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MISSOURI PUBLIC SERVICE COMMISSION

FINANCIAL AND BUSINESS ANALYSIS DIVISION

FINANCIAL ANALYSIS DEPARTMENT

DIRECT TESTIMONY

OF

SEOUNG JOUN WON, PhD

SPIRE MISSOURI INC.,
d/b/a Spire

CASE NO. GR-2025-0107

Jefferson City, Missouri
April 2025

****** Denotes Confidential Information ******

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CASE NO. GR-2025-0107

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 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 5 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 natural gas service rates of Spire Missouri, Inc. ("Spire Missouri"), a subsidiary of Spire, Inc. ("Spire Inc.").

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 Spire Missouri's natural gas service ("NGS") utility operations in this proceeding.

A. To recommend the NGS of Spire 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 Spire Missouri. Regarding the estimation of authorized ROE of Spire Missouri in this proceeding, Staff estimated the market-based cost of common equity ("COE") for Spire 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 Spire Missouri's relative risk compared to an NGS utility proxy group. By utilizing estimated COEs, Staff calculated a reasonable range of authorized ROEs and recommended a just and reasonable ROE for Spire Missouri.[2]

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

A. Staff's recommendation of a 9.63% authorized ROE will fairly compensate Spire Missouri for its current market COE and balance the interests of all stakeholders, particularly considering that Staff found the current market COE estimates for Spire Missouri

[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.

are presently in the range of 8.52% to 10.00%.[3] Staff also recommends that the Commission use Spire Missouri's actual stand-alone capital structure at the end of the update period as of December 31, 2024, which is composed of 53.19% common equity and 46.81% long-term debt, for the purpose of setting Spire Missouri's ROR in this proceeding.[4] Consistent with Staff's capital structure recommendation, Staff also recommends at this time that the Commission use Spire Missouri's embedded COD value of 4.20% as of December 31, 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 support the determination of just and reasonable rates for Spire Missouri's NGS 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 Spire Missouri and its parent company, Spire Inc., including their business and financial risk profiles as well as their credit ratings. In Section V, Staff determines the ratemaking capital structure for Spire Missouri's ROR, examining the financial relationship between Spire Missouri and Spire Inc. In Section VI, Staff explains its ROR analysis for Spire 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 Spire Missouri's allowed ROR for ratemaking purposes in this proceeding.

[3] Schedule SJW-d15, Won's Direct Testimony.
[4] Schedule SJW-d6, Won's Direct Testimony.
[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 Spire 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 Spire 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 estimation methods using a proxy group and ROE estimation 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 Commission-determined ROEs and estimated COEs measured for a comparable group of companies with similar risks.

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

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 Spire 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 Spire Missouri and comparable to the COE estimation results of Staff's DCF and CAPM analyses. 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.

continued on next page

[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 ROR 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 Spire Missouri's NGS, it is necessary to understand how economic conditions have evolved 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 persisted, further exacerbated by the complexity of recent international politics and trade policies.[10]

In the U.S., recent indicators suggest that economic activity has been expanding at a solid pace, with labor market conditions remaining strong and the unemployment rate stabilizing at a low level in recent months, but inflation remains somewhat elevated.[11] Inflation has moved closer to the Federal Open Market Committee (FOMC)'s 2% target but remains somewhat elevated at approximately 3% in the first quarter of 2025.[12] However, the FOMC had gained greater confidence that inflation is moving sustainably toward 2%, and judged that the risks to achieving its employment and inflation goals are roughly in balance.[13] 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 has set goals of achieving maximum employment and returning inflation to a rate of two percent over the longer run.[14] 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%.[15] Additionally, the FOMC decided to lower the target range for the federal funds rate by 0.25 percentage points twice, on November 7, 2024, and December 18, 2024, resulting in a

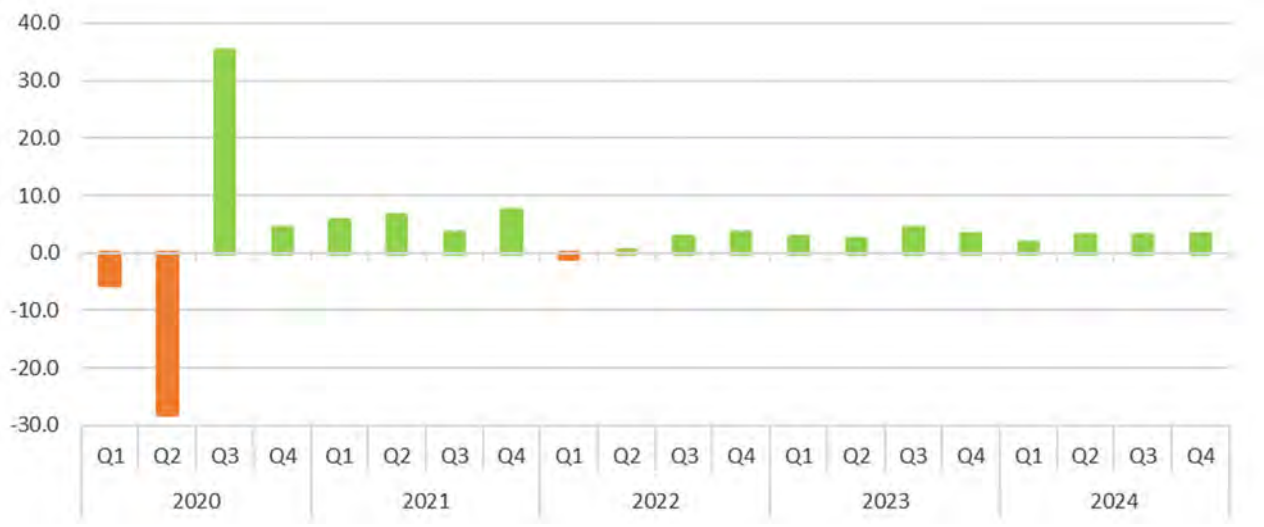
[10] Thompson Reuters, 2025's supply chain challenge: Confronting complexity and disruption in global trade, published February 23, 2025, https://tax.thomsonreuters.com/blog/2025s-supply-chain-challenge-confronting-complexity-and-disruption-in-global-trade-tri/.
[11] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published January 29, 2025, https://www.federalreserve.gov/monetarypolicy/files/monetary20250129a1.pdf.
[12] Bureau of Labor Statistics, Consumer Price Index, retrieved February 12, 2025, https://www.bls.gov/news.release/pdf/cpi.pdf.
[13] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published January 29, 2025, https://www.federalreserve.gov/monetarypolicy/files/monetary20250129a1.pdf.
[14] 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.
[15] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240918a1.pdf.

range of 4.25%–4.50%, 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.[16]

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.[17] The third and fourth quarters of 2020 saw real GDP increase by 33.4% and 4.3%, respectively.[18] Subsequently, in 2021, the quarterly real GDP growth rates were 6.3%, 6.7%, 2.3%, and 6.9%.

Figure 1. Real GDP – Percentage Change from Preceding Quarter[19]



[16] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published November 7, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20241107a1.pdf.
Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published December 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20241218a1.pdf.
[17] Real GDP is GDP adjusted for inflation. Percentage change from the preceding quarter.
[18] Bureau of Economic Analysis, retrieved October 20, 2022, https://www.bea.gov/news/2021/gross-domestic-product-first-quarter-2021-advance-estimate.
[19] FRED, Economic Data, Real Gross Domestic Product (A191RL1Q225SBEA), https://fred.stlouisfed.org/series/A191RL1Q225SBEA.

