yes (A-)	Yes (Baa1)	Yes	Yes	Yes	No		
Dominion Resources, Inc.	D	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	No				
DTE Energy Company	DTE	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	Yes	No			
Duke Energy Corporation	**DUK**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Edison International	EIX	Yes	Yes	Yes (BBB)	Yes (Baa2)	Yes	Yes	Yes	No		
Entergy Corporation	**ETR**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Evergy, Inc.	**EVRG**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Eversource Energy	ES	Yes	Yes	Yes (A-)	Yes (Baa2)	Yes	Yes	Yes	No		
Exelon Corporation	EXC	Yes	Yes	Yes (BBB+)	Yes (Baa2)	No					
FirstEnergy Corp.	FE	Yes	Yes	Yes (BBB)	Yes (Baa3)	Yes	No				
Hawaiian Electric Industries, Inc.	HE	Yes	No								
IDACORP, Inc.	**IDA**	**Yes**	**Yes**	**Yes (BBB)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
MDU Resources Group, Inc.	MDU	Yes	No								
MGE Energy, Inc.	MGEE	Yes	Yes	No	No						
NextEra Energy, Inc.	NEE	Yes	No								
NiSource Inc.	NI	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	Yes	No			
Northwestern Corporation	**NWE**	**Yes**	**Yes**	**Yes (BBB)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
OGE Energy Corp.	**OGE**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa1)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Otter Tail Corporation	OTTR	Yes	Yes	Yes (BBB)	Yes (Baa2)	Yes	Yes	No			
PG&E Corporation	PCG	Yes	Yes	No (BB)	No (Ba1)						
Pinnacle West Capital Corporation	**PNW**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa1)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
PNM Resources, Inc.	PNM	Yes	Yes	Yes (BBB)	Yes (Baa3)	Yes	No				
Portland General Electric Company	**POR**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (A3)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
PPL Corporation	PPL	Yes	Yes	Yes (A-)	Yes (Baa1)	Yes	No				
Public Service Enterprise Group Incorporated	PEG	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	Yes	No			
Sempra Energy	SRE	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	Yes	No			
The Southern Company	**SO**	**Yes**	**Yes**	**Yes (BBB+)**	**Yes (Baa2)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Unitil Corporation	UTL	Yes	Yes	Yes (BBB+)	Yes (Baa2)	Yes	Yes	No			
WEC Energy Group, Inc.	WEC	Yes	Yes	Yes (A-)	Yes (Baa1)	Yes	Yes	No			
Xcel Energy Inc.	**XEL**	**Yes**	**Yes**	**Yes (A-)**	**Yes (Baa1)**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

Source: Edison Electric Institute, https://www.eei.org/issues-and-policy/finance-and-tax#financialreview.
Source: Edison Electric Institute, https://www.eei.org/issues-and-policy/finance-and-tax#financialreview.
Source: Edison Electric Institute, https://www.eei.org/issues-and-policy/finance-and-tax#financialreview.
Source: Edison Electric Institute, https://www.eei.org/issues-and-policy/finance-and-tax#financialreview.
Source: S&P Capital IQ Pro.
Source: S&P Capital IQ Pro.
Source: Value Line Investment Survey, Yahoo! Finance, and Zacks.
Source: SEC Form 10-K Filings.
Source: SEC Form 10-K Filings.
Source: Edison Electric Institute, https://www.eei.org/issues-and-policy/finance-and-tax#financialreview.
Source: S&P Capital IQ Pro.

