Exhibit No.:	_____
Issue(s):	Rate of Return (ROR)/ Capital Structure
Witness/Type of Exhibit:	Murray/Direct
Sponsoring Party:	Public Counsel
Case No.:	WR-2020-0344

DIRECT TESTIMONY

OF

DAVID MURRAY

Submitted on Behalf of the Office of the Public Counsel

MISSOURI-AMERICAN WATER COMPANY

CASE NO. WR-2020-0344

November 24, 2020

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Request for Authority to Implement General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas	)))))	Case No. WR-2020-0344

VERIFICATION OF DAVID MURRAY

David Murray, under penalty of perjury, states:

1. Attached hereto and made a part hereof for all purposes is my direct testimony in the above-captioned case.

2. My answer to each question in the attached direct testimony is true and correct to the best of my knowledge, information, and belief.

/s/ David Murray
David Murray
Utility Regulatory Manager
Office of the Public Counsel

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DIRECT TESTIMONY

OF

DAVID MURRAY

MISSOURI AMERICAN WATER COMPANY

FILE NO. WR-2020-0344

Q. Please state your name and business address.

A. My name is David Murray and my business address is P.O. Box 2230, Jefferson City, Missouri 65102.

Q. By whom are you employed and in what capacity?

A. I am employed by the Missouri Office of the Public Counsel ("OPC") as a Utility Regulatory Manager.

Q. On whose behalf are you testifying?

A. I am testifying on behalf of the OPC.

Q. What it the purpose of your testimony?

A. To recommend a fair and reasonable rate of return ("ROR") for purposes of setting Missouri American Water Company's ("MAWC") revenue requirement.

Q. What experience, knowledge and education qualify you to sponsor ROR testimony in this case?

A. Please see the attached Schedule DM-D-1 for my qualifications as well as a summary of the cases in which I have sponsored testimony on ROR and other financial issues.

Q. What aspects of ROR will you address?

A. I will address a fair and reasonable allowed return on common equity ("ROE") and capital structure.

Q. What is your main conclusion after analyzing Missouri American Water Company, its parent company, American Water Works Company Inc. ("American Water"), and the water utility industry in general?

A. It appears that the cost of capital to water utilities is quite low based on extremely high stock valuation ratios as measured by their price-to-earnings (P/E) ratios. Water utilities trade at a 50 percent premium relative to electric utilities (approximately 30x P/E vs. electric at 20x P/E) with American Water trading at an even larger 75% premium to electric utilities (>35x P/E vs. electric at 20x P/E). While a lower cost of capital for water utilities as compared to electric utilities is a contributing factor to the water utility industry's higher valuation ratios, the water utility industry is also a very capital intensive industry with expectations for high investment growth over the foreseeable future. Many water utilities are expected to have significant earnings per share ("EPS") growth over at least the next five years, if not longer. American Water has one of the highest expected long-term growth in EPS in the water utility industry with consistent estimates of long-term compound annual growth rate ("CAGR") in EPS of 7% to 10%. Due to significant planned growth in capital expenditures, American Water is expected to steadily grow rate base across its sixteen water utility subsidiaries (soon to be fifteen after American Water sells its New York subsidiary, New York American Water Company). American Water is considered a "best-in-class" company within the water utility industry because of its historical record of steady and high growth in EPS and dividends per share ("DPS").

Although American Water's high growth expectations contribute to its very high P/E ratios, as I will explain in more detail when comparing and contrasting MAWC's proposed capital structure as compared to American Water's actual capital structure, another significant contributor to its high P/E ratio is American Water's ability to earn a significant margin over its cost of capital. A high allowed margin over the cost of capital during periods of significant and steady capital expenditures, allows for high shareholder value creation. Because MAWC has not issued its own debt for most of the last twenty years, its capital structure is not consequential to its cost of capital. However, MAWC's capital structure has been quite consequential as it relates to the rates it is allowed to charge its customers.

Even if MAWC is allowed to maintain authorized returns at levels consistent with its sister companies, because American Water's cost of capital continues to decline, this increases shareholder value. American Water's recent use of more leverage enhances this shareholder value creation.

Q. Before you go into the details supporting your analysis, can you summarize the rationale for your conclusions?

A. Yes. I recommend that the Commission set MAWC's allowed ROE at 9.25%, which is the same level as its recent decision in the Empire rate case, Case No. ER-2019-0374. I will provide a significant amount of evidence that supports my position that the water industry's cost of capital is lower than that of the electric utility industry. However, this most specifically holds true as it relates to the overall cost of capital, which considers the mix of capital used to finance rate base. This is due to American Water's use of much higher amounts of leverage compared to its electric utility peers, and that of Empire's intermediate parent company, Liberty Utilities Company. My analysis shows American Water's COE is not significantly different from that of electric utilities, but this is specifically because American Water offsets its lower business risk with the use of a higher proportion of leverage in its capital structure.

Q. Did you consider anything else when determining a fair and reasonable allowed ROE to apply to your recommended capital structure?

A. Yes. Although capital market information supports authorizing MAWC an ROE as low as 8.25%, I recognize that MAWC has affiliates that compete with it for capital. I attempted to review all of MAWC's sister subsidiaries for their recent allowed ROEs and equity ratios. MAWC provided me the authorized ROEs, but not the equity ratios. I am still working on completing this comparison. However, based on the information I had available to me, I believe American Water's other affiliates are being authorized ROEs that are unreasonably high compared to their COE. Additionally, it is my understanding that many of these other subsidiaries have been allowed equity ratios based on the higher equity ratios American Water assigns to them. Consequently, while I considered MAWC's sister

subsidiaries allowed returns before making my final recommendation, I also believe the evidence demonstrates that American Water's lower business risk profile allows it to utilize a larger proportion of debt to finance its capital structure as compared to electric utilities. To the extent other states are not recognizing this fact, I dismissed such information because this unfairly allows American Water shareholders to increase their wealth at the expense of MAWC ratepayers.

FAIR RETURN ON COMMON EQUITY

Q. How did you determine the approach you would take to estimate a fair and reasonable allowed ROE for purposes of this case?

A. I reconciled the principles established in *Hope* and *Bluefield*[1] with the modern financial models used to estimate the cost of equity ("COE"). While setting the allowed ROE based on the COE is at least theoretically sufficient to allow a company to attract capital in efficient markets, because average allowed ROEs have been set higher than the COE, this fact must be considered when determining a fair and reasonable allowed ROE. In fact, this Commission has set a "zone of reasonableness standard" [2] for purposes of setting an allowed ROE with the starting point for this zone of reasonableness being a recent industry average allowed ROE. Considering these principles, I first estimate MAWC's current COE, then compare MAWC's current COE to historical COE estimates as well as to COE estimates for the electric utility industry. This should allow some context for the Commission to determine a fair and reasonable allowed ROE for a regulated water and sewer utility company as compared to ROEs it recently allowed for Missouri's electric utility companies.

[1] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 64 S.Ct. 281, 88 L.Ed. 333 (1943); *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679, *43 S.Ct. 675, 67 L.Ed. 1176* (1923).
[2] *State ex rel. Missouri Gas Energy v. Public Service Commission*, 186 S.W.3d 376, 383 (Mo App. W.D. 2005)

Q. Based on your analysis, what is your estimate of MAWC's current COE?

A. MAWC's COE is in the range of 5.5% to 6.5% based on recent capital market conditions.

Q. Based on your analysis and awareness of capital market conditions, investor expectations and recent average allowed ROEs for water and sewer utilities, what do you consider to be a fair and reasonable allowed ROE for MAWC?

