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MISSOURI PUBLIC SERVICE COMMISSION

FINANCIAL AND BUSINESS ANALYSIS DIVISION

FINANCIAL ANALYSIS DEPARTMENT

DIRECT / REBUTTAL TESTIMONY

OF

KELLI MALKI

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2024-0320

Jefferson City, Missouri
December 6, 2024

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KELLI MALKI
MISSOURI-AMERICAN WATER COMPANY
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1 A. In the Direct portion of this testimony, Staff presents evidence and provides a
2 recommendation regarding the appropriate rate of return (“ROR”) to be used in establishing the
3 water and wastewater service rates of Missouri-American Water Company (“MAWC”),
4 a wholly-owned subsidiary of American Water Works Company, Inc. (“AWWC”).

5 In the Rebuttal portion of this testimony, Staff responds to the direct testimonies of
6 Ann E. Bulkley and Nicholas Furia. Ms. Bulkley sponsored return on equity (“ROE”)
7 testimony on behalf of MAWC. Mr. Furia sponsored capital structure testimony on behalf
8 of MAWC.

9 Staff’s analyses and conclusions are supported by the data presented in the attached
10 direct testimony Schedules KM-d2 through KM-d17 and rebuttal testimony Schedules KM-r1
11 through KM-r6. Staff’s workpapers will be provided to the parties at the time of the filing of
12 this Direct / Rebuttal Testimony. Staff will make any additional source documents of specific
13 interest available upon the request of any party to this case or the Commission.

14 **I. EXECUTIVE SUMMARY**

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

17 A. Staff’s rebuttal will focus on Ms. Bulkley’s proposed ROE and Mr. Furia’s
18 proposed capital structure.

19 Mr. Furia proposed an ROR of 7.74%, based on the forecasted standalone capital
20 structure of MAWC as of May 31, 2026.¹ This proposed ROR was comprised of 50.54%

¹ Page 5, Lines 8-14, Furia’s Direct Testimony & Page 8, Lines 22-23, Bulkley’s Direct Testimony.

1 common equity with Ms. Bulkley's proposed ROE of 10.75%, within a range of 10.25% to
2 11.25%, and 49.46% long-term debt with a cost of debt of 4.68%.²

3 During the audit review process, Staff discerned that Ms. Bulkley introduced a series of
4 biased estimates for her cost of equity ("COE"), resulting in an overstated ROE
5 recommendation.³ Ms. Bulkley overestimated her COE by using inflated input data and
6 improper estimation methods in her direct testimony. In this rebuttal testimony, Staff will
7 provide a detailed explanation of how Ms. Bulkley used unreasonable and upwardly-biased
8 input data in the Constant Growth form of the Discounted Cash Flow ("DCF") model, the
9 Capital Asset Pricing Model ("CAPM"), and the Empirical Capital Asset Pricing Model
10 ("ECAPM") analysis.⁴ First, Ms. Bulkley used an improper proxy group, consisting of utility
11 companies supplying water, natural gas, and electricity for estimation of her COE. Staff's
12 analysis concluded that including natural gas and electric utility companies in the proxy group
13 resulted in an upward bias in Ms. Bulkley's COE estimation. Second, Ms. Bulkley considered
14 Flotation Costs in determining her recommended ROE; however, Staff will argue that Flotation
15 Costs are inappropriate to consider in this case. Third, for ratemaking purposes, Mr. Furia
16 asserted that MAWC's proposed weighted-average cost of debt of 4.68% is reasonable.⁵
17 However, Staff recommends that AWWC's consolidated cost of debt of ** [REDACTED] ** is more
18 appropriate to use for ratemaking purposes for MAWC.⁶ Mr. Furia's proposed ROR of 7.74%

² Ibid.

³ Ms. Bulkley incorrectly used the terms ROE and COE interchangeably. 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 ROEs in recent years.

⁴ Page 3, Lines 16-18, Bulkley's Direct Testimony.

⁵ Page 5, Line 13, Furia's Direct Testimony.

⁶ Schedule KM-d7, Malki's Direct / Rebuttal Testimony.

1 is based on MAWC's projected standalone capital structure as of June 30, 2026, and MAWC's
2 standalone cost of debt, along with Ms. Bulkley's recommended ROE.⁷

3 Q. Please provide a summary of your methodology and findings concerning the
4 ROR that should be utilized in setting rates for MAWC's water utility operations in
5 this proceeding.

6 A. To recommend a just and reasonable ROR for MAWC in this proceeding,
7 Staff estimated cost of capital components such as an authorized ROE, a cost of debt ("COD"),
8 and a rate making capital structure for MAWC. Regarding the estimation of an authorized ROE
9 for MAWC in this proceeding, Staff estimated the market-based COE for MAWC using
10 well-respected COE estimation methodologies such as the DCF model, the CAPM, and the
11 bond yield plus risk premium ("BYPRP") method.⁸ Staff's analysis also considers changes in
12 economic and capital market conditions over time, as well as MAWC's relative risk compared
13 to an electric utility proxy group⁹. By utilizing estimated COEs, Staff calculated a reasonable
14 range of authorized ROEs and recommended a just and reasonable ROE for MAWC.¹⁰

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

17 A. Staff's recommendation of a 9.50% authorized ROE will fairly compensate
18 MAWC for its current market COE and balance the interests of all stakeholders, particularly
19 considering that the current market ROE estimates for MAWC are presently in the range of

⁷ Page 5, Lines 7-14, Furia's Direct Testimony.

⁸ FERC ¶ 61,154 (2020), order on reh'g, Opinion No. 569-B, 173 FERC ¶ 61,159 (2020).

⁹ Due to limited information available regarding market risk premiums for water proxy groups, staff used the information available for electric proxy groups to determine an appropriate market risk premium to use within their BYPRP analysis. No electric proxy information was used in the DCF or CAPM COE estimation models.

¹⁰ 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.

1 8.85% to 10.15%.¹¹ Staff also recommends that the Commission use AWWC's consolidated
2 capital structure as of June 30, 2024, of 43.60% common equity and 56.38% long-term debt for
3 the purposes of setting MAWC's ROR in this proceeding.¹² Consistent with Staff's capital
4 structure recommendation, Staff also recommends at this time that the Commission use
5 AWWC's consolidated embedded cost of debt value of ** [REDACTED] ** as of June 30, 2024,
6 resulting in the overall midpoint ROR of 6.52%, taken from the calculated range of 6.41%
7 to 6.63%.¹³

8 Q. Please explain how your direct testimony is organized.

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

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

¹¹ Schedule KM-d15, Malki's Workpaper.

¹² Schedule KM-d6, Malki's Workpaper.

¹³ Schedule KM-d16, Malki's Workpaper.

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

- 3 • Proposed ROE,
- 4 • Proxy Group Criteria,
- 5 • Growth Rates for DCF Model,
- 6 • Market Risk Premium for CAPM,
- 7 • ECAPM Method, and
- 8 • Capital Structure

9 Staff will discuss each issue later in this testimony.

10 **II. REGULATORY PRINCIPLES**

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

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

17 The United States Supreme Court has described the minimum characteristics of a
18 constitutionally acceptable ROR in two frequently-cited cases: *Bluefield Waterworks &*
19 *Improvement Co. v. Public Service Commission of West Virginia* and *Federal Power*
20 *Commission v. Hope Natural Gas Co.*¹⁴

¹⁴ *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).

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

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

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

10 Regulatory environments and methodologies of financial analysis have advanced
11 significantly since the *Bluefield* and *Hope* decisions.¹⁵ Furthermore, today's utilities compete
12 for capital in a global market rather than a local one. Nevertheless, the parameters established
13 in those cases are easily met using current methods and theories. The principle of a
14 commensurate return is rooted in the concept of risk. Risk is a measure of the likelihood that
15 an investment will not yield the expected returns. Financial theory posits that the return an
16 investor anticipates corresponds to the level of risk inherent in the investment. Each line of
17 business carries its own set of risks. Therefore, the return expected by MAWC's shareholders
18 is comparable to that required by shareholders of utility companies with similar risk profiles.

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

¹⁵ Neither the Discounted Cash Flow ("DCF") nor the Capital Asset Pricing Model ("CAPM") methods were in use when those decisions were issued.

1 A. Staff employed COE and ROE estimation methods using a proxy group for
2 recommending a just and reasonable authorized ROE. COE represents the minimum return
3 investors are willing to accept for their investment in a company, compared to returns on other
4 available investments, and can be directly estimated using market data. In contrast, an
5 authorized ROE is determined by the Commission for monopoly industries, granting them the
6 opportunity to earn just and reasonable compensation for their investments in the rate base.
7 While stock market data cannot directly determine an authorized ROE, Staff can estimate a just
8 and reasonable authorized ROE anticipated by the financial market by using previous
9 Commission-determined ROEs and estimated COEs measured for a comparable group of
10 companies with similar risks.

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

13 A. Staff primarily relied on the analysis of a comparable group of companies to
14 estimate the COE for MAWC. This was done by applying the comparable-company approach
15 using both the DCF method and the CAPM analysis. Properly utilized and applied in
16 appropriate circumstances, both the DCF and CAPM methods can provide accurate estimates
17 of utilities' COE. It is widely accepted in economic theory that a company earning its cost of
18 capital will be able to attract capital and maintain financial integrity.¹⁶

19 To recommend a specific authorized ROE and a range of reasonable ROEs for
20 ratemaking in this proceeding, Staff utilized a BYPRP method to directly estimate ROE.
21 In using this method, Staff first used the 10-year historical data from 2014 to 2023 as well as

¹⁶ Whittaker, W. (1991). The Discounted Cash Flow Methodology: Its Use in Estimating a Utility's Cost of Equity. Energy LJ, 12, 265.

1 2024 data available to date, to determine a relationship between authorized ROEs of water and
2 electric utilities. Staff also used the relationship between risk premium and bond yield to find
3 an appropriate Market Risk Premium for water utilities using electric utility Market Risk
4 Premiums. Staff used the Market Risk Premium in conjunction with the Mergent utility bond
5 yields of similar risk to MAWC to determine a recommended ROE and range of reasonable
6 ROEs. Staff then confirms that the results of Staff ROE analysis are comparable to the COE
7 estimation results of Staff's DCF and CAPM analysis. Considering all Staff methodology and
8 procedures, the authorized ROE recommended by Staff should be commensurate with returns
9 on investments in other companies of comparable risk. Therefore, Staff's recommendation of
10 an authorized ROE, based on a COE derived from the comparison of peer companies, aligns
11 with the principles established in the *Bluefield* and *Hope* decisions.

12 **III. MARKET ANALYSIS**

13 Q. Why is consideration of economic and capital market conditions important for
14 ROE analysis?

15 A. Determining whether a cost of capital estimate is just and reasonable requires a
16 good understanding of current economic and capital market conditions, with the former having
17 a significant impact on the latter. In the comparative COE analysis, input values for COE
18 estimate models change from the former time-period to the latter time-period to reflect the
19 current economic and capital market conditions. With this in mind, Staff emphasizes that an
20 estimate of a utility's COE, which ultimately has a direct effect on an authorized ROE
21 recommendation, should pass the "common sense" test when considering the broader current
22 economic and capital market conditions.

1 **1. Economic Condition**

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

3 A. In order to estimate a COE for MAWC, it is necessary to understand how
4 economic conditions have changed over the past several years. The COVID-19 pandemic
5 profoundly impacted global economies, which lead to significant shifts in financial markets and
6 investment dynamics. As economies continue to recover, a proper assessment of the current
7 state of the COE for the ROR analysis in this proceeding is absolutely essential. To do this
8 requires an understanding of the post-COVID-19-related lockdowns in China as well as the
9 Russian invasion of Ukraine.¹⁷ The fragility of the world’s supply chains has continued, further
10 fueled by escalating tensions in the Red Sea.¹⁸ Supply chains are further strained as the looming
11 threats of port strikes could affect supplies, though the extent of which is still unknown.¹⁹

12 In the U.S., recent indicators suggest that economic activity has been expanding at a
13 solid pace, with moderated job gains since early 2023 remaining strong alongside a low
14 unemployment rate.²⁰ Although inflation has eased over the past year, it remains elevated.
15 In addition, the economic outlook is uncertain, prompting the Federal Open Market Committee
16 (“FOMC”) to remain highly attentive to inflation risks.²¹

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

¹⁷ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published September 21, 2022, <https://www.federalreserve.gov/newsevents/pressreleases/monetary20220921a.htm>.

¹⁸ Forbes, Most Surveyed Companies Are Vulnerable To Another Supply Chain Crisis, published January 28, 2024.

[Most Surveyed Companies Are Vulnerable To Another Supply Chain Crisis \(forbes.com\)](https://www.forbes.com)

¹⁹ Forbes, Could Dock Worker Strike Spike Inflation? Experts Are Split, published October 1, 2024.

[Port Strike Could Harm U.S. Inflation Improvement, Observers Warn \(forbes.com\)](https://www.forbes.com)

²⁰ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published January 31, 2024, <https://www.federalreserve.gov/newsevents/pressreleases/monetary20240131a.htm>.

²¹ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published May 1, 2024, <https://www.federalreserve.gov/newsevents/pressreleases/monetary20240501a.htm>.

1 In February 2024, the Congressional Budget Office (“CBO”) projected growth rates for
2 real GDP of 1.5% to 2.2% and for real potential GDP of 2.0% over the next decade.²⁶ The
3 CBO also projected a long-term nominal GDP growth rate of 4.10%.²⁷ This will be used to
4 calculate the projected growth rate in the DCF model. All else being equal, the current
5 projection of a relatively higher long-term nominal GDP growth rate will lead to inflated COE
6 estimates.

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

9 A. While GDP growth rates and unemployment rates have returned to
10 pre-COVID-19 levels, inflation rates have not yet reached the Fed’s target level of 2%. When
11 COVID-19 hit in 2020, it caused massive volatility in the financial markets.²⁸ As explained
12 above, GDP fell sharply, followed by an equally sharp recovery through 2021.²⁹ Subsequent
13 to COVID-19, there has been an increased availability of vaccines, higher vaccination rates,
14 and in March 2022, the Fed provided assurances that indicators of economic activity and
15 employment continued to strengthen.³⁰ The recovery from the COVID-19 pandemic spurred
16 fears of higher inflation and, consequently, increased market risk.³¹ This heightened market
17 risk was particularly notable for utilities, as investors could have likely believed that regulators
18 might not adjust revenues fast enough to compensate for rising input costs.

²⁶Congressional Budget Office, The Budget and Economic Outlook: 2024 to 2034, Table 2-2 (p.49) and Table 2-3 (p.55), <https://www.cbo.gov/system/files/2024-02/59710-Outlook-2024.pdf?ftag=YHF5b931b>.

²⁷Congressional Budget Office, The Budget and Economic Outlook: 2024 to 2034, Table 2-4, page 66, <https://www.cbo.gov/system/files/2024-02/59710-Outlook-2024.pdf?ftag=YHF5b931b>.

²⁸ Federal Reserve Economic Data, retrieved October 20, 2022, <https://fred.stlouisfed.org/series/VIXCLS>.

²⁹ Bureau of Economic Analysis, U.S. Department of Commerce, retrieved October 2, 2024, <https://www.bea.gov/news/2022/gross-domestic-product-first-quarter-2022-advance-estimate>.

³⁰ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, March 16, 2022, <https://www.federalreserve.gov/monetarypolicy/files/monetary20220316a1.pdf>.

³¹ S&P Global, Markets in Motion, retrieved October 2, 2024, <https://www.spglobal.com/en/research-insights/featured/inflation>.

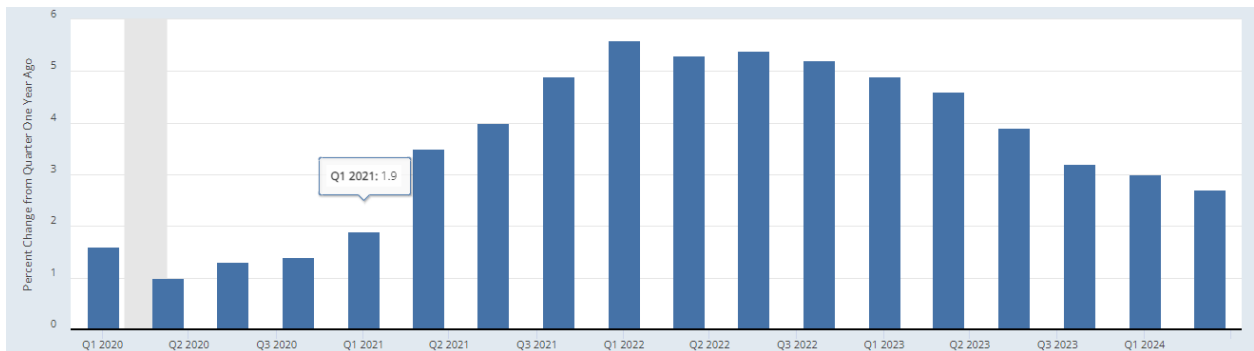
1 In June 2022, the consumer price index soared at an annual rate of 9.1%, a new 40-year
2 high driven by increases in the cost of energy, mainly due to a 98% increase in fuel oil prices.³²

3 On June 15, 2022, the Fed stated that:

4 Inflation remains elevated, reflecting supply and demand imbalances
5 related to the pandemic, higher energy prices, and broader price
6 pressures. The invasion of Ukraine by Russia is causing tremendous
7 human and economic hardship. The invasion and related events are
8 creating additional upward pressure on inflation and are weighing on
9 global economic activity. In addition, COVID-related lockdowns in
10 China are likely to exacerbate supply chain disruptions.³³

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

13 **Figure 2. Change of Personal Consumption Expenditures³⁴**



14
15 The resurgence of aggregate demand in late 2021, coupled with a tight labor market and
16 disruptions of energy supplies and in supply chains for other inputs in subsequent years, may
17 have all contributed to the persistently elevated inflation.³⁵ Following the Fed’s intervention in

³² Bureau of Labor Statistics, Consumer Price Index News Release, published July 13, 2022, https://www.bls.gov/news.release/archives/cpi_07132022.htm.

³³ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published June 15, 2022, <https://www.federalreserve.gov/newsevents/pressreleases/monetary20220615a.htm>.

³⁴ 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>.

³⁵ 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>.

1 March 2022, the annual inflation rate in the U.S. fell to 2.9% in the first quarter of 2024, which
2 still exceeded the Fed's target level of 2.0%.³⁶

3 In response to rapid inflation, central banks raised interest rates.³⁷ The effects of the
4 COVID-19 pandemic and high inflation fears have increased market risk. Increased market
5 volatility, sectoral shifts in investor expectations, and changes in correlations among assets have
6 heightened the sensitivity of utility assets' returns to overall market changes, as represented by
7 the Beta in the CAPM framework. Consequently, this has pushed the estimate of utilities' COE
8 higher. In other words, all else being equal, a high market risk leads to an overstated CAPM
9 COE estimate.³⁸

10 Furthermore, utilities often underperform the broader market during economic recovery,
11 leading to a higher COE estimate for utilities.³⁹ This trend is compounded by current concerns
12 regarding sustained inflation rates exceeding the Fed's target of 2.0%. As a result, the share
13 prices of electric utility equities are currently depressed, resulting in increased dividend yields
14 and elevated COE estimates of the discount rate used in DCF analysis.⁴⁰

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

17 A. The Fed has a dual mandate: maximum employment and stable prices.⁴¹ In early
18 2020, the emergence of the COVID-19 pandemic led to an unprecedented economic downturn,

³⁶FRED, Economic Data, Source: U.S. Bureau of Economic Analysis,
<https://fred.stlouisfed.org/series/BPCCRO1Q156NBEA>.

³⁷ Monetary Policy Responses to the Post Pandemic Inflation, published February 14, 2024,
<https://cepr.org/voxeu/columns/monetary-policy-responses-post-pandemic-inflation-challenges-and-lessons-future>.

³⁸ The relationship between CAPM COE estimate and interest rate will be explained in the CAPM section.

³⁹ 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>.

⁴⁰ The relationship between DCF COE estimate and stock price will be explained in the DCF section.

⁴¹ Fed, What economic goals does the Federal Reserve seek to achieve through its monetary policy? [The Fed - What economic goals does the Federal Reserve seek to achieve through its monetary policy?](#)

1 marked by widespread business closures, job losses, and financial market volatility.⁴² In
2 April 2020, the unemployment rate spiked to 14.8% from 3.5% in February 2020.⁴³ In response
3 to the pandemic's adverse economic effects, which included pushing interest rates higher, the
4 Fed intervened in March 2020 by cutting the federal discount rate to a range of 0% to 0.25%.⁴⁴
5 This move was part of a broader strategy by the Fed, which swiftly lowered interest rates to
6 near zero and implemented massive stimulus measures. These measures included asset
7 purchases and lending programs aimed at supporting the economy and stabilizing financial
8 markets.⁴⁵ Additionally, the Fed provided forward guidance, indicating that interest rates
9 would remain low for an extended period to facilitate the recovery.⁴⁶ As vaccination efforts
10 progressed and economic activity resumed, the U.S. experienced a strong rebound in growth in
11 2021.⁴⁷ However, this recovery was accompanied by rising inflationary pressures, driven by
12 supply chain disruptions, pent-up demand, and fiscal stimulus measures.⁴⁸ In response to
13 concerns about inflation, the Fed began signaling plans to taper its asset purchases and
14 eventually tighten monetary policy by raising interest rates, aiming to achieve its dual mandate

⁴² 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>.

⁴³ Federal Reserve Economic Data, Unemployment Rate, Percent, Monthly, Seasonally Adjusted, <https://fred.stlouisfed.org/series/UNRATE/>.

⁴⁴ Federal Reserve, Press Release, March 15, 2020, <https://www.federalreserve.gov/monetarypolicy/files/monetary20200315a1.pdf>.

⁴⁵ Fed, Monetary Policy and Central Banking in the COVID Era, published on June 3, 2021, <https://www.federalreserve.gov/econres/feds/files/2021035pap.pdf>.

⁴⁶ 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>.

⁴⁷ 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>.

⁴⁸ 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>.

1 of maximum employment and price stability while avoiding overheating the economy.⁴⁹ The
2 Fed held the federal funds rate at around zero as recently as the first quarter of 2022, despite
3 40-year highs in various measures of U.S. inflation.⁵⁰ Before the FOMC decided to raise the
4 target range for the federal funds rate on March 17, 2022, it was at 0.00% to 0.25%.⁵¹ In July
5 2022, the unemployment rate went back down to 3.5%. Once the Fed made the decision to
6 raise the target range for the federal funds rate, the FOMC raised the Fed funds rate by more
7 than 5% over the course of 16 months.⁵² Table 1 displays the 11 instances when the FOMC
8 decided to raise the fed funds rate in order to tame the inflation rate. On May 1, 2024, the Fed
9 remained highly attentive to inflation risks, and the FOMC decided to maintain the target range
10 for the federal funds rate at 5.25% to 5.50%.⁵³

⁴⁹ 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>.

⁵⁰ Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Jan 26, 2024,
<https://www.forbes.com/advisor/investing/fed-funds-rate-history/>.

⁵¹ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published March 16, 2022,
<https://www.federalreserve.gov/monetarypolicy/files/monetary20220316a1.pdf>.

⁵² New York Times, Fed Raises Rates Again, published on July 26, 2023,
<https://www.nytimes.com/live/2023/07/26/business/fed-interest-rates>.

⁵³ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published May 1, 2024,
<https://www.federalreserve.gov/newsevents/pressreleases/monetary20240501a.htm>.

1

Table 1: Fed Rate Hikes 2022-2024⁵⁴

FOMC Meeting Date	Rate Change (Bps)	Federal Funds Rate
Sept 18, 2024	-50	4.75% to 5.00%
July 26, 2023	+25	5.25% to 5.50%
May 3, 2023	+25	5.00% to 5.25%
March 22, 2023	+25	4.75% to 5.00%
Feb 1, 2023	+25	4.50% to 4.75%
Dec 14, 2022	+50	4.25% to 4.50%
Nov 2, 2022	+75	3.75% to 4.00%
Sept 21, 2022	+75	3.00% to 3.25%
July 27, 2022	+75	2.25% to 2.50%
June 16, 2022	+75	1.50% to 1.75%
May 5, 2022	+50	0.75% to 1.00%
March 17, 2022	+25	0.25% to 0.50%

2

3 Opting for a bolder start in making its first reduction since 2020, the Fed decided to
4 lower interest rates by a half-percentage point on September 18, 2024.⁵⁵ The FOMC decided
5 to lower the target range for the federal funds rate by 0.25 percentage points to 4.50%–4.75%
6 on November 7, 2024. They indicated they will continue to reduce the Committee’s holdings
7 of Treasury securities, agency debt, and agency mortgage-backed securities to support
8 maximum employment in efforts to return inflation to its 2% objective.⁵⁶

⁵⁴ Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Sep 18, 2024, <https://www.forbes.com/advisor/investing/fed-funds-rate-history/>.

⁵⁵ 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

⁵⁶ Federal Reserve issues Federal Open Market Committee (FOMC) Statement, published November 7, 2024, <https://www.federalreserve.gov/monetarypolicy/files/monetary20241107a1.pdf>

1 After COVID-19, the Fed’s monetary policy significantly impacted the U.S. financial
2 market, including interest rates such as 30-Year Treasury yields that are used for the risk-free
3 rate in CAPM. The aggregate effect of the Fed’s actions was an increase in 30-Year Treasury
4 yields from 1.69% on December 3, 2021, to a high of 5.09% on October 25, 2023.⁵⁷ Hence, all
5 else being equal, a high inflation rate leads to an overstated CAPM COE estimate due to the
6 elevated interest rate determined by Fed monetary policy.⁵⁸

7 **2. Capital Market Condition**

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

10 A. The capital market conditions are important for estimating COE because they
11 directly impact input values in COE models. A utility company’s cost of capital reflects its mix
12 of equity and debt financing, so it is affected by the equity and debt markets. For example,
13 equity market conditions have a direct impact on input values such as dividend yields in the
14 DCF model, and debt market conditions directly affect the input values such as the risk-free
15 rate of 30-Year Treasury bond yields in the CAPM method.

16 **2.1 Utility Equity Market**

17 Q. Please explain the current utility equity market conditions.

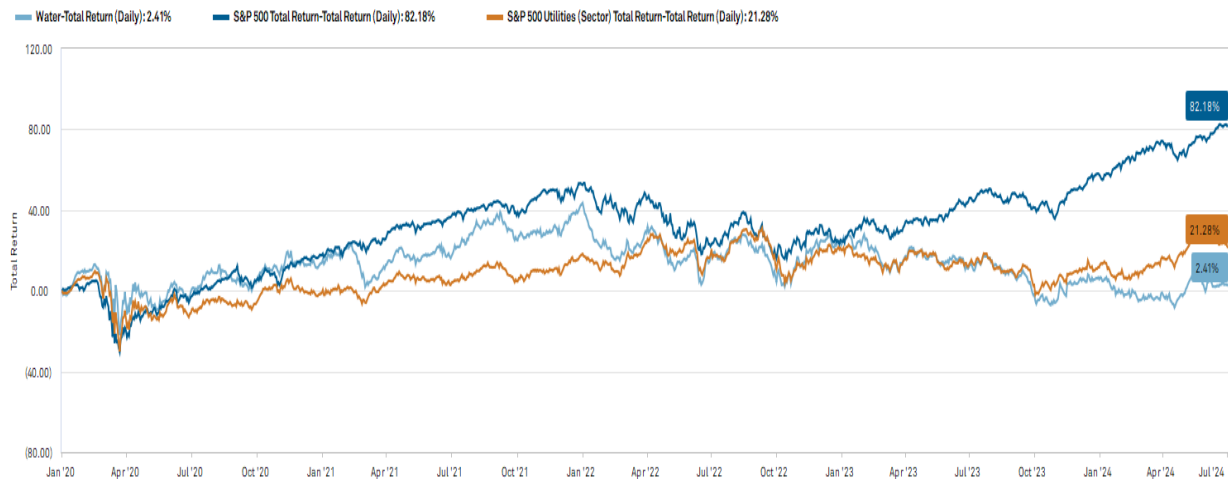
18 A. After the 2020 stock market crash caused by the COVID-19 pandemic, the
19 utilities sector underperformed the broader market. At the onset of the economic shutdown in
20 March 2020, the index-value of the Standard and Poor’s (“S&P”) 500 and the Dow Jones

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.

1 Industrial Average fell approximately 12.5% and 13.74%, respectively.⁵⁹ Since the beginning
2 of the COVID-19 recovery, utilities, including electric utilities, have underperformed the
3 market. This suggests that U.S. utility valuations remain relatively weak, even amid elevated
4 inflation, rising interest rates, and global geopolitical uncertainty. Figure 3 shows the volatility
5 experienced by the stock market since January 2020:

6 **Figure 3. Total Return 2020-2024⁶⁰**



7
8 The total return of the water utilities decreased from the point of reference on
9 December 31, 2019, to an approximate loss of twenty-two percent (-22%) by March 23, 2020.
10 It then rebounded to a gain of approximately forty-four percent (44%) by December 31, 2021,
11 only to fall back down to a loss of approximately seven percent (7%) by October 23, 2023 over
12 the point of reference on December 31, 2019. As of June 28, 2024, the total return for
13 water utilities reached approximately three percent (3%) over the point of reference on
14 December 31, 2019. A detailed analysis of the performance of the equity market since
15 January 2020 reveals tremendous volatility. After January 2023, as shown in Figure 3, there is

⁵⁹ S&P Capital IQ Pro.

⁶⁰ S&P Capital IQ Pro, Chart Builder.

1 a clear trend indicating that the S&P 500 Utility and water utilities underperformed the
2 S&P 500. As of July 1, 2024, the S&P 500, S&P 500 Utilities, and water utilities had
3 total returns of 82.18%, 21.28%, and 2.41%, respectively, over the point of reference on
4 December 31, 2019. S&P stated that the financial performance and ratings of U.S. public power
5 could weaken in 2024 due to a confluence of factors, including inflation and a developing trend
6 of weakening financial margins.⁶¹

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

9 A. The combined effect of the utility sector's incline in 2022 through 2024
10 following its unusual decline in 2020 and subsequent sluggish recovery is that the utility sector
11 has been relatively undervalued since the COVID-19 recession. As shown in Figure 3, the
12 average stock price for water utilities has underperformed compared to the S&P 500 Index.
13 A lower stock price, all else remaining the same, implies a higher COE estimate in the
14 DCF model.⁶²

15 2.2 Utility Debt Market

16 Q. Please explain the current utility debt market conditions.

17 A. The utility debt market has experienced significant volatility in terms of bond
18 yield changes. Average public utility bond yields decreased from 4.48% in January 2019 to
19 2.76% in August 2020.⁶³ However, this downward trend in public utility bond yields reversed

⁶¹ S&P Capital IQ Pro, U.S. Public Power and Electric Cooperative Utilities 2024 Outlook: Mandates, Rising Costs, And Diminishing Affordability, published January 23, 2024.

<https://www.spglobal.com/ratings/en/research/articles/240123-u-s-public-power-and-electric-cooperativeutilities-2024-outlook-mandates-rising-costs-and-diminishing-aff-12968567>.

⁶² The relationship between stock price and DCF COE will be explained in the section of DCF.

⁶³ Schedule KM-d4-1, Malki's Workpaper.

1 after the Fed initiated its Treasury bond-buying activity.⁶⁴ Between March 2022 and July 2023,
2 the Fed raised the target range for the federal funds rate 525 basis points, followed by lowering
3 it 50 basis points in September of 2024 to its current level between 4.75% and 5.00%.⁶⁵
4 Consequently, public utility bond yields increased by 362 basis points to a high of 6.38% in
5 October 2023 compared to the low of 2.76% yield in August 2020 with the current bond yield
6 of 5.65% as of June 2024.⁶⁶

7 **IV. CORPORATE ANALYSIS**

8 Q. Please provide the corporate profile of MAWC.

9 A. MAWC provides water and wastewater services to residential customers in
10 Missouri. MAWC was formerly known as The Saint Joseph Water Company and changed its
11 name to MAWC in December 1983.⁶⁷ MAWC was incorporated in 1879 as the Saint Joseph
12 Water Company and is headquartered in St. Louis, Missouri. As of August 31, 1993, MAWC
13 has operated as a subsidiary of AWWC. MAWC does not have any published independent
14 ratings from the major credit agencies. As of December 31, 2023, MAWC provides service to
15 443,370 customers, all in Missouri.⁶⁸

16 Q. Please provide the corporate profile of AWWC.

17 A. AWWC, formerly known as American Water Works & Guarantee Company
18 (founded in 1886), reorganized and changed its name in 1947 to AWWC.⁶⁹ Per the AWWC

⁶⁴ Brookings, The Hutchins Center Explains, <https://www.brookings.edu/research/fed-response-to-covid19/>.

⁶⁵ Forbes Advisor, Federal Funds Rate History 1990 to 2023, updated Sep 18, 2024,
<https://www.forbes.com/advisor/investing/fed-funds-rate-history/>.