Real GDP decreased at an annual rate of 1.4% and 0.9% in the first and second quarters of 2022, respectively.[20] Starting from Q3 2022, real GDP growth rates remained relatively stable through Q2 2023, consistently ranging between 2% and 3%.[21] The quarterly real GDP had corresponding growth rates of 4.9% and 3.4% in Q3 and Q4 of 2023, and were 1.6%. 3.0%, 3.1% and 3.0% for each respective quarter of 2024.[22]

In January 2024, the Congressional Budget Office ("CBO") projected real GDP growth of 1.9%, real potential GDP growth of 2.1%, and a long-term nominal GDP growth rate of 3.9% for the decade from 2025 to 2035.[23] The CBO's projected long-term nominal GDP growth rate 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.[24] As shown above, GDP fell sharply, followed by an equally sharp recovery through 2020.[25] Regarding COVID-19, there has been increased availability of vaccines, higher vaccination

[20] 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.
[21] FRED, Economic Data, Real Gross Domestic Product (A191RL1Q225SBEA), https://fred.stlouisfed.org/series/A191RL1Q225SBEA.
[22] Bureau of Economic Analysis, Gross Domestic Product, https://www.bea.gov/data/gdp/gross-domestic-product.
[23] Table C-4 (p.30), Congressional Budget Office, The Budget and Economic Outlook: 2025 to 2035, https://www.cbo.gov/publication/61172.
[24] Federal Reserve Economic Data, retrieved October 20, 2022, https://fred.stlouisfed.org/series/VIXCLS.
[25] 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.

rates, and in March 2022, the Fed provided assurances that indicators of economic activity and employment continued to strengthen.[26] The recovery from the COVID-19 pandemic spurred fears of higher inflation and, consequently, increased market risk.[27] 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.

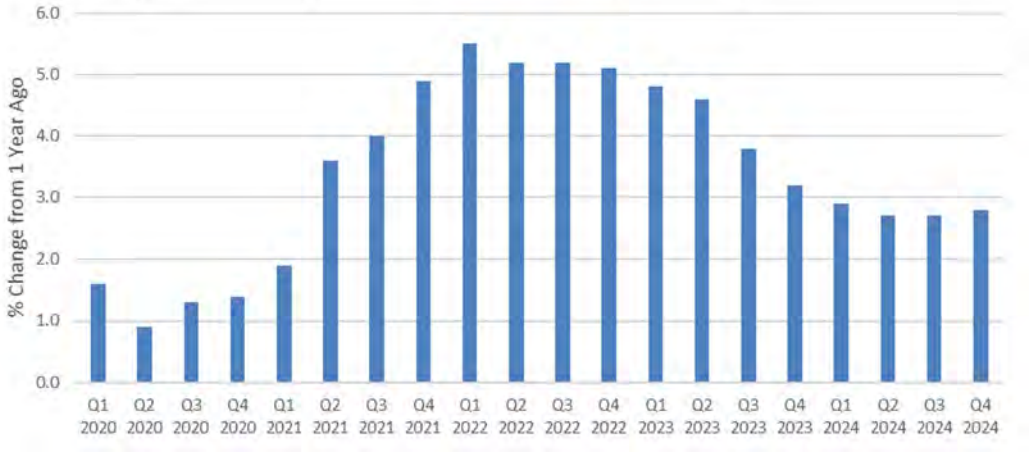
In June 2022, the consumer price index soared at an annual rate of 9.1%, a new 40-year high driven by increases in the cost of energy, mainly due to a 98% increase in fuel oil prices.[28] On June 15, 2022, the Fed stated that:

> 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.[29]

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

[26] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, March 16, 2022, https://www.federalreserve.gov/monetarypolicy/files/monetary20220316a1.pdf.
[27] S&P Global, Markets in Motion, retrieved October 12, 2022, https://www.spglobal.com/en/research-insights/featured/inflation.
[28] Bureau of Labor Statistics, Consumer Price Index News Release, published July 13, 2022, https://www.bls.gov/news.release/archives/cpi_07132022.htm.
[29] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published June 15, 2022, https://www.federalreserve.gov/newsevents/pressreleases/monetary20220615a.htm.

Figure 2. Change of Personal Consumption Expenditures[30]



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.[31] Following the Fed's intervention in March 2022, the annual inflation rate in the U.S. fell to 2.7% in the fourth quarter of 2024, which still exceeded the Fed's target level of 2.0%.[32]

In response to rapid inflation, central banks raised interest rates.[33] 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.[34]

[30] 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.
[31] 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.
[32] FRED, Economic Data, Source: U.S. Bureau of Economic Analysis, https://fred.stlouisfed.org/series/BPCCRO1Q156NBEA.
[33] 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/.
[34] The relationship between CAPM COE estimate and interest rate will be explained in the CAPM section.

Furthermore, utilities often underperform the broader market during economic recovery, leading to a higher COE estimate for utilities.[35] 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 NGS utility equities are currently depressed, resulting in increased dividend yields and elevated COE estimates of the discount rate used in DCF analysis.[36]

Notably, the inflation rate for natural gas utility services continues to be mild. Utility NGS rates nationwide increased by an average of 6.0% year-over-year in February 2025, compared with February 2024.[37] This is a faster increase than the overall Consumer Price Index ("CPI"), which increased 3.0% year-over-year.[38] The gap between the two was 3.0%.

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.[39] 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.[40] In April 2020, the unemployment rate spiked to 14.8% from 3.5% in February 2020.[41] In response to the pandemic's adverse economic effects, which included

[35] 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.
[36] The relationship between DCF COE estimate and stock price will be explained in the DCF section.
[37] Table 2, News Release, The U.S. Bureau of Labor Statistics, published February 12, 2025, https://www.bls.gov/news.release/pdf/cpi.pdf.
[38] CPI Home, The U.S. Bureau of Labor Statistics, retrieved September 18, 2024, https://www.bls.gov/cpi/.
[39] 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.
[40] 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.
[41] Federal Reserve Economic Data, Unemployment Rate, Percent, Monthly, Seasonally Adjusted, https://fred.stlouisfed.org/series/UNRATE/.

pushing interest rates higher, the Fed intervened in March 2020 by cutting the federal discount rate to a range of 0% to 0.25%.[42] 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 stabilizing financial markets.[43] Additionally, the Fed provided forward guidance, indicating that interest rates would remain low for an extended period to facilitate the recovery.[44]

As vaccination efforts progressed and economic activity resumed, the U.S. experienced a strong rebound in growth in 2021.[45] However, this recovery was accompanied by rising inflationary pressures, driven by supply chain disruptions, pent-up demand, and fiscal stimulus measures.[46] 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.[47]

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[42] Federal Reserve, Press Release, March 15, 2020, https://www.federalreserve.gov/monetarypolicy/files/monetary20200315a1.pdf.

[43] Fed, Monetary Policy and Central Banking in the Covid Era, published on June 3, 2021, https://www.federalreserve.gov/econres/feds/files/2021035pap.pdf.

[44] 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.

[45] 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.

[46] 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.

[47] 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.