A. 8.25% to 9.25%. The lowest ROE the Commission would consider under its "zone of reasonableness" standard depends on the average allowed ROE data the Commission relies on. The average allowed ROE for water utilities for the first nine months of 2020 is only 8.82%, but this is based on only four cases, with one allowed ROE of only 7.46%. Because I estimate the water utility industry's current COE to be fairly consistent with electric utilities, I suggest that the Commission should use an allowed ROE of 9.5% for its reasonableness standard. This would narrow my range to 8.5% to 9.25%. If the Commission recognizes that the combination of MAWC's business risk with the financial risk American Water uses to capitalize its water utility subsidiaries, this would cause MAWC to have a similar overall risk profile as Empire and Ameren Missouri. Accordingly, a 9.25% allowed ROE would be reasonable if applied to my recommended common equity ratio of 41.1%. It is MAWC's lower business risk that allows it to support more leverage than Empire and Ameren Missouri and still have a similar cost of equity. If the Commission authorizes a less leveraged capital structure (i.e. more equity than debt), per MAWC's internally managed capital structure, then the allowed ROE should be set less than 9.25% because this reduced financial risk would result in a lower cost of equity.

Q. What ROE and capital structure were specified in the settlement in MAWC's last rate case, Case No. WR-2017-0285?

A. The parties specified an ROE in the range of 9.5% to 10.0%. The parties did not specify a capital structure.

Q. How did you inform yourself for purposes of determining the best methods and approaches to use to estimate MAWC's COE?

A. I reviewed investment industry research covering American Water and the utility industry in general since January 1, 2018. I also considered the research I performed in the recent Empire and Ameren Missouri rate cases, which provided me insight as to the types of methods/models typically used by investors to determine fair prices to pay for utility stocks. Consequently, I decided the best approach to estimate MAWC's COE was to perform a COE analysis on its parent company, American Water, in conjunction with a COE analysis on a proxy group of water utility companies.

Q. Did you attempt to discover how American Water makes its investment and financing decisions, which could have provided additional insight about the proper methods and reasonable assumptions to use for purposes of estimating MAWC's cost of capital?

A. Yes. I issued OPC DR No. 3004 requesting information as it relates to American Water's Financing Committee materials for the period since MAWC's last rate case (since September 30, 2017). MAWC objected to this data request and did not provide any information in response to this data request.

Q. Have you found this type of information to be useful for testing the reasonableness of the methods and assumptions used by ROR witnesses in utility rate cases?

A. Yes. Although other Missouri utility companies have also not always been cooperative with providing such information, if this information is provided, it typically provides direct insight as to the companies' internal views as to its cost of capital and potential growth of its earnings and dividends.

Q. How did you determine a fair and reasonable allowed ROE to recommend for MAWC?

A. I compared the trends in various valuation ratios for the electric utility proxy group I analyzed in the recent Empire and Ameren Missouri rate cases to my water industry proxy

group in this case, with specific emphasis on American Water. This information should be helpful for purposes of comparing and contrasting the characteristics of water utility industry stocks to that of the electric utility industry. My analysis shows that water utility industry stocks in general, but especially so for American Water, are currently valued as a defensive-growth industry. In contrast, electric utility stocks are valued as yield investments (i.e. not growth), with much of their returns achieved from their dividend yields.

Q. What specific COE models did you use?

A. I used a multi-stage discounted cash flow ("DCF") method, with specific emphasis on consensus analysts' estimated dividends and the modeled growth of dividends. When the DCF method is applied to dividends as the proxy for cash flow, it is more specifically defined as the dividend discount model ("DDM"). I also applied the Capital Asset Pricing Model ("CAPM") to both American Water and the proxy group. Finally, I performed simple and logical reasonableness checks to test the reasonableness of my COE estimates. These reasonableness checks recognize the basic characteristics of utility stocks, mainly that because utility stocks are the safest industry sector in the S&P 500, their cost of equity should not be much higher than bond yields rated similar to the industry, which is around an 'A' rating for the water utility industry. One such reasonableness check is a straight-forward bond-yield-plus-risk-premium method included in the Chartered Financial Analyst ("CFA") Program curriculum.

Q. Was your approach substantially the same as you employed in the recent Ameren Missouri and Empire District Electric rate cases, Case Nos. ER-2019-0335 and ER-2019-0374, respectively?

A. Yes.

Q. Can you describe current capital market conditions as it relates to the utility industry in general, the water utility industry in specific and American Water before you get into the details of how you specifically estimated MAWC's COE?

A. Yes. This information should help provide some context as to the current state of utility capital markets and what this implies about the trend in capital markets over approximately the last decade when long-term interest rates entered into a prolonged period of lower levels with a declining trend. At times, I focus on the shorter period since 2015 because since this time, American Water and the water utility industry's valuation ratios have expanded much more significantly than the electric utility industry's valuation ratios.

Q. Did you sponsor ROR testimony in MAWC's 2017 rate case?

A. No. Jeffrey Smith sponsored ROR testimony on behalf of the Staff of the Missouri Public Service Commission (Staff) in the 2017 rate case. However, I was the manager of the Financial Analysis Department at the time. In my role as the manager, I supervised Mr. Smith and reviewed his work product, which included his testimony in the 2017 rate case.

Q. Have you directly sponsored ROR testimony in previous MAWC rate cases?

A. Yes, with the most recent case being in 2015, WR-2015-0301.

Q. What was your recommended allowed ROE in the 2015 rate case?

A. It was in the range of 8.5% to 9.5%, with a point recommendation of 9.25%.

Q. Was your recommended allowed ROE consistent with your COE estimates at the time?

A. No. My COE estimates were in the mid-6% to mid-7% range depending on the method I used. I had given the most weight to the multi-stage DCF, which indicated a COE in the range of 7% to 7.5%. Therefore, my recommended allowed ROE was approximately 200 basis points over my COE estimates.

Q. What was Staff's recommended allowed ROE in the 2017 rate case?

A. Mr. Smith recommended a 9.25% ROE based on a range of 8.5% to 9.5%.

Q. What were Mr. Smith's COE estimates in the 2017 rate case?

A. In the range of 6.5% to 6.75% based on his multi-stage DCF estimates.

Q. If Staff determined the water utility industry's COE declined between the 2015 to 2017, why didn't it recommend a lower allowed ROE than it recommended in the 2015 rate case?