⁶⁶ Schedule KM-d4-1, Malki's Workpaper

⁶⁷ S&P Intelligence IQ Pro.

⁶⁸ Staff's Data Request No. 0067.

⁶⁹ American Water Works Company website; <https://www.amwater.com/corp/faqs>.

1 corporate website, as of the first quarter of 2023, AWWC has 6,500 employees to provide
2 services to more than 14 million people in 14 states and 18 military installations.⁷⁰

3 Q. How is American Water Capital Corporation (“AWCC”) related to AWWC
4 and MAWC?

5 A. AWCC is a wholly-owned subsidiary of AWWC that was created for the special
6 purpose of serving as the primary funding vehicle for AWWC and its subsidiaries. AWCC
7 issues debt financing, which in turn loans those proceeds to AWWC subsidiaries through
8 internal loan agreements. MAWC is dependent upon its loan agreements with AWCC for the
9 majority of MAWC’s debt financing.⁷¹

10 Q. What are the credit ratings for MAWC, AWCC, and AWWC?

11 A. MAWC does not have a public credit rating as a stand-alone entity. MAWC has
12 obtained Private Monitored Unsecured Credit Ratings of ** [REDACTED] ** and ** [REDACTED] **, from
13 Moody’s and S&P, respectively.⁷² These ratings are higher than or equal to my proxy water
14 utilities’ average bond ratings ‘Baa1’ and ‘A’ characterized by Moody’s and S&P,
15 respectively.⁷³

16 AWWC and AWCC are currently rated by Moody’s and S&P. The corporate credit
17 ratings publicly assigned to both AWWC and AWCC by Moody’s and S&P are ‘Baa1’ and ‘A’,
18 respectively.⁷⁴ Although AWWC and AWCC are assigned individual credit ratings, because
19 AWCC’s purpose is to manage and issue financing for AWWC, Staff understands that the credit
20 quality of AWCC is based on AWWC’s consolidated credit quality.

⁷⁰ Ibid.

⁷¹ Staff’s Data Request No. 0038.

⁷² Staff’s Data Request No. 0053.

⁷³ S&P Capital IQ Pro, retrieved September 12, 2022; <https://www.capitaliq.spglobal.com>.

⁷⁴ S&P Capital IQ Pro, retrieved August 31, 2022; <https://www.capitaliq.spglobal.com>.

1 Because MAWC's credit rating is not publicly available, and it is a wholly-owned
2 subsidiary of AWWC, and it is primarily dependent upon AWCC (which is dependent upon
3 AWWC's consolidated credit quality) for debt financing, MAWC is effectively dependent upon
4 AWWC's consolidated credit rating.

5 **V. CAPITAL STRUCTURE**

6 Q. Why is it important to determine a company's correct capital structure in rate
7 making proceedings?

8 A. Capital structure has a direct correlation on a company's ROE and as a result,
9 recommended ROR. If the wrong capital structure is used, it could cause an overstated or
10 understated ROR result that could either negatively affect the company's ability to operate or
11 the rate payers.

12 Q. What capital structure did MAWC witnesses, Mr. Furia and Ms. Bulkley,
13 propose?

14 A. MAWC's witnesses developed and proposed an MAWC pro forma stand-alone
15 capital structure forecasting a thirteen months average ending May 31, 2026, composed of
16 50.54% common equity and 49.46% long-term debt.⁷⁵

17 Q. What are Staff's concerns with Mr. Furia's and Ms. Bulkley's proposed
18 capital structure?

19 A. Staff's concern with the capital structure proposed by Mr. Furia and Ms. Bulkley
20 is that the capital structure does not reflect MAWC's actual financial risk profile. Staff asserts
21 the following reasons for why the capital structure proposed by MAWC does not reflect

⁷⁵ Page 5, Lines 6-10, Furia's Direct Testimony.

1 MAWC's actual financial risk profile and should not be used for the purposes of determining a
2 recommended ROE:

- 3 1. MAWC's proposed capital structure is a forecasted capital structure;
- 4 2. MAWC is not viewed, nor financially managed, as an independent operating
5 company; and,
- 6 3. Staff disagrees with the range of reasonable capital structures determined by
7 MAWC's proxy selection.

8 Q. Why does Staff believe that MAWC is not a financially independent
9 operating company?

10 A. Ms. Bulkley argues that the pro-forma capital structure is reflective of the way
11 MAWC is operated, and that it represents the financing of MAWC's rate base assets and
12 operating costs.⁷⁶ Ms. Bulkley further states that the capital structure reflects the financial risk
13 profile of MAWC⁷⁷ due to the capital structure being reflective of the way MAWC is
14 operated.⁷⁸

15 Despite Ms. Bulkley stating this, MAWC is not viewed, nor financially managed, as an
16 independent operating company with capital costs based on its stand-alone business risk and
17 financial risk. In fact, MAWC is not publicly rated by any of the rating agencies. The *Bluefield*
18 and *Hope* cases set an appropriate return for a utility to be that return that allows the utility to
19 attract capital in the capital market. However, MAWC receives almost all of its debt financing
20 from AWWC's financing subsidiary, AWCC.⁷⁹ The cost of debt issued by AWCC is based on
21 AWWC's consolidated risk profile, which includes both AWWC's business and financial risk

⁷⁶ Pages 69-70, Bulkley's Direct Testimony.

⁷⁷ Page 70, Lines 7-10, Bulkley's Direct Testimony.

⁷⁸ Page 69, Lines 18-19, Bulkley's Direct Testimony.

⁷⁹ Staff Data Request No. 0038.

1 because the responsibility for payment of the debt AWCC obtains ultimately rests with
2 AWWC.⁸⁰ AWWC's financial risks and business risks are the basis for the 'Baa1' and 'A'
3 ratings currently assigned by Moody's and Standard & Poor's,⁸¹ respectively, to AWWC, and
4 the debt issued by AWCC and loaned internally to MAWC.⁸² Although there are internal loan
5 documents between MAWC and AWCC,⁸³ when debt investors are determining the required
6 return on the debt, they evaluate the amount of leverage in AWWC's capital structure, not the
7 capital structure of AWCC or MAWC due to both being one hundred percent owned
8 subsidiaries of AWWC.⁸⁴

9 The most recently independently obtained debt, outstanding on MAWC's books, is
10 approximately \$10 million obtained through the Missouri Department of Natural Resources on
11 March 10, 2022.⁸⁵ This equates to less than 3% of MAWC's debt being independently obtained
12 or issued by MAWC as of Q1 2024.⁸⁶ In contrast, over 98% of MAWC's outstanding debt
13 since January 1, 2022, through June 30, 2024, has been obtained from AWWC or its affiliates.⁸⁷

14 The implication is that MAWC's standalone capital structure does not properly reflect
15 MAWC's real cost of capital for assessing its financial risk and that MAWC does not need to
16 manage its financial risk to appease potential debt investors. Considering that MAWC is a
17 private corporation, wholly owned by AWWC⁸⁸ and that over 98% of MAWC's long-term debt

⁸⁰ Staff Data Request No. 0037.

⁸¹ S&P Capital IQ Pro, retrieved July 22, 2024; <https://www.capitaliq.spglobal.com>.

⁸² Staff Data Request No. 0037.

⁸³ Ibid.

⁸⁴ S&P Capital IQ Pro; <https://www.capitaliq.spglobal.com>.

⁸⁵ Staff Data Request No. 0037.

⁸⁶ Ibid.

⁸⁷ Staff Data Request No. 0037.

⁸⁸ Staff Data Request No. 0005.

1 since 2022 has been obtained from AWCC,⁸⁹ a subsidiary of AWWC, it is more proper to use
2 AWWC's consolidated capital structure for MAWC's ratemaking capital structure.

3 Q. What are Staff's concern's on Ms. Bulkley's range of reasonable
4 capital structures?

5 A. Ms. Bulkley argues that the pro-forma capital structure is within the established
6 range of the capital structures of the proxy group selected,⁹⁰ between 44.57% to 59.79%
7 common equity ratios with an average of 53.50%.⁹¹ Ms. Bulkley also stated that if the
8 Commission is going to rely on the proxy group of companies to establish an ROE for MAWC,
9 the equity ratio for MAWC, being a measure of the financial risk of the company, should also
10 be similar to the proxy group.⁹² Though Staff does not disagree that the Capital Structure used
11 for ratemaking for MAWC should properly measure the financial risk of the company and
12 similar proxy companies, Staff has serious concerns with Ms. Bulkley's proxy group selection,
13 which will be addressed in the Proxy Group section of this testimony.

14 Q. What issues did Staff consider to determine its capital structure for MAWC?

15 A. Staff first considered which capital structure should be used for the purpose of
16 ratemaking in this proceeding: the parent company AWWC's consolidated capital structure or
17 the operating company MAWC's standalone capital structure. Second, Staff considered
18 whether to use an actual current capital structure or a hypothetical or targeted future capital
19 structure. To make a proper recommendation on these issues, Staff reviewed the financial
20 relationship between AWWC and MAWC, as well as both companies' historical, current, and
21 targeted capital structures.

⁸⁹ Staff Data Request No. 0037.

⁹⁰ Page 70, Lines 1-3, Bulkley's Direct Testimony.

⁹¹ Page 71, Lines 15-16, Bulkley's Direct Testimony.

⁹² Page 70, Lines 17-19, Bulkley's Direct Testimony.

1 Q. What capital structure has Staff recommended for MAWC for the purpose of
2 ratemaking in previous general rate cases?

3 A. In MAWC's last four general rate cases, Case Nos. WR-2022-0303,
4 WR-2020-0344, WR-2017-0285, and WR-2015-0301, Staff has consistently recommended the
5 Commission use AWWC's capital structure for MAWC's ratemaking capital structure. There
6 has not been any discernible change to MAWC's or AWWC's capital structure policy since the
7 last rate case to cause Staff to change its recommendation.

8 Q. Why does Staff recommend using AWWC's capital structure for the purpose of
9 ratemaking as opposed to using MAWC's capital structure?

10 A. The following are Staff's reasons for recommending AWWC's capital structure
11 for the purpose of ratemaking:

- 12 1. MAWC does not operate as a financially independent entity;
- 13 2. MAWC's stand-alone capital structure does not support its own public
14 credit rating;⁹³
- 15 3. The business risks of AWWC are similar to those of MAWC in terms of sector
16 risk; and
- 17 4. AWWC can take on greater leverage than MAWC.

18 Q. Why does Staff believe MAWC does not operate as a financially
19 independent entity?

20 A. MAWC does not operate as an independent entity when considering MAWC's
21 procurement of financing and the cost of that financing. For example, MAWC has a Financial
22 Services Agreement with AWCC through which AWCC arranges short-term borrowings and

⁹³ S&P Capital IQ Pro.

1 performs cash management for MAWC.⁹⁴ Under the cash management program, operating
2 cash surpluses and deficits of each participating AWWC affiliate are lent to or borrowed from
3 AWCC on a daily basis, showing heavy integration of MAWC's financial management with
4 AWWC's other operations. While MAWC obtained a 20 year loan from the Missouri
5 Department of Natural Resources ("DNR") for more than \$10 million on March 10, 2022,⁹⁵
6 this accounts for roughly less than 1% of MAWC's currently outstanding long-term debt as of
7 Q3 2024.⁹⁶ AWCC has been and continues to be the primary source of long-term and short-term
8 debt financing for MAWC.⁹⁷ As of June 30, 2024, more than 98 percent of the long-term debt
9 issued since January 1, 2022, was obtained by means of debt issuances by AWCC.⁹⁸
10 Additionally, all of MAWC's equity financing since January 1, 2022 came from AWWC.

11 Q. Why does MAWC's stand-alone capital structure not support its own public
12 credit rating?

13 A. MAWC's stand-alone capital structure does not support its own public credit
14 rating.⁹⁹ MAWC obtains Private Monitored Unsecured Credit Ratings from Moody's and
15 S&P.¹⁰⁰ Debt issued by AWCC is rated by credit rating agencies based on the consolidated
16 credit quality of AWWC. Therefore, the cost of any debt that MAWC receives from AWCC is
17 based on the consolidated creditworthiness of AWWC (i.e., the business risk and financial risk
18 associated with AWWC's consolidated operations).

⁹⁴ See Financial Service Agreement, attached as Appendix 2 to MAWC's Application filed in Case No. WF-2002-1096.

⁹⁵ Staff's Data Request No. 0048.

⁹⁶ Staff's Data Request No. 0037.

⁹⁷ Ibid.

⁹⁸ Staff's Data Request Nos. 0038 & 0049.

⁹⁹ S&P Capital IQ Pro.

¹⁰⁰ Staff's Data Request No. 0053.

1 Q. Why does Staff indicate that the business risks of AWWC are similar to those
2 of MAWC in terms of sector risk?

3 A. AWWC is primarily a regulated water distribution utility, meaning the business
4 risks of AWWC are similar to those of MAWC in terms of sector risk. If the business risks of
5 the parent company are similar to those of the subsidiary, then each entity should be able to
6 incur similar amounts of financial risk. Presumably, this should cause their capital structures
7 to be fairly similar. Because AWWC's consolidated operations drives the cost of debt and
8 equity capital, AWWC's capital structure is the capital structure that will be analyzed by
9 investors when determining the required ROR for debt issued by AWCC and equity issued by
10 AWWC. AWWC's SEC Form 10-K and 10-Q filings indicate that AWWC's debt percentage
11 in its capital structure has continued to average approximately 56.10% from Q4 2022 through
12 June 30, 2024, staying fairly consistent between a low of 54.01% to a high of 59.29%.¹⁰¹
13 In contrast, MAWC reported an average of approximately 47.40% debt in its capital structure
14 from Q4 2022 to Q2 2024, with the lowest being 45.28% and the highest value being 49.25%.¹⁰²
15 Not only would it be unreasonable and inappropriate to use MAWC's standalone capital
16 structure to set MAWC's ROR, it would be more costly for ratepayers because of the higher
17 equity ratio in MAWC's capital structure.

18 Further, due to diversified equity investments in subsidiaries, it is reasonable to assume
19 that AWWC can take on greater leverage than MAWC because of its lesser financial and
20 business risk. Staff notes that it is not always appropriate to use the parent company's cost of

¹⁰¹ Schedule KM-d5-2, Malki's Direct / Rebuttal Testimony.

¹⁰² Ibid.

1 common equity if the parent company's risk profile is significantly different from that of its
2 regulated subsidiaries.

3 Q. Please explain the financial relationship between AWWC and MAWC regarding
4 capital structure for the purpose of ratemaking in this proceeding.

5 A. MAWC does not operate as a financially independent entity, when considering
6 MAWC's procurement of financing and the cost of that financing. AWWC has been the primary
7 source of long-term financing for MAWC and this continues to be the case. As of
8 March 31, 2024, 97.4% of MAWC's long-term debt issued since January 1, 2022, was received
9 by means of debt issuances by AWWC. The remaining 2.6% of long-term debt was obtained
10 by MAWC through the Missouri Department of Natural Resources, funded by Drinking Water
11 Refunding Revenue Bonds (State Revolving Funds Program).¹⁰³ On May 15, 2024, MAWC
12 obtained two additional notes issued through AWWC totaling \$230,000,000.¹⁰⁴

13 MAWC has also received equity infusions directly from AWWC. AWWC assets do
14 not secure MAWC debt and MAWC assets do not secure AWWC debts.¹⁰⁵ The MAWC Board
15 of Directors is responsible for final financing decisions involving MAWC.¹⁰⁶

16 Q. Have MAWC and AWWC indicated to Staff that they would target specific
17 capital structures in the future?

18 A. Yes. MAWC strives to maintain a consistent equity ratio above 50% since 2012.
19 In order to do that, MAWC develops its financing plans to support its operating and capital
20 plans in consideration of cash flows and liquidity needs for a capital structure and overall cost

¹⁰³ Staff's Data Request No. 0038.

¹⁰⁴ Staff's Data Request No. 0049.

¹⁰⁵ Staff's Data Request No. 0037.1.

¹⁰⁶ Staff's Data Request No. 0040.

1 of capital that would be consistent for their business risk profile.¹⁰⁷ In addition, AWWC's
2 investor presentation showed its target long-term debt ratio to be less than 60%, indicating a
3 targeted long-term equity ratio of greater than 40% for its capital structure.¹⁰⁸

4 Q. What are the actual capital structures of MAWC and AWWC?

5 A. MAWC's capital structure as of June 30, 2024, is approximately 50.78%
6 common equity and 49.22% long-term debt, while AWWC's capital structure consists of
7 approximately 43.60% common equity, 0.01% preferred stock, and 56.38% long-term debt.
8 Table 2 below shows the average capital structures of MAWC and AWWC for Q4 2022 through
9 Q2 2024. As seen in Table 2, the average equity ratios for Q4 2022 through Q2 2024 were
10 approximately 52.60% and 43.89% for MAWC and AWWC, respectively:

11 **Table 2. Comparison Average Capital Structure Q4 2022 – Q2 2024¹⁰⁹**

	<u>MAWC</u>	<u>AWWC</u>
Common	52.60%	43.89%
Preferred	0.00%	0.01%
Long-Term Debt	47.40%	56.10%
	100.00%	100.00%

12
13 Q. What is Staff's recommended capital structure for MAWC in this proceeding?

14 A. Considering MAWC's financial relationship with AWWC, Staff recommends
15 the Commission set MAWC's ROR based on AWWC's capital structure. The capital structure
16 Staff used for its analysis in this case is AWWC's actual capital structure, as of June 30, 2024,

¹⁰⁷ Staff's Data Request No. 0041.

¹⁰⁸ Ibid.

¹⁰⁹ KM-d5-2, Malki's Direct / Rebuttal Testimony and Staff Data Request Nos. 0055 & 0055.1.

1 and set MAWC's ratemaking capital structure to be composed of 43.60% common equity,
2 0.01% preferred stock, and 56.38% long-term debt.¹¹⁰ The actual capital structure most
3 accurately represents the proper ratemaking structure and reflects the composition upon which
4 debt and equity financing will be based. Schedules KM-d5-1 and KM-d5-2 present AWWC
5 and MAWC's historical capital structures and the associated capital ratios. Staff will continue
6 to monitor AWWC's and MAWC's updated capital structures through the end of the true-up
7 period (December 31, 2024), and will update its final recommendation to actual values at
8 that time.

9 **VI. RATE OF RETURN**

10 Q. What is Ms. Bulkley's proposed ROE for MAWC in this proceeding?

11 A. Ms. Bulkley proposed an ROE of 10.75%, within a range of 10.25% to 11.25%,
12 for use in this proceeding.¹¹¹

13 Q. How did Ms. Bulkley determine her proposed ROE?

14 A. Ms. Bulkley determined her proposed ROE from a range of the results of her
15 COE estimates. Ms. Bulkley calculated a COE estimate range of 8.72% to 11.94%.¹¹² For her
16 proposed ROE, Ms. Bulkley considered company-specific risk factors along with current and
17 prospective capital market conditions and investors' return requirements.¹¹³ Ms. Bulkley did
18 not, however, precisely state her procedure for selecting the recommended ROE point
19 estimation of 10.75%, or the ends of her reasonable ROE range of 10.25% to 11.25% from
20 within her COE estimate range of 8.72% to 11.94%.¹¹⁴

¹¹⁰ KM-d6, Malki's Direct / Rebuttal Testimony

¹¹¹ Page 8, Lines 22-23, Bulkley's Direct Testimony.

¹¹² Page 76, Figure 14, Bulkley's Direct Testimony.

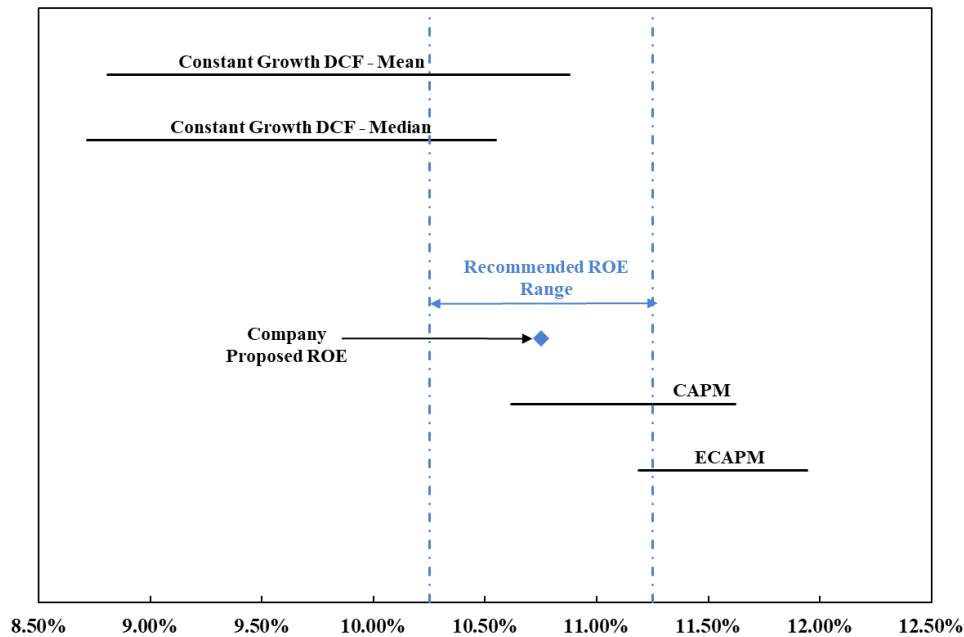
¹¹³ Page 5-6, Bulkley's Direct Testimony.

¹¹⁴ Page 7, Figure 1 and Page 76, Figure 14, Bulkley's Direct Testimony.

1 Q. How did Ms. Bulkley estimate her COE?

2 A. Ms. Bulkley applied COE estimation models such as constant-growth DCF,
3 the CAPM, and the ECAPM to her water and natural gas utility proxy group.¹¹⁵ Ms. Bulkley's
4 estimated COE for each analysis method and proposed ROE are summarized in Figure 4:

5 **Figure 4. Ms Bulkley's COE Estimates and Proposed ROE¹¹⁶**



6

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

8 A. Staff's concern is that Ms. Bulkley's proposed ROE of 10.75% is too high
9 compared to the national average authorized ROE of 9.49% in water utility rate cases completed
10 in the first seven months of 2024.¹¹⁷ As Ms. Bulkley recognized, an authorized ROE
11 significantly below authorized ROEs for other water utilities can inhibit a utility's ability to

¹¹⁵ Pages 3-4, Ann E. Bulkley Direct Testimony.

¹¹⁶ Schedule AEB-1, Bulkley's Direct Testimony.

¹¹⁷ S&P Capital IQ Pro, Retrieved on July 30, 2024.

1 attract capital for investment.¹¹⁸ The opposite is also true: an authorized ROE significantly
2 higher than authorized ROEs for other water utilities, while perhaps conferring an advantage in
3 the attraction of capital, is unfair to the ratepayers and inherently unjust and unreasonable.

4 Ms. Bulkley's recommended ROE is based on her overstated COE estimates.
5 Ms. Bulkley presented unreasonable COE estimation procedures using exaggerated input
6 values for her COE estimation models. Ms. Bulkley utilizes a variety of data sources and
7 analysis methods to produce inflated input values. The following summarizes the steps that led
8 to Ms. Bulkley's overestimation of her COE:

- 9 1. Selecting inappropriate biased data,
- 10 2. Producing overestimated input values, and,
- 11 3. Utilizing inadequate estimation methods.

12 Staff will describe how each of Ms. Bulkley's COE estimates are overstated by
13 presenting detailed investigation results later in this testimony.

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

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

¹¹⁸ Page 10, Lines 21-22, Ann E. Bulkley Direct Testimony, Case No. WR-2024-0320.

1 **1. Proxy Group**

2 Q. What is Ms. Bulkley’s proxy group for estimating MAWC’s COE?

3 A. Ms. Bulkley selected five water utilities, five natural gas distribution companies,
4 and one electric company classified by Value Line as water, natural gas, and electric utilities,¹¹⁹
5 respectively, for her proxy group for estimating MAWC’s COE. These are listed in
6 Table 3 below:

7 **Table 3. Ms. Bulkley’s Proxy Group**

Natural Gas & Electric Utilities Name	Symbol	Credit Rating¹	Average Beta²
Atmos Energy Corporation	ATO	A-	0.84
Eversource Energy	ES	A-	0.94
NiSource Inc.	NI	BBB+	0.93
Northwest Natural Gas Company	NWN	A	0.84
ONE Gas, Inc.	OGS	A-	0.84
Spire, Inc.	SR	A-	0.85
Natural Gas & Electric Utilities Average		A-	0.87
Water Utilities Name			
American States Water Company	AWR	A	0.69
California Water Service Group	CWT	A+	0.74
Essential Utilities, Inc.	WTRG	A	0.99
Middlesex Water Company	MSEX	A	0.74
SJW Group	SJW	A-	0.84
Water Utilities Average		A	0.80

8

9 Q. What is Staff’s concern with Ms. Bulkley’s proxy group?

10 A. Staff’s concern is that Ms. Bulkley’s proxy group includes natural gas
11 distribution and electric companies. Staff found that the natural gas distribution and electric
12 companies are not comparable to water utilities for inclusion in a proxy group used to estimate

¹¹⁹ The Value Line Investment Survey: Ratings & Reports.

1 the COE for a water utility. Because natural gas distribution and electric companies are
2 included in Ms. Bulkley's COE estimates, her estimations are overstated.

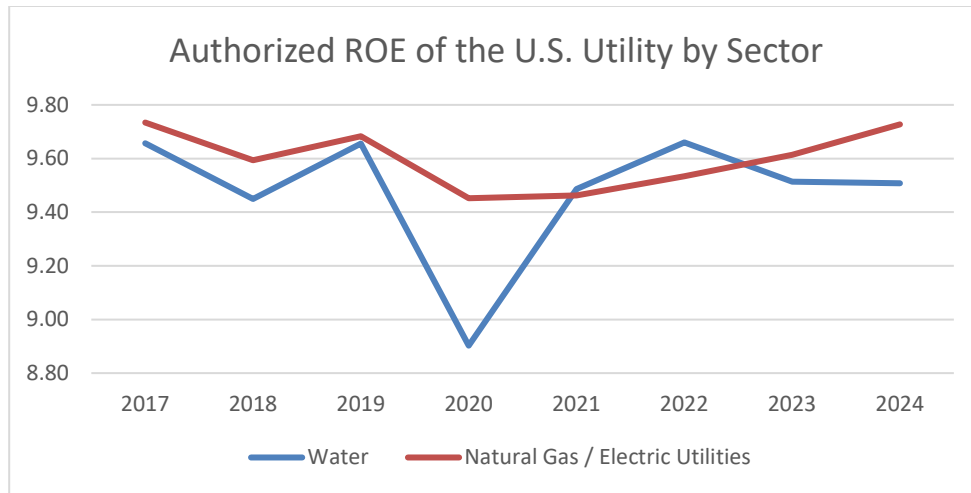
3 Q. Why are natural gas distribution and electric companies not comparable to
4 water utilities?

5 A. As displayed in Table 3 above, the average beta for Ms. Bulkley's natural gas
6 distribution and electric utility proxy companies is higher than that of her proxy water utility
7 companies.¹²⁰ In addition, the average credit rating for the natural gas distribution and electric
8 utility proxy companies is lower than the average credit rating for her proxy water utility
9 companies. Both of these items (credit rating and beta) indicate that the gas/electric proxy
10 group is riskier than the water utility proxy group. For example, the group of water utility
11 companies have an average credit rating and beta of A and 0.80, whereas the group of natural
12 gas and electric utility companies have an average credit rating and beta of A- and 0.87.
13 Therefore, Ms. Bulkley's inclusion of gas and electric companies with lower credit ratings and
14 higher betas, which indicate that they are riskier companies and/or industries requiring higher
15 returns, causes her COE estimation results to be upwardly biased.

16 Additionally, natural gas and electric distribution utilities appear to have more business
17 risk than water utilities, which leads to higher COE estimates for gas and electric distribution
18 utilities than water utilities. The comparison of historical authorized ROEs from 2014 to 2024
19 between water utilities and natural gas and electric distribution companies are presented
20 in Figure 5:

¹²⁰ A higher beta means a higher risk and requires a higher return.

Figure 5. Authorized ROE Comparison: Water vs. Natural Gas & Electric



As seen in Figure 5, gas and electric distribution companies have had, with only a couple of exceptions, authorized ROEs above those of water utilities for most of the period between 2017 and 2024. Another thing to note in this figure is the large variability in authorized ROEs for water utilities. Average authorized ROEs for natural gas and electric distribution companies show a more stable trend above 9.40% as compared to the average authorized ROEs for water utilities, which bottomed out at 8.90%. From 2017 through 2024, the average authorized ROEs for water utilities have been less than that for natural gas and electric utilities for six of the eight years. Including natural gas and electric distribution companies in the proxy group introduced an upward bias in Ms. Bulkley’s authorized ROE estimation.

Q. What is the evidence of upward bias in Ms. Bulkley’s COE estimates because of proxy group selection?

A. To show the upward bias introduced by including gas and electric utilities in the proxy group, Staff conducted a comparison analysis between the results for Ms. Bulkley’s water, gas, and electric utility COE estimates. Table 4 below presents Ms. Bulkley’s DCF COE estimates for water, gas, and electric utilities:

Table 4. Average COE Comparison between Water, Natural Gas, and Electric

	<u>Water</u>	<u>Natural Gas/Electric</u>
Constant Growth DCF		
30-Day Average	9.71%	10.02%
90-Day Average	9.71%	9.98%
180-Day Average	9.66%	9.94%
Constant Growth Average	9.69%	9.98%

As seen in Table 4, average DCF COE estimates for natural gas and electric utilities are consistently higher than average DCF COE estimates for water utilities.

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

A. Staff used a proxy group consisting of U.S. utilities that the Value Line Investment Survey ("Value Line") classifies as water utilities.¹²¹ Staff screened thirty-eight (38) companies for the 15 following criteria:

- Stock publicly traded;
- Have more than five years of financial data available;
- At least investment grade credit rating from major U.S. credit rating agencies;
- Long-term growth rates from at least two sources;
- Positive dividend payout since 2019;
- At least 60% of regulated income from water & wastewater utility operations; and,
- At least 60% of assets from water & wastewater utility operations.

¹²¹ The Value Line Investment Survey:
https://research.valueline.com/secure/research#list=industry_Water+Utility&sec=list.

1 Q. What is Staff’s water proxy group for its ROR analysis?

2 A. The six (6) water utilities that met these criteria are in Table 5 below:

3 **Table 5. Water Utility Proxy Group**

Water Utility Companies	Ticker
American States Water Co	AWR
American Water Works Company Inc.	AWK
California Water Service Group	CWT
Essential Utilities Inc.	WTRG
Middlesex Water Company	MSEX
SJW Group	SJW

4

5 The detailed screening procedure and results, utilizing the above criteria, are presented
6 in Schedules KM-d9 and KM-d10.

7 **2. Cost of Common Equity**

8 Q. Please explain how Staff conducted its COE estimation.

9 A. Staff conducted its COE estimation for MAWC by examining the market data
10 of the second quarter of 2024 (“Q2 2024”) using the proxy group of water utility companies as
11 shown in Table 5. The analysis Staff used to estimate MAWC’s COE consisted of Staff’s DCF
12 COE and CAPM COE analyses. These two analyses are widely accepted in the financial
13 industry as a means to determine a fair and reasonable rate of return for regulated utility
14 companies.¹²² Staff agrees with the Federal Energy Regulatory Commission (“FERC”) that
15 conducting the COE analysis using DCF and CAPM is the most appropriate method for
16 generating a composite zone of reasonableness to determine the recommended ROE to be

¹²² *Ass’n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶61,129 (2019).

1 presented to the Commission for MAWC.¹²³ Staff used the result of a BYPRP method to
2 recommend an authorized ROE comparable to the reasonable range of COEs for the proxy
3 group, as determined through its DCF and CAPM analyses.

4 **3. DCF**

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

6 A. Ms. Bulkley used unreasonably high growth rates in her constant-growth DCF,
7 which overstated her COE estimates. Ms. Bulkley used short-term analysts' projected earnings
8 growth rates from Value Line, Zacks Finance, and Yahoo! Finance in her constant-growth
9 DCF model.¹²⁴

10 Q. What is wrong with using analysts' short-term earnings growth rates?

11 A. Analysts' short-term earnings growth rates are not suitable for use in the
12 constant-growth DCF model. The DCF model uses the selected growth rate and anticipates that
13 growth will be maintained at that level in perpetuity. In using these analysts' growth rates in
14 the constant-growth DCF, Ms. Bulkley makes an unreasonable assumption that water utilities
15 will grow at these often high and precarious short-term growth rates in perpetuity. Analysts are
16 of the consensus that long-term growth rates for utilities will eventually converge to the level
17 of long-term GDP.¹²⁵ Staff has consistently held the view that while it is possible that a
18 company or industry may grow at a rate faster than GDP in the short to medium term,
19 no company or industry may do so indefinitely. Currently, the GDP is projected to grow at a

¹²³ *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").