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.[48] 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%.[49] In July 2022, the unemployment rate went back down to 3.5%. Once the Fed made the decision to raise the target range for the federal funds rate, the FOMC raised the federal funds rate by more than 5% over the course of 16 months.[50]

Table 1: Fed Rate Changes 2022-2024[51]

FOMC Meeting Date	Rate Change (bps)	Federal Funds Rate
17-Mar-22	25	0.25% to 0.50%
5-May-22	50	0.75% to 1.00%
16-Jun-22	75	1.50% to 1.75%
27-Jul-22	75	2.25% to 2.50%
21-Sep-22	75	3.00% to 3.25%
2-Nov-22	75	3.75% to 4.00%
14-Dec-22	50	4.25% to 4.50%
1-Feb-23	25	4.50% to 4.75%
22-Mar-23	25	4.75% to 5.00%
3-May-23	25	5.00% to 5.25%
26-Jul-23	25	5.25% to 5.50%
18-Sep-24	-50	5.00% to 5.25%
7-Nov-24	-25	4.50% to 4.75%
18-Dec-24	-25	4.25% to 4.50%

Table 1 displays the 14 instances when the FOMC decided to raise and lower the federal 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

[48] Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024, https://www.forbes.com/advisor/investing/fed-funds-rate-history/.
[49] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published March 16, 2022, https://www.federalreserve.gov/monetarypolicy/files/monetary20220316a1.pdf.
[50] New York Times, Fed Raises Rates Again, published on July 26, 2023, https://www.nytimes.com/live/2023/07/26/business/fed-interest-rates.
[51] Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024, https://www.forbes.com/advisor/investing/fed-funds-rate-history/.

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%.[52]

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.[53] On November 7, 2024, and December 18, 2024, the FOMC decided to lower the target range for the federal funds rate by 0.25 percentage points on each occasion, resulting in a range of 4.25%–4.50%, 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.[54] On March 19, 2025, the Fed decided to maintain the target range for the federal funds rate at 4.25%–4.50%.[55]

Q. Please explain how the Fed's 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.[56] 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, and made two more

[52] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published July 31, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240731a1.pdf.
[53] 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.
[54] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published November 7, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20241107a1.pdf.
Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published December 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20241218a1.pdf.
[55] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published March 19, 2025, https://www.federalreserve.gov/monetarypolicy/files/monetary20250319a1.pdf.
[56] Federal Reserve Economic Data, Market Yield on U.S. Treasury Securities at 30-Year Constant Maturity, https://fred.stlouisfed.org/series/DGS30.

quarter-point cuts on November 7, 2024, and December 18, 2024, 30-year Treasury yields were 4.98% on January 14, 2025, which is 329 basis points higher compared to 1.69% on December 3, 2021.[57] Hence, all else being equal, a high inflation rate leads to an overstated CAPM COE estimate due to the elevated interest rate set by the Fed's monetary policy.[58]

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 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

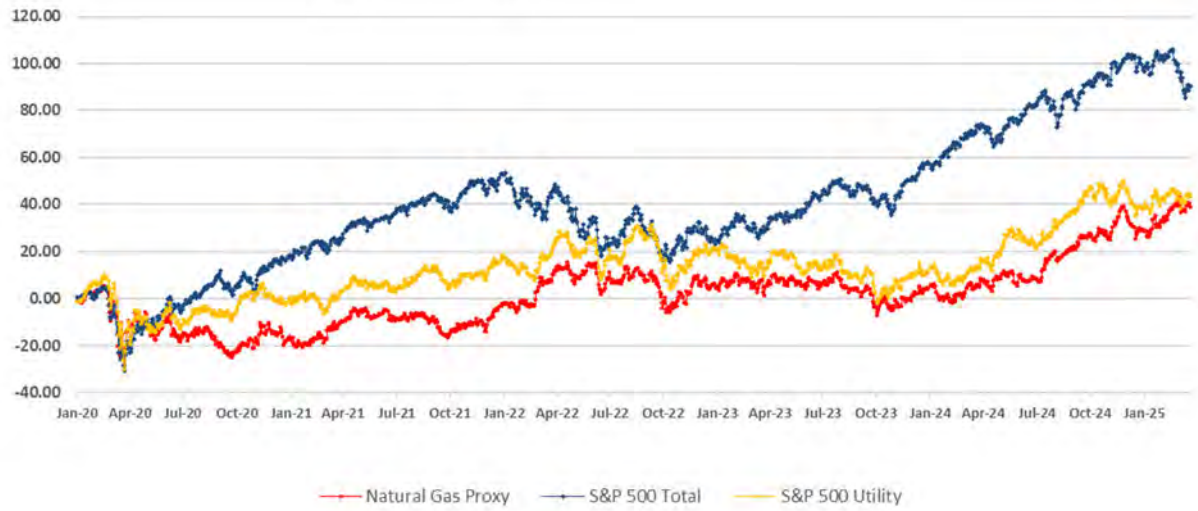
Q. Please explain the current utility equity market conditions.

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.[59] Since the beginning of the COVID-19 recovery, utilities, including natural gas utilities, have underperformed the

[57] Federal Reserve Economic Data, Market Yield on U.S. Treasury Securities at 30-Year Constant Maturity, https://fred.stlouisfed.org/series/DGS30.
[58] The relationship between CAPM COE estimate and interest rate will be explained in the CAPM section.
[59] S&P Capital IQ Pro.

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. Comparison of Total Returns[60]



The total return of the NGS 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 (14%) by May 27, 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 March 3, 2025, the S&P 500, S&P 500 Utilities, and Staff's proxy group had total returns of 96.37%, 44.44%, and 43.05%, respectively, over the point of reference on January 2, 2020. S&P stated that the longer-term credit quality for some natural gas local distribution companies ("LDC") will become increasingly challenging,

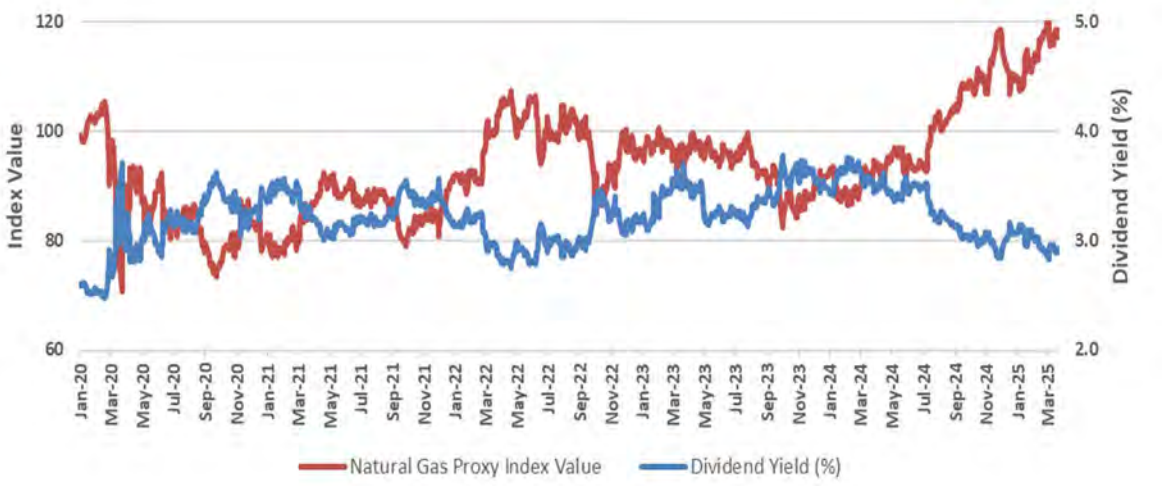
[60] S&P Capital IQ Pro. Retrieved March 23, 2025.

especially for utilities that operate in warmer climates or whose cities or states have banned new gas connections, severely limiting the growth of natural gas LDCs.[61]

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 NGS 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.[62]

Figure 4. Staff NGS Proxy Index Value and Dividend Yield[63]



Before the COVID-19 pandemic, the index value of Staff's NGS utility proxy group (referred to as the 'SNGS Index') reached 105.22 on February 18, 2020. However, due to the impact of COVID-19, the U.S. stock market experienced a significant downturn, causing the SNGS Index to drop by 32% to 70.74 on March 23, 2020. After recovering from the COVID-19

[61] S&P Capital IQ Pro, Industry Credit Outlook 2025, North America Regulated Utilities, Published January 14, 2025.
[62] The relationship between stock price and DCF COE will be explained in the section of DCF.
[63] Won's Direct Workpaper.

shock, the SNGS 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 SNGS Index experienced a sluggish downturn, reaching 82.30 on October 2, 2024. On March 3, 2025, the SNGS Index reached 121.14.[64] 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 NGS 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.