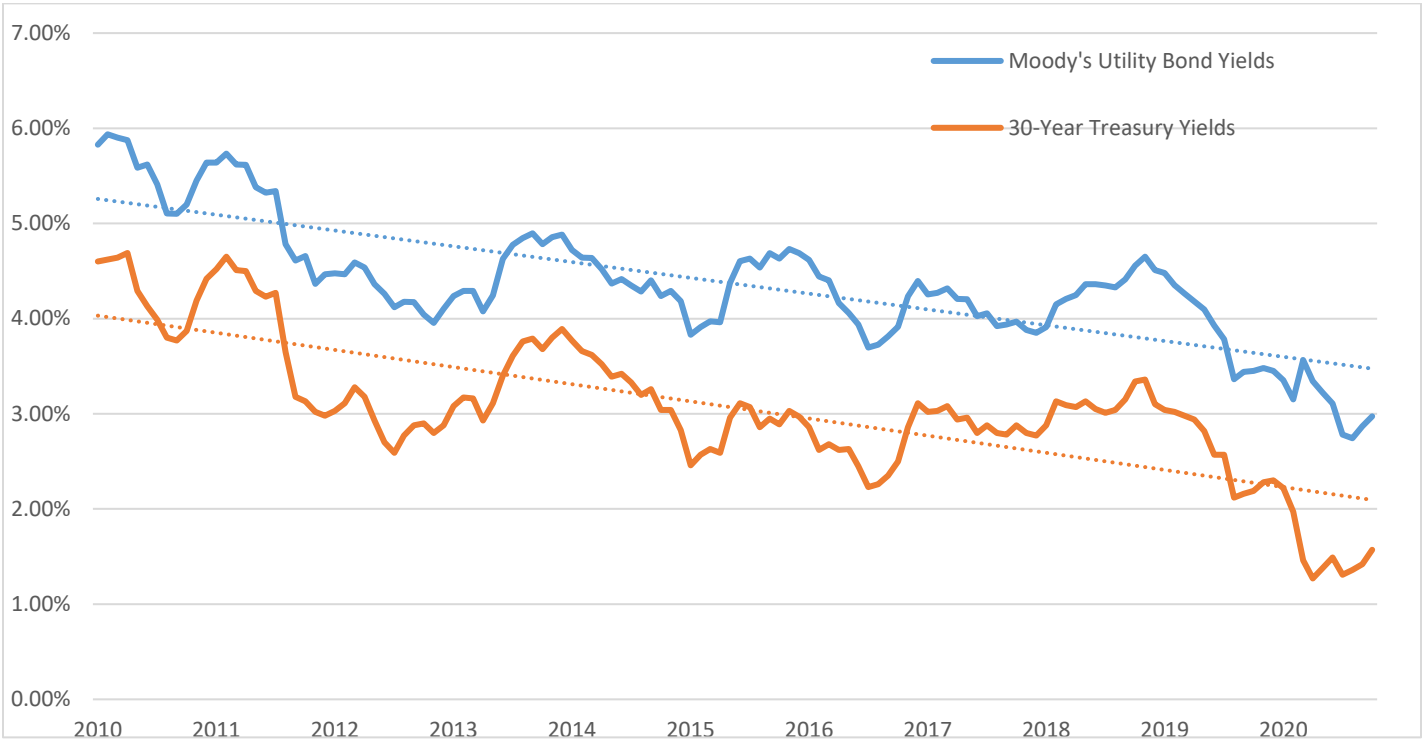
A. Because the Commission had determined an allowed ROE of 9.5% was reasonable for Evergy Metro (then KCPL) in the interim period between the 2015 and 2017 MAWC rate cases. Staff thought it would be unfair to MAWC if the Commission were to award it an ROE that deviated too much from its recent decision in the Evergy Metro rate case. Because Staff quantified the cost of equity difference between MAWC and Evergy Metro to be approximately 25 basis points, Staff continued to recommend MAWC be awarded an ROE 25 basis points below that awarded to Missouri's electric utilities.

Q. How do current investment grade utility bond yields compare to investment grade utility bond yields over the past decade?

A. They are significantly lower.[3] The below graph shows long-term bond yields since January 1, 2010, which captures the prolonged period of lower long-term interest rates post the recession/financial crisis of 2008/2009. While the early stages of lower long-term interest rates in the first half of this decade were considered by some economists and analysts as potentially anomalous because of the Federal Reserve Bank's ("Fed") quantitative easing

[3] American Water's S&P Global's corporate credit rating is A; American Water's Moody's corporate credit rating is Baa1.

("QE") programs[4] through the end of 2013, since that time, long-term interest rates have continued an overall declining trend.



Average utility long-term bond yields dropped to modern all-time lows in August 2020 - levels not experienced since the late 1940s and early 1950s (I am not aware of a publication at the time, such as Regulatory Research Associates, that would provide information on allowed returns to provide guidance for current decisions). Yields are approximately 100 basis points (1.0%) lower than the period of MAWC's last rate case in 2017. While there was certainly significant disruption in credit markets at the onset of the COVID-19 pandemic in March, which caused a brief spike in long-term yields at the end of March and into early April, the aggressive action taken by the Federal Reserve in coordination with the United States Treasury, has caused investors to feel quite secure in buying and holding investment grade bonds. Additionally, the Federal Reserve's signaling

[4] QE involved three rounds of the Fed's direct intervention in bond markets beyond just lowering the Fed Funds rate. The Fed's QE programs had the express intent of reducing long-term interest rates.

that interest rates will remain lower for longer has caused long-term interest rates to remain quite subdued.

Q. Why is it important to evaluate trends in long-term interest rates when evaluating the utility industry's COE?

A. Over the long-term, utility stock prices consistently have a strong inverse correlation to changes in long-term interest rates.

Q. Have utility stock valuations and bond yields since April 2020 provided traditional and consistent signals about utilities' cost of capital?

A. No. Utility and corporate bond yields have declined significantly since even before the pandemic, which were already trading at yields-to-maturity ("YTM") that were at 60-year lows. Now bonds are trading at YTM that are at 70-to-80 year lows. However, during the first few months following the onset of the pandemic, broader utility industry stocks (including gas, electric and water) actually declined on both an absolute and relative basis (as compared to the S&P 500). During the last couple of months, utility valuation levels have returned to levels achieved at the end of last year, but not back to their all-time highs in February 2020. However, when driving down into the specifics of water utility valuation levels during the first few months after the pandemic, they have proven much more resilient than the electric and gas industries. This resiliency is at least partially attributed to the fact that the cash flows expected from the higher-growth, long-lived water utility industry assets, are valued higher due to lower discount rates.[5]