SCHEDULE SJW-d8

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

PROXY GROUP LIST

	Electric Utility Companies	Ticker
1	Alliant Energy Corporation	LNT
2	American Electric Power Company, Inc.	AEP
3	Avista Corporation	AVA
4	CMS Energy Corporation	CMS
5	Duke Energy Corporation	DUK
6	Entergy Corporation	ETR
7	Evergy, Inc.	EVRG
8	IDACORP, Inc.	IDA
9	Northwestern Corporation	NWE
10	OGE Energy Corp.	OGE
11	Pinnacle West Capital Corporation	PNW
12	Portland General Electric Company	POR
13	The Southern Company	SO
14	Xcel Energy Inc.	XEL

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Growth Rate Estimates
Earning per Share (EPS), Based on Dividend per Share (DPS) and Book Value per Share
for the Comparable Electric Utility Companies

			[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
	2024 Q2		Past 10-Years			Past 5-Year			Projected			Average			Projective	GDP	DCF
	Electric Utility Companies	Ticker	EPS	DPS	BVPS	EPS	DPS	BVPS	EPS	DPS	BVPS	EPS	DPS	BVPS	Growth	Growth	Growth
1	Alliant Energy Corporation	LNT	6.00%	6.50%	6.00%	7.00%	6.50%	6.50%	6.00%	6.00%	4.00%	6.33%	6.33%	5.50%	5.33%	3.90%	4.19%
2	American Electric Power Company, Inc.	AEP	5.00%	5.00%	3.50%	4.00%	5.00%	3.50%	6.50%	5.50%	6.00%	5.17%	5.17%	4.33%	6.00%	3.90%	4.32%
3	Avista Corporation	AVA	3.00%	4.50%	4.00%	1.00%	4.50%	3.50%	6.00%	4.50%	3.50%	3.33%	4.50%	3.67%	4.67%	3.90%	4.05%
4	CMS Energy Corporation	CMS	6.00%	7.00%	6.50%	5.50%	6.50%	8.00%	5.00%	4.00%	4.00%	5.50%	5.83%	6.17%	4.33%	3.90%	3.99%
5	Duke Energy Corporation	DUK	3.00%	3.00%	2.00%	4.50%	3.50%	1.00%	5.00%	2.00%	2.50%	4.17%	2.83%	1.83%	3.17%	3.90%	3.75%
6	Entergy Corporation	ETR	2.50%	2.00%	2.00%	5.50%	3.00%	6.50%	0.50%	3.50%	4.00%	2.83%	2.83%	4.17%	2.67%	3.90%	3.65%
7	Evergy, Inc.	EVRG							7.50%	7.00%	3.50%	7.50%	7.00%	3.50%	6.00%	3.90%	4.32%
8	IDACORP, Inc.	IDA	4.00%	8.50%	4.50%	3.50%	6.50%	4.50%	5.00%	5.50%	4.00%	4.17%	6.83%	4.33%	4.83%	3.90%	4.09%
9	Northwestern Corporation	NWE	3.50%	5.50%	6.00%		3.50%	4.00%	4.00%	2.00%	3.00%	3.75%	3.67%	4.33%	3.00%	3.90%	3.72%
10	OGE Energy Corp.	OGE	3.00%	7.50%	4.00%	4.50%	6.00%	1.50%	6.50%	3.00%	5.50%	4.67%	5.50%	3.67%	5.00%	3.90%	4.12%
11	Pinnacle West Capital Corporation	PNW	3.50%	4.00%	4.00%	2.00%	5.00%	3.50%	4.50%	1.50%	4.50%	3.33%	3.50%	4.00%	3.50%	3.90%	3.82%
12	Portland General Electric Company	POR	3.50%	5.00%	3.50%	3.00%	6.00%	3.00%	6.00%	5.50%	4.00%	4.17%	5.50%	3.50%	5.17%	3.90%	4.15%
13	The Southern Company	SO	3.00%	3.50%	3.00%	3.00%	3.50%	2.50%	6.50%	3.50%	3.50%	4.17%	3.50%	3.00%	4.50%	3.90%	4.02%
14	Xcel Energy Inc.	XEL	5.50%	6.00%	5.00%	6.50%	6.50%	6.00%	6.00%	6.50%	5.00%	6.00%	6.33%	5.33%	5.83%	3.90%	4.29%
	Average		3.96%	5.23%	4.15%	4.17%	5.08%	4.15%	5.36%	4.29%	4.07%	4.65%	4.95%	4.10%	4.57%	3.90%	4.03%