¹²⁴ Page 46, Lines 10-13, Ms. Bulkley's Direct Testimony.

¹²⁵ Morin, R. A. (2006) *New Regulatory Finance*. Public Utilities Reports. Page 302.

1 long-term rate of 3.80% over the next 10 years,¹²⁶ making Ms. Bulkley's average projected
2 growth rate of 6.14% for her proxy too high and unrealistic.¹²⁷

3 Q. What else concerns Staff about Ms. Bulkley's DCF COE estimates?

4 A. Even though Ms. Bulkley's authorized ROE estimation methodology assumes
5 ROE is equal to COE,¹²⁸ her recommended authorized ROE does not reflect all of the results
6 of her DCF COE estimation (see Figure 4 on pg. 33). Ms. Bulkley's DCF COE results range
7 from 8.72% to 10.91%, yet her recommended authorized ROE ranges from 10.25%
8 to 11.25%.¹²⁹ It is unreasonable to exclude a series of results (153 basis points) less than her
9 selected range and not exclude an equally proportionate set of results (84 basis points¹³⁰) higher
10 than her selected range.

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

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

¹²⁶ Congressional Budget Office, The 2024 Long-Term Budget Outlook, Table 3-1, page 34, <https://www.cbo.gov/system/files/2024-03/59711-Long-Term-Outlook-2024.pdf>.

¹²⁷ AEB-3 Constant DCF, Bulkley's Direct Testimony.

¹²⁸ Page 3, Line 3, Bulkley's Direct Testimony.

¹²⁹ Schedule AEB-1, Bulkely's Direct Testimony.

¹³⁰ Ms. Bulkley's proposed ROE ranges from 10.25%-11.25%. The maximum number in her model estimations is 11.94%, which is only 69 basis points away from the maximum of her recommended range.

1
$$P = D / (k - g),$$

2 where P is the common stock price,

3 D is the current dividend,

4 k is investors' required return from the stock, and

5 g is the expected growth rate in dividends.

6 The common stock prices of Staff's proxy group in Q2 2024 are presented in Schedule
7 KM-d12. Staff uses an adjusted dividend yield $(1 + 0.5g)D$ to account for the fact that the
8 dividends are paid on a quarterly basis.¹³¹ For the growth rate, Staff used the average of
9 analysts' projected earnings per share ("EPS"), dividends per share ("DPS"), and book value
10 per share ("BVPS") and the projected nominal GDP growth rate.¹³² The average projective
11 growth rate in Q2 2024 for Staff's proxy group is 6.36%.¹³³ With the projected nominal GDP
12 growth rate of 3.80%,¹³⁴ the average long-term sustainable growth rate for the DCF model
13 is 5.85%.¹³⁵

14 It is important that the growth rate used in Staff's constant-growth DCF model reflects
15 the long-term investment horizon assumption implied in the constant-growth DCF model.
16 FERC also agreed as much when it ruled, in Opinion 569, that the exclusive use of analysts'
17 short-term growth rates in the constant-growth DCF was inappropriate.¹³⁶ The detailed

¹³¹ *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶61,129 (2019).

¹³² *Entergy Arkansas, Inc.*, Opinion No. 575, 175 FERC ¶61,136 (2021).

¹³³ Schedule KM-d11, Malki's Direct / Rebuttal Testimony.

¹³⁴ Congressional Budget Office, The 2024 Long-Term Budget Outlook, Table 3-1, page 34, <https://www.cbo.gov/system/files/2024-03/59711-Long-Term-Outlook-2024.pdf>.

¹³⁵ KM-d13, Malki's Direct / Rebuttal Testimony.

¹³⁶ *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶61,129 (2019).

1 procedure of the growth rate calculation for Staff’s DCF model is presented in
2 Schedule KM-d13.

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

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

4
5 Q. What is the result of the COE estimation using the DCF model?

6 A. For the current rate case, Staff’s DCF estimation of the COE for water utility
7 companies in its proxy group ranges from 7.85% to 9.05%, with an average DCF COE estimate
8 of 8.45%, based on the proxy group of electric utility companies presented in Table 5.¹³⁷ The
9 detailed calculation procedure of Staff’s DCF analysis is presented in Schedule KM-d13.

10 **4. CAPM**

11 Q. What is Staff’s concern with Ms. Bulkley’s CAPM estimates?

12 A. Ms. Bulkley used unreasonably high market risk premiums (“MRPs”) to
13 calculate her CAPM estimates. Ms. Bulkley’s MRPs of between 8.31% and 8.81% are 2.81%
14 to 3.31% higher than the industry’s estimates, which range from 5.0% to 6.0%.¹³⁸
15 Ms. Bulkley’s MRPs assume that U.S. capital markets will achieve nominal returns of 12.91%
16 per year, forever.¹³⁹ This is unrealistic given that historical data shows that from 1926 – 2023,
17 the geometric mean total returns for large U.S. stocks have been approximately 10.28%.¹⁴⁰ It is
18 even more unrealistic to expect nominal returns of 12.91% given that ongoing economic growth

¹³⁷ Schedule KM-d13, Malki’s Direct Testimony.

¹³⁸ For instance, the American Appraisal Risk Premium Quarterly, Value Line, and Duff & Phelps calculated forward-looking risk premiums of 6.0%, 5.5%, and 5.0%, respectively. According to 2024 survey research, the average of MRP estimates for the U.S. is 5.50% within a range of 5.3% to 5.7% since 2011. FERC Opinion No. 569, 169 FERC ¶ 61,129 (<https://www.ferc.gov/media/e-4-e114-12-016>) and Statista, Published June 17, 2024, and retrieved October 28, 2024; <https://www.statista.com/statistics/664840/average-market-risk-premiumusa/#:~:text=The%20average%20market%20risk%20premium%20in%20the%20United,hovered%20between%205.3%20and%205.7%20percent%20since%202011.>

¹³⁹ MRP = U.S. capital market returns 30-year government bond yields.

¹⁴⁰ Malki’s MRP SBBI Workpaper

1 is not expected to be higher than the projective growth rate of 6.36%.¹⁴¹ In March of 2024, the
2 Congressional Budget Office projected a nominal GDP growth rate of 4.0% over the next ten
3 years.¹⁴² It is irrational to expect future returns to be greater than the historical returns under
4 conditions of slower current economic growth.

5 Q. How did Ms. Bulkley calculate the market return of 12.91% within her
6 CAPM estimates?

7 A. Ms. Bulkley calculated the total return estimate for the market of 12.91% using
8 a dividend yield for the S&P 500 of 1.72% adjusted by multiplying by 0.5 plus a growth rate
9 for the S&P 500 of 11.09%. This is the same formula, but not the same inputs, used by FERC
10 to determine market returns.¹⁴³ The assumed growth rate for the S&P 500 of 11.09% is not
11 consistent with FERC's assumptions. FERC accepted a procedure that screened out growth
12 rates for individual companies smaller than negative 20% or in excess of 20% from
13 consideration in CAPM analysis.¹⁴⁴ Such growth rates are considered unsustainable and not
14 representative of U.S. market growth rates.¹⁴⁵ Ms. Bulkley's CAPM analysis included certain
15 companies with extreme growth rate values that would be screened out under current
16 FERC policy.

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

18 A. Typical historical MRPs are between 4.54% for geometric mean and 5.94% for
19 arithmetic mean.¹⁴⁶ For a multitude of reasons such as regulatory influence and different

¹⁴¹ Schedule KM-d11, Malki's Direct Testimony.

¹⁴² Congressional Budget Office, The 2024 Long-Term Budget Outlook, Table 3-1, page 34, <https://www.cbo.gov/system/files/2024-03/59711-Long-Term-Outlook-2024.pdf>.

¹⁴³ Opinion No. 531-B, 150 FERC ¶ 61,165 at P 113.

¹⁴⁴ *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Opinion No. 569, 169 FERC ¶ 61,129 (2019).

¹⁴⁵ Richard A. Brealey and Stewart C. Myers, *Principles of Corporate Finance*, 68 (7th ed. 2003).

¹⁴⁶ Malki's MRP SBBI Workpaper.

1 estimation methods, there is a wide variety of MRP estimates. For instances, the American
2 Appraisal Risk Premium Quarterly, Value Line, and Duff & Phelps calculated MRPs of 6.0%,
3 5.5%, and 5.0%, respectively.¹⁴⁷ According to 2024 survey research, the average MRP for 2023
4 was 5.5%, with the premium hovering between 5.3% and 5.7% since 2011.¹⁴⁸ All of these
5 numbers show that Ms. Bulkley's MRPs ranging from 8.31% to 8.81%¹⁴⁹ are too high
6 and unrealistic.

7 Q. What is the other reason Ms. Bulkley's CAPM COE estimates are overstated?

8 A. The Value Line Beta used for Ms. Bulkley's CAPM COE estimations show as
9 understated values for her electric and natural gas proxy, while they appear overstated for her
10 water utility proxy versus the currently available beta values available from Value Line. Having
11 the correct beta is crucial for estimating a COE. In CAPM, the use of beta allows for the
12 calculation of a risk-adjusted return by balancing market-wide and asset-specific factors.
13 For investors, accurately estimating beta is essential in aligning the expected return with the
14 asset's actual risk profile. Miss-estimation of the beta could potentially lead to either
15 overestimating or underestimating fair returns which could disadvantage either the company or
16 the rate payers. Adjusting the Value Line Beta values to the most currently available values as
17 of Q2 2024, increases the average Value Line Beta value for Ms. Bulkley's Water proxy group
18 by an average of 0.06, with the largest change being an increase of 0.20 for the beta for
19 Middlesex Water Company. Conversely, this adjustment lowers the average Value Line Beta

¹⁴⁷ FERC Opinion No. 569, 169 FERC ¶ 61,129

¹⁴⁸ Statista, Published June 17, 2024 and retrieved October 28, 2024;
<https://www.statista.com/statistics/664840/average-market-risk-premiumusa/#:~:text=The%20average%20market%20risk%20premium%20in%20the%20United,hovered%20between%2005.3%20and%205.7%20percent%20since%202011.>

¹⁴⁹ AEB-4, Bulkley's Direct Testimony.

1 value for Ms. Bulkley's Water proxy group by an average of 0.06 with the largest change being
2 a decrease of 0.25 for the beta for NiSource, Inc.

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

5 A. With reasonable assumptions such as using only the water utility proxy
6 companies, a market return of 11.93%, and a risk-free rate of 4.57%¹⁵⁰ as well as updated
7 current Value Line Beta values, Ms. Bulkley's range of CAPM COE estimates would be
8 between 8.29% and 10.46%. This overlaps closely with Staff's COE estimates which are much
9 lower than Ms. Bulkley's CAPM COE estimates of 10.62% - 11.62%.¹⁵¹

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

11 A. The CAPM used for Staff's COE estimation is another widely used financial
12 model that describes the relationship between risk and expected return. According to CAPM,
13 the expected return on an investment is determined by the risk-free rate of return (typically the
14 yield on government bonds) and a risk premium that reflects the riskiness of the investment
15 compared to the overall market. The CAPM is built on the premise that the variance in returns
16 over time is the appropriate measure of risk, but only the non-diversifiable variance (systematic
17 risk) is rewarded. Systematic risks, also called market risks, are unanticipated events that affect
18 almost all assets to some degree because the effects are economy wide. Systematic risk in an
19 asset, relative to the average, is measured by the beta of that asset.¹⁵² Unsystematic risks, also
20 called asset-specific risks, are unanticipated events that affect single assets or small groups of

¹⁵⁰ Three month average 30 year treasury yield for April, May, & June 2024 $[(4.66 + 4.62 + 4.44) / 3 = 4.57]$.

¹⁵¹ Figure 10, Page 50, Bulkley's Direct Testimony.

¹⁵² 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 1, 2024).

1 assets. Because unsystematic risks can be freely eliminated by diversification, the appropriate
2 reward for bearing risk depends on the level of systematic risk.

3 The CAPM shows that the expected return for a particular asset depends on the pure
4 time value of money (measured by the risk-free rate), the amount of the reward for bearing
5 systematic risk (measured by the MRP), and the amount of systematic risk incurred by the asset
6 (measured by beta). Specifically, the CAPM methodology estimates the COE by taking the
7 risk-free rate and adding the MRP multiplied by beta.¹⁵³ The MRP is calculated by subtracting
8 the risk-free rate from the expected market return. The general formula of the CAPM is
9 as follows:

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

11 where, k is the expected return on equity for a security,

12 R_f is the risk-free rate,

13 R_m is the expected market return,

14 β is beta, and

15 $(R_m - R_f)$ is the MRP.

16 For the risk-free rate of each time period, Staff used the average yield on 30-Year U.S.
17 Treasury bonds which was 4.57% for the Q2 2023. For Staff's CAPM estimation, it relied on
18 betas provided by Value Line.¹⁵⁴ For the MRP estimate, Staff relied on four sets of data for the
19 Q2 2024. The first data set is the long-term geometric mean of historical return differences
20 between large company stocks and long-term government bonds from 1926-2023, resulting in
21 MRP estimates of 4.54%.¹⁵⁵ The second data set is the long-term arithmetic mean of historical

¹⁵³ Roger A. Morin, *New Regulatory Finance* (Public Utilities Reports, Inc. 2006).

¹⁵⁴ Value Line, <https://valueline.com/?msclkid=4ed36370d16911eca58154b129389016>.

¹⁵⁵ Kroll, the Stocks, Bonds, Bills, and Inflation (SBBI®) Monthly Dataset.

1 return differences between large company stocks and long-term government bonds from
2 1926-2023, resulting in MRP estimates of 5.94%.¹⁵⁶ The third data set is the long-term
3 geometric mean of historical return differences between S&P 500 and long-term government
4 bonds from 1928-2023, resulting in MRP estimates of 5.23%.¹⁵⁷ The fourth data set is the
5 long-term arithmetic mean of historical return differences between S&P 500 and long-term
6 government bonds from 1928-2023, resulting in MRP estimates of 6.80%.¹⁵⁸

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

8 A. For the current rate case, Staff's CAPM estimation of the COE for water utility
9 companies in its proxy group ranges from 8.07% to 10.63%, with an average CAPM COE
10 estimate of 9.35%, based on the proxy group of electric utility companies presented
11 in Table 5.¹⁵⁹ The detailed calculation procedure of Staff's CAPM analysis is in
12 Schedule KM-d14.

13 5. ECAPM

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

15 A. Ms. Bulkley's ECAPM COE estimates of 11.19% - 11.94% have all of the same
16 issues as her CAPM COE estimation, plus an additional concern regarding her adjustment to
17 account for the supposed tendency of the CAPM method to underestimate COE for companies
18 with low beta coefficients.

19 Q. How did Ms. Bulkley adjust her CAPM COE?

¹⁵⁶ Ibid.

¹⁵⁷ Risk Premium, Damodaran Online, Stern School of Business, NYU.

¹⁵⁸ Ibid.

¹⁵⁹ Schedule KM-d14, Malki's Direct / Rebuttal Testimony.

1 A. Ms. Bulkley multiplied 75% of her MRPs by the beta coefficient and added the
2 remaining 25% MRPs.¹⁶⁰ This adjustment is consistent with Dr. Roger Morin's formula.
3 Dr. Morin's formula was based on his finding, with data between 1926 and 1984, that regular
4 CAPM underestimated returns by about 2.00%.¹⁶¹ However, there is no evidence Dr. Morin's
5 finding would hold with data after 1984. Furthermore, Dr. Morin also cited other studies that
6 found that CAPM produced returns between -9.61% and 13.56%, meaning that CAPM actually
7 overestimated COE in some instances.¹⁶² Such variations in findings do not lend credibility to
8 Ms. Bulkley's use of the ECAPM.

9 Q. What would Ms. Bulkley's ECAPM COE estimates be with proper input data?

10 A. With a Market Return of 11.93%, a risk-free rate of 4.57%, and updated value
11 line beta values, the range of ECAPM COE estimates for Ms. Bulkley's water utility proxy
12 group would be 8.57% - 10.82%. This result is much lower than Ms. Bulkley's CAPM COE
13 estimates of 11.19% to 11.94%. Ms. Bulkley's ECAPM, just like her CAPM, overstates the
14 authorized ROE.

15 **6. Bond Yield Plus Risk Premium**

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

17 A. The BYPRP model is widely accepted in academia and regulatory proceedings
18 to estimate ROE.¹⁶³ The BYPRP model is built on the premise that investors demand a greater
19 return in exchange for taking on higher levels of risk; for instance, a company's common stock
20 equity is riskier than its corporate bonds because equity holders have residual claims on a

¹⁶⁰ Page 48, Lines 5-8, Bulkley's Direct Testimony.

¹⁶¹ Morin, R. A. (2006). New Regulatory Finance. Public Utilities Reports. Page 190.

¹⁶² Ibid.

¹⁶³ Paragraph 146, Opinion No. 531, 147 FERC ¶ 61,234.

1 company's assets and earnings, which means they are not guaranteed fixed returns and may
2 face greater volatility in their investment. According to the Chartered Financial Analyst
3 ("CFA") study guide, BYPRP estimates the ROE of a company by adding its equity risk
4 premium to the yield-to-maturity ("YTM") of the subject company's long-term debt.¹⁶⁴

5 In contrast to DCF and CAPM estimates of the COE for recommending an authorized
6 ROE, Staff's BYPRP method is designed to directly estimate an authorized ROE. Staff's
7 BYPRP method involves estimating an authorized ROE by adding an associated risk premium
8 to the utility bond yields. The relationship between ROE and Risk Premium can be expressed
9 as follows:

10
$$\text{ROE} = \text{Bond Yield} + \text{Risk Premium};$$

11
$$\text{ROE} = \text{Bond Yield} + (\text{Estimated Electric Risk Premium} - (\text{Electric Utility Authorized}$$

12
$$\text{ROE} - \text{Water Utility Authorized ROE})).$$

13 Staff utilized Moody's A-rated and Baa-rated public utility bond yields and defined the
14 difference between the estimated ROE and the utility bond yield as the Risk Premium.
15 To determine a risk premium for a given bond yield, Staff relied on the negative relationship
16 between risk premiums and bond yields. A study determining the relationship between risk
17 premiums and bond ratings for electric utilities found that the average risk premiums for A rated
18 companies was between 3.1% and 3.8% with an average of 3.45%, while the average risk
19 premiums for Baa companies was roughly 3.8% to 4.9% with an average of 4.35%.¹⁶⁵ Given
20 these figures were provided for electric utilities only, Staff also considered 138 authorized
21 ROEs of water utilities over the 10-year period from 2014 to 2023 as well as what is available

¹⁶⁴ Stowe, J. D., Robinson, T. R., Pinto, J. E., & McLeavey, D. W. (2002) Analysis of Equity Investment: Valuation. Association for Investment Management and Research.

¹⁶⁵ Roger A. Morin, New Regulatory Finance (Public Utilities Reports, Inc. 2006).

1 for 2024 year to date compared to the authorized ROEs of 116 vertically integrated electric
2 utilities over the same period of time in their BYPRP analysis.¹⁶⁶ Staff found that the average
3 difference between these ROEs was the average ROEs for electric utilities was 21 basis points
4 higher than that of water utilities.

5 Staff determined Risk Premiums for each month of Q2 2024 by subtracting the average
6 of the difference of fully litigated authorized ROEs (0.21%)¹⁶⁷ from the 3-month average
7 estimated risk premiums of A-rated (3.45%) and Baa-rated (4.35%) public electric utility bonds
8 to determine a reasonable risk premium for water utilities.¹⁶⁸ This yielded risk premiums
9 of 3.24% for A-rated public utility bonds and 4.14% for Baa-rated public utility bonds.¹⁶⁹

10 In Q2 2024, the average A and Baa rated utility bond yields were 5.71% and 5.94%,
11 respectively. Using these yields and the estimated risk premiums for A and Baa rated utility
12 bond yields which were 3.24% and 4.14%, respectively, Staff's BYPRP analysis indicates that
13 the vertically integrated electric utility's estimated ROE is 9.50%, as illustrated in Staff's
14 Schedule KM-d14-1.¹⁷⁰

15 7. Return on Equity

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

18 A. Staff conducted two COE estimation analyses using DCF and CAPM.
19 In addition, Staff directly estimated an authorized ROE using the BYPRP method. Based on
20 Staff's estimation analyses described above, Staff estimates MAWC's current market COE to

¹⁶⁶ S&P Capital IQ Pro, Rate Case History (Past Rate Cases).

¹⁶⁷ Schedule KM-d17, Malki's Direct / Rebuttal Testimony.

¹⁶⁸ Schedule KM-d14-1. Malki's Direct / Rebuttal Testimony.

¹⁶⁹ Ibid.

¹⁷⁰ Ibid.

1 be in the range of 7.96% to 9.84%, as summarized in Table 6.¹⁷¹ Staff recommends that the
2 Commission grant MAWC an authorized ROE of 9.5% within a reasonable range of 8.85%
3 to 10.15%.¹⁷²

4 **Table 6. Summary Result of COE and ROE Estimation**

	<u>COE Analysis</u>		
	<u>Lower</u>	<u>Estimate</u>	<u>Upper</u>
DCF	7.85%	8.45%	9.05%
CAPM	8.07%	9.35%	10.63%
	7.96%	8.90%	9.84%

	<u>ROE Analysis</u>		
	<u>Lower</u>	<u>Estimate</u>	<u>Upper</u>
BYPRP	8.85%	9.50%	10.15%

5
6 Q. Does Staff have any supporting evidence the Commission can consider to
7 determine the reasonableness of Staff's ROE recommendation?

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

¹⁷¹ Schedule KM-d15, Malki's Direct / Rebuttal Testimony.

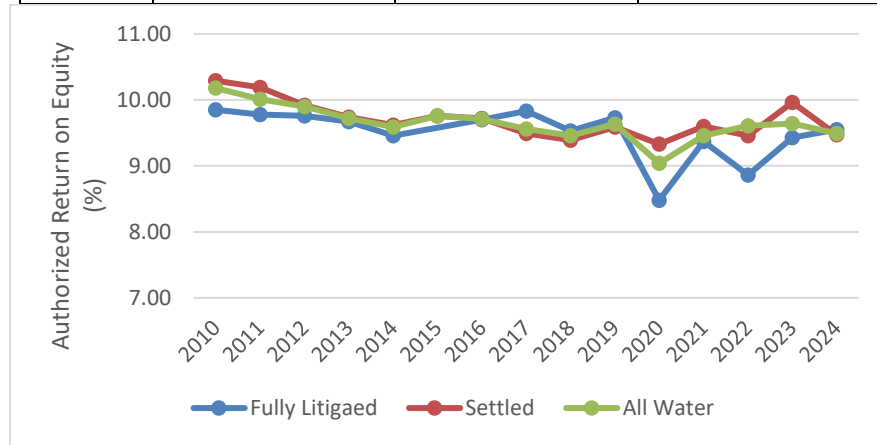
¹⁷² Schedule KM-d16, Malki's Direct / Rebuttal Testimony.

1 Table 7 presents information compiled and published by Regulatory Research
2 Associates (“RRA”) which details the average fully litigated and other authorized ROEs from
3 Commissions around the U.S. in the years 2010 - 2024 along with the number of cases
4 considered:
5 *...continued on next page.*

1

Table 7: Authorized ROE and Equity Ratio in the U.S. (2010-2024)¹⁷³

Order Year	Water					
	Fully Litigated		Other		Water Total	
	Avg ROE (%)	Case (No.)	Avg ROE (%)	Case (No.)	Avg ROE (%)	Case (No.)
2010	9.85	6	10.29	24	10.18	30
2011	9.78	3	10.19	5	10.01	8
2012	9.76	3	9.92	20	9.90	23
2013	9.67	2	9.74	10	9.72	12
2014	9.46	3	9.62	14	9.59	17
2015		0	9.76	13	9.76	13
2016	9.70	4	9.72	10	9.71	14
2017	9.83	2	9.49	9	9.56	11
2018	9.53	10	9.39	12	9.46	22
2019	9.73	3	9.59	8	9.63	11
2020	8.48	2	9.33	6	9.04	8
2021	9.37	3	9.60	7	9.46	10
2022	8.86	3	9.46	5	9.61	8
2023	9.43	9	9.96	6	9.64	15
2024	9.55	3	9.47	6	9.49	9



2

¹⁷³ S&P Capital IQ Pro: Regulatory Research Association, retrieved July 31, 2024.

1 In 2024 to date, the average authorized ROE of water utilities for fully litigated and
2 settled cases is 9.55% and 9.47%, respectively, for an overall average of 9.49% over nine cases.
3 Considering the current high interest rates, Staff’s recommended authorized ROE of 9.50% is
4 generally consistent with ROEs recently authorized for other electric utilities around the
5 country. It is Staff’s position that in order for MAWC to be competitive on the capital market,
6 it needs to have the opportunity to earn an ROE that is reasonably consistent with ROEs
7 awarded to other water utilities around the country.

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

10 A. The Commission’s most recent, fully-litigated water rate case is Confluence
11 Rivers Utility Operating Company, Inc.’s (“Confluence”) rate case, Case No. WR-2023-0006,
12 (“2023 Confluence rate case”).¹⁷⁴ In the 2023 Confluence Case, the Commission ordered an
13 authorized ROE of 9.90% for Confluence, a currently unrated entity.

14 Q. Why did Staff determine a recommended ROE for MAWC lower than that of
15 the Commission’s decision in the most recent, fully-litigated water rate case?

16 A. Though the most recent authorized ROE for a water utility determined by the
17 commission was 9.90%, Staff finds both companies differ greatly when considering their
18 financial and business risk profiles. Confluence as well as their parent company, Central States
19 Water Resources (“CSWR”), are currently not big enough companies to be rated by either
20 Moody’s or S&P. Confluence was also found during the case to have a very high debt ratio in
21 comparison to their equity ratio, necessitating the need for the Commission to order a

¹⁷⁴ *Report and Order* issued October 25, 2023, in Case No. WR-2023-0006.

1 hypothetical capital structure to be used.¹⁷⁵ Confluence is also a company that frequently
2 acquires small, distressed water and sewer systems as a part of its business model that further
3 affects its financial and business risk profile.¹⁷⁶

4 Q. What is the other area of Ms. Bulkley's testimony that Staff disagrees with?

5 A. Ms. Bulkley's analysis incorporated Mr. LaGrand's proposal to use a future test
6 year.¹⁷⁷ In her analysis, Ms. Bulkley included forward-looking estimates that introduced
7 excessive uncertainty to the models used to estimate the ROE. The more projections that are
8 used in a model, the less reliable the model becomes.

9 **8. Flotation Costs**

10 Q. What is Staff's opinion regarding Ms. Bulkley's consideration of flotation costs
11 for determining her final recommended ROE?

12 A. Ms. Bulkley considered the estimated effect of flotation costs on ROE when
13 identifying a recommended ROE within her range.¹⁷⁸ Flotation costs are one-time costs that
14 occur when new capital is raised; however, ROE measures the ongoing profitability of equity
15 of a company. If these costs are considered or included within ROE calculations, it could distort
16 the company's true earnings and performance. Adjusting ROE to cover flotation costs can lead
17 to an overstatement of the cost of capital that could potentially place unnecessary burdens on
18 the rate payers. Staff is of the opinion that flotation costs not be considered when determining
19 an appropriate recommendation for an ROE for a company.

¹⁷⁵ *Ibid.*

¹⁷⁶ *Ibid.*

¹⁷⁷ Page 5, Lines 11-12, Lagrand's Direct Testimony and Page 60, Lines 10-12

¹⁷⁸ Page 68, Lines 20-22, Bulkley's Direct Testimony

1 **9. Costs of Debt**

2 Q. What is the COD for the purpose of ratemaking?

3 A. To recommend an allowed ROR, COD is an essential component in calculating
4 the cost of capital. COD refers to the expenses a utility incurs from borrowing money through
5 bonds, loans, or other debt instruments. These costs typically include interest payments and
6 any associated fees. Estimating COD involves embedded COD methodologies, such as
7 calculating the weighted average cost of debt, analyzing interest rates on existing debt
8 instruments, evaluating credit ratings, and comparing borrowing costs to industry benchmarks.

9 Q. What COD should the Commission authorize for MAWC in this proceeding?

10 A. The ratemaking COD the Commission should authorize for MAWC in this
11 proceeding is AWWC's consolidated embedded cost of debt, as of June 30, 2024, of
12 ** [REDACTED] **. ¹⁷⁹ Staff will update its embedded cost of debt throughout this proceeding
13 through the true-up period, as additional information becomes available.

14 **VII. CONCLUSION**

15 Q. Please summarize the conclusions of your rebuttal testimony.

16 A. Ms. Bulkley's recommended ROE of 10.75% for MAWC within a range of
17 10.25% to 11.25%¹⁸⁰ is not just and reasonable considering her inappropriate reliance on
18 unreasonable inputs to her DCF and CAPM analyses. Additionally, given that MAWC's capital
19 structure is financed and managed almost entirely by AWWC, Staff finds Mr. Furia's
20 recommendation of using a forecasted capital structure for May 31, 2026, of 49.46% long-term
21 debt and 50.54% common equity to not be fully representative of MAWC's current financial

¹⁷⁹ Schedule KM-d7, Malki's Direct / Rebuttal Testimony and Staff Data Request No. 0037.

¹⁸⁰ Page 8, Lines 22-23, Bulkley's Direct Testimony.

1 situation as further discussed earlier in Section V of this testimony. Both of these values result
2 in an unrealistic ROR of 7.74%.¹⁸¹

3 Staff's recommended ROE of 9.5% for MAWC and embedded cost of debt of
4 ** [REDACTED] ** and cost of preferred stock ** [REDACTED] ** applied to a capital structure of 56.38%
5 long-term debt, 0.01% Preferred Stock and 43.60% common equity, which results in an allowed
6 ROR of 6.52%.¹⁸² Staff will continue to monitor AWWC's and MAWC's capital structures
7 and cost of debt through the true-up period and will make its final recommendation at that time.

8 Q. Does this conclude your testimony?

9 A. Yes, it does.

¹⁸¹ Page 5, Lines 8-14, Furia's Direct Testimony.

¹⁸² Schedule KM-d16, Direct / Rebuttal Testimony.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's)
Request for Authority to Implement a General Rate) Case No. WR-2024-0320
Increase for Water and Sewer Service Provided in)
Missouri Service Areas)

AFFIDAVIT OF KELLI MALKI

STATE OF MISSOURI)
) ss.
COUNTY OF COLE)

COMES NOW KELLI MALKI and on her oath declares that she is of sound mind and lawful age; that she contributed to the foregoing *Direct / Rebuttal Testimony of Kelli Malki*; and that the same is true and correct according to her best knowledge and belief.

Further the Affiant sayeth not.



KELLI MALKI

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 25th day of November 2024.

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



Notary Public

Kelli Malki

Credentials & Case Participation

Present Position:

I am a Financial Analyst in the Financial Analysis Department of the Financial and Business Analysis Division of the Missouri Public Service Commission. I have been employed by the Missouri Public Service Commission since July 2022.

Educational Background and Work Experience:

I earned a Bachelor of Arts degree in Mathematical Sciences from Westminster College in Fulton, MO. I was previously employed as a Compliance Auditor and Credit Analyst with Central Bancompany for 9 years.