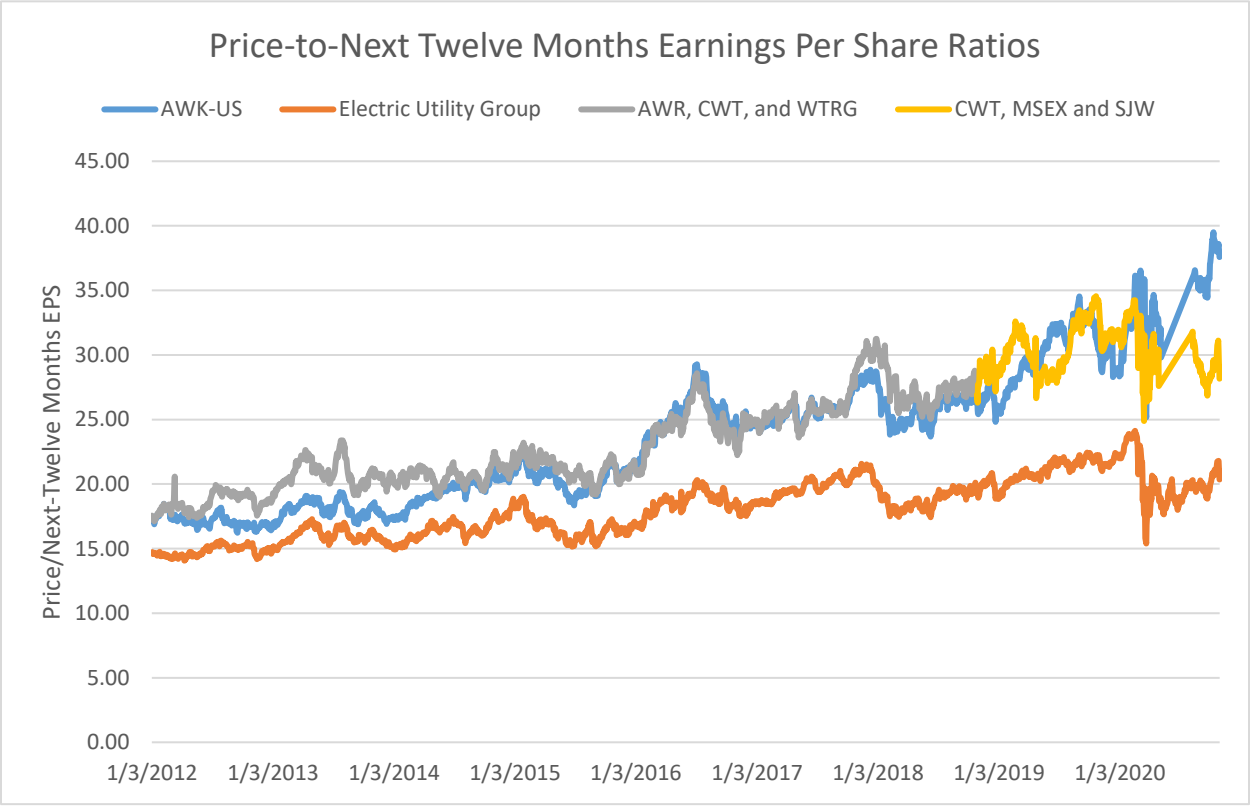
Consequently, while the utility industry is undoubtedly able to issue bonds at even lower costs than shortly before the pandemic, the utility equity market data has not been as conclusive about the direction of utility equity costs. For example, as I will discuss later in my capital asset pricing model ("CAPM") analysis, utility stock betas have increased, implying a higher COE. However, the valuation ratios for the water utility industry are

[5] Insoo Kim, et. al, "Analyzing water utility premiums - Upgrade AWK to Buy, Initiate WTRG at Neutral," Goldman Sachs, April 15, 2020.

quite similar to the all-time highs achieved right before the pandemic. In fact, the valuation ratios for American Water specifically have reached even higher levels than before the pandemic.

Q. Can you provide a graphic illustration that compares American Water's P/E ratios to the water utility industry and the electric utility industry?

A. Yes. See the below graph:



As can be seen in the above graph, between 2013 to 2015, American Water's (blue line) P/E ratio actually traded fairly close to the electric utility industry's (orange line) P/E ratio and was below its water utility peers (gray line) until late 2014. Between late 2014 and early 2020 American Water and its water utility peers[6] have traded at fairly similar P/E

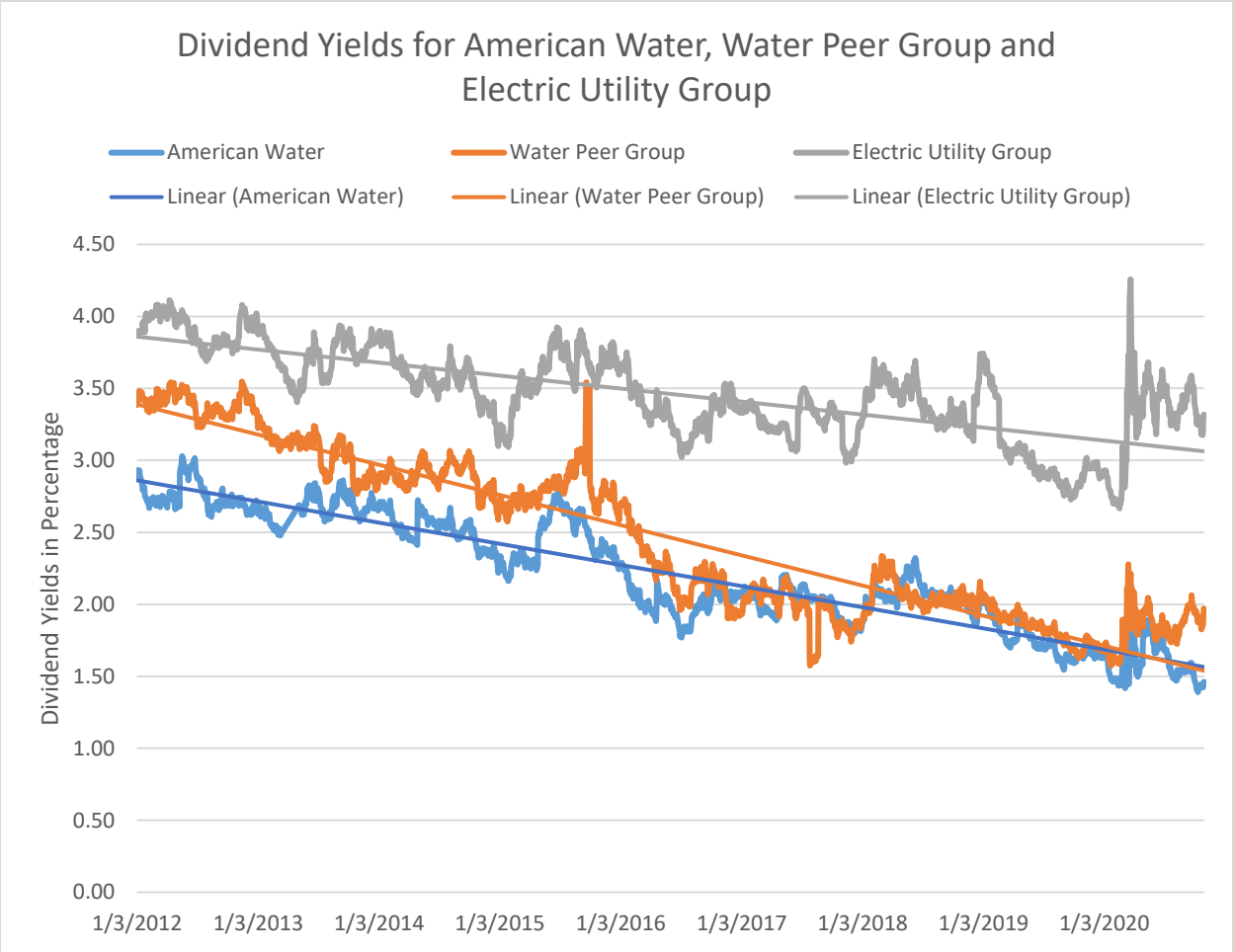
[6] Due to unavailable continuous P/NTM EPS data for the water utilities that comprise the water utility industry, the period from January 1, 2012 through October 26, 2018 (stopped on October 26 because this is the date Aqua America announced its intent to acquire Peoples Gas Company) was based on data from American States Water

ratio, with a steady and increasing expansion in P/E premiums to the electric utility industry. American Water traded at almost a 40x P/E ratio in October 2020. While American Water does have a higher expected long-term growth in EPS than the electric utility sector, American Water has also been able to increase shareholder value due to the fact that it earns much higher than its cost of capital. Allowing this significant margin to continue is unfair to American Water's ratepayers, including those of MAWC because it provides more shareholder compensation than necessary.