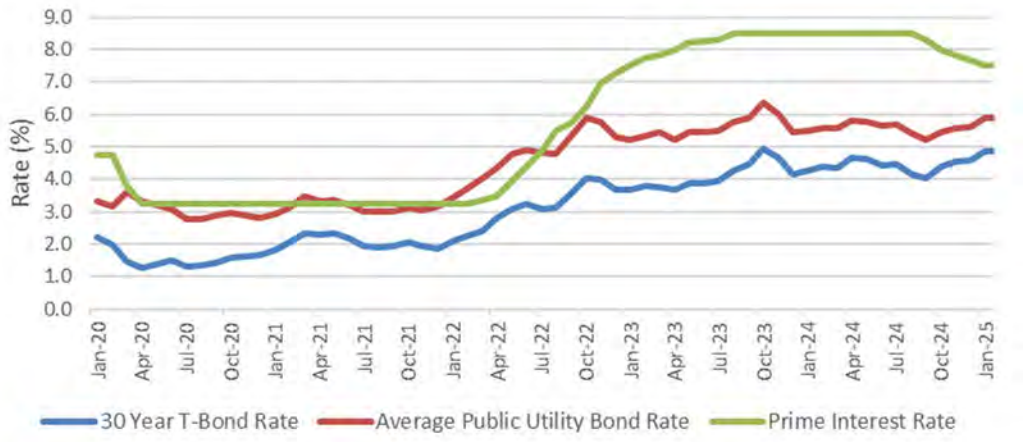
A. The utility debt market has experienced significant volatility in terms of bond yield changes. Average public utility bond yields decreased from 4.48% in January 2019 to 2.76% in August 2020.[65] However, this downward trend in public utility bond yields reversed after the Fed initiated its Treasury bond-buying activity.[66] 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.[67] 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.[68]

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

[64] S&P Capital IQ Pro. Retrieved March 23, 2025.
[65] Schedule SJW-d4-1, Won's Direct Testimony.
[66] Brookings, The Hutchins Center Explains, https://www.brookings.edu/research/fed-response-to-covid19/.
[67] Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024, https://www.forbes.com/advisor/investing/fed-funds-rate-history/.
[68] Schedule SJW-d4-1, Won's Direct Testimony.

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.[69]

Figure 5. 30-Year Treasury Bond, Public Utility Bond and Fed Fund[70]



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

[69] Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 18, 2024, https://www.federalreserve.gov/monetarypolicy/files/monetary20240918a1.pdf.
[70] Won's Direct Workpaper.

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.[71]

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 natural gas 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.

continued on next page

[71] 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 ROR 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 should provide 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 Spire Missouri, considering the commensurate risk of the NGS 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 Spire Inc. and Spire Missouri through corporate analysis.

Q. Why is corporate analysis necessary for both Spire Inc. and Spire 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.[72] Thus, to fully understand the risk profile and creditworthiness of Spire Inc. and Spire 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.[73] 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 Spire Inc.

A. According to its 10-K reported to the United States Securities and Exchange Commission ("SEC") and S&P Company Description, Spire Inc. is the holding company of Spire Missouri. Spire Inc., formerly known as the Laclede Group, Inc. (founded in 1857), changed its name to Spire Inc. in April 2016 and is based in St. Louis, Missouri. Spire Inc., together with its subsidiaries, engages in the purchase, retail distribution, and sale of natural gas to residential, commercial, industrial, and other end-users of natural gas in the United States.

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

Spire Inc. operates in two segments, Gas Utility and Gas Marketing. Spire Inc.'s gas utility segment includes the regulated operations of Spire Missouri, Spire Alabama Inc., Spire Gulf Inc. and Spire Mississippi Inc. Spire Inc.'s marketing segments includes Spire Marketing Inc. (Spire Marketing), a wholly owned subsidiary providing natural gas marketing services.

In addition, Spire Inc. engages in the transportation of propane through its propane pipeline; compression of natural gas; risk management; and other activities. Further, it provides physical natural gas storage services. Other components of Spire Inc.'s consolidated business include Spire Inc.'s Midstream operations consisting of Spire Storage West, Spire Storage Salt Plains (jointly, "Spire Storage"), Spire STL Pipeline, and Spire MoGas Pipeline. In addition, Spire Inc.'s subsidiaries engage in the operation of a propane pipeline, the compression of natural gas, and risk management, among other activities.

In its Midstream segment, Spire Inc. seeks to drive growth through supporting natural gas grid reliability, the ability to manage exposure to gas price volatility, and providing access to key supply basins for the shipment of natural gas. These transportation and storage operations serve a variety of natural gas customers, including Spire Inc.'s other businesses.

Q. Please provide the corporate profile of Spire Missouri.

A. Spire Missouri is a subsidiary of Spire Inc. The following summary is based on Spire's Form 10-K filing with the SEC and S&P Company Description. Spire Missouri is Missouri's largest natural gas distribution utility. It was formerly known as Laclede Gas Company, founded in 1857, and changed its name to Spire Missouri Inc. in 2018.

Spire Missouri operates as a public utility that engages in the purchase, retail distribution, and sale of natural gas, with its primary offices located in St. Louis, Missouri. Spire Missouri operates as a major natural gas distribution utility system in Missouri that serves

approximately 1.2 million residential, commercial and industrial customers across two regions, Spire Missouri East (serving St. Louis and eastern Missouri) and Spire Missouri West (serving Kansas City and western Missouri), and other areas in Missouri. Spire Missouri purchases natural gas in the wholesale market from producers and marketers and ships the gas through interstate pipelines into its own distribution facilities for sale to residential, commercial and industrial customers.

Spire Missouri also transports gas through its distribution system for certain larger customers who buy their own gas on the wholesale market. The earnings of Spire Missouri are primarily generated by the sale of heating energy. Spire Missouri utilizes Midcontinent, Gulf Coast, Northeast, and Rocky Mountain gas sources to provide a level of supply diversity that facilitates the optimization of pricing differentials as well as protecting against the potential of regional supply disruptions.

Spire Missouri is the only distributor of natural gas within its franchised service areas. Spire Missouri focuses its gas supply portfolio around various natural gas suppliers with equity ownership or control of assets situated to complement its regionally diverse firm transportation arrangements. The mains and service lines are located in municipal streets or alleys, public streets or highways, or on lands of others for which Spire Missouri has obtained the necessary legal rights to place and operate its facilities on such property. Spire Missouri has an underground natural gas storage facility, various operating centers, and other related properties. All of Spire Missouri's utility plant is subject to the liens of its mortgage. Spire Missouri entered into firm agreements with suppliers, including both major producers and marketers, providing flexibility to meet the temperature-sensitive needs of its customers. Spire Missouri is not publicly-traded and is totally owned by Spire.