Case Participation:

<u>Company Name</u>	<u>Case Number</u>	<u>Case Type/Type of Testimony</u>	<u>Utility Type</u>
Confluence Rivers Utility Operating Company, Inc.	WF-2023-0023 SF-2023-0024	Finance – Staff Memorandum	Water & Sewer
Evergy Missouri Metro	EF-2023-0241	Finance – Staff Memorandum	Electric
Gascony Water Company, Inc.	WR-2024-0014	Rate Case – Staff Memorandum	Water
Liberty Utilities (MO Water), LLC	WF-2024-0135	Finance – Staff Memorandum	Water
TBJ Sewer Systems, LLC	SR-2024-0306	Rate Case – Staff Memorandum	Sewer
Union electric Company	EF-2023-0151	Finance – Staff Memorandum	Electric
United Services, Inc.	SR-2024-0206	Rate Case – Staff Memorandum	Sewer
Vicinity Energy Kansas City, Inc.	HR-2023-0198	Rate Case – Staff Memorandum	Steam

DIRECT / REBUTTAL TESTIMONY

FOR

MISSOURI AMERICAN WATER COMPANY

CASE NO. WR-2024-0320 / SR-2024-0321

**APPENDIX
SCHEDULES**

BY

Kelli Malki

Financial Analysis

MISSOURI PUBLIC SERVICE COMMISSION

December 6, 2024

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

List of Schedules

Schedule	Description of Direct Schedules
d1	List of Schedules
d2-1	Federal Reserve Discount Rates and Federal Reserve Funds Rates Changes
d2-2	Graph of Federal Reserve Discount Rates and Federal Funds Rates Changes
d3-1	Rate of Inflation
d3-2	Graph of Rate of Inflation
d4-1	Average Yields on Moody's Public Utility Bonds
d4-2	Average Yields on Thirty-Year U.S. Treasury Bonds
d4-3	Graph of Average Yields on Mergent's Public Utility Bonds and Thirty-Year U.S. Treasury Bonds
d4-4	Graph of Monthly Spreads Between Yields on Moody's Public Utility Bonds and 30-Year U.S. Treasury Bonds
d4-5	Graph of Average Yields on A and BBB+ Utility Bonds
d5-1	Historical Consolidated Capital Structures (Dollar)
d5-2	Historical Consolidated Capital Structures (Percentage)
d6	Capital Structure
d7	Rate Making Cost of Long-Term Debt
d8	Rate Making Cost of Preferred Stock
d9	Criteria for Selecting Comparable Utility Companies
d10	Comparable Utility Companies
d11	Historical and Projected Growth Rates
d12	Average High / Low Stock Price
d13	DCF Model Analysis of COE Estimates
d14	CAPM Analysis of COE Estimates
d15	Return on Equity BYPRP Analysis
d16	Rate of Return
d17	Authorized Return on Equity

Schedule	Description of Rebuttal Schedules
r1	Summary of ROE Analysis
r2	MAWC Proxy Selection
r3	MAWC Constant DCF with Staff Analysis
r4	MAWC CAPM Analysis with Staff Analysis
r5	CAPM Long Term Beta
r6	MAWC Market Return with Staff Analysis

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

Federal Reserve Discount Rate and Federal Reserve Funds Rate

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

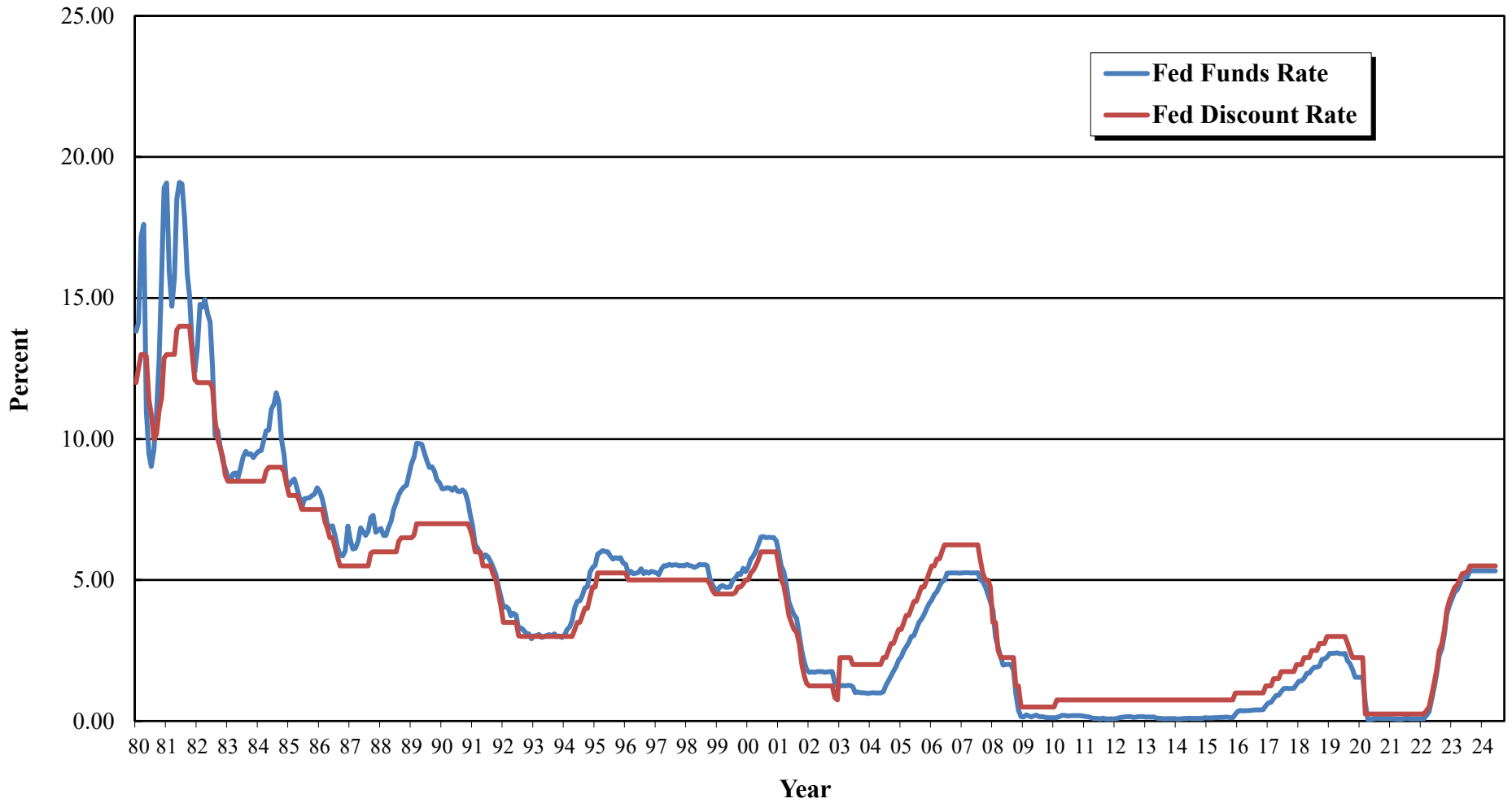
**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

Federal Reserve Discount Rate and Federal Reserve Funds Rate

Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate	Date	Reserve Discount Rate	Reserve Funds Rate	Date	Federal Reserve Discount Rate	Federal Reserve Funds Rate
Jan 2016	1.00	0.38	Jan 2021	0.25	0.09			
Feb	1.00	0.38	Feb	0.25	0.08			
Mar	1.00	0.38	Mar	0.25	0.07			
Apr	1.00	0.38	Apr	0.25	0.07			
May	1.00	0.38	May	0.25	0.06			
Jun	1.00	0.38	Jun	0.25	0.08			
Jul	1.00	0.39	Jul	0.25	0.10			
Aug	1.00	0.40	Aug	0.25	0.09			
Sep	1.00	0.40	Sep	0.25	0.08			
Oct	1.00	0.40	Oct	0.25	0.08			
Nov	1.00	0.41	Nov	0.25	0.08			
Dec	1.25	0.54	Dec	0.25	0.08			
Jan 2017	1.25	0.65	Jan 2022	0.25	0.08			
Feb	1.25	0.66	Feb	0.25	0.08			
Mar	1.50	0.79	Mar	0.37	0.20			
Apr	1.50	0.90	Apr	0.50	0.33			
May	1.50	0.91	May	0.93	0.77			
Jun	1.75	1.04	Jun	1.31	1.21			
July	1.75	1.15	Jul	1.82	1.68			
Aug	1.75	1.16	Aug	2.50	2.33			
Sep	1.75	1.15	Sep	2.74	2.56			
Oct	1.75	1.15	Oct	3.25	3.08			
Nov	1.75	1.16	Nov	3.93	3.78			
Dec	2.00	1.30	Dec	4.25	4.10			
Jan 2018	2.00	1.41	Jan 2023	4.50	4.33			
Feb	2.00	1.42	Feb	4.74	4.57			
Mar	2.25	1.51	Mar	4.83	4.65			
Apr	2.25	1.69	Apr	5.00	4.83			
May	2.25	1.70	May	5.22	5.06			
Jun	2.50	1.82	Jun	5.25	5.08			
Jul	2.50	1.91	Jul	5.29	5.12			
Aug	2.50	1.91	Aug	5.50	5.33			
Sep	2.75	1.95	Sep	5.50	5.33			
Oct	2.75	2.19	Oct	5.50	5.33			
Nov	2.75	2.20	Nov	5.50	5.33			
Dec	3.00	2.27	Dec	5.50	5.33			
Jan 2019	3.00	2.40	Jan 2024	5.50	5.33			
Feb	3.00	2.40	Feb	5.50	5.33			
Mar	3.00	2.41	Mar	5.50	5.33			
Apr	3.00	2.42	Apr	5.50	5.33			
May	3.00	2.39	May	5.50	5.33			
Jun	3.00	2.38	Jun	5.50	5.33			
Jul	3.00	2.40	Jul	5.50	5.33			
Aug	2.75	2.13	Aug	5.50	5.33			
Sept	2.50	2.04	Sep	5.31	5.13			
Oct	2.25	1.83	Oct					
Nov	2.25	1.55	Nov					
Dec	2.25	1.55	Dec					
Jan 2020	2.25	1.55						
Feb	2.25	1.58						
Mar	0.25	0.65						
Apr	0.25	0.05						
May	0.25	0.05						
Jun	0.25	0.08						
Jul	0.25	0.09						
Aug	0.25	0.10						
Sep	0.25	0.09						
Oct	0.25	0.09						
Nov	0.25	0.09						
Dec	0.25	0.09						

MISSOURI AMERICAN WATER COMPANY
Case No. WR-2024-0320 and SR-2024-0321

Federal Reserve Discount Rates and Federal Funds Rates
1980 - 2024



**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

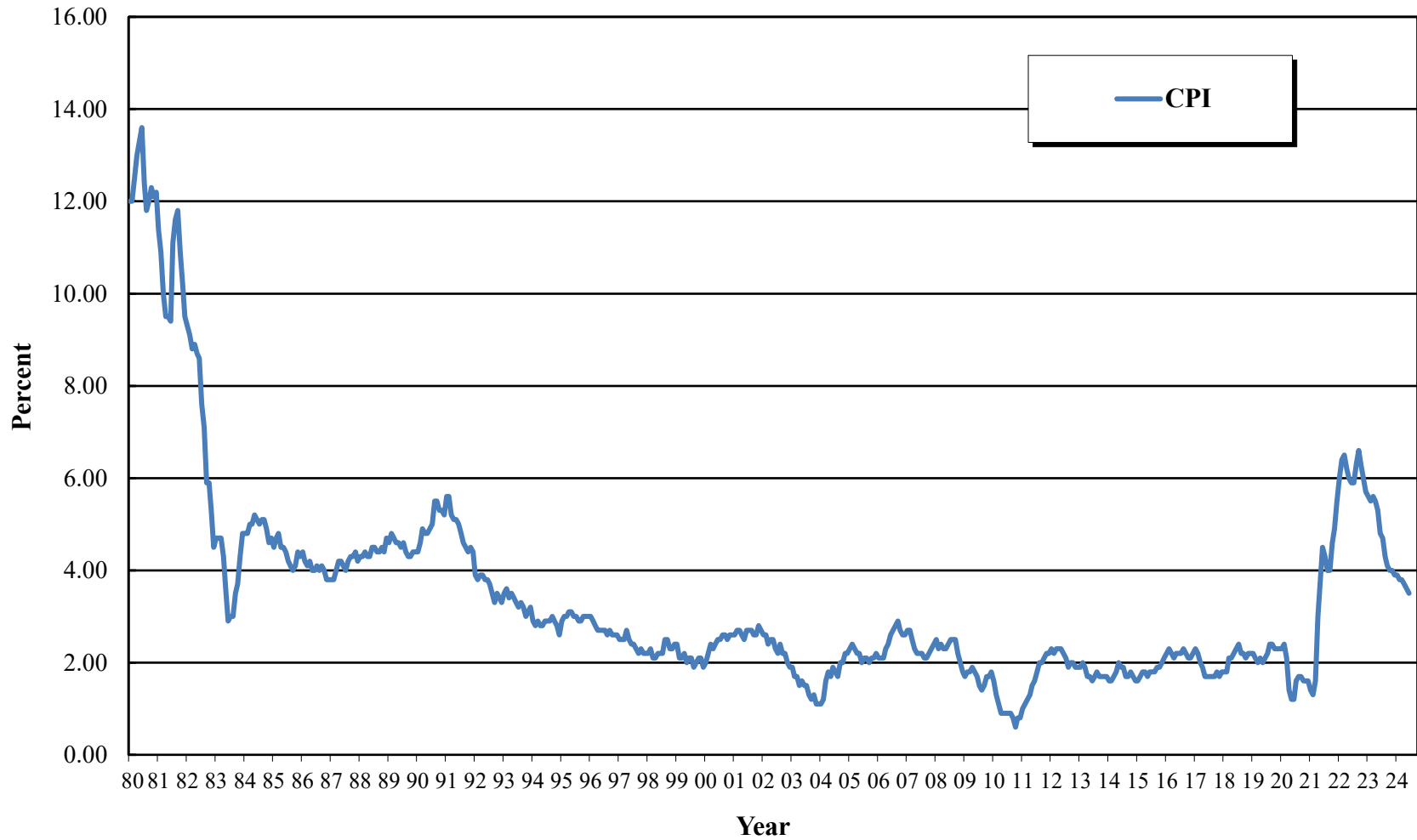
Rate of Inflation

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

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

MISSOURI AMERICAN WATER COMPANY
Case No. WR-2024-0320 and SR-2024-0321

Rate of Inflation
1980 - 2024



**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

Average Yields on Moody's Public Utility Bonds

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

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

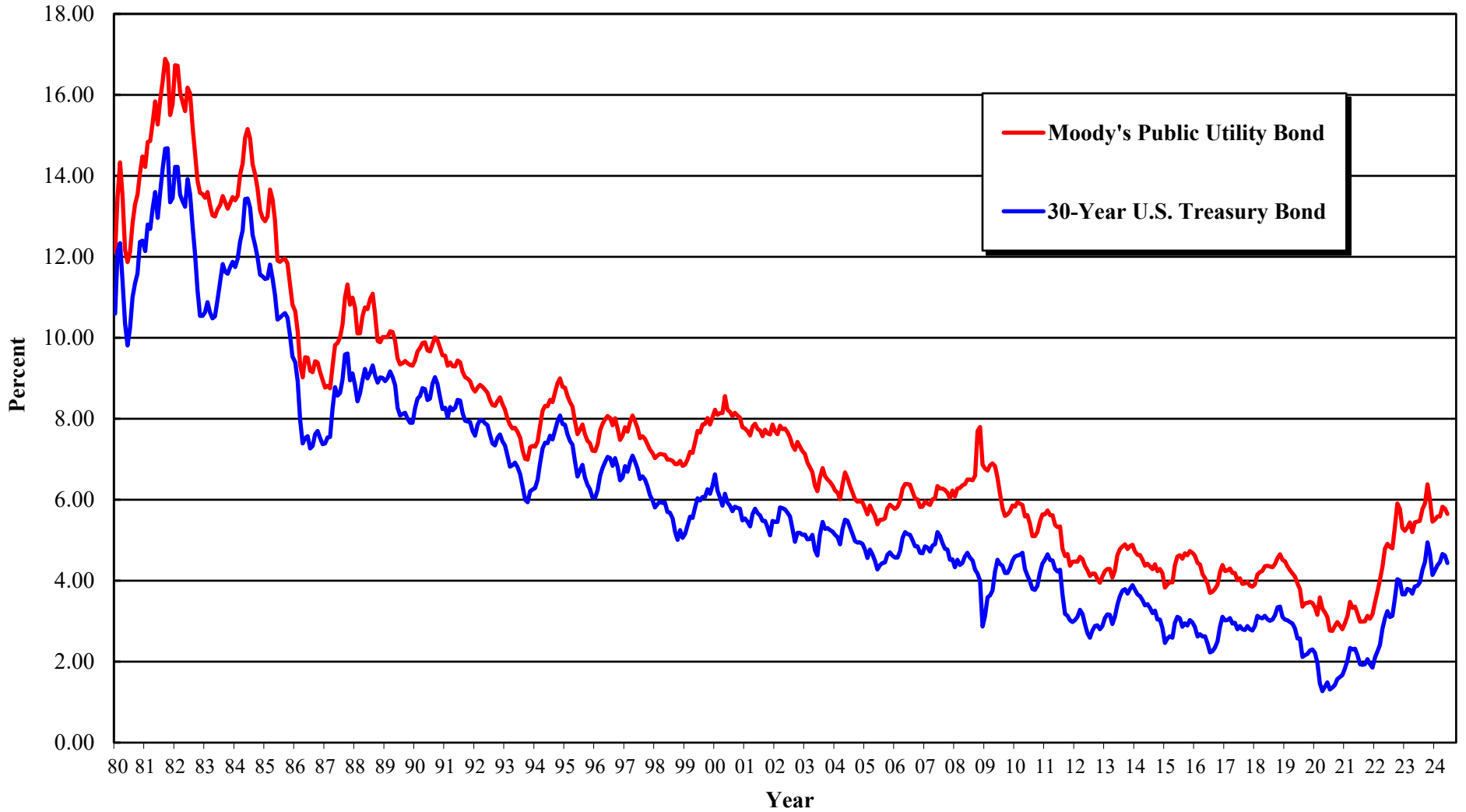
Average Yields on Thirty-Year U.S. Treasury Bonds

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

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

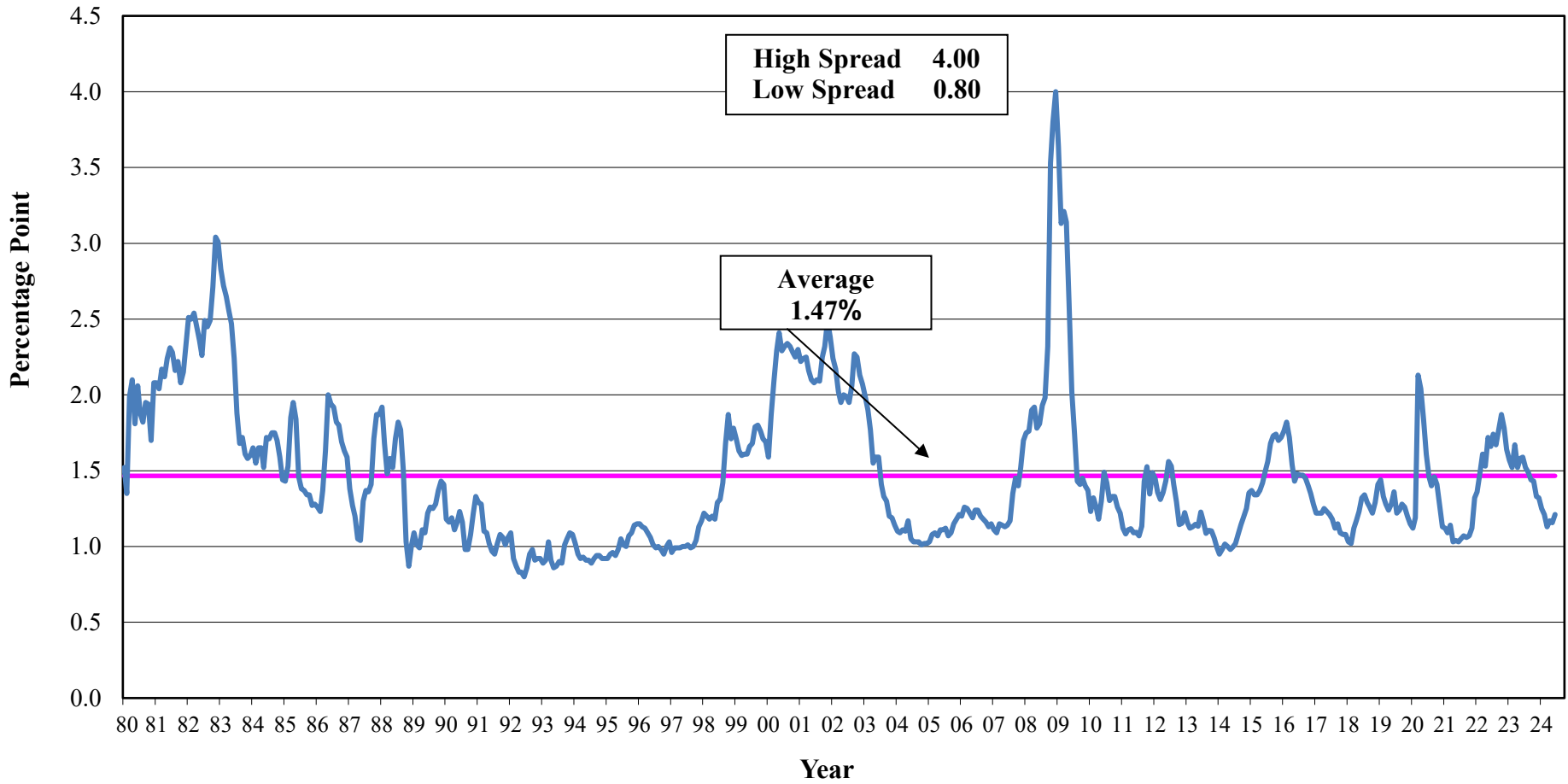
MISSOURI AMERICAN WATER COMPANY
Case No. WR-2024-0320 and SR-2024-0321

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



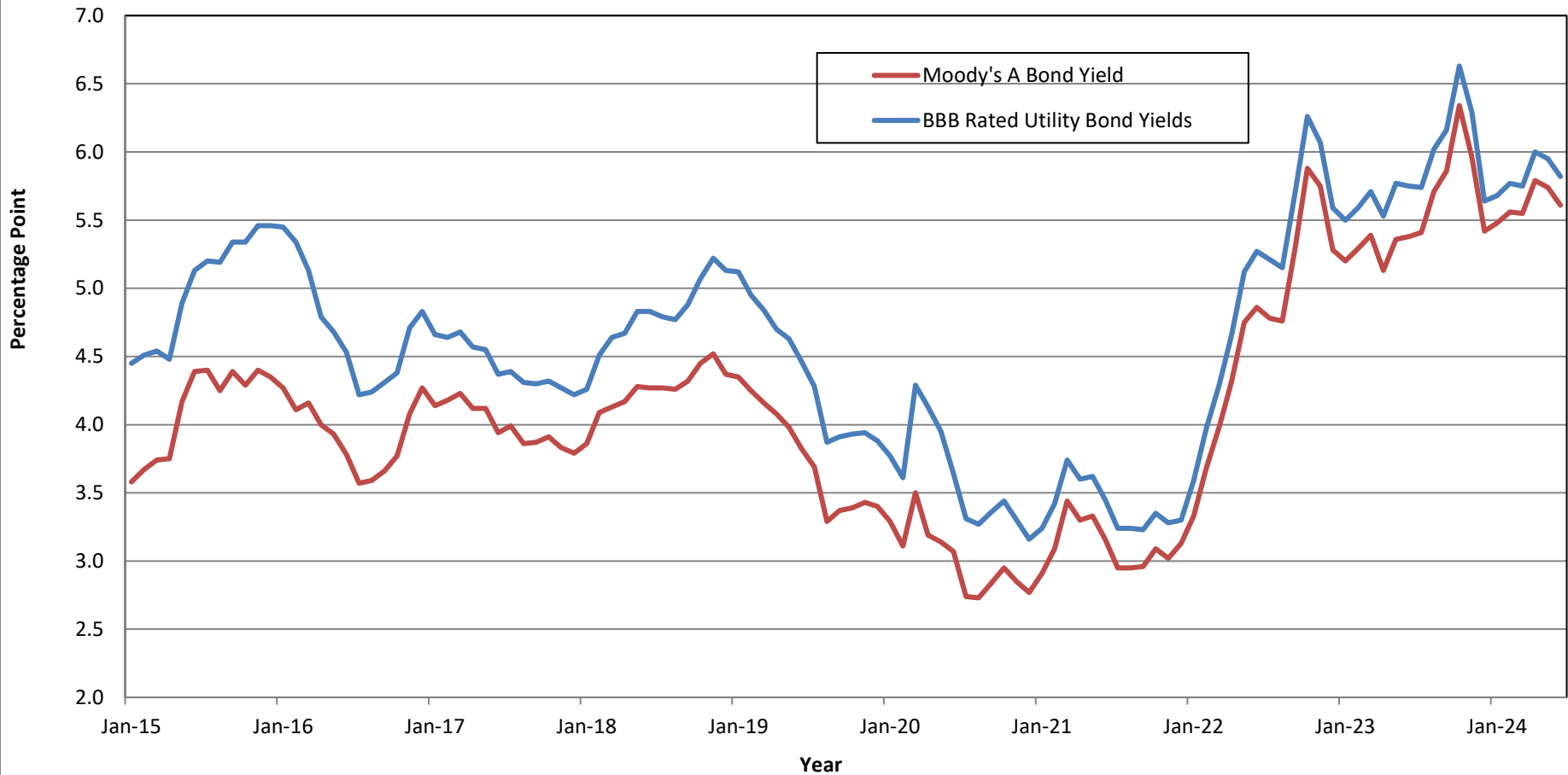
MISSOURI AMERICAN WATER COMPANY
Case No. WR-2024-0320 and SR-2024-0321

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



MISSOURI AMERICAN WATER COMPANY
Case No. WR-2024-0320 and SR-2024-0321

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



Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

**Historical Consolidated Capital Structures for
American Water Consolidated**

(Dollars in Millions)

	March 31, ³ 2022	June 30, ³ 2022	September 30, ³ 2022	December 31, ² 2022
Capital Components				
Common Equity	\$7,460.0	\$7,570.0	\$7,758.0	\$7,693.0
Preferred Stock	\$3.0	\$3.0	\$3.0	\$3.0
Long-Term Debt	\$10,404.0	\$11,201.0	\$11,205.0	\$11,207.0
	\$17,867.0	\$18,774.0	\$18,966.0	\$18,903.0
Capital Components				
Common Equity	\$9,547.0	\$9,701.0	\$9,897.0	\$9,797.0
Preferred Stock	\$2.0	\$2.00	\$3.0	\$3.0
Long-Term Debt	\$11,212.0	\$12,186.0	\$12,190.0	\$12,190.0
	\$20,761.0	\$21,889.0	\$22,090.0	\$21,990.0
Capital Components				
Common Equity	\$10,007.0	\$10,152.0	\$10,362.0	
Preferred Stock	\$3.0	\$3.0	\$3.0	
Long-Term Debt	\$13,123.0	\$13,128.0	\$13,135.0	
	\$23,133.0	\$23,283.0	\$23,500.0	

**Historical Consolidated Capital Structures for
Missouri American Water**

(Dollars in Millions)

	March 31, ³ 2022	June 30, ³ 2022	September 30, ³ 2022	December 31, ² 2022
Capital Components				
Common Equity	\$1,039.8	\$1,116.8	\$1,150.6	\$1,125.7
Preferred Stock	\$0.0	\$0.0	\$0.0	\$0.0
Long-Term Debt	\$893.8	\$1,091.7	\$1,091.9	\$1,092.3
Total	\$1,933.6	\$2,208.5	\$2,242.4	\$2,218.1
Capital Components				
Common Equity	\$1,288.5	\$1,321.1	\$1,373.0	\$1,391.6
Preferred Stock	\$0.0	\$0.00	\$0.0	\$0.0
Long-Term Debt	\$1,092.8	\$1,093.1	\$1,290.7	\$1,291.3
	\$2,381.2	\$2,414.2	\$2,663.7	\$2,682.9
Capital Components				
Common Equity	\$1,511.6	\$1,541.5	\$1,596.4	
Preferred Stock	\$0.0	\$0.0	\$0.0	
Long-Term Debt	\$1,266.8	\$1,493.8	\$1,494.4	
	\$2,778.4	\$3,035.3	\$3,090.8	

Sources:

SEC Form 10-Q and 10-K ¹

WR-2024-0320 DR 0055 ²

WR-2024-0320 DR 0055.1 ³

American Water Consolidated "Long-Term Debt" does not include the "Current Portion of Long-term Debt".

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

**Historical Consolidated Capital Structures for
American Water Consolidated**

(Dollars in Millions)

	March 31, 2022	June 30, 2022	September 30, 2022	December 31, 2022
<u>Capital Components</u>				
Common Equity	41.75%	40.32%	40.90%	40.70%
Preferred Stock	0.02%	0.02%	0.02%	0.02%
Long-Term Debt	58.23%	59.66%	59.08%	59.29%
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>

	March 31, 2023	June 30, 2023	September 30, 2023	December 31, 2023
<u>Capital Components</u>				
Common Equity	45.99%	44.32%	44.80%	44.55%
Preferred Stock	0.01%	0.01%	0.01%	0.01%
Long-Term Debt	54.01%	55.67%	55.18%	55.43%
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>

	March 31, 2024	June 30, 2024	September 30, 2024	
<u>Capital Components</u>				
Common Equity	43.26%	43.60%	44.09%	
Preferred Stock	0.01%	0.01%	0.01%	
Long-Term Debt	56.73%	56.38%	55.89%	
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	

**Historical Consolidated Capital Structures for
Missouri American Water**

(Dollars in Millions)

	March 31, 2022	June 30, 2022	September 30, 2022	December 31, 2022
<u>Capital Components</u>				
Common Equity	53.77%	50.57%	51.31%	50.75%
Preferred Stock	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	46.23%	49.43%	48.69%	49.25%
Total	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>

	March 31, 2023	June 30, 2023	September 30, 2023	December 31, 2023
<u>Capital Components</u>				
Common Equity	54.11%	54.72%	51.54%	51.87%
Preferred Stock	0.00%	0.00%	0.00%	0.00%
Long-Term Debt	45.89%	45.28%	48.46%	48.13%
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>

	March 31, 2024	June 30, 2024	September 30, 2024	
<u>Capital Components</u>				
Common Equity	54.40%	50.78%	51.65%	
Preferred Stock	0.00%	0.00%	0.00%	
Long-Term Debt	45.60%	49.22%	48.35%	
	<u>100.00%</u>	<u>100.00%</u>	<u>100.00%</u>	

Sources:

SEC Form 10-Q and 10-K

WR-2024-0320 DR 0055

WR-2024-0320 DR 0055.1

American Water Consolidated "Long-Term Debt" does not include the "Current Portion of Long-term Debt".