Q. Can this also be illustrated by comparing American Water's dividend yields to that of the water utility industry and the electric utility industry?

A. Yes. See the graphical illustration below:

Company, California Water Services Group and Aqua America. Data for the period October 27, 2018 through most recent is based on data from California Water Services Group, Middlesex Water Company and San Jose Water Group.



As can be seen in the chart, American Water's dividend yield was approximately 100 basis points lower than the electric utility industry's until about 2015, but then it began to widen considerably after that period. The difference between American Water's and the electric utility industry's dividend yield has doubled to approximately 200 basis points. If American Water's expected growth over the last five years as compared to the electric utility industry had also doubled, then it would be logical to conclude that the cost of equity difference between American Water and electric utilities hasn't changed, but long-term growth data does not support this conclusion.

Q. What were American Water's expected long-term growth CAGR in EPS in 2015?

A. They were 7.34%.[7]

Q. What are they now?

A. 8.33%. Therefore, some of the expansion in American Water's P/E ratio can be explained by higher growth rate expectations, but not a doubling of its P/E ratio from 2015 to 2020.

Q. How much have expected long-term growth rates for the electric utility industry changed since 2015?

A. They have not varied much over the last five years. They have typically averaged around 5% to 5.5% throughout the last five years.

Q. Is there a ratio that would provide context as to American Water's expansion in its P/E ratio as compared to its expansion in long-term growth expectations?

A. Yes. Investment analysts typically divide the P/E ratio by the expected long-term CAGR in EPS ("PEG") to evaluate whether the P/E expansion is explained by higher long-term growth expectations. In 2015, American Water's PEG ratio was approximately 2.75x (20x P/E dividend by long-term growth of 7.34%). During the past month or so American Water's PEG ratio has traded at around 4.5x (37.5/8.33).

Q. If the expansion in American Water's P/E ratio isn't fully explained by higher long-term growth expectations, then what is a logical explanation for its significant expansion?

A. A continued decline it its cost of capital due to lower business risk and a continued decline in long-term interest rates over the last few years.

[7] Staff Cost of Service Report, 2015, Appendix 2, Schedule 11-5.

Q. Are there other reasons investment analysts offer to describe why American Water trades at such a lofty valuation level?

A. Yes. Goldman Sachs assigns a premium to American Water (and other water utilities) because water utility assets have longer useful lives (lower depreciation rates) allowing for a much longer earnings horizon. Goldman Sachs also indicates that American Water has a much larger and prolonged period of capital expenditures as compared to the electric utility industry. This implies that investors in water utilities, such as American Water, may expect higher EPS and DPS growth rates for a longer period than that of electric utilities.[8]

Q. Although you estimate a fairly low cost of equity for American Water at 5.5% to 6.5%, is it possible that at least some investors use a lower cost of equity to value American Water's stock?

A. Yes. For example, HSBC Global Markets estimated American Water's cost of equity at 4.0%.[9] A cost of equity this low would certainly help explain the significant expansion in American Water's P/E ratio.

Q. Are you aware of other investment analysts that ascribe lower costs of equity to the water utility industry than the electric utility industry?

A. Yes. Evercore ISI indicated the following when it initiated coverage of the water utility industry:

> Unlike electrics and more similar to local distribution gas utilities water utility capex projects are numerous and much smaller so the project risk faced by electrics isn't there especially compared to large generation and transmission projects. Services provided by water utility are ingested and still on relative basis water bills represents a much smaller portion of average households utility bills. Furthermore the infrastructure is in worse condition than electric and gas (Water is rated D while electric and gas is rated D+ by ASCE so capital expenditure budgets get less scrutiny from regulators). The lower perceived risk also corresponds, however, to lower allowed ROEs, in Exhibit 5 below we show a comparison of water vs electric

[8] Insoo Kim, CFA, et. al., "Americas Utilities: Analyzing water utility premiums - Upgrade AWK to Buy, Initiate WTRG at Neutral," Goldman Sachs, April 15, 2020.
[9] Verity Mitchell, "American Water Works (AWK US), Buy: Refinancing Debt for 2020 – all set for growth," HSBC Global Markets, April 14, 2020, p. 9.

> ROEs for states which have highest percentage of investor owned water systems. On average authorized water ROEs tend to be 40 bps lower vs electric.[10]

Evercore ISI went on further state the following about expected allowed ROEs for the water utility industry:

> In valuing water utilities we assume the authorized ROEs falling to 8.75% from 9.25% which is 50 bps lower than their electric peers but we use the same ultimate 2.25% spread between ROE and cost of equity to account for the water industry's lower risk profile as we articulated above.[11]

Wells Fargo ascribes a cost of equity for some electric utilities that is approximately 25 basis points higher than water utilities. However, some electric utilities that are viewed as particularly low risk, are ascribed a cost of equity of 6.0%, which is the same as estimated for water utilities.[12]

RBC Capital indicated the following:

> **Premium valuation tied to low risk and leading ESG characteristics.** The knock on AWK has historically been - and will likely continue to be - its high valuation relative to all other large cap utilities. Water utilities have the lowest risk profile, thus justifying a lower discount rate, and thus a higher valuation. The premium is further supported by dedicated water funds that treat AWK as their go-to name for U.S. water utilities. Ultimately, while we recognize the high valuation, AWK has a unique blend of growth and defensiveness that makes the stock attractive in our view.[13]

Q. Do investors expect allowed ROEs to be reduced because of the current and prolonged low cost of capital environment?

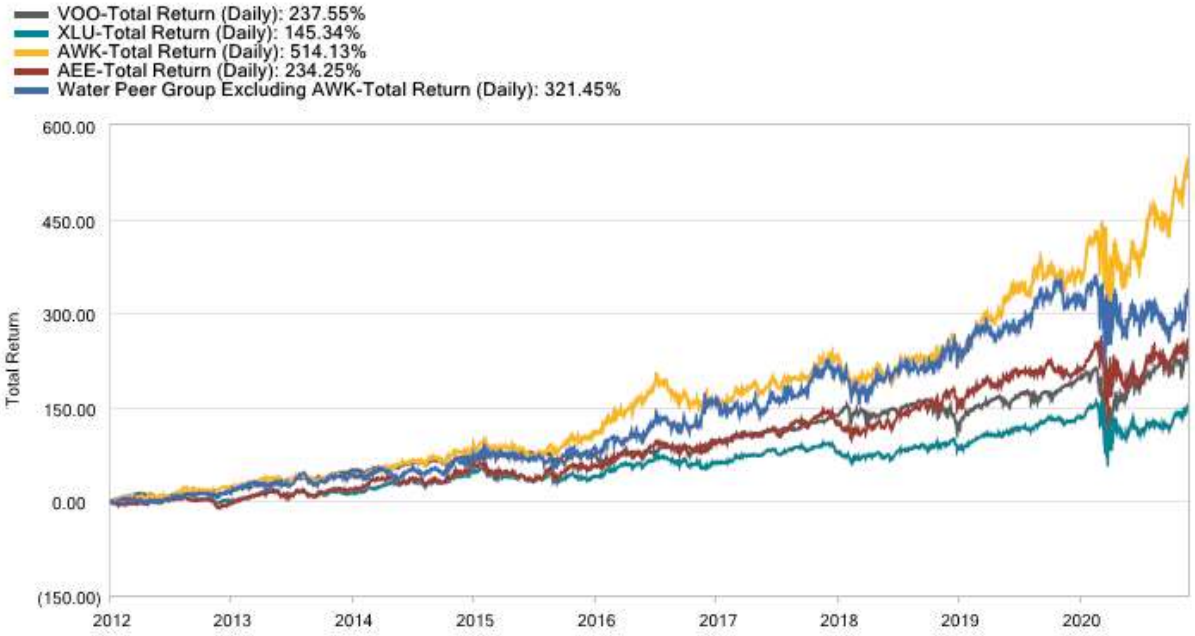
A. Yes. While investors are accustomed to the practice of commissions allowing ROEs higher than the COE, they price in the potential that commissions will not allow the spread