Q. Please provide Spire Missouri's corporate profile regarding its natural gas supply for distribution in 2024.

A. The following summary based on Spire's Form 10-K filing with the SEC. The fiscal 2024 peak day send out of natural gas to Spire Missouri East customers, including transportation customers, occurred on January 14, 2024. The average temperature was 0.4 degrees Fahrenheit in St. Louis, and on that day Spire Missouri East customers consumed 1.03 billion cubic feet ("Bcf") of natural gas. This peak day demand was met with natural gas transported to St. Louis through the Missouri Gas Pipeline LLC (now Spire MoGas Pipeline), Spire STL Pipeline, and Southern Star transportation systems, and from Spire Missouri's on-system storage. The fiscal 2024 peak day send out of natural gas to Spire Missouri West customers, including transportation customers, occurred on January 14, 2024. The average temperature was -9 degrees Fahrenheit in Kansas City, and on that day Spire Missouri West customers consumed 0.90 Bcf of natural gas. This peak day demand was met with natural gas transported to Kansas City through the Southern Star and other transportation systems.

Spire Missouri's natural gas rates may be adjusted without a traditional rate proceeding for changes in the costs, which are passed through to customers without markup from Spire Missouri. These adjusted mechanisms are the Purchased Gas Adjustment ("PGA"), the Infrastructure System Replacement Surcharge ("ISRS") and the Weather Normalization Adjustment Rider ("WNAR").

Q. What are the business and financial risk profiles of Spire Missouri and Spire Inc.?

A. According to S&P, both Spire Missouri and Spire Inc. are showing an excellent business risk profile based on their regulated utility services. Spire Missouri demonstrates a

'Significant' financial risk profile that is approximately a the midpoint of the benchmark range,[74] but Spire Inc. demonstrates an 'Aggressive' financial risk profile that is approximately at the lower end of the benchmark range,[75] which means Spire Inc. is exposed to a higher financial risk than Spire Missouri. These financial risk profiles are directly related to the fact that Spire Inc.'s debt ratio is approximately 10% higher in its capital structure compared to Spire Missouri's. The stable outlook on parent Spire Inc. and its subsidiaries, including Spire Missouri, reflects that of parent Spire Inc.'s consolidated S&P's adjusted funds from operations ("FFO") to debt will remain between 12%-14% through 2026.[76]

Q. What is the credit rating for Spire Inc. and Spire Missouri?

A. Spire Inc. and Spire Missouri are currently rated by Moody's and S&P. Moody's assigned a 'Baa2' rating to Spire Inc. and an 'A1' rating to Spire Missouri for their most recent long-term issuer ratings, respectively.[77] On June 3, 2024, S&P downgraded the issuer credit rating of Spire Inc. and its subsidiaries, including Spire Missouri, to 'BBB+' from 'A-' due to weak financial measures, based on Spire Inc.'s financial measures, including its FFO-to-debt ratio, having been consistently below S&P's downgrade threshold of 15%, coupled with higher borrowing costs and robust capital spending, which are expected to persist.[78]

[74] S&P RatingDirect, Tear Sheet, Decoupling Spire Missouri's Revenue From Weather Would Be Highly Supportive Of Credit Quality, Published September 26, 2024.
[75] S&P RatingDirect, Tear Sheet, Spire's Fiscal 2024 Financial Measures Below Expectations But Higher Cash Flow Anticipated In Fiscal 2025, Published January 2, 2025.
[76] S&P Global Ratings, Spire Missouri, Published September 26, 2024.
[77] According to S&P Capital IQ Pro, the most recent dates for the long-term issuer ratings of Spire Inc. and Spire Missouri are May 2, 2013.
[78] S&P RatingsDirect, Spire Inc. And Subsidiaries Downgraded To 'BBB+' From 'A-' On Weak Financial Measures; Outlook Stable, Published June 3, 2024.

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

A. The natural gas utilities have average bond ratings of 'Baa1' and 'BBB+' provided by Moody's and S&P, respectively.[79] The overall agency ratings of Spire Inc. and Spire Missouri are comparable to those of the average natural gas utilities in the U.S.[80] This means Spire Inc. and Spire Missouri are perceived to have similar credit risks as the average natural gas 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 Spire Missouri's authorized ROE should fall within a reasonable range compared to the average authorized ROE of NGS utility companies in the U.S. For ratemaking capital structure, Spire Missouri has more debt capacity based on its financial risk profile, as reported by S&P and Moody's long-term debt credit rating, because Spire Missouri currently shows a higher credit quality than Spire Inc.

continued on next page

[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 Spire 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 Spire Missouri's overall cost of capital, which is the allowed ROR required by investors (both debt and equity holders) of Spire Missouri. This cost of capital is used in the rate-setting process to determine the allowed return on investment, which Spire Missouri needs to recover through tariff rates.

Second, the ratemaking capital structure should appropriately reflect Spire 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 Spire Missouri's cost of capital, aligning with the risk profile faced by Spire Missouri.

Third, a well-considered capital structure helps ensure that Spire Missouri remains financially stable. If the rates reflect the actual cost of capital, Spire Missouri 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 Spire 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 Spire Missouri?

A. Spire 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 Spire Missouri.

First, which capital structure should be used for ratemaking in this proceeding: the parent company Spire Inc.'s consolidated capital structure or Spire 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 Spire Inc. and Spire Missouri, assessed which capital structure most appropriately reflects the new rates, and examined how Spire Missouri's short-term debt was utilized. For regulatory consistency, Staff also reviewed the Commission's previous decisions on these issues in Spire 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 was more economical than Empire's, based on the finding that it was 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's decision in the 2021 Spire Case was 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 in that case will produce just and reasonable rates.[85]

[82] 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] Page 96, *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.
[85] Page 46, *Report and Order* issued October 25, 2023, in Case No. WR-2023-0006.

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

A. No, I do not. The Commission's decision on the capital structure issue for each rate proceeding was 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 ROR.[86] The Commission found that LUCo's adjusted capital structure was appropriate to use for setting rates in that case because it was 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]

[86] Page 22, *Order Approving Stipulations and Agreements and Authorizing Merger Transaction issued* September 7, 2016, EM-2016-0213.
[87] Page 39, *Amended Report and Order* issued July 23, 2020, in Case No. ER-2019-0374.
[88] 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.

In the 2023 Confluence Case, both the actual operating standalone capital structure and the consolidated parent capital structure were inappropriate for ratemaking purposes. The Commission found that a hypothetical capital structure was appropriate for ratemaking due to Confluence Rivers' large negative retained earnings balance of approximately $9.5 million at year-end 2022 and its unique corporate structure, which relies directly on affiliates for external capital structure and Confluence Rivers' size.[90]

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

A. In Spire Missouri's most recent rate case, Case No. GR-2022-0179, Staff recommended Spire Missouri's actual standalone capital structure as of September 30, 2021, which consisted of 51.23% common equity, 48.10% long-term debt, and 0.67% short-term debt.[91]

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

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

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

A. Spire Missouri operates as an independent entity when considering Spire Missouri's procurement of financing and the cost of that financing. Spire Inc. is not the primary

[90] Page 45-46, *Report and Order* issued October 25, 2023, in Case No. WR-2023-0006.
[91] Page 2, lines 6-7, Won's True-Up Direct Testimony, Case No. GR-2022-0179.

source of long-term financing for Spire Missouri and this continues to be the case.[92] Since January 2022, Spire Missouri has not received long-term financing from Spire Inc. or other Spire Inc. subsidiaries.[93]

Spire Missouri is an operating subsidiary of Spire Inc. and has separate credit ratings issued by Moody's and S&P.[94] Spire 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 Spire Missouri.[96] Therefore, the cost of any debt that Spire Missouri has will be based on Spire Missouri's creditworthiness. The corporate credit ratings assigned by Moody's and S&P to Spire Missouri are 'A1' and 'BBB+', respectively, while those assigned to Spire Inc. are 'Baa2' and 'BBB+'.[97]

Spire Inc. provides all equity and no debt financing to Spire Missouri.[98] Spire Inc. assets do not secure Spire Missouri debt and Spire Missouri assets do not secure Spire Inc. debts.[99] Spire Inc. raises short-term funding through its commercial paper program and loans this funding to Spire Missouri.[100] The management members of Spire Inc. are included as part of the ultimate financial decision makers for Spire Missouri.[101] These financial relationships between Spire Inc. and Spire Missouri are normal in the utilities sector.