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

Capital Structure as of June 30, 2024
American Water Consolidated
(Dollars in Millions)

<u>Capital Component</u>	<u>Amount</u>	<u>Percentage of Capital</u>
Common Stock Equity	\$10,152	43.60%
Preferred Stock	\$3	0.01%
Long-Term Debt	\$13,128	56.38%
Total Capitalization	<u>\$23,283</u>	<u>100.00%</u>

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

<u>Capital Component</u>	<u>Amount</u>	<u>Percentage of Capital</u>
Common Stock Equity	\$1,541	50.78%
Preferred Stock	\$0	0.00%
Long-Term Debt	\$1,494	49.22%
Total Capitalization	<u>\$3,035</u>	<u>100.00%</u>

Sources:
SEC Form 10-Q and 10-K
DR 0055 & 0055.1

Case No. WR-2024-0320

SCHEDULE KM-d7

HAS BEEN DEEMED

CONFIDENTIAL

IN ITS ENTIRETY

Case No. WR-2024-0320

SCHEDULE KM-d8

HAS BEEN DEEMED

CONFIDENTIAL

IN ITS ENTIRETY

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

WATER PROXY GROUP SCREENING DATA AND RESULTS															
			[1]	[2]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	
Water Utility Companies	Ticker	Stock Publicly Traded	Information Provided by Value Line	5-Year Data Available	Dividends	At Least Investment Grade Credit Rating	S&P Global Rating	Moody's	At least 60% of Regulated Income from Water & Wastewater Utility Operations	At least 60% of Assets are Water Distribution Operations	No Reduced Dividend Since 2019	Positive Growth Rates from at Least Two Sources	Covered by More Than 2 Analyst	Comparable Company Met All Criteria	
1	American States Water Co	AWR	Yes	Yes	Yes	Yes	Yes	A	WR	Yes	Yes	Yes	Yes	Yes	Yes
2	American Water Works Company Inc	AWK	Yes	Yes	Yes	Yes	Yes	A	Baa1	Yes	Yes	Yes	Yes	Yes	Yes
3	Artesian Resources Corporation	ARTNA	Yes	Yes	Yes	Yes	No	N/A	N/A						No
4	California Water Service Group	CWT	Yes	Yes	Yes	Yes	Yes	A+	WR	Yes	Yes	Yes	Yes	Yes	Yes
5	Consolidated Water Co. Ltd.	CWCO	Yes	Yes	Yes	Yes	No	N/A	N/A						No
6	Essential Utilities Inc.	WTRG	Yes	Yes	Yes	Yes	Yes	A-	Baa2	Yes	Yes	Yes	Yes	Yes	Yes
7	Global Water Resources, Inc	GWRS	Yes	Yes	Yes	Yes	No	N/A	N/A						No
8	Middlesex Water Company	MSEX	Yes	Yes	Yes	Yes	Yes	A	N/A	Yes	Yes	Yes	Yes	Yes	Yes
9	SJW Group	SJW	Yes	Yes	Yes	Yes	Yes	A	N/A	Yes	Yes	Yes	Yes	Yes	Yes
10	York Water Company	YORW	Yes	Yes	Yes	Yes	No	N/A	N/A						No

Note:

- [1] Source: The Value Line Investment Survey: Ratings & Reports
- [2] Source: The Value Line Investment Survey: Ratings & Reports
- [3] Source: Reuters, <https://www.reuters.com/>
- [4] Source: The Value Line Investment Survey: Ratings & Reports
- [5] Source: The Value Line Investment Survey: Ratings & Reports
- [6] Source: S&P Global Market Intelligence
- [7] Source: S&P Global Market Intelligence
- [8] Source: S&P Global Market Intelligence
- [9] Source: SEC Form 10-K Filings
- [10] Source: SEC Form 10-K Filings
- [11] Source: The Value Line Investment Survey: Ratings & Reports
- [12] Source: S&P Global Market Intelligence, Value Line Investment Survey, Yahoo! Finance, and Zacks
- [13] Source: S&P Global Market Intelligence, Value Line Investment Survey, Yahoo! Finance, and Zacks

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

PROXY GROUP LIST

	Water Utility Companies	Ticker
1	American States Water Co	AWR
2	American Water Works Company Inc.	AWK
3	California Water Service Group	CWT
4	Essential Utilities Inc.	WTRG
5	Middlesex Water Company	MSEX
6	SJW Group	SJW

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

**Growth Rate Estimates
Based on Dividend per Share (DPS) and Earning per Share (EPS)
for the Comparable Water Utility Companies**

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	
2024 Q2		Past 10-Years			Past 5-Year			Projected			Average			Projective	Projective	
Water Utility Companies	Ticker	EPS	DPS	BVPS	EPS	DPS	BVPS	EPS	DPS	BVPS	EPS	DPS	BVPS	Growth	Nominal GDP	
1	American States Water Co	AWR	7.00%	9.00%	5.00%	9.00%	9.00%	6.50%	6.50%	8.50%	11.50%	7.50%	8.83%	7.67%	8.83%	3.80%
2	American Water Works Company Inc.	AWK	11.00%	10.00%	6.00%	15.00%	9.50%	7.50%	4.50%	8.50%	6.50%	10.17%	9.33%	6.67%	6.50%	3.80%
3	California Water Service Group	CWT	5.00%	4.50%	7.50%	4.00%	6.50%	10.00%	11.50%	6.00%	4.50%	6.83%	5.67%	7.33%	7.33%	3.80%
4	Essential Utilities Inc.	WTRG	6.50%	7.50%	10.00%	7.00%	7.00%	14.00%	7.00%	8.00%	4.50%	6.83%	7.50%	9.50%	6.50%	3.80%
5	Middlesex Water Company	MSEX	8.50%	5.00%	7.00%	5.50%	6.50%	9.50%	6.50%	5.00%	1.00%	6.83%	5.50%	5.83%	4.17%	3.80%
6	SJW Group	SJW	7.50%	7.50%	9.50%	-0.50%	8.00%	8.00%	6.50%	4.50%	3.50%	4.50%	6.67%	7.00%	4.83%	3.80%
Average			7.58%	7.25%	7.50%	6.67%	7.75%	9.25%	7.08%	6.75%	5.25%	7.11%	7.25%	7.33%	6.36%	3.80%

Note:

- [1] Source: The Value Line Investment Survey
- [2] Source: The Value Line Investment Survey
- [3] Source: The Value Line Investment Survey
- [4] Source: The Value Line Investment Survey
- [5] Source: The Value Line Investment Survey
- [6] Source: The Value Line Investment Survey
- [7] Source: The Value Line Investment Survey
- [8] Source: The Value Line Investment Survey
- [9] Source: The Value Line Investment Survey
- [10] =([1]+[4]+[7])/3
- [11] =([2]+[5]+[8])/3
- [12] =([3]+[6]+[9])/3
- [13] =([7]+[8]+[9])/3
- [14] Source: Congress Budget Office (CBO), Budget Economic Outlook

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

**Average High / Low Stock Price
for the Comparable Water Utility Companies**

[1] [2] [3] [4] [5] [6] [7]

2024 Q2		<u>April 2024</u>		<u>May 2024</u>		<u>June 2024</u>		<u>(4/1/24 - 6/30/24)</u>
<u>Company Name</u>	<u>Ticker</u>	<u>Avg High Stock Price</u>	<u>Avg Low Stock Price</u>	<u>Avg High Stock Price</u>	<u>Avg Low Stock Price</u>	<u>Avg High Stock Price</u>	<u>Avg Low Stock Price</u>	<u>Average High/Low Stock Price</u>
1	American States Water Co	AWR	69.97 68.76	76.11 74.74	72.14 70.95	72.14 70.95	72.11	
2	American Water Works Company Inc.	AWK	120.09 117.97	131.72 129.46	130.85 128.71	130.85 128.71	126.47	
3	California Water Service Group	CWT	46.41 45.40	51.92 50.86	48.79 47.83	48.79 47.83	48.54	
4	Essential Utilities Inc.	WTRG	36.08 35.39	38.59 37.89	37.59 37.01	37.59 37.01	37.09	
5	Middlesex Water Company	MSEX	49.16 47.84	55.72 54.04	53.03 51.73	53.03 51.73	51.92	
6	SJW Group	SJW	54.62 53.52	57.36 56.29	53.52 52.49	53.52 52.49	54.63	
							Average	65.13

Note:

- [1] Source: Wall Street Journal, <https://www.wsj.com/market-data>
- [2] Source: Wall Street Journal, <https://www.wsj.com/market-data>
- [3] Source: Wall Street Journal, <https://www.wsj.com/market-data>
- [4] Source: Wall Street Journal, <https://www.wsj.com/market-data>
- [5] Source: Wall Street Journal, <https://www.wsj.com/market-data>
- [6] Source: Wall Street Journal, <https://www.wsj.com/market-data>
- [7] = (([1]+[2]+[3]+[4]+[5]+[6])) / 6

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

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

2024 Q2 DCF COE estimate		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
		2023 Dividend per Share	Stock Price	Dividend Yield	Expected Dividend Yield	Projected Growth	Projected GDP Growth	Growth Rate	COE	
1	American States Water Co	AWR	1.66	72.11	2.30%	2.39%	8.83%	3.80%	7.83%	10.22%
2	American Water Works Company Inc.	AWK	2.78	126.47	2.20%	2.26%	6.50%	3.80%	5.96%	8.22%
3	California Water Service Group	CWT	1.04	48.54	2.14%	2.21%	7.33%	3.80%	6.63%	8.84%
4	Essential Utilities Inc.	WTRG	1.19	37.09	3.21%	3.30%	6.50%	3.80%	5.96%	9.26%
5	Middlesex Water Company	MSEX	1.26	51.92	2.43%	2.48%	4.17%	3.80%	4.09%	6.57%
6	SJW Group	SJW	1.52	54.63	2.78%	2.85%	4.83%	3.80%	4.63%	7.47%
Average			1.58	65.13	2.51%	2.58%	6.36%	3.80%	5.85%	8.43%
									DCF Lower Bound	7.85%
									DCF Upper Bound	9.05%
									DCF COE	8.45%

Note:

- [1] Source: The Value Line Investment Survey: Ratings & Reports.
- [2] Source: The Wall Street Journal; Monthly Average.
- [3] = [1] / [2]
- [4] = [3] x (1 + .5 x [7])
- [5] Source: [12] of Growth Rate SJW-11
- [6] Source: Congress Budget Office (CBO), Budget Economic Outlook
- [7] = (4 x [5] + [6]) / 5
- [8] = [4] + [7]

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

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

2024 Q2 CAPM Estimate		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]
		Kroll, LLC (1926-2023)				NYU Stern (1928-2023)				Market Risk Premium				CAPM Cost of Common Equity					
		Large Company Stocks		Long-term G-Bonds		S&P 500		US Treasury Bond		Kroll, LLC		NYU Stern		Kroll, LLC		NYU Stern			
Water Utility Companies		Risk-Free Rate	Beta	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return	Geometric Mean Return	Arithmetic Mean Return
1	American States Water Co	4.57%	0.70	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	7.75%	8.73%	8.23%	9.33%
2	American Water Works Company Inc.	4.57%	0.95	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.89%	10.22%	9.54%	11.03%
3	California Water Service Group	4.57%	0.75	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	7.98%	9.03%	8.49%	9.67%
4	Essential Utilities Inc.	4.57%	1.00	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	9.12%	10.51%	9.80%	11.37%
5	Middlesex Water Company	4.57%	0.75	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	7.98%	9.03%	8.49%	9.67%
6	SJW Group	4.57%	0.85	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.44%	9.62%	9.02%	10.35%
Average		4.57%	0.83	10.28%	12.16%	5.73%	6.22%	9.80%	11.66%	4.57%	4.86%	4.54%	5.94%	5.23%	6.80%	8.36%	9.52%	8.93%	10.24%
																	CAPM Lower Bound		8.07%
																	CAPM Upper Bound		10.63%
																	Average		9.35%

[1] Source: 3-Month Average of 30-Year Treasury Bond

[2] Source: Value Line, Investment Survey.

[3] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (S&BBI®) Monthly Dataset.

[4] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (S&BBI®) Monthly Dataset.

[5] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (S&BBI®) Monthly Dataset.

[6] Source: Kroll, LLC, the Stocks, Bonds, Bills, and Inflation (S&BBI®) Monthly Dataset.

[7] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.

[8] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.

[9] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.

[10] Source: Risk Premium, Damodaran Online, Stern School of Business, NYU.

[11] = [3] - [5]

[12] = [4] - [6]

[13] = [7] - [9]

[14] = [8] - [10]

[15] = [1] + [2] x [11]

[16] = [1] + [2] x [12]

[17] = [1] + [2] x [13]

[18] = [1] + [2] x [14]

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0320**

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

<u>Month-Year</u>	<u>[1] Bond Yield (%)</u>		<u>[2] Risk Premium (%)</u>		<u>[3] Estimated ROE (%)</u>	
	<u>A</u>	<u>Baa</u>	<u>A</u>	<u>Baa</u>	<u>A</u>	<u>Baa</u>
Apr-24	5.79	6.01	3.24	4.14	9.03	10.15
May-24	5.74	5.97	3.24	4.14	8.98	10.11
Jun-24	5.61	5.84	3.24	4.14	8.85	9.98

BYPRP Lower Bound	8.85
BYPRP Upper Bound	<u>10.15</u>
BYPRP ROE	<u><u>9.50</u></u>

Notes:

- [1] Mergent Bond Record, Moody's Utility Bonds Yields
- [2] =Average Risk Premium vs. Bond Rating - Average of Differences in Water ROEs vs Electric ROEs
- [3] = [1] + [2]

Missouri-American Water Company

WR-2024-0320 and SR-2024-0320

RETURN ON EQUITY

		<u>COE Analysis</u>			
		<u>Lower</u>	<u>Estimate</u>	<u>Upper</u>	
COE Estimation	DCF	7.85%	8.45%	9.05%	[1]
	CAPM	8.07%	9.35%	10.63%	[2]
<hr/>		7.96%	8.90%	9.84%	[3]
		<u>ROE Analysis</u>			
		<u>Lower</u>	<u>Estimate</u>	<u>Upper</u>	
ROE Estimation	BYPRP	8.85%	9.50%	10.15%	[4]
<hr/>		<hr/>			
ROE Recommendation		<u>9.50%</u>			

Note:

-
- [1] Schedule KM-d12
 - [2] Schedule KM-d13
 - [3] = $([A] + [B]) / 2$
 - [4] Schedule KM-d14-1

Case No. WR-2024-0320

SCHEDULE KM-d16

HAS BEEN DEEMED

CONFIDENTIAL

IN ITS ENTIRETY

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

**Authorized ROE of the U.S Utility by Sector
2010-2024**

Order Year	Water						Order Year	Vertically Integrated Electric					
	Fully Litigated		Other		Water Total			Fully Litigated		Other		Electric Total	
	Avg ROE (%)	Case (No.)	Avg ROE (%)	Case (No.)	Avg ROE (%)	Case (No.)		Avg ROE (%)	Case (No.)	Avg ROE (%)	Case (No.)	Avg ROE (%)	Case (No.)
2010	9.85	6	10.29	24	10.18	30	2010	10.32	16	10.49	25	10.42	41
2011	9.78	3	10.19	5	10.01	8	2011	10.46	17	10.14	11	10.33	28
2012	9.76	3	9.92	20	9.90	23	2012	10.10	16	10.10	23	10.10	39
2013	9.67	2	9.74	10	9.72	12	2013	9.91	9	9.96	22	9.95	31
2014	9.46	3	9.62	14	9.59	17	2014	10.03	9	9.86	10	9.94	19
2015		0	9.76	13	9.76	13	2015	9.74	13	9.78	4	9.75	17
2016	9.70	4	9.72	10	9.71	14	2016	9.62	9	9.88	11	9.77	20
2017	9.83	2	9.49	9	9.56	11	2017	9.69	8	9.85	20	9.80	28
2018	9.53	10	9.39	12	9.46	22	2018	9.62	9	9.72	14	9.68	23
2019	9.73	3	9.59	8	9.63	11	2019	9.74	10	9.74	15	9.74	25
2020	8.48	2	9.33	6	9.04	8	2020	9.52	15	9.57	12	9.55	27
2021	9.37	3	9.60	7	9.46	10	2021	9.24	8	9.67	17	9.53	25
2022	8.86	3	9.46	5	9.61	8	2022	9.82	12	9.68	13	9.75	25
2023	9.43	9	9.96	6	9.64	15	2023	9.96	19	9.61	17	9.80	36
2024	9.55	3	9.47	6	9.49	9	2024	9.62	4	9.79	4	9.70	8

Note:

Source: S&P Global Market Intelligence, Retrieved October 1, 2024

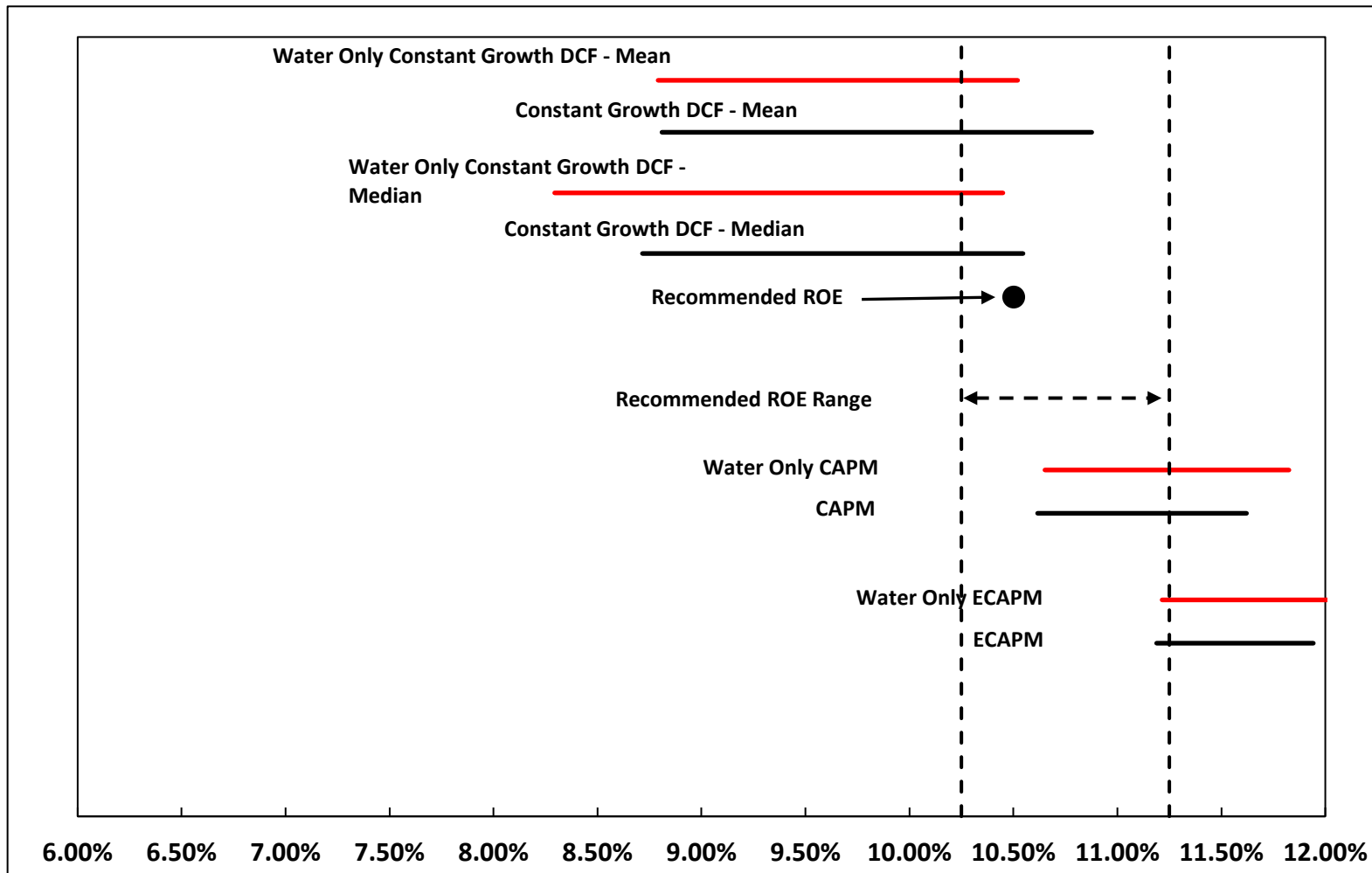
Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

Staff Analysis
SUMMARY OF ROE ANALYSES RESULTS

Staff Analysis

Staff Analysis

		Minimum Growth Rate	Minimum Water Only	Minimum Gas/Electric Only	Average Growth Rate	Average Water Only	Average Gas/Electric Only	Maximum Growth Rate	Maximum Water Only	Maximum Gas/Electric Only
Constant Growth DCF Mean	30-Day Average	8.84%	8.81%	8.87%	9.88%	9.71%	10.02%	10.91%	10.54%	11.22%
	90-Day Average	8.81%	8.81%	8.82%	9.86%	9.71%	9.98%	10.88%	10.54%	11.17%
	180-Day Average	8.77%	8.76%	8.79%	9.82%	9.66%	9.94%	10.84%	10.49%	11.13%
	Constant Growth Average	8.81%	8.79%	8.83%	9.85%	9.69%	9.98%	10.88%	10.52%	11.17%
Constant Growth DCF Median	30-Day Average	8.71%	8.25%	9.17%	10.03%	10.03%	9.98%	10.54%	10.48%	11.04%
	90-Day Average	8.69%	8.36%	9.18%	10.00%	10.00%	9.99%	10.52%	10.41%	11.05%
	180-Day Average	8.75%	8.27%	9.26%	9.90%	9.90%	10.07%	10.58%	10.46%	11.13%
	Constant Growth Average	8.72%	8.29%	9.20%	9.98%	9.98%	10.01%	10.55%	10.45%	11.07%
		Current 30-day Average Treasury Bond Yield	Water Only	Gas/Electric Only	Near-Term Blue Chip Forecast Yield	Water Only	Gas/Electric Only	Long-Term Blue Chip Forecast Yield	Water Only	Gas/Electric Only
CAPM	Value Line Beta	11.62%	11.83%	11.45%	11.58%	11.79%	11.40%	11.55%	11.76%	11.36%
	Bloomberg Beta	10.90%	10.95%	10.86%	10.83%	10.88%	10.79%	10.78%	10.83%	10.74%
	Long-term Avg. Beta	10.74%	10.78%	10.72%	10.67%	10.71%	10.65%	10.62%	10.65%	10.59%
ECAPM	Value Line Beta	11.94%	12.10%	11.81%	11.91%	12.07%	11.78%	11.89%	12.05%	11.75%
	Bloomberg Beta	11.40%	11.44%	11.37%	11.35%	11.39%	11.32%	11.31%	11.35%	11.28%
	Long-term Avg. Beta	11.28%	11.31%	11.26%	11.23%	11.26%	11.21%	11.19%	11.22%	11.17%



Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

PROXY GROUP SCREENING DATA AND RESULTS

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	
Company	Ticker	Dividends	S&P Credit Rating Between BBB- and AAA	Covered by More Than 1 Analyst	Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	% Regulated Operating Income > 70%	Electric Companies with < 10% Generation	Electric Companies with Water Operations	Announced Merger
1 American States Water Company	AWR	Yes	A	Yes	Yes	84.3%	n/a	n/a	No
2 Atmos Energy Corporation	ATO	Yes	A-	Yes	Yes	100.0%	n/a	n/a	No
3 California Water Service Group	CWT	Yes	A+	Yes	Yes	95.9%	n/a	n/a	No
4 Essential Utilities, Inc.	WTRG	Yes	A	Yes	Yes	99.0%	n/a	n/a	No
5 Eversource Energy	ES	Yes	A-	Yes	Yes	92.2%	0.06%	Yes	No
6 Middlesex Water Company	MSEX	Yes	A	Yes	Yes	91.3%	n/a	n/a	No
7 NiSource Inc.	NI	Yes	BBB+	Yes	Yes	99.9%	n/a	n/a	No
8 Northwest Natural Gas Company	NWN	Yes	A	Yes	Yes	100.0%	n/a	n/a	No
9 ONE Gas, Inc.	OGS	Yes	A-	Yes	Yes	100.0%	n/a	n/a	No
10 SJW Group	SJW	Yes	A-	Yes	Yes	98.0%	n/a	n/a	No
11 Spire, Inc.	SR	Yes	A-	Yes	Yes	83.4%	n/a	n/a	No

Notes:

- [1] Bloomberg Professional
- [2] Bloomberg Professional
- [3] Yahoo! Finance and Zacks
- [4] Yahoo! Finance, Value Line Investment Survey, and Zacks
- [5] Form 10-K's for 2022, 2021, and 2020
- [6] S&P Capital IQ Pro
- [7] S&P Capital IQ Pro
- [8] S&P Capital IQ Pro Financial News Releases

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

Staff Analysis

30-DAY CONSTANT GROWTH DCF -- MAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	Staff Analysis		[10]	Staff Analysis		[11]	Staff Analysis	
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Min ROE	Min ROE Water	Min ROE Gas	Average ROE	Average ROE Water Only	Average ROE Gas	Max ROE	Max ROE Water Only	Max ROE Gas
American States Water Company	AWR	\$3.22	\$116.44	2.77%	2.86%	7.00%	7.50%	7.00%	7.17%	9.86%	9.86%	10.03%	10.03%	10.03%	10.37%	10.37%		
Atmos Energy Corporation	ATO	\$1.06	\$27.15	3.90%	4.05%	9.50%	7.30%	6.00%	7.60%	10.02%	10.02%	11.65%	11.65%	11.65%	13.59%	13.59%	13.59%	
California Water Service Group	CWT	\$1.95	\$36.43	5.35%	5.48%	6.50%	2.80%	n/a	4.65%	8.23%	8.23%	10.13%	10.13%	10.13%	12.03%	12.03%	12.03%	
Essential Utilities, Inc.	WTRG	\$2.64	\$63.34	4.17%	4.27%	4.00%	5.00%	5.00%	4.67%	8.25%	8.25%	8.93%	8.93%	8.93%	9.27%	9.27%	9.27%	
Eversource Energy	ES	\$3.02	\$60.13	5.02%	5.16%	4.50%	6.36%	5.00%	5.29%	9.64%	9.64%	10.44%	10.44%	10.44%	11.54%	11.54%	11.54%	
Middlesex Water Company	MSEX	\$2.86	\$59.07	4.84%	4.95%	5.50%	3.25%	4.20%	4.32%	8.17%	8.17%	9.26%	9.26%	9.26%	10.48%	10.48%	10.48%	
NiSource Inc.	NI	\$1.72	\$69.90	2.46%	2.53%	6.50%	4.40%	6.30%	5.73%	6.91%	6.91%	8.26%	8.26%	8.26%	9.04%	9.04%	9.04%	
Northwest Natural Gas Company	NWN	\$1.12	\$46.08	2.43%	2.56%	10.00%	10.80%	n/a	10.40%	12.55%	12.55%	12.96%	12.96%	12.96%	13.36%	13.36%	13.36%	
ONE Gas, Inc.	OGS	\$1.30	\$49.25	2.64%	2.70%	6.50%	2.70%	n/a	4.60%	5.38%	5.38%	7.30%	7.30%	7.30%	9.23%	9.23%	9.23%	
SJW Group	SJW	\$1.60	\$54.64	2.93%	3.03%	6.50%	7.50%	7.50%	7.17%	9.52%	9.52%	10.20%	10.20%	10.20%	10.54%	10.54%	10.54%	
Spire, Inc.	SR	\$1.23	\$35.94	3.42%	3.52%	7.00%	5.20%	5.80%	6.00%	8.71%	8.71%	9.52%	9.52%	9.52%	10.54%	10.54%	10.54%	
Mean				3.63%	3.74%	6.68%	5.71%	5.85%	6.14%	8.84%	8.81%	8.87%	9.88%	9.71%	10.02%	10.91%	10.54%	11.22%
Median				3.42%	3.52%	6.50%	5.20%	5.90%	5.73%	8.71%	8.25%	9.17%	10.03%	10.03%	9.98%	10.54%	10.48%	11.04%

Notes:

- [1] Source: Bloomberg Professional as of April 30, 2024
- [2] Source: Bloomberg Professional, equals 30-day average as of April 30, 2024
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7]))
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7]))

90-DAY CONSTANT GROWTH DCF -- MAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	Staff Analysis		[10]	Staff Analysis		[11]	Staff Analysis	
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Min ROE	Min ROE Water	Min ROE Gas	Average ROE	Average ROE Water Only	Average ROE Gas	Max ROE	Max ROE Water Only	Max ROE Gas
American States Water Company	AWR	\$3.22	\$114.74	2.81%	2.91%	7.00%	7.50%	7.00%	7.17%	9.90%	9.90%	10.07%	10.07%	10.07%	10.41%	10.41%		
Atmos Energy Corporation	ATO	\$1.06	\$26.25	4.04%	4.19%	9.50%	7.30%	6.00%	7.60%	10.16%	10.16%	11.79%	11.79%	11.79%	13.73%	13.73%	13.73%	
California Water Service Group	CWT	\$1.95	\$36.82	5.30%	5.42%	6.50%	2.80%	n/a	4.65%	8.17%	8.17%	10.07%	10.07%	10.07%	11.97%	11.97%	11.97%	
Essential Utilities, Inc.	WTRG	\$2.64	\$61.79	4.27%	4.37%	4.00%	5.00%	5.00%	4.67%	8.36%	8.36%	9.04%	9.04%	9.04%	9.38%	9.38%	9.38%	
Eversource Energy	ES	\$3.02	\$59.69	5.06%	5.19%	4.50%	6.36%	5.00%	5.29%	9.67%	9.67%	10.48%	10.48%	10.48%	11.58%	11.58%	11.58%	
Middlesex Water Company	MSEX	\$2.86	\$57.86	4.94%	5.05%	5.50%	3.25%	4.20%	4.32%	8.27%	8.27%	9.37%	9.37%	9.37%	10.58%	10.58%	10.58%	
NiSource Inc.	NI	\$1.72	\$73.64	2.34%	2.40%	6.50%	4.40%	6.30%	5.73%	6.79%	6.79%	8.14%	8.14%	8.14%	8.91%	8.91%	8.91%	
Northwest Natural Gas Company	NWN	\$1.12	\$46.98	2.38%	2.51%	10.00%	10.80%	n/a	10.40%	12.50%	12.50%	12.91%	12.91%	12.91%	13.31%	13.31%	13.31%	
ONE Gas, Inc.	OGS	\$1.30	\$54.46	2.39%	2.44%	6.50%	2.70%	n/a	4.60%	5.12%	5.12%	7.04%	7.04%	7.04%	8.96%	8.96%	8.96%	
SJW Group	SJW	\$1.60	\$58.46	2.74%	2.83%	6.50%	7.50%	7.50%	7.17%	9.33%	9.33%	10.00%	10.00%	10.00%	10.34%	10.34%	10.34%	
Spire, Inc.	SR	\$1.23	\$36.10	3.40%	3.51%	7.00%	5.20%	5.80%	6.00%	8.69%	8.69%	9.51%	9.51%	9.51%	10.52%	10.52%	10.52%	
Mean				3.61%	3.71%	6.68%	5.71%	5.85%	6.14%	8.81%	8.81%	8.82%	9.86%	9.71%	9.98%	10.88%	10.54%	11.17%
Median				3.40%	3.51%	6.50%	5.20%	5.90%	5.73%	8.69%	8.36%	9.18%	10.00%	10.00%	9.99%	10.52%	10.41%	11.05%

Notes:

- [1] Source: Bloomberg Professional as of April 30, 2024
- [2] Source: Bloomberg Professional, equals 30-day average as of April 30, 2024
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7]))
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7]))

180-DAY CONSTANT GROWTH DCF -- MAWC PROXY GROUP

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	Staff Analysis		[10]	Staff Analysis		[11]	Staff Analysis	
		Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Min ROE	Min ROE Water	Min ROE Gas / Electric	Average ROE	Average ROE Water Only	Average ROE Gas / Electric	Max ROE	Max ROE Water Only	Max ROE Gas / Electric
American States Water Company	AWR	\$3.22	\$112.81	2.85%	2.96%	7.00%	7.50%	7.00%	7.17%	9.95%	9.95%	10.12%	10.12%	10.12%	10.46%	10.46%		
Atmos Energy Corporation	ATO	\$1.06	\$25.79	4.11%	4.27%	9.50%	7.30%	6.00%	7.60%	10.23%	10.23%	11.87%	11.87%	11.87%	13.81%	13.81%	13.81%	
California Water Service Group	CWT	\$1.95	\$37.07	5.26%	5.38%	6.50%	2.80%	n/a	4.65%	8.13%	8.13%	10.03%	10.03%	10.03%	11.93%	11.93%	11.93%	
Essential Utilities, Inc.	WTRG	\$2.64	\$63.77	4.14%	4.24%	4.00%	5.00%	5.00%	4.67%	8.22%	8.22%	8.90%	8.90%	8.90%	9.24%	9.24%	9.24%	
Eversource Energy	ES	\$3.02	\$58.64	5.15%	5.29%	4.50%	6.36%	5.00%	5.29%	9.77%	9.77%	10.57%	10.57%	10.57%	11.67%	11.67%	11.67%	
Middlesex Water Company	MSEX	\$2.86	\$57.87	4.94%	5.05%	5.50%	3.25%	4.20%	4.32%	8.27%	8.27%	9.37%	9.37%	9.37%	10.58%	10.58%	10.58%	
NiSource Inc.	NI	\$1.72	\$77.04	2.23%	2.30%	6.50%	4.40%	6.30%	5.73%	6.68%	6.68%	8.03%	8.03%	8.03%	8.81%	8.81%	8.81%	
Northwest Natural Gas Company	NWN	\$1.12	\$48.23	2.32%	2.44%	10.00%	10.80%	n/a	10.40%	12.44%	12.44%	12.84%	12.84%	12.84%	13.25%	13.25%	13.25%	
ONE Gas, Inc.	OGS	\$1.30	\$61.28	2.12%	2.17%	6.50%	2.70%	n/a	4.60%	4.85%	4.85%	6.77%	6.77%	6.77%	8.69%	8.69%	8.69%	
SJW Group	SJW	\$1.60	\$60.72	2.63%	2.73%	6.50%	7.50%	7.50%	7.17%	9.22%	9.22%	9.90%	9.90%	9.90%	10.23%	10.23%	10.23%	
Spire, Inc.	SR	\$1.23	\$35.51	3.46%	3.56%	7.00%	5.20%	5.80%	6.00%	8.75%	8.75%	9.56%	9.56%	9.56%	10.58%	10.58%	10.58%	
Mean				3.57%	3.67%	6.68%	5.71%	5.85%	6.14%	8.77%	8.76%	8.79%	9.82%	9.66%	9.94%	10.84%	10.49%	11.13%
Median				3.46%	3.56%	6.50%	5.20%	5.90%	5.73%	8.75%	8.27%	9.26%	9.90%	9.90%	10.07%	10.58%	10.46%	11.13%

Notes:

- [1] Source: Bloomberg Professional as of April 30, 2024
- [2] Source: Bloomberg Professional, equals 30-day average as of April 30, 2024
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.50 x [8])
- [5] Source: Value Line
- [6] Source: Yahoo! Finance
- [7] Source: Zacks
- [8] Equals Average ([5], [6], [7])
- [9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7]))
- [10] Equals [4] + [8]
- [11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7]))