[10] Durgesh Chopra, et. al, "Initiating Coverage On Water Utilities: Top pick AWK (OP); AWR (UP); WTR/CWT/SJW/CTWS (IL)," Evercore ISI, September 17, 2018, p. 10.
[11] *Id.*, p. 13.
[12] Neil Kalton, Sarah Akers, and Jonathan Reeder, "DDM Analysis Supports Sector Valuation & Quality/Growth Trade," Wells Fargo, August 19, 2019.
[13] Shelby Tucker, CFA, "American Water Works Company Inc.: Clear as Water; Initiating at Outperform," RBC Capital Markets, April 24, 2020, p. 1

between allowed ROEs and the COE to widen considerably. This is especially true due to the U.S. markets prolonged experience with generally declining long-term interest rates.[14]

Q. Can you provide information on how American Water's shareholder returns have compared to its peers, Ameren, a broad utility index and the S&P 500?

A. Yes. See the below chart for a graphic illustration of American Water's total return as compared to the S&P 500 (VOO), a broad utility index (XLU), Ameren (AEE) and a water peer group (American States Water, California Water Service Group, Middlesex Water Company, SJW Group, and The York Water Company).



American Water's total return has exceeded all of the comparable entities and indices. Other than its water peer group, its total return since January 1, 2012 has been twice that of the S&P 500, Ameren and the broader utility index. [15]

[14] Angie Storozynski, "American Water Works Company Inc: 2Q20 earnings preview; updating estimates & price target," Seaport Global Securities, July 16, 2020, p. 3; Durgesh Chopra, et. al, "American Water Works Company Inc: Notes from Virtual NDR," Evercore ISI, June 17, 2020, p. 1

[15] VOO" is the trading symbol for Vanguard Fund that tracks the S&P 500.

American Water's total return over this period translates into a compound annual return of 20.50% since 2012. This compares to the compound annual return of 14.09% for the water peer group, 10.45% for Ameren, 10.17% for the S&P 500 and 4.38% for the utilities index.

Q. Are you aware of any information specific to MAWC's parent company, American Water, that illustrates just how low its cost of capital is in the current capital market environment?

A. Yes. American Water issued bonds to investors through its financing subsidiary, AWCC. According to recent over-the-counter trades on AWCC 30-year bonds, debt investors are only requiring a yield-to-maturity ("YTM") of approximately 2.75% to 2.9%. These debt yields are even lower than the bond yields I had observed for Ameren Missouri's 30-year, 3.25% coupon mortgage bond in Ameren Missouri's recent rate case, Case No. ER-2019-0335. At the time I sponsored direct testimony in the Ameren Missouri rate case, which was approximately one year ago, Ameren Missouri's 3.25% bond was trading at a YTM of approximately 3.15%. This bond is now trading at a YTM of only 2.62%. While this is slightly lower than the YTM on the AWCC bonds, it certainly implies that MAWC's parent company and Ameren Missouri have fairly similar costs of debt capital. Again, MAWC's cost of capital components should not be viewed in isolation, but rather by the amount of weight assigned to each component. There is no doubt that American Water's water utility assets can support a more leveraged capital structure than electric utilities and still maintain a similar overall risk profile.

Q. Can you provide third-party corroboration for your position?

A. Yes. Rating agencies, such as S&P Global Ratings, allow the water utility industry to carry more leverage due to applying less stringent credit metrics as it relates to financial risk. S&P Global Ratings applies "low volatility" benchmarks to the water utility industry as compared to "medial volatility" benchmarks to the electric utility industry. For example, S&P allows water utility companies to have funds from operations-to-debt (FFO/debt) ratios of as low 9% to 13% and still maintain an 'A' credit rating. However, most

integrated electric utility companies have to achieve FFO/debt ratios of 13% to 23% in order to maintain an 'A' credit rating. Therefore, while it may be acceptable to authorize an ROE to MAWC that is similar to other Missouri electric utilities, this is only true if the ROE is applied to a more leveraged capital structure.

COST OF EQUITY METHODS

Q. Now that you have provided some context on changes in utility capital market conditions generally and American Water specifically, can you discuss how you decided to approach your COE estimate for MAWC in this case?

A. Yes. I performed a company-specific COE analysis on American Water, as well as a proxy group COE analysis. I used a multi-stage DCF approach and a CAPM. I then tested the reasonableness of my estimates by using some simple, straightforward sanity checks, such as the straightforward bond-yield-plus-risk-premium method discussed in the CFA curriculum.

Q. How have you informed yourself as to reasonable and rational inputs for your COE approaches?

A. Being that the objective of a ROR witness is to emulate investors' approaches to analyzing and making investment recommendations as it relates to investing in utility stocks, I have prioritized reviewing and analyzing how equity research analysts determine a utility stock price estimate in practice. This has allowed me to test the theory of cost of capital estimation in utility ROR testimony as it compares to how utility stocks are actually valued. I have discovered investment analysts use multi-stage DCF approaches to estimate fundamental values of utility stocks as well as relative valuation assessments based on comparing P/E ratios. I have found that investment analysts' projected long-term compound annual growth rate ("CAGR") in EPS are more relevant to their relative P/E analysis rather than assumed perpetual growth rates in their DCF/DDM analysis. Investment analysts use perpetual growth rates for the water utility industry in the range of

3.5% to 4.0% when discounting dividends using the DDM. Finally and most relevant to the task at hand, they estimate water utilities' COE to be in the 4% to 6.8% range.[16]

Q. What equity research firms cover American Water's stock?

A. According to American Water's website, the following firms cover its stock: Argus Research Corporation, Baird Equity Research, Bank of American Merrill Lynch ("BAML"), Barclays, Coker Palmer, Evercore ISI, Goldman Sachs ("GS"), Guggenheim Securities, HSBC Global Research, J.P. Morgan, Janney Montgomery Scott, RBC Capital, Seaport Global, UBS Securities, Wells Fargo, and Wolfe Research ("Wolfe).

Q. Why is it important to analyze this information to determine a fair and reasonable allowed ROE for MAWC?

A. Analyzing this information is important because these professional investment analysts are the same individuals that underlie various consensus estimates widely considered by investors. ROR witnesses recognize the influence investment analysts have on utility stock prices by the very fact that they use consensus EPS forecasts for purposes of estimating the COE.