Spire Inc. has raised significant equity capital in recent years to support higher capital expenditures at Spire Missouri, including any necessary equity contribution into the utility, but

[92] Staff's Data Request No. 0064.
[93] Staff's Data Request No. 0065(1).
[94] S&P Capital IQ Pro.
[95] Staff's Data Request No. 0065(4).
[96] Rating Direct, S&P Capital IQ.
[97] S&P Capital IQ Pro.
[98] Staff's Data Request Nos. 0064 and 0065(1).
[99] Staff's Data Request No. 0065(6).
[100] Staff's Data Request No. 0065(2).
[101] Staff's Data Request 0065(7).

no proceeds from Spire Inc. long-term debt issuances have been used to infuse equity into Spire Missouri.[102] Therefore, Staff does not find evidence that Spire Inc. has used "double leverage" for investing in Spire Missouri.[103]

In addition, Spire Inc.'s non-regulated business is less than 10% of its business mix.[104] Hence, there are no significant concerns about the financial relationship between Spire Missouri's regulated utility service and Spire Inc.'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 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

[102] Staff's Data Request No. 0067.
[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] Staff's Data Request No. 0066.

other short-term assets exceeds the amount of short-term debt.[105] In 2021 Spire Case, the 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 amount of Spire Missouri's short-term debt that is used to finance its long-term assets?

A. According to Spire Missouri witness Adam W. Woodard, Treasurer of Spire Inc. and Chief Financial Officer of Spire Missouri, the amount of Spire Missouri's short-term debt that is used to finance its long-term assets is considered to be zero as of September 30, 2024. Mr. Woodard stated, ** [redacted] **.[107] Based on his short-term debt analysis, Mr. Woodard insisted that the short-term debt in the Spire Missouri ratemaking capital structure is 0%. In contrast, Staff expert Kimberly K. Bolin found that the 13-month average of short-term debt exceeds the 13-month average balance of short-term assets by ** [redacted] ** as of December 31, 2024.[108] Currently, Staff has not included short-term debt in the ratemaking capital structure. However, Staff will continue monitoring Spire Missouri's short-term assets and short-term debt through the true-up period ending May 31, 2025, and, if appropriate, will state any change in position on this capital structure issue no later than in its true-up direct testimony.

[105] Pages 44-45, *Amended Report and Order* issued March 7, 2018, in Case Nos. GR-2017-0215 and GR-2017-0216.
[106] Page 97, *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.
[107] Page 39, line 8-10, Woodard's Direct Testimony.
[108] Schedule KKB-d2, Bolin's Direct Testimony.

Q. Has Spire Missouri and Spire Inc. indicated to Staff that they would target specific capital structures in the future for Spire Missouri and Spire Inc.?

A. Spire Missouri's response to Staff's Data Request No. 0058 says Spire Missouri and Spire Inc. are not aware of any specific materials/documents targeting capital structure or strategies related to managing their capital structure.[109] According to its witness, "Spire Missouri maintains the balance of debt and equity in its capital structure to optimize its overall cost of capital and preserve its financial resiliency."[110]

Q. What is the actual capital structure of Spire Missouri and Spire Inc.?

A. As of December 31, 2024, Spire Missouri's capital structure at the end of the update period consists of approximately 53.19% common equity and 46.81% long-term debt.[111] Table 2 below shows the average capital structures of Spire Inc. and Spire Missouri for Q1 2022 through Q4 2024. As seen in Table 2, the average equity ratios for Q1 2022 through Q4 2024 were approximately 53.72% and 43.33% for Spire Missouri and Spire Inc., respectively:[112]

Table 2: Comparison Average Capital Structure Q1 2022 – Q4 2024

	Spire Inc.	Spire Missouri
Common Equity	43.33%	53.72%
Preferred Stock	3.76%	0.00%
Long-Term Debt	52.91%	46.28%
	100.00%	100.00%

[109] Staff's Data Request No. 0107.
[110] Page 35, lines 15-16, Woodard's Direct Testimony.
[111] Schedule SJW-d6, Won's Direct Testimony.
[112] Schedule SJW-d5-2, Won's Direct Testimony.

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

A. Considering Spire Missouri's financial relationship with Spire Inc., and to maintain consistency with the Commission's previous ratemaking decisions, Staff recommends that the Commission set Spire 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 Spire Missouri's stand-alone capital structure composed of 53.19% common equity and 46.81% long-term debt, based on Spire Missouri's actual capital structure as of December 31, 2024.[113] Schedules SJW-d5-1 and SJW-d5-2 to this testimony, and incorporated by reference herein, presents Spire Inc. and Spire Missouri's historical capital structures and the associated capital ratios. Staff will keep monitoring Spire Inc. and Spire Missouri's updated capital structures through the end of the true-up period, through May 31, 2025, and will update its final recommendation to actual values at that time.

continued on next page

[113] Schedule SJW-d6 and SJW-d16, 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 Spire 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 natural gas distribution companies in the proxy group; (2) the authorized ROE estimated by the BYPRP method; (3) the recent national average authorized ROEs for natural gas utilities; (4) Staff's recommended ROE for the current Spire Missouri rate case; (5) the current embedded COD; and (6) the allowed ROR for the purpose of ratemaking in this proceeding. For this procedure, Staff started with the selection of a natural gas proxy group.

1. Proxy Group

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

A. Staff used a proxy group consisting of U.S. utilities that that Value Line classifies as natural gas utilities.[114] Staff screened five (5) companies for the following criterions:

- stock publicly traded;
- more than five years of financial data available;
- investment grade credit ratings from major U.S. credit rating agencies;
- positive long-term growth coverage from at least two analysts;
- no pending merger or acquisitions;
- not reduced dividends since 2015;
- at least 70% of income from regulated utility operations; and
- at least 65% of assets in regulated utility operations.

[114] Value Line, https://research.valueline.com/secure/dashboard.

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

A. The five (5) natural gas utilities that met these criterions are in Table 3 below:

Table 3: Natural Gas Proxy Group

Natural Gas Companies	Ticker
Atmos Energy Corporation	ATO
Northwest Natural Holding Company	NWN
ONE Gas, Inc.	OGS
Southwest Gas Holdings, Inc.	SWX
Spire Inc.	SR

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 Spire Missouri by examining the market data of the first quarter of 2025 ("Q1 2025") using the proxy group of natural gas distribution utility companies as shown in Table 3.[115] The analysis Staff used to estimate Spire Missouri's COE 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 ROR for regulated utility companies.[116] 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

[115] The test year for this case ends on September 30, 2024, with updates through May 31, 2025.
[116] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).

Spire Missouri.[117] 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.