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

Water
Natural Gas
Electric

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis	[6]	Staff Analysis			
		Current 30-day average of 30-year U.S. Treasury bond										
% Wate	Company	Ticker	yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.59%	0.85	12.91%	8.31%	11.66%	11.66%		11.97%	11.97%	
0%	Atmos Energy Corporation	ATO	4.59%	0.90	12.91%	8.31%	12.07%		12.07%	12.28%		12.28%
100%	California Water Service Group	CWT	4.59%	0.85	12.91%	8.31%	11.66%	11.66%		11.97%	11.97%	
57%	Essential Utilities, Inc.	WTRG	4.59%	0.85	12.91%	8.31%	11.66%	11.66%		11.97%	11.97%	
2%	Eversource Energy	ES	4.59%	0.85	12.91%	8.31%	11.66%		11.66%	11.97%		11.97%
100%	Middlesex Water Company	MSEX	4.59%	0.95	12.91%	8.31%	12.49%	12.49%		12.59%	12.59%	
0%	NiSource Inc.	NI	4.59%	0.70	12.91%	8.31%	10.41%		10.41%	11.04%		11.04%
0%	Northwest Natural Gas Company	NWN	4.59%	0.75	12.91%	8.31%	10.83%		10.83%	11.35%		11.35%
0%	ONE Gas, Inc.	OGS	4.59%	0.75	12.91%	8.31%	10.83%		10.83%	11.35%		11.35%
100%	SJW Group	SJW	4.59%	0.85	12.91%	8.31%	11.66%	11.66%		11.97%	11.97%	
0%	Spire, Inc.	SR	4.59%	1.00	12.91%	8.31%	12.91%		12.91%	12.91%		12.91%
	Mean						11.62%	11.83%	11.45%	11.94%	12.10%	11.81%
	Median						11.66%	11.66%	11.24%	11.97%	11.97%	11.66%

Notes:

- [1] Bloomberg Professional 30-day average as of April 30, 2024
- [2] Value Line reports
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis	[6]	Staff Analysis			
		Near-term projected 30-year U.S. Treasury bond yield (Q3 2024 - Q3 2025)										
% Wate	Company	Ticker	yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.32%	0.85	12.91%	8.59%	11.62%	11.62%		11.94%	11.94%	
0%	Atmos Energy Corporation	ATO	4.32%	0.90	12.91%	8.59%	12.05%		12.05%	12.26%		12.26%
100%	California Water Service Group	CWT	4.32%	0.85	12.91%	8.59%	11.62%	11.62%		11.94%	11.94%	
57%	Essential Utilities, Inc.	WTRG	4.32%	0.85	12.91%	8.59%	11.62%	11.62%		11.94%	11.94%	
2%	Eversource Energy	ES	4.32%	0.85	12.91%	8.59%	11.62%		11.62%	11.94%		11.94%
100%	Middlesex Water Company	MSEX	4.32%	0.95	12.91%	8.59%	12.48%	12.48%		12.58%	12.58%	
0%	NiSource Inc.	NI	4.32%	0.70	12.91%	8.59%	10.33%		10.33%	10.97%		10.97%
0%	Northwest Natural Gas Company	NWN	4.32%	0.75	12.91%	8.59%	10.76%		10.76%	11.30%		11.30%
0%	ONE Gas, Inc.	OGS	4.32%	0.75	12.91%	8.59%	10.76%		10.76%	11.30%		11.30%
100%	SJW Group	SJW	4.32%	0.85	12.91%	8.59%	11.62%	11.62%		11.94%	11.94%	
0%	Spire, Inc.	SR	4.32%	1.00	12.91%	8.59%	12.91%		12.91%	12.91%		12.91%
	Mean						11.58%	11.79%	11.40%	11.91%	12.07%	11.78%
	Median						11.62%	11.62%	11.19%	11.94%	11.94%	11.62%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 43, No. 5. May 1, 2024, at 2
- [2] Value Line reports
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original		[1]	[2]	[3]	[4]	[5]	Staff Analysis	[6]	Staff Analysis
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**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

% Wate	Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM		ECAPM ROE	ECAPM	
								Water Only	Gas / Electric		Water Only	Gas / Electric
81%	American States Water Company	AWR	4.10%	0.85	12.91%	8.81%	11.59%	11.59%		11.92%	11.92%	
0%	Atmos Energy Corporation	ATO	4.10%	0.90	12.91%	8.81%	12.03%		12.03%	12.25%		12.25%
100%	California Water Service Group	CWT	4.10%	0.85	12.91%	8.81%	11.59%	11.59%		11.92%	11.92%	
57%	Essential Utilities, Inc.	WTRG	4.10%	0.85	12.91%	8.81%	11.59%	11.59%		11.92%	11.92%	
2%	Eversource Energy	ES	4.10%	0.85	12.91%	8.81%	11.59%		11.59%	11.92%		11.92%
100%	Middlesex Water Company	MSEX	4.10%	0.95	12.91%	8.81%	12.47%	12.47%		12.58%	12.58%	
0%	NiSource Inc.	NI	4.10%	0.70	12.91%	8.81%	10.26%		10.26%	10.92%		10.92%
0%	Northwest Natural Gas Company	NWN	4.10%	0.75	12.91%	8.81%	10.70%		10.70%	11.25%		11.25%
0%	ONE Gas, Inc.	OGS	4.10%	0.75	12.91%	8.81%	10.70%		10.70%	11.25%		11.25%
100%	SJW Group	SJW	4.10%	0.85	12.91%	8.81%	11.59%	11.59%		11.92%	11.92%	
0%	Spire, Inc.	SR	4.10%	1.00	12.91%	8.81%	12.91%		12.91%	12.91%		12.91%
Mean							11.55%	11.76%	11.36%	11.89%	12.05%	11.75%
Median							11.59%	11.59%	11.14%	11.92%	11.92%	11.59%

Notes:

[1] Blue Chip Financial Forecasts, Vol. 42, No. 12, December 1, 2023, at 14

[2] Value Line reports

[3] Schedule AEB-6, Bulkley's Direct Testimony

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & BLOOMBERG BETA

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

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Original	% Wate	Company	Ticker	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
				average of 30- year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
	81%	American States Water Company	AWR	4.59%	0.75	12.91%	8.31%	10.84%	10.84%		11.35%	11.35%	
	0%	Atmos Energy Corporation	ATO	4.59%	0.80	12.91%	8.31%	11.27%		11.27%	11.68%		11.68%
	100%	California Water Service Group	CWT	4.59%	0.70	12.91%	8.31%	10.39%	10.39%		11.02%	11.02%	
	57%	Essential Utilities, Inc.	WTRG	4.59%	0.77	12.91%	8.31%	11.02%	11.02%		11.49%	11.49%	
	2%	Eversource Energy	ES	4.59%	0.77	12.91%	8.31%	10.97%		10.97%	11.46%		11.46%
	100%	Middlesex Water Company	MSEX	4.59%	0.80	12.91%	8.31%	11.25%	11.25%		11.66%	11.66%	
	0%	NiSource Inc.	NI	4.59%	0.65	12.91%	8.31%	9.96%		9.96%	10.70%		10.70%
	0%	Northwest Natural Gas Company	NWN	4.59%	0.69	12.91%	8.31%	10.32%		10.32%	10.97%		10.97%
	0%	ONE Gas, Inc.	OGS	4.59%	0.77	12.91%	8.31%	10.98%		10.98%	11.47%		11.47%
	100%	SJW Group	SJW	4.59%	0.80	12.91%	8.31%	11.24%	11.24%		11.65%	11.65%	
	0%	Spire, Inc.	SR	4.59%	0.85	12.91%	8.31%	11.63%		11.63%	11.95%		11.95%
Mean								10.90%	10.95%	10.86%	11.40%	11.44%	11.37%
Median								10.98%	11.02%	10.98%	11.47%	11.49%	11.46%

Notes:

[1] Bloomberg Professional 30-day average as of April 30, 2024

[2] Bloomberg Professional

[3] Schedule AEB-6, Bulkley's Direct Testimony

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

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

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Original	% Wate	Company	Ticker	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
				Near-term projected 30-year U.S. Treasury bond yield (Q3 2024 - Q3 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
	81%	American States Water Company	AWR	4.32%	0.75	12.91%	8.59%	10.77%	10.77%		11.30%	11.30%	
	0%	Atmos Energy Corporation	ATO	4.32%	0.80	12.91%	8.59%	11.22%		11.22%	11.64%		11.64%
	100%	California Water Service Group	CWT	4.32%	0.70	12.91%	8.59%	10.31%	10.31%		10.96%	10.96%	
	57%	Essential Utilities, Inc.	WTRG	4.32%	0.77	12.91%	8.59%	10.96%	10.96%		11.45%	11.45%	
	2%	Eversource Energy	ES	4.32%	0.77	12.91%	8.59%	10.91%		10.91%	11.41%		11.41%
	100%	Middlesex Water Company	MSEX	4.32%	0.80	12.91%	8.59%	11.20%	11.20%		11.62%	11.62%	

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

0% NiSource Inc.	NI	4.32%	0.65	12.91%	8.59%	9.87%	9.87%	10.63%	10.63%		
0% Northwest Natural Gas Company	NWN	4.32%	0.69	12.91%	8.59%	10.24%	10.24%	10.91%	10.91%		
0% ONE Gas, Inc.	OGS	4.32%	0.77	12.91%	8.59%	10.92%	10.92%	11.42%	11.42%		
100% SJW Group	SJW	4.32%	0.80	12.91%	8.59%	11.18%	11.18%	11.61%	11.61%		
0% Spire, Inc.	SR	4.32%	0.85	12.91%	8.59%	11.59%	11.59%	11.92%	11.92%		
Mean						10.83%	10.88%	10.79%	11.35%	11.39%	11.32%
Median						10.92%	10.96%	10.92%	11.42%	11.45%	11.41%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 43, No. 5, May 1, 2024, at 2
- [2] Bloomberg Professional
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis			
% Wate	Company	Ticker	Projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.10%	0.75	12.91%	8.81%	10.71%	10.71%		11.26%	11.26%	
0%	Atmos Energy Corporation	ATO	4.10%	0.80	12.91%	8.81%	11.18%		11.18%	11.61%		11.61%
100%	California Water Service Group	CWT	4.10%	0.70	12.91%	8.81%	10.24%	10.24%		10.91%	10.91%	
57%	Essential Utilities, Inc.	WTRG	4.10%	0.77	12.91%	8.81%	10.91%	10.91%		11.41%	11.41%	
2%	Eversource Energy	ES	4.10%	0.77	12.91%	8.81%	10.86%		10.86%	11.37%		11.37%
100%	Middlesex Water Company	MSEX	4.10%	0.80	12.91%	8.81%	11.15%	11.15%		11.59%	11.59%	
0%	NiSource Inc.	NI	4.10%	0.65	12.91%	8.81%	9.79%		9.79%	10.57%		10.57%
0%	Northwest Natural Gas Company	NWN	4.10%	0.69	12.91%	8.81%	10.17%		10.17%	10.86%		10.86%
0%	ONE Gas, Inc.	OGS	4.10%	0.77	12.91%	8.81%	10.87%		10.87%	11.38%		11.38%
100%	SJW Group	SJW	4.10%	0.80	12.91%	8.81%	11.14%	11.14%		11.58%	11.58%	
0%	Spire, Inc.	SR	4.10%	0.85	12.91%	8.81%	11.56%		11.56%	11.89%		11.89%
Mean						10.78%	10.83%	10.74%	11.31%	11.35%	11.28%	
Median						10.87%	10.91%	10.86%	11.38%	11.41%	11.37%	

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 42, No. 12, December 1, 2023, at 14
- [2] Source: Bloomberg Professional
- [3] Schedule AEB-6, Bulkley's Direct Testimony
- [4] Equals [3] - [1]
- [5] Equals [1] + [2] x [4]
- [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis			
% Wate	Company	Ticker	Current 30-day average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.59%	0.75	12.91%	8.31%	10.83%	10.83%		11.35%	11.35%	
0%	Atmos Energy Corporation	ATO	4.59%	0.76	12.91%	8.31%	10.91%		10.91%	11.41%		11.41%
100%	California Water Service Group	CWT	4.59%	0.71	12.91%	8.31%	10.49%	10.49%		11.10%	11.10%	
57%	Essential Utilities, Inc.	WTRG	4.59%	0.74	12.91%	8.31%	10.74%	10.74%		11.28%	11.28%	
2%	Eversource Energy	ES	4.59%	0.74	12.91%	8.31%	10.74%		10.74%	11.28%		11.28%
100%	Middlesex Water Company	MSEX	4.59%	0.76	12.91%	8.31%	10.91%	10.91%		11.41%	11.41%	
0%	NiSource Inc.	NI	4.59%	0.69	12.91%	8.31%	10.33%		10.33%	10.97%		10.97%
0%	Northwest Natural Gas Company	NWN	4.59%	0.70	12.91%	8.31%	10.41%		10.41%	11.04%		11.04%
0%	ONE Gas, Inc.	OGS	4.59%	0.74	12.91%	8.31%	10.74%		10.74%	11.28%		11.28%
100%	SJW Group	SJW	4.59%	0.76	12.91%	8.31%	10.91%	10.91%		11.41%	11.41%	
0%	Spire, Inc.	SR	4.59%	0.79	12.91%	8.31%	11.16%		11.16%	11.60%		11.60%
Mean						10.74%	10.78%	10.72%	11.28%	11.31%	11.26%	
Median						10.74%	10.83%	10.74%	11.28%	11.35%	11.28%	

Notes:

- [1] Bloomberg Professional 30-day average as of April 30, 2024
- [2] Source: Schedule AEB-4 p. 4

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

- [3] Schedule AEB-6, Bulkley's Direct Testimony
 [4] Equals [3] - [1]
 [5] Equals [1] + [2] x [4]
 [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

APITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis			
% Water	Company	Ticker	Near-term projected 30-year U.S. Treasury bond yield (Q3 2024 - Q3 2025)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.32%	0.75	12.91%	8.59%	10.76%	10.76%		11.30%	11.30%	
0%	Atmos Energy Corporation	ATO	4.32%	0.76	12.91%	8.59%	10.85%		10.85%	11.36%		11.36%
100%	California Water Service Group	CWT	4.32%	0.71	12.91%	8.59%	10.42%	10.42%		11.04%	11.04%	
57%	Essential Utilities, Inc.	WTRG	4.32%	0.74	12.91%	8.59%	10.67%	10.67%		11.23%	11.23%	
2%	Eversource Energy	ES	4.32%	0.74	12.91%	8.59%	10.67%		10.67%	11.23%		11.23%
100%	Middlesex Water Company	MSEX	4.32%	0.76	12.91%	8.59%	10.85%	10.85%		11.36%	11.36%	
0%	NiSource Inc.	NI	4.32%	0.69	12.91%	8.59%	10.24%		10.24%	10.91%		10.91%
0%	Northwest Natural Gas Company	NWN	4.32%	0.70	12.91%	8.59%	10.33%		10.33%	10.97%		10.97%
0%	ONE Gas, Inc.	OGS	4.32%	0.74	12.91%	8.59%	10.67%		10.67%	11.23%		11.23%
100%	SJW Group	SJW	4.32%	0.76	12.91%	8.59%	10.85%	10.85%		11.36%	11.36%	
0%	Spire, Inc.	SR	4.32%	0.79	12.91%	8.59%	11.10%		11.10%	11.55%		11.55%
	Mean						10.67%	10.71%	10.65%	11.23%	11.26%	11.21%
	Median						10.67%	10.76%	10.67%	11.23%	11.30%	11.23%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 43, No. 5. May 1, 2024, at 2
 [2] Source: Schedule AEB-4 p. 4
 [3] Schedule AEB-6, Bulkley's Direct Testimony
 [4] Equals [3] - [1]
 [5] Equals [1] + [2] x [4]
 [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Original	[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis			
% Water	Company	Ticker	Long-term projected 30-year U.S. Treasury bond yield (2025 - 2029)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.10%	0.75	12.91%	8.81%	10.70%	10.70%		11.25%	11.25%	
0%	Atmos Energy Corporation	ATO	4.10%	0.76	12.91%	8.81%	10.79%		10.79%	11.32%		11.32%
100%	California Water Service Group	CWT	4.10%	0.71	12.91%	8.81%	10.35%	10.35%		10.99%	10.99%	
57%	Essential Utilities, Inc.	WTRG	4.10%	0.74	12.91%	8.81%	10.62%	10.62%		11.19%	11.19%	
2%	Eversource Energy	ES	4.10%	0.74	12.91%	8.81%	10.62%		10.62%	11.19%		11.19%
100%	Middlesex Water Company	MSEX	4.10%	0.76	12.91%	8.81%	10.79%	10.79%		11.32%	11.32%	
0%	NiSource Inc.	NI	4.10%	0.69	12.91%	8.81%	10.18%		10.18%	10.86%		10.86%
0%	Northwest Natural Gas Company	NWN	4.10%	0.70	12.91%	8.81%	10.26%		10.26%	10.92%		10.92%
0%	ONE Gas, Inc.	OGS	4.10%	0.74	12.91%	8.81%	10.62%		10.62%	11.19%		11.19%
100%	SJW Group	SJW	4.10%	0.76	12.91%	8.81%	10.79%	10.79%		11.32%	11.32%	
0%	Spire, Inc.	SR	4.10%	0.79	12.91%	8.81%	11.06%		11.06%	11.52%		11.52%
	Mean						10.62%	10.65%	10.59%	11.19%	11.22%	11.17%
	Median						10.62%	10.70%	10.62%	11.19%	11.25%	11.19%

Notes:

- [1] Blue Chip Financial Forecasts, Vol. 42, No. 12, December 1, 2023, at 14
 [2] Source: Schedule AEB-4 p. 4
 [3] Schedule AEB-6, Bulkley's Direct Testimony
 [4] Equals [3] - [1]
 [5] Equals [1] + [2] x [4]
 [6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VL BETA

Water
Natural Gas
Electric

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis		
% Water	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric	
81%	American States Water Company	AWR	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%		
0%	Atmos Energy Corporation	ATO	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	California Water Service Group	CWT	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.99	11.93%	7.36%	11.83%	11.83%		11.86%	11.86%		
2%	Eversource Energy	ES	4.57%	0.94	11.93%	7.36%	11.47%		11.47%	11.58%		11.58%	
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
0%	NiSource Inc.	NI	4.57%	0.93	11.93%	7.36%	11.38%		11.38%	11.51%		11.51%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
0%	ONE Gas, Inc.	OGS	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	SJW Group	SJW	4.57%	0.84	11.93%	7.36%	10.73%	10.73%		11.03%	11.03%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.82%		10.82%	11.10%		11.10%	
Mean								10.74%	10.46%	10.98%	11.04%	10.82%	11.21%
Median								10.73%	10.00%	10.78%	11.03%	10.48%	11.06%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Value Line reports

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis		
% Water	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric	
81%	American States Water Company	AWR	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%		
0%	Atmos Energy Corporation	ATO	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	California Water Service Group	CWT	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.99	11.93%	7.36%	11.83%	11.83%		11.86%	11.86%		
2%	Eversource Energy	ES	4.57%	0.94	11.93%	7.36%	11.47%		11.47%	11.58%		11.58%	
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
0%	NiSource Inc.	NI	4.57%	0.93	11.93%	7.36%	11.38%		11.38%	11.51%		11.51%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
0%	ONE Gas, Inc.	OGS	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	SJW Group	SJW	4.57%	0.84	11.93%	7.36%	10.73%	10.73%		11.03%	11.03%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.82%		10.82%	11.10%		11.10%	
Mean								10.74%	10.46%	10.98%	11.04%	10.82%	11.21%
Median								10.73%	10.00%	10.78%	11.03%	10.48%	11.06%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Value Line reports

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VL BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
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**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

% Wate	Company	Ticker	April-June 2024 average of 30- year U.S. Treasury bond		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric	
			yield	Beta (β)									
81%	American States Water Company	AWR	4.57%	0.70	11.93%	7.36%	9.72%	9.72%		10.27%	10.27%		
0%	Atmos Energy Corporation	ATO	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	California Water Service Group	CWT	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.99	11.93%	7.36%	11.83%	11.83%		11.86%	11.86%		
2%	Eversource Energy	ES	4.57%	0.94	11.93%	7.36%	11.47%		11.47%	11.58%		11.58%	
100%	Middlesex Water Company	MSEX	4.57%	0.74	11.93%	7.36%	10.00%	10.00%		10.48%	10.48%		
0%	NiSource Inc.	NI	4.57%	0.93	11.93%	7.36%	11.38%		11.38%	11.51%		11.51%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
0%	ONE Gas, Inc.	OGS	4.57%	0.84	11.93%	7.36%	10.73%		10.73%	11.03%		11.03%	
100%	SJW Group	SJW	4.57%	0.84	11.93%	7.36%	10.73%	10.73%		11.03%	11.03%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.82%		10.82%	11.10%		11.10%	
Mean								10.74%	10.46%	10.98%	11.04%	10.82%	11.21%
Median								10.73%	10.00%	10.78%	11.03%	10.48%	11.06%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Value Line reports

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & BLOOMBERG BETA

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

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis		
% Wate	Company	Ticker	April-June 2024 average of 30- year U.S. Treasury bond		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric	
			yield	Beta (β)									
81%	American States Water Company	AWR	4.57%	0.75	11.93%	7.36%	10.10%	10.10%		10.55%	10.55%		
0%	Atmos Energy Corporation	ATO	4.57%	0.80	11.93%	7.36%	10.48%		10.48%	10.84%		10.84%	
100%	California Water Service Group	CWT	4.57%	0.70	11.93%	7.36%	9.70%	9.70%		10.26%	10.26%		
57%	Essential Utilities, Inc.	WTRG	4.57%	0.77	11.93%	7.36%	10.26%	10.26%		10.68%	10.68%		
2%	Eversource Energy	ES	4.57%	0.77	11.93%	7.36%	10.22%		10.22%	10.64%		10.64%	
100%	Middlesex Water Company	MSEX	4.57%	0.80	11.93%	7.36%	10.46%	10.46%		10.83%	10.83%		
0%	NiSource Inc.	NI	4.57%	0.65	11.93%	7.36%	9.32%		9.32%	9.97%		9.97%	
0%	Northwest Natural Gas Company	NWN	4.57%	0.69	11.93%	7.36%	9.64%		9.64%	10.21%		10.21%	
0%	ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.23%		10.23%	10.65%		10.65%	
100%	SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%		10.82%	10.82%		
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.80%		10.80%	11.08%		11.08%	
Mean								10.15%	10.19%	10.11%	10.59%	10.63%	10.57%
Median								10.23%	10.26%	10.22%	10.65%	10.68%	10.65%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Bloomberg Professional

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

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

$$K = R_f + 0.25 x (R_m - R_f) + 0.75 x \beta x (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30- year U.S. Treasury bond		Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
			yield	Beta (β)								
81%	American States Water Company	AWR	4.57%	0.75	11.93%	7.36%	10.10%	10.10%		10.55%	10.55%	
0%	Atmos Energy Corporation	ATO	4.57%	0.80	11.93%	7.36%	10.48%		10.48%	10.84%		10.84%
100%	California Water Service Group	CWT	4.57%	0.70	11.93%	7.36%	9.70%	9.70%		10.26%	10.26%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.77	11.93%	7.36%	10.26%	10.26%		10.68%	10.68%	
2%	Eversource Energy	ES	4.57%	0.77	11.93%	7.36%	10.22%		10.22%	10.64%		10.64%
100%	Middlesex Water Company	MSEX	4.57%	0.80	11.93%	7.36%	10.46%	10.46%		10.83%	10.83%	

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

0% NiSource Inc.	NI	4.57%	0.65	11.93%	7.36%	9.32%	9.32%	9.97%	9.97%		
0% Northwest Natural Gas Company	NWN	4.57%	0.69	11.93%	7.36%	9.64%	9.64%	10.21%	10.21%		
0% ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.23%	10.23%	10.65%	10.65%		
100% SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%	10.82%	10.82%		
0% Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.80%	10.80%	11.08%	11.08%		
Mean						10.15%	10.19%	10.11%	10.59%	10.63%	10.57%
Median						10.23%	10.26%	10.22%	10.65%	10.68%	10.65%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Bloomberg Professional

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & BLOOMBERG BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.75	11.93%	7.36%	10.10%	10.10%		10.55%	10.55%	
0%	Atmos Energy Corporation	ATO	4.57%	0.80	11.93%	7.36%	10.48%		10.48%	10.84%		10.84%
100%	California Water Service Group	CWT	4.57%	0.70	11.93%	7.36%	9.70%	9.70%		10.26%	10.26%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.77	11.93%	7.36%	10.26%	10.26%		10.68%	10.68%	
2%	Eversource Energy	ES	4.57%	0.77	11.93%	7.36%	10.22%		10.22%	10.64%		10.64%
100%	Middlesex Water Company	MSEX	4.57%	0.80	11.93%	7.36%	10.46%	10.46%		10.83%	10.83%	
0%	NiSource Inc.	NI	4.57%	0.65	11.93%	7.36%	9.32%		9.32%	9.97%		9.97%
0%	Northwest Natural Gas Company	NWN	4.57%	0.69	11.93%	7.36%	9.64%		9.64%	10.21%		10.21%
0%	ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.23%		10.23%	10.65%		10.65%
100%	SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%		10.82%	10.82%	
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.80%		10.80%	11.08%		11.08%
Mean							10.15%	10.19%	10.11%	10.59%	10.63%	10.57%
Median							10.23%	10.26%	10.22%	10.65%	10.68%	10.65%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Bloomberg Professional

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- CURRENT RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.75	11.93%	7.36%	10.10%	10.10%		10.55%	10.55%	
0%	Atmos Energy Corporation	ATO	4.57%	0.80	11.93%	7.36%	10.48%		10.48%	10.84%		10.84%
100%	California Water Service Group	CWT	4.57%	0.70	11.93%	7.36%	9.70%	9.70%		10.26%	10.26%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.77	11.93%	7.36%	10.26%	10.26%		10.68%	10.68%	
2%	Eversource Energy	ES	4.57%	0.77	11.93%	7.36%	10.22%		10.22%	10.64%		10.64%
100%	Middlesex Water Company	MSEX	4.57%	0.80	11.93%	7.36%	10.46%	10.46%		10.83%	10.83%	
0%	NiSource Inc.	NI	4.57%	0.65	11.93%	7.36%	9.32%		9.32%	9.97%		9.97%
0%	Northwest Natural Gas Company	NWN	4.57%	0.69	11.93%	7.36%	9.64%		9.64%	10.21%		10.21%
0%	ONE Gas, Inc.	OGS	4.57%	0.77	11.93%	7.36%	10.23%		10.23%	10.65%		10.65%
100%	SJW Group	SJW	4.57%	0.80	11.93%	7.36%	10.45%	10.45%		10.82%	10.82%	
0%	Spire, Inc.	SR	4.57%	0.85	11.93%	7.36%	10.80%		10.80%	11.08%		11.08%
Mean							10.15%	10.19%	10.11%	10.59%	10.63%	10.57%
Median							10.23%	10.26%	10.22%	10.65%	10.68%	10.65%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Schedule AEB-4 p. 4

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

APITAL ASSET PRICING MODEL -- NEAR-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BET

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.75	9.43%	4.86%	8.22%	8.22%		8.52%	8.52%	
0%	Atmos Energy Corporation	ATO	4.57%	0.80	9.43%	4.86%	8.48%		8.48%	8.72%		8.72%
100%	California Water Service Group	CWT	4.57%	0.70	9.43%	4.86%	7.96%	7.96%		8.33%	8.33%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.77	9.43%	4.86%	8.33%	8.33%		8.61%	8.61%	
2%	Eversource Energy	ES	4.57%	0.77	9.43%	4.86%	8.30%		8.30%	8.58%		8.58%
100%	Middlesex Water Company	MSEX	4.57%	0.80	9.43%	4.86%	8.46%	8.46%		8.71%	8.71%	
0%	NiSource Inc.	NI	4.57%	0.65	9.43%	4.86%	7.71%		7.71%	8.14%		8.14%
0%	Northwest Natural Gas Company	NWN	4.57%	0.69	9.43%	4.86%	7.92%		7.92%	8.30%		8.30%
0%	ONE Gas, Inc.	OGS	4.57%	0.77	9.43%	4.86%	8.31%		8.31%	8.59%		8.59%
100%	SJW Group	SJW	4.57%	0.80	9.43%	4.86%	8.46%	8.46%		8.70%	8.70%	
0%	Spire, Inc.	SR	4.57%	0.85	9.43%	4.86%	8.69%		8.69%	8.87%		8.87%
Mean							8.26%	8.29%	8.24%	8.55%	8.57%	8.53%
Median							8.31%	8.33%	8.31%	8.59%	8.61%	8.59%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Schedule AEB-4 p. 4

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

CAPITAL ASSET PRICING MODEL -- LONG-TERM PROJECTED RISK-FREE RATE & VALUE LINE LT AVERAGE BETA

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

$$K = R_f + 0.25 \times (R_m - R_f) + 0.75 \times \beta \times (R_m - R_f)$$

Staff Adjusted Market Return & Beta			[1]	[2]	[3]	[4]	[5]	Staff Analysis		[6]	Staff Analysis	
% Wate	Company	Ticker	April-June 2024 average of 30-year U.S. Treasury bond yield	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	CAPM ROE	CAPM Water Only	CAPM Gas / Electric	ECAPM ROE	ECAPM Water Only	ECAPM Gas / Electric
81%	American States Water Company	AWR	4.57%	0.75	9.43%	4.86%	8.22%	8.22%		8.52%	8.52%	
0%	Atmos Energy Corporation	ATO	4.57%	0.80	9.43%	4.86%	8.48%		8.48%	8.72%		8.72%
100%	California Water Service Group	CWT	4.57%	0.70	9.43%	4.86%	7.96%	7.96%		8.33%	8.33%	
57%	Essential Utilities, Inc.	WTRG	4.57%	0.77	9.43%	4.86%	8.33%	8.33%		8.61%	8.61%	
2%	Eversource Energy	ES	4.57%	0.77	9.43%	4.86%	8.30%		8.30%	8.58%		8.58%
100%	Middlesex Water Company	MSEX	4.57%	0.80	9.43%	4.86%	8.46%	8.46%		8.71%	8.71%	
0%	NiSource Inc.	NI	4.57%	0.65	9.43%	4.86%	7.71%		7.71%	8.14%		8.14%
0%	Northwest Natural Gas Company	NWN	4.57%	0.69	9.43%	4.86%	7.92%		7.92%	8.30%		8.30%
0%	ONE Gas, Inc.	OGS	4.57%	0.77	9.43%	4.86%	8.31%		8.31%	8.59%		8.59%
100%	SJW Group	SJW	4.57%	0.80	9.43%	4.86%	8.46%	8.46%		8.70%	8.70%	
0%	Spire, Inc.	SR	4.57%	0.85	9.43%	4.86%	8.69%		8.69%	8.87%		8.87%
Mean							8.26%	8.29%	8.24%	8.55%	8.57%	8.53%
Median							8.31%	8.33%	8.31%	8.59%	8.61%	8.59%

Notes:

[1] April-June 2024 Avg Yield 30-Year Treasury Bond

[2] Source: Schedule AEB-4 p. 4

[3] Schedule 6 Market Return

[4] Equals [3] - [1]

[5] Equals [1] + [2] x [4]

[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

HISTORICAL BETA - 2013 - 2023

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	Average	
American States Water Company	AWR	0.65	0.70	0.70	0.75	0.80	0.70	0.65	0.65	0.65	0.65	0.70	0.69
Atmos Energy Corporation	ATO	0.80	0.80	0.80	0.70	0.70	0.60	0.60	0.80	0.80	0.80	0.85	0.75
California Water Service Group	CWT	0.60	0.70	0.75	0.75	0.80	0.70	0.70	0.65	0.70	0.70	0.75	0.71
Essential Utilities, Inc.	WTRG	0.60	0.70	0.75	0.70	0.75	0.70	0.65	0.95	0.95	0.95	1.00	0.79
Eversource Energy	ES			0.75	0.70	0.65	0.60	0.55	0.90	0.90	0.90	0.95	0.77
Middlesex Water Company	MSEX	0.75	0.70	0.70	0.75	0.80	0.75	0.75	0.75	0.70	0.70	0.75	0.74
NiSource Inc.	NI	0.85	0.85	NMF	NMF	0.60	0.50	0.55	0.85	0.85	0.90	0.90	0.76
Northwest Natural Gas Company	NWN	0.65	0.70	0.65	0.65	0.70	0.60	0.60	0.80	0.85	0.80	0.85	0.71
ONE Gas, Inc.	OGS				0.70	0.70	0.65	0.65	0.80	0.80	0.80	0.85	0.74
SJW Group	SJW	0.85	0.85	0.75	0.75	0.70	0.60	0.60	0.85	0.80	0.80	0.85	0.76
Spire, Inc.	SR	0.65	0.70	0.70	0.70	0.70	0.65	0.65	0.85	0.85	0.85	0.85	0.74
Mean		0.71	0.74	0.73	0.72	0.72	0.64	0.63	0.80	0.80			0.74

Notes:

- [1] Value Line, Q4 2013.
- [2] Value Line, Q4 2014.
- [3] Value Line, Q4 2015.
- [4] Value Line, Q4 2016.
- [5] Value Line, Q4 2017.
- [6] Value Line, Q4 2018.
- [7] Value Line, Q4 2019.
- [8] Value Line, Q4 2020.
- [9] Value Line, Q4 2021.
- [10] Value Line, Q4 2022.
- [11] Value Line, Q4 2023.
- [10] Average ([1] - [11])

- [11] Value Line, Q1 2024
- [12] Value Line, Q2 2024
- [13] Average ([8] - [12])