Note:

[1] Source: The Value Line Investment Survey

[2] Source: The Value Line Investment Survey

[3] Source: The Value Line Investment Survey

[4] Source: The Value Line Investment Survey

[5] Source: The Value Line Investment Survey

[6] Source: The Value Line Investment Survey

[7] Source: The Value Line Investment Survey

[8] Source: The Value Line Investment Survey

[9] Source: The Value Line Investment Survey

[10] =([1]+[4]+[7])/3

[11] =([2]+[5]+[8])/3

[12] =([3]+[6]+[9])/3

[13] =([7]+[8]+[9])/3

[14] Source: Congress Budget Office (CBO), Budget Economic Outlook

[15] = (4 x [13] + [14]) / 5

SCHEDULE SJW-d10

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Average High / Low Stock Price
for the Comparable Electric Utility Companies

			[1]	[2]	[3]	[4]	[5]	[6]	[7]
	2024 Q2		April 2024		May 2024		June 2024		(3/01/24 - 6/30/24)
	Company Name	Ticker	Max High Stock Price	Min Low Stock Price	Max High Stock Price	Min Low Stock Price	Max High Stock Price	Min Low Stock Price	Average High/Low Stock Price
1	Alliant Energy Corporation	LNT	50.61	47.23	52.31	49.05	52.03	49.25	50.08
2	American Electric Power Company, Inc	AEP	88.30	79.16	93.44	85.70	91.00	85.93	87.26
3	Avista Corporation	AVA	36.12	33.00	38.91	35.84	37.24	33.58	35.78
4	CMS Energy Corporation	CMS	60.97	56.61	63.70	60.16	63.44	58.54	60.57
5	Duke Energy Corporation	DUK	99.61	92.75	104.60	97.49	104.87	99.30	99.77
6	Entergy Corporation	ETR	108.45	100.38	114.28	105.04	112.49	105.35	107.66
7	Evergy, Inc.	EVRG	53.42	49.55	56.34	52.11	54.97	52.10	53.08
8	IDACORP, Inc.	IDA	95.88	88.70	99.21	92.18	96.01	90.64	93.77
9	Northwestern Corporation	NWE	51.02	47.48	53.03	49.99	52.39	48.91	50.47
10	OGE Energy Corp.	OGE	34.76	32.37	37.30	34.18	36.70	34.84	35.03
11	Pinnacle West Capital Corporation	PNW	75.28	70.73	78.89	73.14	78.86	74.45	75.22
12	Portland General Electric Company	POR	44.75	40.10	45.49	42.60	44.74	41.86	43.26
13	The Southern Company	SO	74.85	67.53	80.23	73.20	80.84	77.18	75.64
14	Xcel Energy Inc.	XEL	55.69	52.17	56.79	52.85	56.54	52.68	54.45

Note:

[1] Source: Wall Street Journal, https://www.wsj.com/market-data

[2] Source: Wall Street Journal, https://www.wsj.com/market-data

[3] Source: Wall Street Journal, https://www.wsj.com/market-data

[4] Source: Wall Street Journal, https://www.wsj.com/market-data

[5] Source: Wall Street Journal, https://www.wsj.com/market-data

[6] Source: Wall Street Journal, https://www.wsj.com/market-data

[7] = ([1]+[2]+[3]+[4]+[5]+[6]) / 6

SCHEDULE SJW-d11

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Discounted Cash Flow (DCF) Costs of Common Equity (COE) Estimates
Based on Dividend per Share, Earning per Share, Stock Price, and Growth Rate
for the Comparable Electric Utility Companies