The common stock prices of Staff's proxy group in Q4 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.[118] 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.[119] The average projective

[117] 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").
[118] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).
[119] *Entergy Arkansas, Inc*., Opinion No. 575, 175 FERC ¶ 61,136 (2021).

growth rate in Q1 2025 for Staff's proxy group is 5.03%.[120] The average long-term sustainable growth rate for the DCF model is 4.81%[121] with the projected nominal GDP growth rate of 3.90%.[122]

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.[123] 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 NGS utility companies in its proxy group ranges from 7.86% to 9.49%, with an average DCF COE estimate of 8.67%, based on the proxy group of NGS utility companies presented in Table 3.[124] 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 ROR (typically the yield on

[120] Schedule SJW-d10, Won's Direct Testimony.
[121] Schedule SJW-d12, Won's Direct Testimony.
[122] Table C-4 (p.30), Congress Budget Office (CBO), Budget Economic Outlook, Published January 2025.
[123] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).
[124] Table 3 (p.42) and Schedule SJW-d12, Won's Direct Testimony.

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.[125] 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.[126] The MRP is 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.

[125] 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).
[126] Roger A. Morin, New Regulatory Finance (Public Utilities Reports, Inc. 2006).

For the risk-free rate of each time period, Staff used the average yield on 30-Year U.S. Treasury bonds which was 4.71% for Q1 2025.[127] For Staff's CAPM estimation, it relied on betas provided by Value Line.[128] For the MRP estimate, Staff relied on four sets of data for Q1 2025. The first data set is the long-term geometric mean of historical return differences between large company stocks and long-term government bonds from 1926-2024, resulting in MRP estimates of 4.52%.[129] The second data set is the long-term arithmetic mean of historical return differences between large company stocks and long-term government bonds from 1926-2024, resulting in MRP estimates of 5.90%.[130] The third data set is the long-term geometric mean of historical return differences between S&P 500 and long-term government bonds from 1928-2024, resulting in MRP estimates of 5.44%.[131] The fourth data set is the long-term arithmetic mean of historical return differences between S&P 500 and long-term government bonds from 1928-2024, resulting in MRP estimates of 7.00%.[132]

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 NGS utility companies in its proxy group ranges from 9.19% to 10.52%, with an average CAPM COE estimate of 9.85%, based on the proxy group of NGS utility companies presented in Table 3.[133] The detailed calculation procedure of Staff's CAPM analysis its summary results are presented in Schedule SJW-d13.

[127] Schedule SJW-d13, Won's Direct Testimony.
[128] Value Line, https://valueline.com/?msclkid=4ed36370d16911eca58154b129389016.
[129] Kroll, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.
[130] Ibid.
[131] Risk Premium, Damodaran Online, Stern School of Business, NYU.
[132] Ibid.
[133] Schedule SJW-d13, Won's Direct Testimony.

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.[134] 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.[135]

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

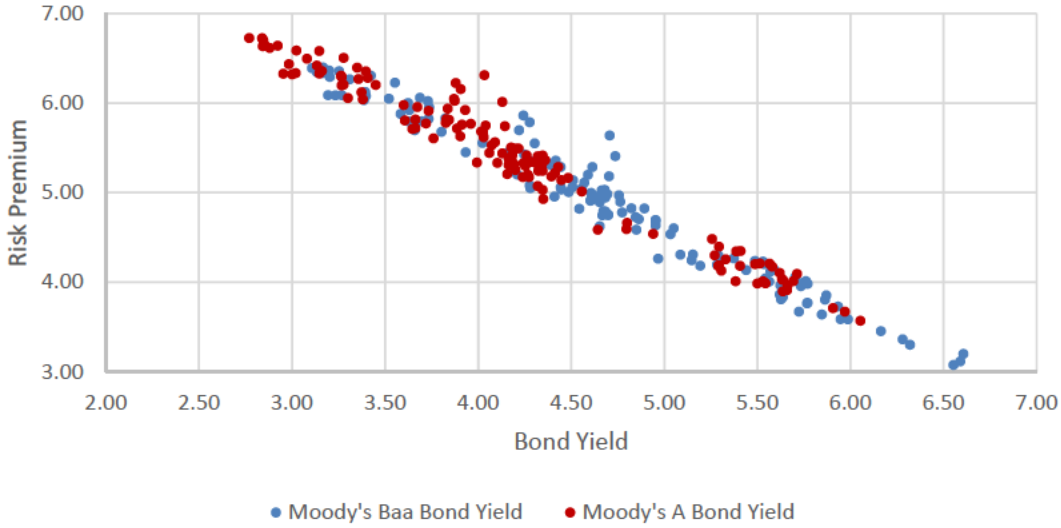
ROE = Bond Yield + Risk Premium.

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 363 authorized ROEs of natural gas utilities over a period from 2014 to 2024.[136] To determine a risk premium for a given bond yield, Staff relied on the

[134] Paragraph 146, Opinion No. 531, 147 FERC ¶ 61,234.
[135] Stowe, J. D., Robinson, T. R., Pinto, J. E., & McLeavey, D. W. (2002) Analysis of Equity Investment: Valuation. Association for Investment Management and Research.
[136] S&P Capital IQ Pro, Rate Case History (Past Rate Cases).

negative relationship between risk premiums and bond yields, as shown in Figure 6.

Figure 6. Bond Yield and Risk Premium (2014-2024)



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 natural gas utilities in each month. To account for the inverse relationship between bond yields and risk premiums, Staff performed a regression analysis between the utility bond yields and monthly risk premiums during the 2014-2024 study period. Using a regression analysis, Staff obtained the following equation:

Risk Premium (%) = 9.4667% – 0.9509 Bond Yield (%).[137]

In Staff's regression model, the results showed an R-squared value of 0.96 and a p-value associated with the regression coefficient of less than 0.0001. This indicates that approximately 96% 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 fourth quarter of 2024

[137] Schedule SJW-d14-2, Won's Direct Testimony.

and the first quarter of 2025, the average yields of A and Baa-rated utility bonds were 5.64% and 5.83%, respectively.[138] Using these yields and the equation of the regression analysis result listed above, Staff's BYPRP analysis indicates that the NGS utility's estimated ROE is 9.63% 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 Spire Missouri's current market COE to be in the range of 8.52% to 10.00% summarized in Table 4. Staff recommends that the Commission grant Spire Missouri an authorized ROE of 9.63% within a reasonable range of 9.38% to 9.88%.[139]

Table 4: Summary Result of COE and ROE Estimation[140]

	COE Analysis		
	Lower	Mean	Upper
DCF	7.86%	8.67%	9.49%
CAPM	9.19%	9.85%	10.52%
	8.52%	9.26%	10.00%

	ROE Analysis		
	Lower	Estimate	Upper
BYPRP	9.62%	9.63%	9.64%

[138] Schedule SJW-d14-1, Won's Direct Testimony.
[139] Schedule SJW-d16, Won's Direct Testimony.
[140] Schedule SJW-d15, Won's Direct Testimony.