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

		Staff Analysis					
Gas/Electric Proxy Avg Beta		[8]	[9]	[11]	[12]	[13]	S&P
Company	Ticker	12/31/22	12/31/23	03/31/24	06/30/24	Average	Credit Rating
Atmos Energy Corporation	ATO	0.80	0.85	0.85	0.85	0.84	A-
Eversource Energy	ES	0.90	0.95	0.95	0.95	0.94	A-
NiSource Inc.	NI	0.90	0.90	0.95	0.95	0.93	BBB+
Northwest Natural Gas Comp	NWN	0.80	0.85	0.85	0.85	0.84	A
ONE Gas, Inc.	OGS	0.80	0.85	0.85	0.85	0.84	A-
Spire, Inc.	SR	0.85	0.85	0.85	0.85	0.85	A-
Mean		0.84	0.88	0.88	0.88	0.87	A-
Water Proxy Avg Beta		[8]	[9]	[11]	[12]	[13]	S&P
Company	Ticker	12/31/22	12/31/23	03/31/24	06/30/24	Average	Credit Rating
American States Water Com	AWR	0.65	0.70	0.70	0.70	0.69	A
California Water Service Gro	CWT	0.70	0.75	0.75	0.75	0.74	A+
Essential Utilities, Inc.	WTRC	0.95	1.00	1.00	1.00	0.99	A
Middlesex Water Company	MSEX	0.70	0.75	0.75	0.75	0.74	A
SJW Group	SJW	0.80	0.85	0.85	0.85	0.84	A-
Mean		0.76	0.81	0.81	0.81	0.80	A

Missouri-American Water Company
WR-2024-0320 and SR-2024-0321

MARKET RISK PREMIUM DERIVED FROM S&P 500 INDEX

[1] Estimate of the S&P 500 Dividend Yield	1.72%
[2] Estimate of the S&P 500 Growth Rate	11.09%
[3] S&P 500 Estimated Required Market Return	12.91%

Staff Adjustment	
[1] Estimated Weighted Average Dividend Yield	1.72%
[2] Estimated Weighted Average Long-Term Growth Rate	10.12%
[3] S&P 500 Estimated Required Market Return	11.93%

Name	Ticker	[4] Shares Outst'g	[5] Price	[6] Market Capitalization	[7] Weight in Index	[8] Estimated Dividend Yield	[9] Cap-Weighted Dividend Yield	[10] Bloomberg Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.	[11] Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	325.622	99.97	32,552.43	0.10%	5.00%	0.01%	8.00%	0.01%	0.01%
American Express Co	AXP	719.303	234.03	168,338.48	0.53%	1.20%	0.01%	15.22%	0.08%	0.08%
Verizon Communications Inc	VZ	4209.255	39.49	166,223.48	0.52%	6.74%	0.04%	1.22%	0.01%	0.01%
Broadcom Inc	AVGO	463.421	1300.27	602,572.42	1.89%	1.62%	0.03%	14.20%	0.27%	0.27%
Boeing Co/The	BA	613.884	167.84	103,034.29				74.41%		
Solventum Corp	SOLV	172.709	65.01	11,227.81				-4.00%		
Caterpillar Inc	CAT	489.053	334.57	163,622.46	0.51%	1.55%	0.01%	15.00%	0.08%	0.08%
JPMorgan Chase & Co	JPM	2872.091	191.74	550,694.73	1.73%	2.40%	0.04%	3.50%	0.06%	0.06%
Chevron Corp	CVX	1847.32	161.27	297,917.30	0.94%	4.04%	0.04%	7.00%	0.07%	0.07%
Coca-Cola Co/The	KO	4311.191	61.77	266,302.27	0.84%	3.14%	0.03%	6.36%	0.05%	0.05%
AbbVie Inc	ABBV	1770.647	162.64	287,978.03	0.90%	3.81%	0.03%	8.62%	0.08%	0.08%
Walt Disney Co/The	DIS	1834.329	111.1	203,793.95		0.81%		21.90%		
Corpay Inc	CPAY	71.854	302.14	21,709.97	0.07%			13.65%	0.01%	
Extra Space Storage Inc	EXR	211.62	134.28	28,416.33	0.09%	4.83%	0.00%	1.62%	0.00%	0.00%
Exxon Mobil Corp	XOM	3943.007	118.27	466,339.44		3.21%		-12.00%		
Phillips 66	PSX	423.952	143.21	60,714.17		3.21%				
General Electric Co	GE	1094.607	161.82	177,129.30		0.69%		23.50%		
HP Inc	HPQ	978.481	28.09	27,485.53	0.09%	3.92%	0.00%	0.50%	0.00%	0.00%
Home Depot Inc/The	HD	991.031	334.22	331,222.38	1.04%	2.69%	0.03%	4.31%	0.04%	0.04%
Monolithic Power Systems Inc	MPWR	48.661	669.33	32,570.27	0.10%	0.75%	0.00%	16.00%	0.02%	0.02%
International Business Machines Corp	IBM	918.603	166.2	152,671.82	0.48%	4.02%	0.02%	3.19%	0.02%	0.02%
Johnson & Johnson	JNJ	2409.783	144.59	348,430.52	1.09%	3.43%	0.04%	5.05%	0.06%	0.06%
Lululemon Athletica Inc	LULU	120.892	360.6	43,593.66						
McDonald's Corp	MCD	721.005	273.04	196,863.21	0.62%	2.45%	0.02%	7.79%	0.05%	0.05%
Merck & Co Inc	MRK	2533.028	129.22	327,317.88		2.38%		39.45%		
3M Co	MMM	553.361	96.51	53,404.87		6.26%		0.00%		
American Water Works Co Inc	AWK	194.755	122.32	23,822.43	0.07%	2.31%	0.00%	7.70%	0.01%	0.01%
Bank of America Corp	BAC	7820.37	37.01	289,431.89		2.59%				
Pfizer Inc	PFE	5646.778	25.62	144,670.45	0.45%	6.56%	0.03%	9.59%	0.04%	0.04%
Procter & Gamble Co/The	PG	2360.135	163.2	385,174.03	1.21%	2.47%	0.03%	8.09%	0.10%	0.10%
AT&T Inc	T	7170	16.89	121,101.30	0.38%	6.57%	0.02%	2.78%	0.01%	0.01%
Travelers Cos Inc/The	TRV	228.993	212.16	48,583.15	0.15%	1.98%	0.00%	18.24%	0.03%	0.03%
RTX Corp	RTX	1329.506	101.52	134,971.45	0.42%	2.32%	0.01%	10.21%	0.04%	0.04%
Analog Devices Inc	ADI	495.908	200.61	99,484.10	0.31%	1.83%	0.01%	4.50%	0.01%	0.01%
Walmart Inc	WMT	8058.049	59.35	478,245.21	1.50%	1.40%	0.02%	7.00%	0.11%	0.11%
Cisco Systems Inc	CSCO	4049.187	46.98	190,230.81	0.60%	3.41%	0.02%	7.50%	0.04%	0.04%
Intel Corp	INTC	4256.872	30.47	129,706.89	0.41%	1.64%	0.01%	0.41%	0.00%	0.00%
General Motors Co	GM	1140.395	44.53	50,781.79	0.16%	1.08%	0.00%	15.71%	0.03%	0.03%
Microsoft Corp	MSFT	7432.306	389.33	2,893,619.69	9.09%	0.77%	0.07%	16.54%	1.50%	1.50%
Dollar General Corp	DG	219.671	139.19	30,576.01		1.70%		-1.47%		
Cigna Group/The	CI	283.647	357.04	101,273.32	0.32%	1.57%	0.00%	11.62%	0.04%	0.04%
Kinder Morgan Inc	KMI	2219.384	18.28	40,570.34	0.13%	6.29%	0.01%	4.00%	0.01%	0.01%
Citigroup Inc	C	1911.367	61.33	117,224.14	0.37%	3.46%	0.01%	17.34%	0.06%	0.06%
American International Group Inc	AIG	674.032	75.31	50,761.35	0.16%	1.91%	0.00%	9.50%	0.02%	0.02%
Altria Group Inc	MO	1717.626	43.81	75,249.20	0.24%	8.95%	0.02%	4.00%	0.01%	0.01%
HCA Healthcare Inc	HCA	264.485	309.82	81,942.74	0.26%	0.85%	0.00%	9.57%	0.02%	0.02%
International Paper Co	IP	347.332	34.94	12,135.78		5.29%		-2.00%		
Hewlett Packard Enterprise Co	HPE	1300	17	22,100.00	0.07%	3.06%	0.00%	2.86%	0.00%	0.00%
Abbott Laboratories	ABT	1735.184	105.97	183,877.45	0.58%	2.08%	0.01%	4.19%	0.02%	0.02%
Aflac Inc	AFL	575.408	83.65	48,132.88	0.15%	2.39%	0.00%	6.69%	0.01%	0.01%
Air Products and Chemicals Inc	APD	222.306	236.34	52,539.80	0.16%	3.00%	0.00%	9.40%	0.02%	0.02%
Super Micro Computer Inc	SMCI	58.55	858.8	50,282.74				54.91%		
Royal Caribbean Cruises Ltd	RCL	257.349	139.63	35,933.64				27.45%		
Hess Corp	HES	308.109	157.49	48,524.09	0.15%	1.11%	0.00%	18.00%	0.03%	0.03%
Archer-Daniels-Midland Co	ADM	494.438	58.66	29,003.73		3.41%		-2.35%		
Automatic Data Processing Inc	ADP	410.791	241.89	99,366.23	0.31%	2.32%	0.01%	16.00%	0.05%	0.05%
Verisk Analytics Inc	VRSK	143.39	217.96	31,253.28	0.10%	0.72%	0.00%	11.97%	0.01%	0.01%
AutoZone Inc	AZO	17.303	2956.4	51,154.59	0.16%			14.75%	0.02%	
Linde PLC	LIN	481.576	440.96	212,355.75	0.67%	1.26%	0.01%	11.00%	0.07%	0.07%
Avery Dennison Corp	AVY	80.553	217.28	17,502.56	0.05%	1.62%	0.00%	7.00%	0.00%	0.00%
Enphase Energy Inc	ENPH	136.063	108.76	14,798.21	0.05%			19.27%	0.01%	
MSCI Inc	MSCI	79.224	465.79	36,901.75	0.12%	1.37%	0.00%	11.45%	0.01%	0.01%
Ball Corp	BALL	315.642	69.57	21,959.21	0.07%	1.15%	0.00%	9.50%	0.01%	0.01%
Axon Enterprise Inc	AXON	75.463	313.66	23,669.72						
Dayforce Inc	DAY	156.6	61.37	9,610.54						
Carrier Global Corp	CARR	901.012	61.49	55,403.23	0.17%	1.24%	0.00%	7.87%	0.01%	0.01%
Bank of New York Mellon Corp/The	BK	747.816	56.49	42,244.13	0.13%	2.97%	0.00%	10.00%	0.01%	0.01%
Otis Worldwide Corp	OTIS	404.323	91.2	36,874.26	0.12%	1.71%	0.00%	9.00%	0.01%	0.01%
Baxter International Inc	BAX	508	40.37	20,507.96	0.06%	2.87%	0.00%	2.73%	0.00%	0.00%
Becton Dickinson & Co	BDX	288.902	234.6	67,776.41	0.21%	1.62%	0.00%	8.36%	0.02%	0.02%
Berkshire Hathaway Inc	BRK/B	1310.995	396.73	520,111.05						
Best Buy Co Inc	BBY	215.381	73.64	15,860.66	0.05%	5.11%	0.00%	3.36%	0.00%	0.00%
Boston Scientific Corp	BSX	1469.895	71.87	105,641.35	0.33%			12.08%	0.04%	
Bristol-Myers Squibb Co	BMJ	2027.1	43.94	89,070.77		5.46%		-4.12%		
Brown-Forman Corp	BF/B	303.416	47.85	14,518.46	0.05%	1.82%	0.00%	2.73%	0.00%	0.00%
Coterra Energy Inc	CTRA	751.847	27.36	20,570.53		3.07%				

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Campbell Soup Co	CPB	298.103	45.71	13,626.29	0.04%	3.24%	0.00%	4.87%	0.00%	0.00%
Hilton Worldwide Holdings Inc	HLT	250.046	197.28	49,329.07	0.15%	0.30%	0.00%	15.52%	0.02%	0.02%
Carnival Corp	CCL	1119.446	14.82	16,590.19						
Qorvo Inc	QRVO	96.548	116.84	11,280.67	0.04%			17.72%	0.01%	
Builders FirstSource Inc	BLDR	121.94	182.82	22,293.07	0.07%			11.65%	0.01%	
UDR Inc	UDR	329.329	38.08	12,540.85	0.04%	4.46%	0.00%	6.06%	0.00%	0.00%
Clorox Co/The	CLX	124.188	147.87	18,363.68	0.06%	3.25%	0.00%	13.23%	0.01%	0.01%
Paycom Software Inc	PAYC	58.15	187.98	10,931.04	0.03%	0.80%	0.00%	5.50%	0.00%	0.00%
CMS Energy Corp	CMS	291.764	60.61	17,683.82	0.06%	3.40%	0.00%	7.36%	0.00%	0.00%
Colgate-Palmolive Co	CL	820.441	91.92	75,414.94	0.24%	2.18%	0.01%	8.18%	0.02%	0.02%
EPAM Systems Inc	EPAM	57.995	235.26	13,643.90	0.04%			2.97%	0.00%	
Comerica Inc	CMA	132.587	50.17	6,651.89		5.66%				
Conagra Brands Inc	CAG	478.063	30.78	14,714.78	0.05%	4.55%	0.00%	1.82%	0.00%	0.00%
Airbnb Inc	ABNB	438.087	158.57	69,467.46	0.22%			19.82%	0.04%	
Consolidated Edison Inc	ED	344.924	94.4	32,560.83	0.10%	3.52%	0.00%	5.70%	0.01%	0.01%
Corning Inc	GLW	855.352	33.38	28,551.65	0.09%	3.36%	0.00%	10.78%	0.01%	0.01%
Cummins Inc	CMI	141.857	282.49	40,073.18	0.13%	2.38%	0.00%	6.07%	0.01%	0.01%
Caesars Entertainment Inc	CZR	216.416	35.82	7,752.02				-28.24%		
Danaher Corp	DHR	740.687	246.62	182,668.23		0.44%		-7.56%		
Target Corp	TGT	461.69	160.98	74,322.86		2.73%		-2.13%		
Deere & Co	DE	278.358	391.41	108,952.10		1.50%		-4.67%		
Dominion Energy Inc	D	837.593	50.98	42,700.49	0.13%	5.24%	0.01%	10.65%	0.01%	0.01%
Dover Corp	DOV	137.43	179.3	24,641.20	0.08%	1.14%	0.00%	9.50%	0.01%	0.01%
Alliant Energy Corp	LNT	252.719	49.8	12,585.41	0.04%	3.86%	0.00%	7.00%	0.00%	0.00%
Steel Dynamics Inc	STLD	160.018	130.12	20,821.54		1.41%		-1.63%		
Duke Energy Corp	DUK	771	98.26	75,758.46	0.24%	4.17%	0.01%	6.65%	0.02%	0.02%
Regency Centers Corp	REG	184.581	59.22	10,930.89	0.03%	4.53%	0.00%	3.63%	0.00%	0.00%
Eaton Corp PLC	ETN	399.892	318.26	127,269.63	0.40%	1.18%	0.00%	15.00%	0.06%	0.06%
Ecolab Inc	ECL	285.912	226.15	64,659.00	0.20%	1.01%	0.00%	12.50%	0.03%	0.03%
Revvity Inc	RVTY	123.525	102.47	12,657.61	0.04%	0.27%	0.00%	8.26%	0.00%	0.00%
Emerson Electric Co	EMR	571.7	107.78	61,617.83	0.19%	1.95%	0.00%	14.13%	0.03%	0.03%
EOG Resources Inc	EOG	580.002	132.13	76,635.66	0.24%	2.75%	0.01%	5.00%	0.01%	0.01%
Aon PLC	AON	217.431	282.01	61,317.72	0.19%	0.96%	0.00%	10.59%	0.02%	0.02%
Entergy Corp	ETR	213.273	105.54	22,508.83	0.07%	4.28%	0.00%	7.02%	0.00%	0.00%
Equifax Inc	EFX	123.611	220.19	27,217.91	0.09%	0.71%	0.00%	11.56%	0.01%	0.01%
EQT Corp	EQT	441.592	40.09	17,703.42		1.57%		31.59%		
IQVIA Holdings Inc	IQV	182.014	231.77	42,185.38	0.13%			8.92%	0.01%	
Gartner Inc	IT	77.63	412.59	32,029.36	0.10%			10.78%	0.01%	
FedEx Corp	FDX	246.081	261.78	64,419.08	0.20%	1.93%	0.00%	13.00%	0.03%	0.03%
FMC Corp	FMC	124.817	59.01	7,365.45	0.02%	3.93%	0.00%	8.00%	0.00%	0.00%
Brown & Brown Inc	BRO	285.249	81.54	23,259.20	0.07%	0.64%	0.00%	9.56%	0.01%	0.01%
Ford Motor Co	F	3921.485	12.15	47,646.04	0.15%	4.94%	0.01%	1.67%	0.00%	0.00%
NextEra Energy Inc	NEE	2023.714	66.97	135,528.13	0.43%	3.08%	0.01%	8.10%	0.03%	0.03%
Franklin Resources Inc	BEN	526.091	22.84	12,015.92		5.43%				
Garmin Ltd	GRMN	192.079	144.47	27,749.65	0.09%	2.08%	0.00%	5.60%	0.00%	0.00%
Freeport-McMoRan Inc	FCX	1434.409	49.94	71,634.39	0.22%	1.20%	0.00%	1.14%	0.00%	0.00%
Dexcom Inc	DXCM	397.684	127.39	50,660.96				30.31%		
General Dynamics Corp	GD	274.364	287.09	78,767.16	0.25%	1.98%	0.00%	12.64%	0.03%	0.03%
General Mills Inc	GIS	564.549	70.46	39,778.12	0.12%	3.35%	0.00%	4.00%	0.00%	0.00%
Genuine Parts Co	GPC	139.299	157.21	21,899.20		2.54%				
Atmos Energy Corp	ATO	150.84	117.9	17,784.04	0.06%	2.73%	0.00%	7.00%	0.00%	0.00%
WW Grainger Inc	GWW	49.069	921.35	45,209.72		0.89%				
Halliburton Co	HAL	885.301	37.47	33,172.23	0.10%	1.81%	0.00%	11.60%	0.01%	0.01%
Healthpeak Properties Inc	DOC	703.782	18.61	13,097.38	0.04%	6.45%	0.00%	2.24%	0.00%	0.00%
L3Harris Technologies Inc	LHX	189.68	214.05	40,601.00	0.13%	2.17%	0.00%	7.29%	0.01%	0.01%
Insulet Corp	PODD	70.022	171.94	12,039.58				33.03%		
Catalent Inc	CTLT	180.974	55.85	10,107.40				35.27%		
Fortive Corp	FTV	352.029	75.27	26,497.22	0.08%	0.43%	0.00%	8.98%	0.01%	0.01%
Hershey Co/The	HSY	149.598	193.92	29,010.04	0.09%	2.83%	0.00%	5.50%	0.01%	0.01%
Synchrony Financial	SYF	401.544	43.98	17,659.91		2.27%				
Hormel Foods Corp	HRL	547.688	35.56	19,475.79	0.06%	3.18%	0.00%	6.59%	0.00%	0.00%
Arthur J Gallagher & Co	AJG	216.8	234.69	50,880.79	0.16%	1.02%	0.00%	12.32%	0.02%	0.02%
Mondelez International Inc	MDLZ	1341.359	71.94	96,497.37	0.30%	2.36%	0.01%	8.55%	0.03%	0.03%
CenterPoint Energy Inc	CNP	633.032	29.14	18,446.55	0.06%	2.75%	0.00%	7.95%	0.00%	0.00%
Humana Inc	HUM	120.501	302.09	36,402.15		1.17%		-6.15%		
Willis Towers Watson PLC	WTW	102.236	251.14	25,675.55	0.08%	1.40%	0.00%	12.37%	0.01%	0.01%
Illinois Tool Works Inc	ITW	298.745	244.11	72,926.64	0.23%	2.29%	0.01%	7.27%	0.02%	0.02%
CDW Corp/DE	CDW	134.368	241.86	32,498.24	0.10%	1.03%	0.00%	8.93%	0.01%	0.01%
Trane Technologies PLC	TT	226.352	317.34	71,830.54	0.23%	1.06%	0.00%	13.47%	0.03%	0.03%
Interpublic Group of Cos Inc/The	IPG	377.424	30.44	11,488.79	0.04%	4.34%	0.00%	4.94%	0.00%	0.00%
International Flavors & Fragrances Inc	IFF	255.319	84.65	21,612.75		1.89%		-1.97%		
Generac Holdings Inc	GNRC	60.269	135.96	8,194.17	0.03%			6.00%	0.00%	
NXP Semiconductors NV	NXPI	255.684	256.19	65,503.68	0.21%	1.58%	0.00%	20.00%	0.04%	0.04%
Kellanova	K	340.678	57.86	19,711.63	0.06%	3.87%	0.00%	8.42%	0.01%	0.01%
Broadridge Financial Solutions Inc	BR	117.772	193.41	22,778.28		1.65%				
Kimberly-Clark Corp	KMB	336.709	136.53	45,970.88	0.14%	3.57%	0.01%	7.72%	0.01%	0.01%
Kimco Realty Corp	KIM	674.133	18.63	12,559.10	0.04%	5.15%	0.00%	2.80%	0.00%	0.00%
Oracle Corp	ORCL	2748.514	113.75	312,643.47	0.98%	1.41%	0.01%	14.30%	0.14%	0.14%
Kroger Co/The	KR	721.688	55.38	39,967.08	0.13%	2.09%	0.00%	4.76%	0.01%	0.01%
Lennar Corp	LEN	245.036	151.62	37,152.36	0.12%	1.32%	0.00%	8.82%	0.01%	0.01%
Eli Lilly & Co	LLY	950.405	781.1	742,361.35		0.67%		40.63%		
Bath & Body Works Inc	BBWI	224.897	45.42	10,214.82	0.03%	1.76%	0.00%	13.65%	0.00%	0.00%
Charter Communications Inc	CHTR	144.386	255.94	36,954.15	0.12%			5.89%	0.01%	
Loews Corp	L	222.072	75.15	16,688.71		0.33%				
Lowe's Cos Inc	LOW	572.192	227.99	130,454.05	0.41%	1.93%	0.01%	2.12%	0.01%	0.01%
Hubbell Inc	HUBB	53.683	370.52	19,890.63	0.06%	1.32%	0.00%	18.00%	0.01%	0.01%
IDEX Corp	IEX	75.695	220.46	16,687.72		1.16%				
Marsh & McLennan Cos Inc	MMC	492.724	199.43	98,263.95	0.31%	1.42%	0.00%	6.90%	0.02%	0.02%
Masco Corp	MAS	220.244	68.45	15,075.70	0.05%	1.69%	0.00%	8.64%	0.00%	0.00%
S&P Global Inc	SPGI	320.257	415.83	133,172.47	0.42%	0.88%	0.00%	12.93%	0.05%	0.05%

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Medtronic PLC	MDT	1327.823	80.24	106,544.52	0.33%	3.44%	0.01%	3.83%	0.01%	0.01%
Viatis Inc	VTRS	1187.569	11.57	13,740.17		4.15%		-1.69%		
CVS Health Corp	CVS	1260.48	67.71	85,347.10	0.27%	3.93%	0.01%	7.62%	0.02%	0.02%
DuPont de Nemours Inc	DD	417.583	72.5	30,274.77	0.10%	2.10%	0.00%	6.72%	0.01%	0.01%
Micron Technology Inc	MU	1107.368	112.96	125,088.29		0.41%		-4.00%		
Motorola Solutions Inc	MSI	166.123	339.15	56,340.62	0.18%	1.16%	0.00%	8.85%	0.02%	0.02%
Cboe Global Markets Inc	CBOE	105.582	181.15	19,126.18	0.06%	1.21%	0.00%	14.28%	0.01%	0.01%
Laboratory Corp of America Holdings	LH	84.294	201.37	16,974.28	0.05%	1.43%	0.00%	9.46%	0.01%	0.01%
Newmont Corp	NEM	1153.14	40.64	46,863.61	0.15%	2.46%	0.00%	18.15%	0.03%	0.03%
NIKE Inc	NKE	1211.462	92.26	111,769.48	0.35%	1.60%	0.01%	10.85%	0.04%	0.04%
NiSource Inc	NI	448.188	27.86	12,486.52	0.04%	3.80%	0.00%	7.00%	0.00%	0.00%
Norfolk Southern Corp	NSC	225.914	230.32	52,032.51		2.34%				
Principal Financial Group Inc	PFG	235.15	79.14	18,609.77	0.06%	3.59%	0.00%	11.79%	0.01%	0.01%
Eversource Energy	ES	350.727	60.62	21,261.07		4.72%				
Northrop Grumman Corp	NOC	147.99	485.03	71,779.59	0.23%	1.54%	0.00%	18.93%	0.04%	0.04%
Wells Fargo & Co	WFC	3501.7	59.32	207,720.84	0.65%	2.36%	0.02%	13.41%	0.09%	0.09%
Nucor Corp	NUE	239.98	168.53	40,443.83	0.13%	1.28%	0.00%	0.83%	0.00%	0.00%
Occidental Petroleum Corp	OXY	879.499	66.14	58,170.06	0.18%	1.33%	0.00%	20.00%	0.04%	0.04%
Omnicom Group Inc	OMC	195.834	92.84	18,181.23	0.06%	3.02%	0.00%	7.46%	0.00%	0.00%
ONEOK Inc	OKE	583.64	79.12	46,177.60	0.14%	5.01%	0.01%	1.56%	0.00%	0.00%
Raymond James Financial Inc	RJF	207.3	122	25,290.60	0.08%	1.48%	0.00%	15.38%	0.01%	0.01%
PG&E Corp	PCG	2133.508	17.11	36,504.32	0.11%	0.23%	0.00%	10.10%	0.01%	0.01%
Parker-Hannifin Corp	PH	128.411	544.91	69,972.44	0.22%	1.20%	0.00%	16.28%	0.04%	0.04%
Rollins Inc	ROL	484.23	44.56	21,577.29	0.07%	1.35%	0.00%	13.02%	0.01%	0.01%
PPL Corp	PPL	737.124	27.46	20,241.43	0.06%	3.75%	0.00%	7.22%	0.00%	0.00%
ConocoPhillips	COP	1171.101	125.62	147,113.71		2.48%				
PulteGroup Inc	PHM	210.342	111.42	23,436.31	0.07%	0.72%	0.00%	7.65%	0.01%	0.01%
Pinnacle West Capital Corp	PNW	113.557	73.65	8,363.47	0.03%	4.78%	0.00%	7.28%	0.00%	0.00%
PNC Financial Services Group Inc/The	PNC	397.845	153.26	60,973.72	0.19%	4.05%	0.01%	15.32%	0.03%	0.03%
PPG Industries Inc	PPG	235.361	129	30,361.57	0.10%	2.02%	0.00%	7.82%	0.01%	0.01%
Progressive Corp/The	PGR	585.7	208.25	121,972.03		0.19%		32.49%		
Veralto Corp	VLTO	246.847	93.68	23,124.63		0.38%				
Public Service Enterprise Group Inc	PEG	498.587	69.08	34,442.39	0.11%	3.47%	0.00%	6.28%	0.01%	0.01%
Robert Half Inc	RHI	105.117	69.14	7,267.79	0.02%	3.07%	0.00%	7.15%	0.00%	0.00%
Cooper Cos Inc/The	COO	198.756	89.06	17,701.21	0.06%			11.77%	0.01%	
Edison International	EIX	383.925	71.06	27,281.71	0.09%	4.39%	0.00%	7.80%	0.01%	0.01%
Schlumberger NV	SLB	1429.338	47.48	67,864.97	0.21%	2.32%	0.00%	14.81%	0.03%	0.03%
Charles Schwab Corp/The	SCHW	1773.475	73.95	131,148.48	0.41%	1.35%	0.01%	14.20%	0.06%	0.06%
Sherwin-Williams Co/The	SHW	253.549	299.61	75,965.82	0.24%	0.95%	0.00%	9.56%	0.02%	0.02%
West Pharmaceutical Services Inc	WST	72.843	357.48	26,039.92	0.08%	0.22%	0.00%	7.72%	0.01%	0.01%
J M Smucker Co/The	SJM	106.176	114.85	12,194.31	0.04%	3.69%	0.00%	7.04%	0.00%	0.00%
Snap-on Inc	SNA	52.719	267.96	14,126.58	0.04%	2.78%	0.00%	3.83%	0.00%	0.00%
AMETEK Inc	AME	231.211	174.66	40,383.31	0.13%	0.64%	0.00%	7.56%	0.01%	0.01%
Uber Technologies Inc	UBER	2081.544	66.27	137,943.92				51.75%		
Southern Co/The	SO	1094.633	73.5	80,455.53	0.25%	3.92%	0.01%	7.10%	0.02%	0.02%
Truist Financial Corp	TFC	1338.096	37.55	50,245.50	0.16%	5.54%	0.01%	10.30%	0.02%	0.02%
Southwest Airlines Co	LUV	598.456	25.94	15,523.95		2.78%		21.33%		
W R Berkley Corp	WRB	256.549	76.97	19,746.58	0.06%	0.57%	0.00%	11.50%	0.01%	0.01%
Stanley Black & Decker Inc	SWK	153.802	91.4	14,057.50	0.04%	3.54%	0.00%	10.00%	0.00%	0.00%
Public Storage	PSA	175.829	259.45	45,618.83	0.14%	4.63%	0.01%	3.51%	0.01%	0.01%
Arista Networks Inc	ANET	312.634	256.56	80,209.38	0.25%			15.67%	0.04%	
Sysco Corp	SY	497.83	74.32	36,998.73	0.12%	2.74%	0.00%	14.00%	0.02%	0.02%
Corteva Inc	CTVA	687.797	54.13	37,230.45	0.12%	1.18%	0.00%	13.66%	0.02%	0.02%
Texas Instruments Inc	TXN	910.482	176.42	160,627.23	0.50%	2.95%	0.01%	10.00%	0.05%	0.05%
Textron Inc	TXT	190.699	84.59	16,131.23	0.05%	0.09%	0.00%	10.12%	0.01%	0.01%
Thermo Fisher Scientific Inc	TMO	381.312	568.72	216,859.76		0.27%				
TJX Cos Inc/The	TJX	1132.974	94.09	106,601.52	0.33%	1.59%	0.01%	10.00%	0.03%	0.03%
Globe Life Inc	GL	94.037	76.17	7,162.80	0.02%	1.26%	0.00%	7.00%	0.00%	0.00%
Johnson Controls International plc	JCI	681.477	65.07	44,343.71	0.14%	2.27%	0.00%	9.77%	0.01%	0.01%
Ulta Beauty Inc	ULTA	47.935	404.84	19,406.01	0.06%			6.90%	0.00%	
Union Pacific Corp	UNP	610.122	237.16	144,696.53	0.45%	2.19%	0.01%	11.00%	0.05%	0.05%
Keysight Technologies Inc	KEYS	174.556	147.94	25,823.81				-0.99%		
UnitedHealth Group Inc	UNH	920.08	483.7	445,042.70	1.40%	1.55%	0.02%	11.58%	0.16%	0.16%
Blackstone Inc	BX	722.263	116.61	84,223.09		2.85%		23.93%		
Marathon Oil Corp	MRO	571.477	26.85	15,344.16	0.05%	1.64%	0.00%	7.00%	0.00%	0.00%
Bio-Rad Laboratories Inc	BIO	23.423	269.75	6,318.35						
Ventas Inc	VTR	404.049	44.28	17,891.29	0.06%	4.07%	0.00%	5.78%	0.00%	0.00%
Vulcan Materials Co	VMC	132.272	257.63	34,077.24	0.11%	0.71%	0.00%	15.78%	0.02%	0.02%
Weyerhaeuser Co	WY	729.617	30.17	22,012.54		2.65%				
Williams Cos Inc/The	WMB	1218.425	38.36	46,738.78	0.15%	4.95%	0.01%	2.50%	0.00%	0.00%
Constellation Energy Corp	CEG	315.121	185.94	58,593.60	0.18%	0.76%	0.00%	9.00%	0.02%	0.02%
WEC Energy Group Inc	WEC	315.562	82.64	26,078.04	0.08%	4.04%	0.00%	6.85%	0.01%	0.01%
Adobe Inc	ADBE	448	462.83	207,347.84	0.65%			16.73%	0.11%	
AES Corp/The	AES	710.287	17.9	12,714.14	0.04%	3.85%	0.00%	7.85%	0.00%	0.00%
Expeditors International of Washington Inc	EXPD	143.899	111.31	16,017.40	0.05%	1.24%	0.00%	2.85%	0.00%	0.00%
Amgen Inc	AMGN	536.376	273.94	146,934.84	0.46%	3.29%	0.02%	4.49%	0.02%	0.02%
Apple Inc	AAPL	15441.881	170.33	2,630,215.59	8.26%	0.56%	0.05%	13.00%	1.07%	1.07%
Autodesk Inc	ADSK	213.915	212.85	45,531.81	0.14%			12.76%	0.02%	
Cintas Corp	CTAS	101.463	658.34	66,797.15	0.21%	0.82%	0.00%	10.83%	0.02%	0.02%
Comcast Corp	CMCSA	3914.182	38.11	149,169.48	0.47%	3.25%	0.02%	8.67%	0.04%	0.04%
Molson Coors Beverage Co	TAP	197.551	57.26	11,311.77	0.04%	3.07%	0.00%	4.67%	0.00%	0.00%
KLA Corp	KLAC	134.64	689.29	92,806.01	0.29%	0.84%	0.00%	9.54%	0.03%	0.03%
Marriott International Inc/MD	MAR	288.259	236.13	68,066.60	0.21%	0.88%	0.00%	4.74%	0.01%	0.01%
Fiserv Inc	FI	585.102	152.67	89,327.52	0.28%			15.47%	0.04%	
McCormick & Co Inc/MD	MKC	251.745	76.06	19,147.72	0.06%	2.21%	0.00%	5.96%	0.00%	0.00%
PACCAR Inc	PCAR	524.011	106.11	55,602.81	0.17%	1.13%	0.00%	12.00%	0.02%	0.02%
Costco Wholesale Corp	COST	443.504	722.9	320,609.04	1.01%	0.64%	0.01%	10.16%	0.10%	0.10%
Stryker Corp	SYK	380.47	336.5	128,028.16	0.40%	0.95%	0.00%	8.45%	0.03%	0.03%
Tyson Foods Inc	TSN	286.339	60.65	17,366.46		3.23%		53.81%		
Lamb Weston Holdings Inc	LW	144.391	83.34	12,033.55	0.04%	1.73%	0.00%	11.56%	0.00%	0.00%