Q. Did you review any of these firms' research for purposes of performing your cost of equity analysis and preparing your testimony?

A. Yes. I mainly relied on reports MAWC provide in response to Staff Data Request No. 0057. However, over my career I have established relationships with some firms/analysts who have distributed this material to me directly through their email distribution lists. These relationships were borne from my role as a regulator in which many of these analysts seek information related to Missouri's general and specific regulatory issues. I have also interacted with these analysts through my participation in organizations, such as the Society of Utility and Regulatory Financial Analysts ("SURFA").

[16] Various equity analysts' reports MAWC provided in response to Staff Data Request No. 57

Q. How did you approach selecting a custom water utility proxy group?

A. Due to the small number of publicly traded water utility companies in the United States, I chose to include most of the companies generally classified as water utility companies by Value Line. However, Value Line classifies a few companies as water utility companies that do not have a business risk profile primarily consistent with a regulated water utility with monopoly power. I excluded Consolidated Water Company because it develops and operates water desalination plants in the Bahama and Cayman Islands. Consolidated Water Company also is involved in manufacturing of products used for water treatment and desalination. Although I chose not to exclude Essential Utilities from my proxy group, during my analysis I gave consideration to the fact that it is now a combination water and natural gas distribution utility. Before March 2020, Essential Utilities (f/k/a Aqua America) had been primarily a regulated water utility company, but it acquired a sizeable amount of gas distribution assets when it bought Peoples Gas Company in March 2020. After exclusion of Consolidated Water Company, this left seven companies in my proxy group – American States Water Company, American Water Works Company, California Water Service Group, Essential Utilities, Middlesex Water Company, SJW Group and York Water Company. Although all of these companies have business risk profiles consistent with MAWC's regulated water and sewer utility operations, Middlesex Water Company and York Water Company are not widely followed by investment analysts. Therefore, because I rely on investment analysts' projections for my multi-stage DDM analysis, I excluded these two companies from this analysis. However, I included them in my Capital Asset Pricing Model ("CAPM") analysis.

Q. How did you approach the multi-stage DCF/DDM analysis?

A. I used consensus equity analysts' estimates of the annual DPS for each company for as many annual periods as were available. Consensus equity analysts' annual DPS estimates were available for the next two to three years for the following companies: American States Water Company, American Water Works Company, California Water Service Group, Essential Utilities, Middlesex Water Company, SJW Group and York Water Company.in my proxy group. However, because Middlesex Water Company and York

Water Company did not have information on consensus equity analysts' long-term CAGR in EPS, I excluded these companies from my multi-stage DDM analysis.

Q. How did you model the expected DPS for your proxy group for annual periods after the discrete stage?

A. I determined each company's estimated dividend payout ratio for the final year where a discrete annual DPS estimate was available. I then modeled an equal percentage change in the annual payout ratio from this period until the terminal year, which is when I assumed that all companies would converge to a dividend payout ratio necessary to ensure each company retained sufficient earnings to sustain the assumed perpetual growth rate of 3.5% to 4.0%. This growth rate and retention ratio assume allowed ROEs for water utility companies will eventually be reduced to no higher than 9.00%, which is consistent with assumptions used by Wells Fargo and Evercore ISI.

My water utility industry COE estimates based on application of the multi-stage DCF (assuming a 4% perpetual growth rate) to the proxy group shows a COE in the range of 5.95% to 6.75% with an average of around 6.40%. American Water's specific COE estimate is 6.26%. Schedule DM-D-2 attached to my testimony shows these results. Using a 3.5% perpetual growth rate results in a COE estimate in the range of 5.70% to 6.60% with an average of approximately 6.25% (see Schedule DM-D-3). American Water's company-specific COE estimate is 6.04% using the 3.5% perpetual growth rate.

Q. What does industry data suggest is a sustainable growth rate for water utility companies?

A. I reviewed past actual historical industry growth rate data from my proxy group of water utility companies, water utility industry fundamentals as it relates to expected ROEs on water utility rate base growth, and commentary/analysis available from institutional investors/analysts.[17] This information supports a perpetual growth rate no higher than the potential long-run sustainable growth rate for the U.S. economy. Therefore, a perpetual

[17] Discussed throughout this testimony.

growth rate of no higher than a range of 3.5% to 4.0% is consistent with water utility industry fundamentals and investors' expectations. A perpetual growth rate within this range is also consistent with the "sustainable growth model," which estimates EPS growth by multiplying an average long-term industry retention rate by an expected book ROE of approximately 9.00%. Assuming the water utility industry retains sufficient capital to assure it doesn't have to access external equity markets, then it is reasonable to model an earnings per share ("EPS") retention rate of 44.44%, which applied to a 9.00% ROE, results in a perpetual growth rate of approximately 4%. Both Wells Fargo and Evercore ISI, equity research firms that follow American Water, assume scenarios where allowed ROEs eventually decline to between 8.75% to 9.00% as we remain in this prolonged period of low costs of capital.[18]

Q. How does this compare to perpetual growth rates used by equity analysts to estimate fair prices for the broader utility industry?

A. These perpetual growth rates are higher than those that are typically used for other subsectors of the utility industry. Historically, the electric utility industry has had more variability in its construction cycles then the water utility industry. The water utility industry has a fairly visible and consistent need for high capital expenditures required to replace its continuously aging utility infrastructure. This explains why the water industry in general, but American Water in specific, consistently has expected 3 to 5-year compound annual growth rates ("CAGR") in EPS growth rates in the high single digits. Because the electric utility companies have frequent periods of varying capital expenditures, some companies may have low single-digit expected 3 to 5-year expected CAGR in EPS, but others, such as Ameren, have expected 3 to 5-year CAGR in EPS of 6 to 8%.

[18] Durgesh Chopra, et. al, "Initiating Coverage On Water Utilities: Top pick AWK (OP); AWR (UP); WTR/CWT/SJW/CTWS (IL)," Evercore ISI, September 17, 2018, p. 13. Neil Kalton, Sarah Akers, and Jonathan Reeder, "DDM Analysis Supports Sector Valuation & Quality/Growth Trade," Wells Fargo, August 19, 2019, p. 2.

Q. How is the multi-stage DCF analysis you performed in this case different from what you performed when you sponsored testimony on behalf of Staff?

A. While I was with Staff, the multi-stage DCF I performed on my proxy group was more generic. For the first stage, I assumed DPS would grow at the same rate as EPS during the first five years. For the second stage (the next five years), I assumed the growth in DPS would gradually decline to a sustainable growth rate starting in the eleventh year. In the third and final stage, starting in the eleventh year, I assumed DPS would grow in perpetuity at a constant growth rate consistent with industry fundamentals, but no higher than expected long-term growth in the gross domestic product.