	2024 Q2 DCF COE estimate		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
	Electric Utility Companies	Ticker	2023 Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Growth	Projected GDP Growth	Sustainable Growth Rate	COE
1	Alliant Energy Corporation	LNT	1.81	50.08	3.61%	3.71%	5.33%	3.90%	5.05%	8.75%
2	American Electric Power Company, Inc.	AEP	3.37	87.26	3.86%	3.97%	6.00%	3.90%	5.58%	9.55%
3	Avista Corporation	AVA	1.84	35.78	5.14%	5.26%	4.67%	3.90%	4.51%	9.77%
4	CMS Energy Corporation	CMS	1.95	60.57	3.22%	3.29%	4.33%	3.90%	4.25%	7.53%
5	Duke Energy Corporation	DUK	4.06	99.77	4.07%	4.14%	3.17%	3.90%	3.31%	7.45%
6	Entergy Corporation	ETR	4.34	107.66	4.03%	4.09%	2.67%	3.90%	2.91%	7.00%
7	Evergy, Inc.	EVRG	2.48	53.08	4.67%	4.80%	6.00%	3.90%	5.58%	10.38%
8	IDACORP, Inc.	IDA	3.20	93.77	3.41%	3.49%	4.83%	3.90%	4.65%	8.14%
9	Northwestern Corporation	NWE	2.52	50.47	4.99%	5.07%	3.00%	3.90%	3.18%	8.25%
10	OGE Energy Corp.	OGE	1.66	35.03	4.74%	4.85%	5.00%	3.90%	4.78%	9.63%
11	Pinnacle West Capital Corporation	PNW	3.49	75.22	4.64%	4.72%	3.50%	3.90%	3.58%	8.30%
12	Portland General Electric Company	POR	1.88	43.26	4.35%	4.45%	5.17%	3.90%	4.91%	9.37%
13	The Southern Company	SO	2.78	75.64	3.68%	3.76%	4.50%	3.90%	4.38%	8.14%
14	Xcel Energy Inc.	XEL	2.08	54.45	3.82%	3.92%	5.83%	3.90%	5.45%	9.37%
	Average		2.68	65.86	4.16%	4.25%	4.57%	3.90%	4.44%	8.69%
									DCF Lower Bound	7.49%
									DCF Upper Bound	9.70%
									DCF COE	8.60%

Note:

[1] Source: The Value Line Investment Survey: Ratings & Reports.

[2] Source: The Wall Street Journal; Monthly Average.

[3] = [1] / [2]

[4] = [3] x (1 + .5 x [7])

[5] Source: [12] of Growth Rate SJW-11

[6] Source: Congress Budget Office (CBO), Budget Economic Outlook

[7] = (4 x [5] + [6]) / 5

[8] = [4] + [7]

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Capital Asset Pricing Model (CAPM) Costs of Common Equity (COE) Estimates
Based on Historical Return Differences Between Common Stocks and Long-Term U.S. Treasuries
for the Comparable Electric Utility Companies

	2024 Q2 CAPM Estimate		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
					Kroll, LLC (1926-2023)				NYU Stern (1928-2023)				Market Risk Premium				CAPM Cost of Common Equity			
					Large Company Stocks		Long-term G-Bonds		S&P 500		US Treasury Bond		Kroll, LLC		NYU Stern		Kroll, LLC		NYU Stern	
	Electric Utility Companies	Ticker	Risk-Free Rate	Beta	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return
1	Alliant Energy Corporation	LNT	4.57%	0.90	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.66%	9.92%	9.28%	10.69%
2	American Electric Power Company, Inc.	AEP	4.57%	0.85	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.44%	9.62%	9.02%	10.35%
3	Avista Corporation	AVA	4.57%	0.95	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.89%	10.22%	9.54%	11.03%
4	CMS Energy Corporation	CMS	4.57%	0.85	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.44%	9.62%	9.02%	10.35%
5	Duke Energy Corporation	DUK	4.57%	0.90	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.66%	9.92%	9.28%	10.69%
6	Entergy Corporation	ETR	4.57%	1.00	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	9.12%	10.51%	9.80%	11.37%
7	Evergy, Inc.	EVRG	4.57%	0.95	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.89%	10.22%	9.54%	11.03%
8	IDACORP, Inc.	IDA	4.57%	0.85	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.44%	9.62%	9.02%	10.35%
9	Northwestern Corporation	NWE	4.57%	0.95	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.89%	10.22%	9.54%	11.03%
10	OGE Energy Corp.	OGE	4.57%	1.05	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	9.34%	10.81%	10.06%	11.71%
11	Pinnacle West Capital Corporation	PNW	4.57%	0.95	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.89%	10.22%	9.54%	11.03%
12	Portland General Electric Company	POR	4.57%	0.90	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.66%	9.92%	9.28%	10.69%
13	The Southern Company	SO	4.57%	0.90	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.66%	9.92%	9.28%	10.69%
14	Xcel Energy Inc.	XEL	4.57%	0.85	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.44%	9.62%	9.02%	10.35%
	Average		4.57%	0.92	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.74%	10.03%	9.37%	10.81%
																		CAPM Lower Bound		9.06%
																		CAPM Upper Bound		10.42%
																		CAPM COE		9.74%