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Applied Materials Inc	AMAT	830.897	198.65	165,057.69	0.52%	0.81%	0.00%	14.23%	0.07%	0.07%
American Airlines Group Inc	AAL	653.541	13.51	8,829.34				-1.53%		
Cardinal Health Inc	CAH	243.233	103.04	25,062.73	0.08%	1.94%	0.00%	11.91%	0.01%	0.01%
Cincinnati Financial Corp	CINF	156.558	115.69	18,112.20	0.06%	2.80%	0.00%	7.35%	0.00%	0.00%
Paramount Global	PARA	625.776	11.39	7,127.59				48.12%		
DR Horton Inc	DHI	329.312	142.1901	46,824.91	0.15%	0.84%	0.00%	4.37%	0.01%	0.01%
Electronic Arts Inc	EA	267.35	126.82	33,905.33	0.11%	0.60%	0.00%	12.50%	0.01%	0.01%
Fair Isaac Corp	FICO	24.711	1133.33	28,005.72						
Fastenal Co	FAST	572.547	67.94	38,898.84		2.30%				
M&T Bank Corp	MTB	166.724	144.39	24,073.28	0.08%	3.60%	0.00%	8.00%	0.01%	0.01%
Xcel Energy Inc	XEL	555.639	53.73	29,854.48	0.09%	4.08%	0.00%	6.71%	0.01%	0.01%
Fifth Third Bancorp	FITB	683.812	36.46	24,931.79		3.84%		25.00%		
Gilead Sciences Inc	GILD	1246.969	65.2	81,302.38	0.26%	4.72%	0.01%	13.35%	0.03%	0.03%
Hasbro Inc	HAS	138.791	61.3	8,507.89	0.03%	4.57%	0.00%	17.10%	0.00%	0.00%
Huntington Bancshares Inc/OH	HBAN	1449.254	13.47	19,521.45	0.06%	4.60%	0.00%	4.46%	0.00%	0.00%
Welltower Inc	WELL	597.916	95.28	56,969.44	0.18%	2.56%	0.00%	14.52%	0.03%	0.03%
Biogen Inc	BIIB	145.597	214.82	31,277.15	0.10%			4.62%	0.00%	
Northern Trust Corp	NTRS	204.592	82.39	16,856.33	0.05%	3.64%	0.00%	10.80%	0.01%	0.01%
Packaging Corp of America	PKG	89.755	172.98	15,525.82	0.05%	2.89%	0.00%	3.00%	0.00%	0.00%
Paychex Inc	PAYX	359.963	118.81	42,767.20	0.13%	3.00%	0.00%	7.00%	0.01%	0.01%
QUALCOMM Inc	QCOM	1116	165.85	185,088.60	0.58%	2.05%	0.01%	10.65%	0.06%	0.06%
Ross Stores Inc	ROST	335.174	129.55	43,421.79	0.14%	1.13%	0.00%	10.00%	0.01%	0.01%
IDEXX Laboratories Inc	IDXX	83.089	492.76	40,942.94	0.13%			11.51%	0.01%	
Starbucks Corp	SBUX	1132.2	88.49	100,188.38	0.31%	2.58%	0.01%	13.62%	0.04%	0.04%
KeyCorp	KEY	942.776	14.49	13,660.82	0.04%	5.66%	0.00%	9.83%	0.00%	0.00%
Fox Corp	FOXA	239.295	31.01	7,420.54	0.02%	1.68%	0.00%	6.24%	0.00%	0.00%
Fox Corp	FOX	235.581	28.68	6,756.46	0.02%	1.81%	0.00%	6.24%	0.00%	0.00%
State Street Corp	STT	301.504	72.49	21,856.02	0.07%	3.81%	0.00%	8.06%	0.01%	0.01%
Norwegian Cruise Line Holdings Ltd	NCLH	425.657	18.92	8,053.43				48.23%		
US Bancorp	USB	1558	40.63	63,301.54	0.20%	4.82%	0.01%	5.00%	0.01%	0.01%
A O Smith Corp	AOS	120.784	82.84	10,005.75		1.55%				
Gen Digital Inc	GEN	636.91	20.14	12,827.37	0.04%	2.48%	0.00%	11.51%	0.00%	0.00%
T Rowe Price Group Inc	TROW	223.3	109.57	24,466.98	0.08%	4.53%	0.00%	5.88%	0.00%	0.00%
Waste Management Inc	WM	401.083	208.02	83,433.29	0.26%	1.44%	0.00%	11.11%	0.03%	0.03%
Constellation Brands Inc	STZ	182.953	253.46	46,371.27	0.15%	1.59%	0.00%	11.01%	0.02%	0.02%
Invesco Ltd	IVZ	449.8	14.17	6,373.67	0.02%	5.79%	0.00%	8.71%	0.00%	0.00%
Intuit Inc	INTU	279.979	625.62	175,160.46	0.55%	0.58%	0.00%	18.76%	0.10%	0.10%
Morgan Stanley	MS	1627	90.84	147,796.68	0.46%	3.74%	0.02%	5.29%	0.02%	0.02%
Microchip Technology Inc	MCHP	540.388	91.98	49,704.89	0.16%	1.96%	0.00%	2.30%	0.00%	0.00%
Chubb Ltd	CB	406.061	248.64	100,963.01	0.32%	1.38%	0.00%	6.00%	0.02%	0.02%
Hologic Inc	HOLX	234.732	75.77	17,785.64	0.06%			8.68%	0.00%	
Citizens Financial Group Inc	CFG	458.485	34.11	15,638.92		4.93%		-5.79%		
Jabil Inc	JBL	120.597	117.36	14,153.26	0.04%	0.27%	0.00%	12.00%	0.01%	0.01%
O'Reilly Automotive Inc	ORLY	58.982	1013.26	59,764.10	0.19%			10.51%	0.02%	
Allstate Corp/The	ALL	263.759	170.06	44,854.86		2.16%		53.70%		
Equity Residential	EQR	378.94	64.4	24,403.74	0.08%	4.19%	0.00%	4.75%	0.00%	0.00%
BorgWarner Inc	BWA	230.956	32.77	7,568.43	0.02%	1.34%	0.00%	5.67%	0.00%	0.00%
Keurig Dr Pepper Inc	KDP	1355.574	33.7	45,682.84	0.14%	2.55%	0.00%	7.12%	0.01%	0.01%
Host Hotels & Resorts Inc	HST	703.6	18.87	13,276.93		4.24%				
Incyte Corp	INCY	224.541	52.05	11,687.36				25.33%		
Simon Property Group Inc	SPG	325.766	140.53	45,779.90	0.14%	5.55%	0.01%	1.58%	0.00%	0.00%
Eastman Chemical Co	EMN	117.649	94.44	11,110.77	0.03%	3.43%	0.00%	6.19%	0.00%	0.00%
AvalonBay Communities Inc	AVB	142.025	189.57	26,923.68	0.08%	3.59%	0.00%	5.81%	0.00%	0.00%
Prudential Financial Inc	PRU	359.38	110.48	39,704.30	0.12%	4.71%	0.01%	10.08%	0.01%	0.01%
United Parcel Service Inc	UPS	727.842	147.48	107,342.14	0.34%	4.42%	0.01%	8.77%	0.03%	0.03%
Walgreens Boots Alliance Inc	WBA	862.713	17.73	15,295.90		5.64%		-1.67%		
STERIS PLC	STE	98.814	204.56	20,213.39		1.02%				
McKesson Corp	MCK	131.408	537.21	70,593.69	0.22%	0.46%	0.00%	12.22%	0.03%	0.03%
Lockheed Martin Corp	LMT	239.938	464.93	111,554.37	0.35%	2.71%	0.01%	2.39%	0.01%	0.01%
Cencora Inc	COR	199.482	239.05	47,686.17	0.15%	0.85%	0.00%	10.10%	0.02%	0.02%
Capital One Financial Corp	COF	382.102	143.43	54,804.89		1.67%		50.10%		
Waters Corp	WAT	59.31	309.04	18,329.16	0.06%			7.23%	0.00%	
Nordson Corp	NDSN	57.192	258.19	14,766.40		1.05%				
Dollar Tree Inc	DLTR	217.983	118.25	25,776.49	0.08%			14.10%	0.01%	
Darden Restaurants Inc	DRI	119.359	153.41	18,310.86	0.06%	3.42%	0.00%	10.97%	0.01%	0.01%
Everygy Inc	EVRG	229.746	52.45	12,050.18	0.04%	4.90%	0.00%	5.00%	0.00%	0.00%
Match Group Inc	MTCH	268.012	30.82	8,260.13				36.66%		
Domino's Pizza Inc	DPZ	34.88	529.27	18,460.94	0.06%	1.14%	0.00%	12.99%	0.01%	0.01%
NVR Inc	NVR	3.168	7438.85	23,566.28	0.07%			4.87%	0.00%	
NetApp Inc	NTAP	206.377	102.21	21,093.79	0.07%	1.96%	0.00%	7.40%	0.00%	0.00%
Old Dominion Freight Line Inc	ODFL	217.674	181.71	39,553.54	0.12%	0.57%	0.00%	13.12%	0.02%	0.02%
DaVita Inc	DVA	87.7	139.01	12,191.18	0.04%			14.97%	0.01%	
Hartford Financial Services Group Inc/The	HIG	295.755	96.89	28,655.70	0.09%	1.94%	0.00%	7.00%	0.01%	0.01%
Iron Mountain Inc	IRM	293.096	77.52	22,720.80		3.35%				
Estee Lauder Cos Inc/The	EL	232.931	146.71	34,173.31	0.11%	1.80%	0.00%	17.63%	0.02%	0.02%
Cadence Design Systems Inc	CDNS	272.134	275.63	75,008.29	0.24%			16.32%	0.04%	
Tyler Technologies Inc	TYL	42.455	461.55	19,595.11						
Universal Health Services Inc	UHS	60.083	170.43	10,239.95	0.03%	0.47%	0.00%	12.42%	0.00%	0.00%
Skyworks Solutions Inc	SWKS	160.444	106.59	17,101.73	0.05%	2.55%	0.00%	5.08%	0.00%	0.00%
Quest Diagnostics Inc	DGX	111.092	138.18	15,350.69		2.17%		-0.82%		
Rockwell Automation Inc	ROK	114.592	270.96	31,049.85	0.10%	1.85%	0.00%	10.87%	0.01%	0.01%
Kraft Heinz Co/The	KHC	1215.638	38.61	46,935.78	0.15%	4.14%	0.01%	3.87%	0.01%	0.01%
American Tower Corp	AMT	466.975	171.56	80,114.23	0.25%	3.78%	0.01%	10.24%	0.03%	0.03%
Regeneron Pharmaceuticals Inc	REGN	107.944	890.66	96,141.40	0.30%			13.00%	0.04%	
Amazon.com Inc	AMZN	10387.381	175	1,817,791.68				24.94%		
Jack Henry & Associates Inc	JKHY	72.868	162.69	11,854.89	0.04%	1.35%	0.00%	7.69%	0.00%	0.00%
Ralph Lauren Corp	RL	39.044	163.64	6,389.16	0.02%	1.83%	0.00%	12.64%	0.00%	0.00%
Boston Properties Inc	BXP	157.049	61.89	9,719.76	0.03%	6.33%	0.00%	0.37%	0.00%	0.00%
Amphenol Corp	APH	600.604	120.77	72,534.95	0.23%	0.73%	0.00%	11.57%	0.03%	0.03%
Howmet Aerospace Inc	HWM	410.304	66.75	27,387.79	0.09%	0.30%	0.00%	14.19%	0.01%	0.01%

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Pioneer Natural Resources Co	PXD	233.623	269.32	62,919.35		3.80%		-13.00%		
Valero Energy Corp	VLO	326.996	159.87	52,276.85		2.68%		-24.00%		
Synopsys Inc	SNPS	152.544	530.59	80,938.32	0.25%			18.70%	0.05%	
Etsy Inc	ETSY	117.064	68.67	8,038.78	0.03%			4.48%	0.00%	
CH Robinson Worldwide Inc	CHRW	115.712	71	8,215.55	0.03%	3.44%	0.00%	5.00%	0.00%	0.00%
Accenture PLC	ACN	670.422	300.91	201,736.68	0.63%	1.71%	0.01%	10.00%	0.06%	0.06%
TransDigm Group Inc	TDG	55.606	1248.03	69,397.96	0.22%			14.52%	0.03%	
Yum! Brands Inc	YUM	281.5	141.25	39,761.88	0.12%	1.90%	0.00%	8.59%	0.01%	0.01%
Prologis Inc	PLD	925.844	102.05	94,482.38	0.30%	3.76%	0.01%	8.70%	0.03%	0.03%
FirstEnergy Corp	FE	575.516	38.34	22,065.28	0.07%	4.43%	0.00%	6.65%	0.00%	0.00%
VeriSign Inc	VRSN	100.139	169.48	16,971.56						
Quanta Services Inc	PWR	145.749	258.56	37,684.86	0.12%	0.14%	0.00%	10.00%	0.01%	0.01%
Henry Schein Inc	HSIC	128.481	69.28	8,901.16	0.03%			9.38%	0.00%	
Ameren Corp	AEE	266.511	73.87	19,687.17	0.06%	3.63%	0.00%	6.00%	0.00%	0.00%
ANSYS Inc	ANSS	87.3	324.88	28,362.02	0.09%			8.63%	0.01%	
FactSet Research Systems Inc	FDS	38.116	416.89	15,890.18	0.05%	0.94%	0.00%	10.32%	0.01%	0.01%
NVIDIA Corp	NVDA	2500	864.02	2,160,050.00		0.02%		37.63%		
Cognizant Technology Solutions Corp	CTSH	497.199	65.68	32,656.03	0.10%	1.83%	0.00%	12.00%	0.01%	0.01%
Intuitive Surgical Inc	ISRG	354.706	370.62	131,461.14	0.41%			16.21%	0.07%	
Take-Two Interactive Software Inc	TTWO	170.746	142.81	24,384.24				22.73%		
Republic Services Inc	RSG	314.975	191.7	60,380.71	0.19%	1.12%	0.00%	9.04%	0.02%	0.02%
eBay Inc	EBAY	518	51.54	26,697.72	0.08%	2.10%	0.00%	1.99%	0.00%	0.00%
Goldman Sachs Group Inc/The	GS	324.527	426.71	138,478.92	0.43%	2.58%	0.01%	9.31%	0.04%	0.04%
SBA Communications Corp	SBAC	108.021	186.12	20,104.87	0.06%	2.11%	0.00%	8.00%	0.01%	0.01%
Sempra	SRE	632.15	71.63	45,280.90	0.14%	3.46%	0.00%	3.85%	0.01%	0.01%
Moody's Corp	MCO	182.5	370.33	67,585.23	0.21%	0.92%	0.00%	9.45%	0.02%	0.02%
ON Semiconductor Corp	ON	430.232	70.16	30,185.08	0.09%			3.32%	0.00%	
Booking Holdings Inc	BKNG	34.171	3452.03	117,959.32		1.01%		22.55%		
F5 Inc	FFIV	58.806	165.31	9,721.22	0.03%			7.81%	0.00%	
Akamai Technologies Inc	AKAM	153.211	100.93	15,463.59	0.05%			8.33%	0.00%	
Charles River Laboratories International Inc	CRL	51.35	229	11,759.15	0.04%			14.00%	0.01%	
MarketAxess Holdings Inc	MKTX	37.868	200.09	7,577.01	0.02%	1.48%	0.00%	5.09%	0.00%	0.00%
Devon Energy Corp	DVN	635	51.18	32,499.30		3.44%				
Bio-Techne Corp	TECH	157.192	63.21	9,936.11	0.03%	0.51%	0.00%	2.00%	0.00%	0.00%
Alphabet Inc	GOOGL	5874	162.78	956,169.72	3.00%	0.49%	0.01%	15.01%	0.45%	0.45%
Teleflex Inc	TFX	47.101	208.75	9,832.33	0.03%	0.65%	0.00%	7.21%	0.00%	0.00%
Allegion plc	ALLE	87.441	121.56	10,629.33	0.03%	1.58%	0.00%	7.25%	0.00%	0.00%
Netflix Inc	NFLX	430.965	550.64	237,306.57				35.61%		
Warner Bros Discovery Inc	WBD	2450.13	7.36	18,032.96				35.28%		
Agilent Technologies Inc	A	293.055	137.04	40,160.26		0.69%				
Trimble Inc	TRMB	244.208	60.07	14,669.57						
Elevance Health Inc	ELV	232.418	528.58	122,851.51	0.39%	1.23%	0.00%	10.02%	0.04%	0.04%
CME Group Inc	CME	360.025	209.64	75,475.64	0.24%	2.19%	0.01%	4.90%	0.01%	0.01%
Juniper Networks Inc	JNPR	324.988	34.82	11,316.08	0.04%	2.53%	0.00%	4.78%	0.00%	0.00%
BlackRock Inc	BLK	148.76	754.64	112,260.25	0.35%	2.70%	0.01%	11.89%	0.04%	0.04%
DTE Energy Co	DTE	206.925	110.32	22,827.97	0.07%	3.70%	0.00%	6.50%	0.00%	0.00%
Celanese Corp	CE	108.906	153.61	16,729.05	0.05%	1.82%	0.00%	4.32%	0.00%	0.00%
Nasdaq Inc	NDAQ	575.207	59.85	34,426.14	0.11%	1.60%	0.00%	5.72%	0.01%	0.01%
Philip Morris International Inc	PM	1554.557	94.94	147,589.64	0.46%	5.48%	0.03%	8.23%	0.04%	0.04%
Ingersoll Rand Inc	IR	403.436	93.32	37,648.65		0.09%				
Salesforce Inc	CRM	970	268.94	260,871.80		0.59%		22.50%		
Roper Technologies Inc	ROP	107.022	511.46	54,737.47		0.59%				
Huntington Ingalls Industries Inc	HII	39.609	276.93	10,968.92		1.88%		40.00%		
MetLife Inc	MET	723.02	71.08	51,392.26	0.16%	3.07%	0.00%	14.63%	0.02%	0.02%
Tapestry Inc	TPR	229.366	39.92	9,156.29	0.03%	3.51%	0.00%	11.00%	0.00%	0.00%
CSX Corp	CSX	1954.927	33.22	64,942.67	0.20%	1.44%	0.00%	10.76%	0.02%	0.02%
Edwards Lifesciences Corp	EW	601.3	84.67	50,912.07	0.16%			10.03%	0.02%	
Ameriprise Financial Inc	AMP	100.191	411.79	41,257.65		1.44%				
Zebra Technologies Corp	ZBRA	51.419	314.56	16,174.36						
Zimmer Biomet Holdings Inc	ZBH	205.084	120.28	24,667.50	0.08%	0.80%	0.00%	6.89%	0.01%	0.01%
Camden Property Trust	CPT	106.969	99.68	10,662.67	0.03%	4.13%	0.00%	5.93%	0.00%	0.00%
CBRE Group Inc	CBRE	305.696	86.89	26,561.93						
Mastercard Inc	MA	925.723	451.2	417,686.22	1.31%	0.59%	0.01%	16.78%	0.22%	0.22%
CarMax Inc	KMX	157.388	67.97	10,697.66				25.76%		
Intercontinental Exchange Inc	ICE	572.616	128.76	73,730.04	0.23%	1.40%	0.00%	10.83%	0.03%	0.03%
Fidelity National Information Services Inc	FIS	576.466	67.92	39,153.57	0.12%	2.12%	0.00%	16.00%	0.02%	0.02%
Chipotle Mexican Grill Inc	CMG	27.467	3159.6	86,784.73				22.81%		
Wynn Resorts Ltd	WYNN	112.067	91.65	10,270.94		1.09%				
Live Nation Entertainment Inc	LYV	230.798	88.91	20,520.25						
Assurant Inc	AIZ	51.978	174.4	9,064.96	0.03%	1.65%	0.00%	5.04%	0.00%	0.00%
NRG Energy Inc	NRG	208.021	72.67	15,116.89	0.05%	2.24%	0.00%	3.00%	0.00%	0.00%
Monster Beverage Corp	MNST	1040.636	53.45	55,621.99	0.17%			12.45%	0.02%	
Regions Financial Corp	RF	918.864	19.27	17,706.51	0.06%	4.98%	0.00%	1.71%	0.00%	0.00%
Baker Hughes Co	BKR	997.998	32.62	32,554.69		2.58%		27.93%		
Mosaic Co/The	MOS	321.689	31.39	10,097.82	0.03%	2.68%	0.00%	16.00%	0.01%	0.01%
Expedia Group Inc	EXPE	130.765	134.63	17,604.89	0.06%			19.47%	0.01%	
CF Industries Holdings Inc	CF	188.338	78.97	14,873.05	0.05%	2.53%	0.00%	2.50%	0.00%	0.00%
APA Corp	APA	370.888	31.44	11,660.72		3.18%		-2.00%		
Leidos Holdings Inc	LDOS	135.212	140.22	18,959.43	0.06%	1.08%	0.00%	9.66%	0.01%	0.01%
Alphabet Inc	GOOG	5617	164.64	924,782.88	2.90%	0.49%	0.01%	15.01%	0.44%	0.44%
First Solar Inc	FSLR	107.026	176.3	18,868.68				29.52%		
TE Connectivity Ltd	TEL	306.228	141.48	43,325.14	0.14%	1.84%	0.00%	5.04%	0.01%	0.01%
Discover Financial Services	DFS	251	126.73	31,809.23		2.21%		61.27%		
Visa Inc	V	1574.152	268.61	422,832.97	1.33%	0.77%	0.01%	13.53%	0.18%	0.18%
Mid-America Apartment Communities Inc	MAA	116.688	130	15,169.44	0.05%	4.52%	0.00%	2.99%	0.00%	0.00%
Xylem Inc/NY	XYL	241.77	130.7	31,599.34		1.10%				
Marathon Petroleum Corp	MPC	352.33	181.72	64,025.41		1.82%		-12.00%		
Tractor Supply Co	TSCO	107.932	273.08	29,474.07	0.09%	1.61%	0.00%	5.54%	0.01%	0.01%
Advanced Micro Devices Inc	AMD	1615.787	158.38	255,908.35				33.38%		
ResMed Inc	RMD	146.907	213.99	31,436.63	0.10%	0.90%	0.00%	8.30%	0.01%	0.01%

**Missouri-American Water Company
WR-2024-0320 and SR-2024-0321**

Mettler-Toledo International Inc	MTD	21.388	1229.7	26,300.82	0.08%			9.18%	0.01%	
VICI Properties Inc	VICI	1043.137	28.55	29,781.56	0.09%	5.81%	0.01%	1.98%	0.00%	0.00%
Copart Inc	CPRT	961.462	54.31	52,217.00						
Jacobs Solutions Inc	J	125.651	143.53	18,034.69	0.06%	0.81%	0.00%	12.41%	0.01%	0.01%
Albemarle Corp	ALB	117.525	120.31	14,139.43		1.33%		-19.50%		
Fortinet Inc	FTNT	763.031	63.18	48,208.30	0.15%			18.05%	0.03%	
Moderna Inc	MRNA	382.88	110.31	42,235.49	0.13%			17.62%	0.02%	
Essex Property Trust Inc	ESS	64.206	246.25	15,810.73	0.05%	3.98%	0.00%	4.48%	0.00%	0.00%
CoStar Group Inc	CSGP	408.342	91.53	37,375.54	0.12%			20.00%	0.02%	
Realty Income Corp	O	861.15	53.54	46,105.97	0.14%	5.76%	0.01%	4.82%	0.01%	0.01%
Westrock Co	WRK	258.148	47.96	12,380.78	0.04%	2.52%	0.00%	5.28%	0.00%	0.00%
Westinghouse Air Brake Technologies Corp	WAB	176.385	161.08	28,412.10	0.09%	0.50%	0.00%	15.49%	0.01%	0.01%
Pool Corp	POOL	38.329	362.53	13,895.41	0.04%	1.21%	0.00%	4.73%	0.00%	0.00%
Western Digital Corp	WDC	326.525	70.83	23,127.77				-11.96%		
PepsiCo Inc	PEP	1374.786	175.91	241,838.61	0.76%	3.08%	0.02%	7.91%	0.06%	0.06%
Diamondback Energy Inc	FANG	178.34	201.13	35,869.52	0.11%	6.13%	0.01%	2.00%	0.00%	0.00%
Palo Alto Networks Inc	PANW	323.1	290.89	93,986.56				20.50%		
ServiceNow Inc	NOW	205.382	693.33	142,397.50				25.00%		
Church & Dwight Co Inc	CHD	243.905	107.89	26,314.91	0.08%	1.05%	0.00%	7.35%	0.01%	0.01%
Federal Realty Investment Trust	FRT	82.775	104.17	8,622.67	0.03%	4.19%	0.00%	5.18%	0.00%	0.00%
MGM Resorts International	MGM	317.016	39.44	12,503.11	0.04%			9.87%	0.00%	
American Electric Power Co Inc	AEP	526.59	86.03	45,302.54	0.14%	4.09%	0.01%	5.93%	0.01%	0.01%
Invitation Homes Inc	INVH	611.958	34.2	20,928.96	0.07%	3.27%	0.00%	6.43%	0.00%	0.00%
PTC Inc	PTC	119.552	177.44	21,213.31				21.10%		
JB Hunt Transport Services Inc	JBHT	103.197	162.57	16,776.74	0.05%	1.06%	0.00%	12.00%	0.01%	0.01%
Lam Research Corp	LRCX	130.736	894.41	116,931.59	0.37%	0.89%	0.00%	11.92%	0.04%	0.04%
Mohawk Industries Inc	MHK	63.863	115.32	7,364.68	0.02%			2.74%	0.00%	
GE HealthCare Technologies Inc	GEHC	456.465	76.24	34,800.89	0.11%	0.16%	0.00%	11.53%	0.01%	0.01%
Pentair PLC	PNR	166.025	79.09	13,130.92	0.04%	1.16%	0.00%	13.13%	0.01%	0.01%
Vertex Pharmaceuticals Inc	VRTX	258.459	392.81	101,525.28	0.32%			16.71%	0.05%	
Amcor PLC	AMCR	1445.343	8.94	12,921.37	0.04%	5.59%	0.00%	2.63%	0.00%	0.00%
Meta Platforms Inc	META	2191.446	430.17	942,694.33	2.96%	0.46%	0.01%	18.58%	0.55%	0.55%
T-Mobile US Inc	TMUS	1171.854	164.17	192,383.27	0.60%	1.58%	0.01%	5.00%	0.03%	0.03%
United Rentals Inc	URI	66.59	667.99	44,481.45	0.14%	0.98%	0.00%	5.27%	0.01%	0.01%
Alexandria Real Estate Equities Inc	ARE	174.883	115.87	20,263.69	0.06%	4.38%	0.00%	5.49%	0.00%	0.00%
Honeywell International Inc	HON	651.186	192.73	125,503.08	0.39%	2.24%	0.01%	8.50%	0.03%	0.03%
Delta Air Lines Inc	DAL	645.312	50.07	32,310.77	0.10%	0.80%	0.00%	12.00%	0.01%	0.01%
United Airlines Holdings Inc	UAL	328.803	51.46	16,920.20	0.05%			12.79%	0.01%	
Seagate Technology Holdings PLC	STX	209.989	85.91	18,040.15	0.06%	3.26%	0.00%	1.21%	0.00%	0.00%
News Corp	NWS	191.095	24.54	4,689.47		0.81%				
Centene Corp	CNC	534.906	73.06	39,080.23	0.12%			5.16%	0.01%	
Martin Marietta Materials Inc	MLM	61.64	587.07	36,186.99	0.11%	0.50%	0.00%	9.71%	0.01%	0.01%
Teradyne Inc	TER	152.974	116.32	17,793.94		0.41%		-1.44%		
PayPal Holdings Inc	PYPL	1046.046	67.92	71,047.44	0.22%			6.02%	0.01%	
Tesla Inc	TSLA	3189.196	183.28	584,515.84				-11.00%		
Arch Capital Group Ltd	ACGL	374.151	93.54	34,998.08	0.11%			6.00%	0.01%	
Dow Inc	DOW	703.268	56.9	40,015.95	0.13%	4.92%	0.01%	2.46%	0.00%	0.00%
Everest Group Ltd	EG	43.382	366.41	15,895.60	0.05%	1.91%	0.00%	3.93%	0.00%	0.00%
Teledyne Technologies Inc	TDY	47.422	381.48	18,090.54	0.06%			7.49%	0.00%	
GE Vernova Inc	GEV	274.086	153.71	42,129.76						
News Corp	NWSA	380.024	23.8	9,044.57		0.84%				
Exelon Corp	EXC	999.735	37.58	37,570.04	0.12%	4.04%	0.00%	5.25%	0.01%	0.01%
Global Payments Inc	GPN	257.985	122.77	31,672.82	0.10%	0.81%	0.00%	11.98%	0.01%	0.01%
Crown Castle Inc	CCI	435	93.78	40,794.30	0.13%	6.68%	0.01%	7.00%	0.01%	0.01%
Aptiv PLC	APTIV	272.679	71	19,360.21	0.06%			11.44%	0.01%	
Align Technology Inc	ALGN	75.279	282.38	21,257.28	0.07%			6.87%	0.00%	
Illumina Inc	ILMN	158.9	123.05	19,552.65	0.06%			3.00%	0.00%	
Kenvue Inc	KVUE	1914.648	18.82	36,033.68	0.11%	4.25%	0.00%	15.35%	0.02%	0.02%
Targa Resources Corp	TRGP	223.155	114.06	25,453.06	0.08%	2.63%	0.00%	9.00%	0.01%	0.01%
Bunge Global SA	BG	141.595	101.76	14,408.71		2.60%		-8.30%		
LKQ Corp	LKQ	266.776	43.13	11,506.05		2.78%				
Deckers Outdoor Corp	DECK	25.668	818.47	21,008.49	0.07%			19.98%	0.01%	
Zoetis Inc	ZTS	456.947	159.24	72,764.24	0.23%	1.09%	0.00%	10.10%	0.02%	0.02%
Equinix Inc	EQIX	94.905	711.11	67,487.89	0.21%	2.40%	0.01%	12.49%	0.03%	0.03%
Digital Realty Trust Inc	DLR	311.608	138.78	43,244.96	0.14%	3.52%	0.00%	4.80%	0.01%	0.01%
Molina Healthcare Inc	MOH	59	342.1	20,183.90	0.06%			11.72%	0.01%	
Las Vegas Sands Corp	LVS	745.047	44.36	33,050.28		1.80%				

Notes:

- [1] Equals sum of Col. [9]
- [2] Equals sum of Col. [11]
- [3] Equals ([1] x (1 + (0.5 x [2]))) + [2]
- [4] Bloomberg Professional as of April 30, 2024
- [5] Bloomberg Professional as of April 30, 2024
- [6] Equals [4] x [5]
- [7] Equals weight in S&P 500 based on market capitalization [6] if Growth Rate >0% and ≤20%
- [8] Source: Bloomberg Professional, as of April 30, 2024
- [9] Equals [7] x [8]
- [10] Value Line, as of April 30, 2024
- [11] Equals [7] x [10]