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

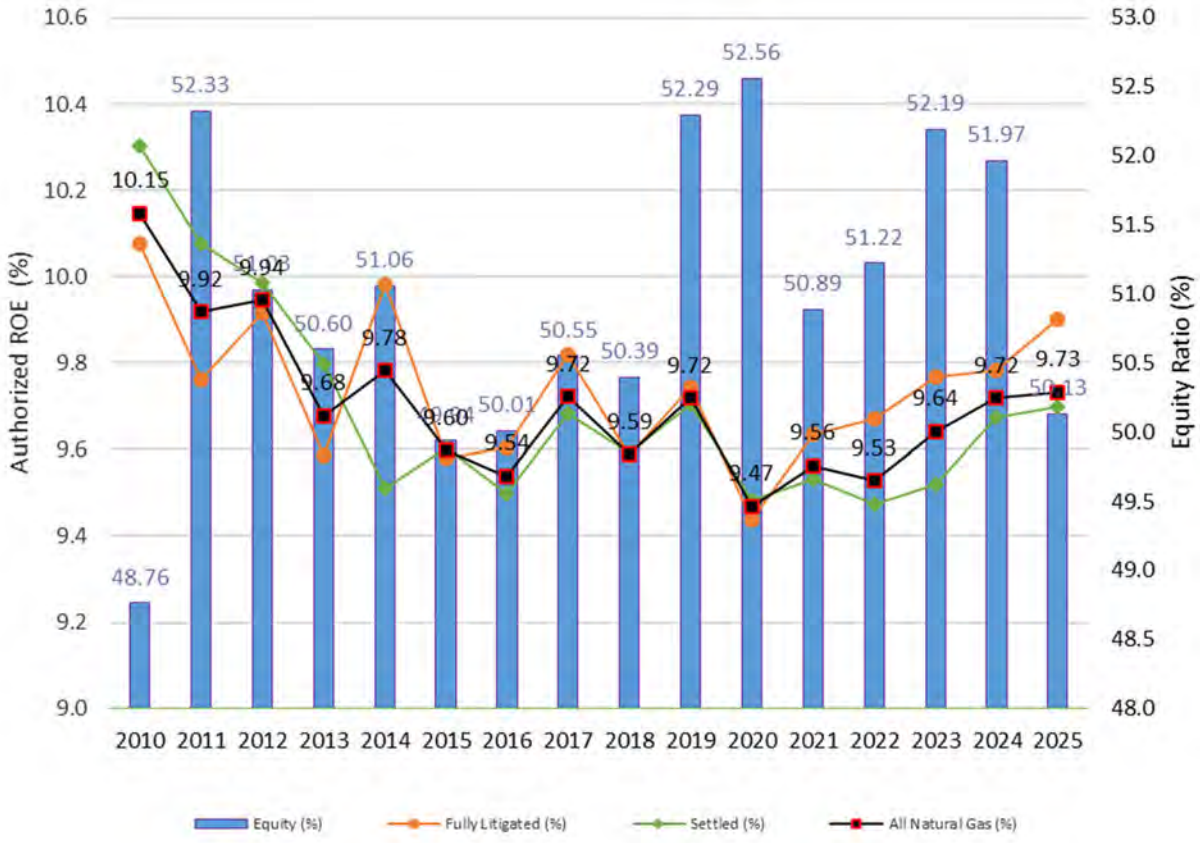
A. Yes. Staff recognizes that the Commission may be interested in recent authorized ROEs for other NGS utility companies in the U.S. as a test of reasonableness of Staff's recommendation of authorized ROE. Comparing Staff's recommended ROE to those of similar natural gas utilities provides a benchmark for assessing whether the recommendation falls within a reasonable range. In addition, analyzing recent authorized ROEs for other natural gas 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 – 2025Q1 along with the number of cases considered:

Table 5: Authorized ROE and Equity Ratio in the U.S.[141]

	Natural Gas Utility								
	Fully Litigated			Settled			Natural Gas Total		
Year	ROE (%)	Equity (%)	Case (No.)	ROE (%)	Equity (%)	Case (No.)	ROE (%)	Equity (%)	Case (No.)
2010	10.08	48.72	27	10.30	48.87	12	10.15	48.76	39
2011	9.76	52.64	8	10.08	51.82	8	9.92	52.33	16
2012	9.92	51.06	21	9.99	50.97	14	9.94	51.03	35
2013	9.59	51.98	12	9.80	48.53	9	9.68	50.60	21
2014	9.98	52.86	15	9.51	48.61	11	9.78	51.06	26
2015	9.58	51.17	5	9.60	49.32	11	9.60	49.94	16
2016	9.61	52.11	10	9.50	48.60	16	9.54	50.01	26
2017	9.82	50.39	7	9.68	50.63	17	9.72	50.55	24
2018	9.59	50.56	17	9.59	50.27	23	9.59	50.39	40
2019	9.74	52.00	12	9.70	52.47	21	9.72	52.29	33
2020	9.44	52.38	12	9.48	52.66	23	9.47	52.56	35
2021	9.63	50.59	13	9.53	51.02	30	9.56	50.89	43
2022	9.67	52.51	9	9.47	50.70	24	9.53	51.22	33
2023	9.77	53.37	21	9.52	51.01	22	9.64	52.19	43
2024	9.78	50.91	18	9.67	52.72	26	9.72	51.97	44
2025Q1	9.90	50.00	1	9.70	50.16	5	9.73	50.13	6

[141] S&P Capital IQ Pro: Regulatory Research Association, retrieved April 17, 2025.



In 2024, the average authorized ROE of natural gas utilities for fully litigated and settled cases is 9.78% and 9.67%, respectively, for an overall average of 9.72% over a total of 44 cases. In the first quarter 2025, the average authorized ROE of natural gas utilities for fully litigated and settled cases is 9.90% and 9.69%, respectively, for an overall average of 9.73% over a total of 6 cases. Considering the current high interest rates, Staff's recommended authorized ROE of 9.63% is generally consistent with ROEs recently authorized for other natural gas utilities around the country. It is Staff's position that in order for Spire Missouri to be competitive in the capital market, it needs to have the opportunity to earn an ROE that is reasonably consistent with ROEs awarded to other natural gas utilities around the country.

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

A. The Commission's most recent, fully-litigated NGS rate case is Spire Missouri's rate case, Case No. GR-2021-0108, ("2021 Spire rate case").[142] In the 2021 Spire rate case, the Commission ordered an authorized ROE of 9.37%.

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 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 COD, 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 Spire Missouri in this proceeding?

A. At this time, Staff recommends that the Commission authorize the cost of preferred stock in this proceeding to be Spire Missouri's cost of preferred stock of 0% because there is no preferred stock as of December 31, 2024,[143] This cost of preferred stock

[142] *Amended Report and Order* issued November 12, 2021, in Case No. GR-2021-0108.
[143] Staff's Data Request No. 0055 and Schedules SJW-d7-2, Won's Direct Testimony.

has not changed from Spire Missouri's last rate proceeding.[144] 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 Spire Missouri in this proceeding?

A. At this time, Staff recommends that the Commission authorize the ratemaking COD in this proceeding to be Spire Missouri's embedded COD as of December 31, 2024, which is 4.20%.[145] Staff will update its embedded COD throughout this proceeding, through the true-up period, as additional information becomes available.

continued on next page

[144] Schedule SJW-TD-1, Won's True-Up Direct Testimony, ER-2022-0179.
[145] Staff's Data Request No. 0055 and Schedules SJW-d7-1, Won's Direct Testimony.

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 Spire Missouri's risk profile, Staff's COE and ROE analysis supports a just and reasonable recommended ROE of 9.63%, which is the midpoint of a range from 9.38% to 9.88%, for Spire 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 9.63% for Spire Missouri and COD of 4.20% applied to a capital structure of 53.19% common equity and 46.81% long-term debt, results in an allowed ROR of 7.09%. Staff will continue to monitor Spire Inc.'s and Spire Missouri's capital structure and COD through the true-up period, which ends on May 31, 2025, 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 Spire Missouri Inc. d/b/a Spire's Request for Authority to Implement a General Rate Increase for Natural Gas Service Provided in the Company's Missouri Service Areas	))))	Case No. GR-2025-0107

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 18th day of April 2025.

Notary Public

D. SUZIE MANKIN
Notary Public - Notary Seal
State of Missouri
Commissioned for Cole County
My Commission Expires: April 04, 2029
Commission Number: 12412070