Note:

[1] Source: 3-Month Average of 30-Year Treasury Bond
[2] Source: Value Line, Investment Survey.
[3] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[4] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[5] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[6] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[7] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.
[8] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.
[9] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.
[10] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.
[11] = [3] - [5]
[12] = [4] - [6]
[13] = [7] - [9]
[14] = [8] - [10]
[15] = [1] + [2] x [11]
[16] = [1] + [2] x [12]
[17] = [1] + [2] x [13]
[18] = [1] + [2] x [14]

SCHEDULE SJW-d13

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Bond Yield Plus Risk Premium (BYPRP) Return on Equity (ROE) Estimates
Risk Premium Calculated by Authorized ROE and Utility Bond Yields

	[1] Bond Yield (%)		[2] Risk Premium (%)		[3] Estimated ROE (%)	
Month-Year	A	Baa	A	Baa	A	Baa
Apr-24	5.79	6.01	3.96	3.75	9.75	9.76
May-24	5.74	5.97	4.00	3.79	9.74	9.76
Jun-24	5.61	5.84	4.13	3.91	9.74	9.75
Jul-24	5.64	5.85	4.10	3.90	9.74	9.75
Aug-24	5.38	5.61	4.35	4.13	9.73	9.74
Sep-24	5.20	5.41	4.52	4.32	9.72	9.73
	5.56	5.78	4.18	3.97	9.74	9.75

BYPRP Lower Bound	9.72
BYPRP Upper Bound	9.76
BYPRP ROE	9.74

Notes:

[1] Mergent Bond Record, Moody's Utility Bonds Yields

[2] = 9.47 - 0.9515 x [1]

[3] = [1] + [2]

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Risk Premium Estimation Using Regression Analysis
Plus Risk Premium (BYPRP) Return on Equity (ROE) Estimates
Risk Premium as Difference Between Authorized ROE and Utility Bond Yield

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.9598
R Square	0.9212
Adjusted R Square	0.9209
Standard Error	0.2325
Observations	244

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	153.0035	153.0035	2830.6037	0.0000
Residual	242	13.0809	0.0541		
Total	243	166.0844			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	9.4665	0.0789	119.9612	0.0000	9.3110	9.6219	9.3110	9.6219
Bond Yield	-0.9515	0.0179	-53.2034	0.0000	-0.9867	-0.9163	-0.9867	-0.9163

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

RETURN ON EQUITY

		COE Analysis			
		Lower	Mean	Upper	
COE Estimation	DCF	7.49%	8.60%	9.70%	A
	CAPM	9.06%	9.74%	10.42%	B
		8.28%	9.17%	10.06%	C

		ROE Analysis			
		Lower	Estimate	Upper	
ROE Estimation	BYPRP	9.72%	9.74%	9.76%	D
ROE Recommandation			9.74%		

Note:

A Schedule SJW-d12

B Schedule SJW-d13

C = ([A] + [B]) / 2

D Schedule SJW-d14-1

SCHEDULE SJW-d15

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

RATE OF RETURN

Capital Component	Percentage of Capital [1]	Embedded Cost	Allowed Rate of Return Common Equity Return of: Lower **9.49%**	ROE [4] **9.74%**	Upper **9.99%**
Common Stock Equity	51.80%	-	4.92%	5.04%	5.17%
Preferred Stock	0.57%	4.18% [2]	0.02%	0.02%	0.02%
Long-Term Debt	47.63%	4.24% [3]	2.02%	2.02%	2.02%
Total	**100.0%**		**6.96%**	**7.09%**	**7.22%**

Note:

[1] Schedule SJW-d6

[2] Schedule SJW-d7-2

[3] Schedule SJW-d7-1

[4] Schedule SJW-d15

Union Electric Company, d/b/a Ameren Missouri
Case No. ER-2024-0319

Authorized ROE and Equity Ratio of the U.S Utility by Sector
2010-2024

	Electric								
	Fully Litigated			Settled			Electric Total		
Year	ROE (%)	Equity (%)	Case (No.)	ROE (%)	Equity (%)	Case (No.)	ROE (%)	Equity (%)	Case (No.)
2010	10.35	47.68	27	10.39	49.49	34	10.37	48.63	61
2011	10.39	48.17	26	10.12	48.01	16	10.29	48.11	42
2012	10.28	49.98	29	10.06	51.40	29	10.17	50.62	58
2013	9.85	48.25	17	10.12	49.70	32	10.03	49.14	49
2014	10.05	50.14	21	9.73	50.26	17	9.91	50.19	38
2015	9.66	48.98	16	10.04	49.28	15	9.84	49.12	31
2016	9.74	49.75	25	9.80	47.51	17	9.77	48.85	42
2017	9.73	49.23	24	9.75	49.30	29	9.74	49.26	53
2018	9.63	48.70	22	9.57	49.76	26	9.60	49.27	48
2019	9.58	51.07	27	9.76	49.66	20	9.66	50.62	47
2020	9.43	49.87	32	9.46	50.45	23	9.44	50.12	55
2021	9.23	50.71	30	9.57	49.79	25	9.38	50.31	55
2022	9.48	51.25	32	9.62	50.32	21	9.54	50.93	53
2023	9.64	52.10	39	9.52	50.57	24	9.60	51.59	63
2024	9.63	50.81	22	9.81	48.70	12	9.69	50.20	34

	Vertically Integrated Electric								
	Fully Litigated			Settled			Electric Total		
Year	ROE (%)	Equity (%)	Case (No.)	ROE (%)	Equity (%)	Case (No.)	ROE (%)	Equity (%)	Case (No.)
2010	10.32	47.37	16	10.49	49.63	25	10.42	48.65	41
2011	10.46	48.51	17	10.14	48.47	11	10.33	48.50	28
2012	10.10	49.69	16	10.10	52.34	23	10.10	51.09	39
2013	9.91	46.46	9	9.96	50.90	22	9.95	49.42	31
2014	10.03	51.39	9	9.86	51.03	10	9.94	51.24	19
2015	9.74	49.03	13	9.78	52.00	4	9.75	49.59	17
2016	9.62	49.47	9	9.88	47.21	11	9.77	48.28	20
2017	9.69	47.89	8	9.85	49.06	20	9.80	48.68	28
2018	9.62	46.44	9	9.72	48.76	14	9.68	47.89	23
2019	9.74	50.83	10	9.74	47.65	15	9.74	49.10	25
2020	9.52	48.71	15	9.57	49.78	12	9.55	49.25	27
2021	9.24	49.03	8	9.67	48.87	17	9.53	48.93	25
2022	9.82	50.85	12	9.68	48.76	13	9.75	49.80	25
2023	9.96	52.93	19	9.61	49.72	17	9.80	51.52	36
2024	9.68	49.77	6	9.86	46.79	10	9.79	48.06	16

Note:

Source: S&P Global Market Intelligence, Retrieved in October 2, 2024

SCHEDULE SJW-d17