Although I consider the multi-stage DCF I used while I was with Staff to be fairly reliable, I also recognized its assumptions didn't always comport with reality. Typically, DPS do not increase at the same rate as EPS during higher growth periods because companies recognize the need to retain a higher proportion of earnings to help fund capital expenditures. As the higher growth investment cycle declines, then DPS will usually grow at a rate higher than EPS. During this time period, companies will adjust their dividend payout ratios to consider their stage in the investment cycle. After the investment cycle returns to a maintenance level of capital expenditures, then the payout ratio will increase until the company reaches its sustainable/constant state. The multi-stage DCF I performed in this case considers this reality. After a build-cycle, especially with no expected growth in usage, eventually the growth rate would revert to no higher than at least long-term historical averages. Because utilities earn a return on the book value of their investment, it is reasonable to assume water utility companies will target a dividend payout ratio that would allow for sufficient internal equity funding to sustain the expected perpetual growth rate.

The multi-stage DCF I sponsor in this case for the proxy groups still has three stages, but the first stage discounts discrete consensus annual DPS estimates for as many years as they are available for each company. At the point in which no discrete DPS estimates are available, I apply an estimated dividend payout ratio to each company's projected EPS in order to estimate the dividend payment. Because the projected EPS is

based on analysts' estimates for the first five years and then transitions to a sustainable growth rate until the start of the third stage (year 15 or 2035 in this case), this approach captures the influence of analysts' estimates on utility stock prices, while still discounting the appropriate metric, DPS. This method also corrects for the fact that the dividend payout ratio should change until the company reaches a sustainable state in which it manages its dividend payout ratio to ensure it is not required to issue new equity, which would reduce the value of existing shares.

Q. If you had performed your multi-stage similar to how you did so when with Staff, what COE would you have estimated?

A. My overall average COE estimate is 6.44% using the methodology I used when I was with Staff compared to the 6.42% average based on the approach I used in this case (Schedule DM-D-2). Using the old method I used with Staff implies American Water's COE is 6.15% compared to the 6.26% COE implied using my new method. Although there are only slight differences in the overall result, this is mainly because the water utility industry's current dividend payout ratios shouldn't be that much different than the sustainable payout ratios in the future. Regardless, in order to ensure that earnings, dividends and book value grow in equilibrium in the terminal stage, this is consistent with the assumptions of the constant-growth DCF and therefore should be used. Because it is clear that the COE is much lower than allowed ROEs, I don't consider it critical to narrow down the COE to a precise estimate. However, I believe it is important to provide context as to the widening margin between water utility industry's COE and its allowed ROEs.

Q. How did this COE estimate compare to Staff's COE in MAWC's 2015 and 2017 rate cases?

A. My current COE estimate using the same approach I used with Staff is approximately 60 basis points lower than my estimate in 2015 and about the same as Staff's estimate in 2017.

My American Water-specific COE estimate is about 95 basis points lower than my estimate in 2015 and 65 basis points lower than Staff's estimate in the 2017 rate case.[19]

Q. Did you use any other models to estimate American Water and the water peer groups' cost of equity?

A. Yes, I used the capital asset pricing model ("CAPM"). The CAPM shows the specific impact of lower interest rates on the cost of capital. Although COE estimates can be manipulated with the CAPM by using unreasonable risk premium estimates, there are a variety of authoritative sources that provide equity risk premium estimates that can form the basis for a consensus view on reasonable risk premium based on current capital market conditions.

Q. What is the underlying theory that supports the use of the CAPM to estimate the cost of equity for utilities?

A. The CAPM is based on capital market theory in which it is recognized that although the total risk of a company and/or industry consists of market ("systematic") risk and asset/business-specific ("unsystematic") risk, investors are only compensated for systematic risk because holding a diversified portfolio allows the investor to avoid unsystematic risk. Systematic risks are unanticipated events in the economy, such as economic growth, changes in interest rates, demographic changes, etc., that affect almost all assets to some degree. The required risk premium for incurring the market risk as it relates to the investment/portfolio is determined by adjusting the market risk premium by the beta of the stock or portfolio. The adjusted risk premium is then added to a risk-free rate to determine the cost of equity. The CAPM is typically expressed in equation form as follows:

[19] Staff Cost of Service Report, Case No. WR-2015-0301, Appendix 2, Schedule 15-1. Staff Cost of Service Report, Case No. WR-2017-0285, Appendix 2, Schedule 15-1.

$$K_e = Rf + \beta\ (RP_m)$$

Where:
K_e = the cost of equity for a security;
Rf = the risk-free rate;
β = beta; and
RP_m = equity risk premium.

For purposes of my CAPM analysis, I relied on Duff & Phelps (D&P) recommended equity risk premium of 6% provided as of June 30, 2020,[20] Goldman Sachs' equity risk premium of 6.3% as of August 14, 2020, equity risk premiums specified in the equity analyst reports published on American Water (3.0% to 6.3%)[21] and historical achieved equity risk premiums based on data published in Ibbotson Associates 2020 Stocks, Bonds, Bills and Inflation Yearbook. Although each of these equity risk premium estimates use various methods and risk-free rates to arrive at their final estimates, I do not consider any estimate outside these to be consistent with the investment community's "consensus." One of the primary drivers of using a higher equity risk premium versus a lower equity risk premium is due to whether this equity risk premium is applied to a normalized risk-free rate or a current risk-free rate (higher equity risk premiums applied to lower current low risk-free rates). Long-term expected nominal market returns for the S&P 500 are as low as 4% to 5%.[22] Therefore, an equity risk premium of 6% may actually be excessive for purposes of a CAPM analysis.

Q. What does the beta represent in a CAPM analysis?

A. Beta is statistically defined as the covariance of the returns on an asset (in this case an individual stock or group of stocks) with the return on the S&P 500 divided by the variance of the returns on the S&P 500. This statistical measure is intended to provide investors

[20] https://www.duffandphelps.com/insights/publications/cost-of-capital
[21] Shelby Tucker, "American Water Works Co Inc: Clear as Water; Initiating at Outperform," RBC Capital Markets, April 24, 2020, p. 18; Verity Mitchell, "American Water Works: Buy: Defensive pick; 2020 EPS guidance intact," HSBC Global Markets, May 18, 2020, p. 6.
[22] First Qurater 2020 Survey of Professional Forecasters, Philidelphia Federal Reserve Board (Feb. 14, 2020), https://www.philadelphiafed.org/surveys-and-data/real-time-data-research/spf-q1-2020, and John Bilton et al., *Executive Summary: A new Portfolio for a New Decade*, J.P.Morgan (Nov. 9, 2020), https://am.jpmorgan.com/us/en/asset-management/institutional/insights/portfolio-insights/ltcma/executive-summary/.

with insight regarding expected volatility and returns as it relates to the market. A beta of less than one implies less expected volatility than the market with the trade-off of a lower expected return than the market. The reverse is expected for a beta greater than one.

Q. Have utility stock betas increased recently?

A. Yes. At the time I drafted testimony for the Empire and Ameren Missouri rate cases, electric utility stock betas had declined to quite low levels of around 0.55. Water utility betas at that time were around 0.65. Electric utility stock betas have since increased to around 0.80. Water utility betas have also increased to around 0.8. Although these beta increases imply a higher required risk premium since February 2020, it is important to note that before the decline in utility betas to the 0.55 to 0.65 range, utility betas had typically been in the 0.7 to 0.75 range.

Q. What would an increase in betas of approximately 0.2 imply about the required risk premium to invest in utility stocks?

A. That the required risk premium to invest in utility stocks has increased by 1.2% assuming the required market (S&P 500) risk premium was 6% in February 2020 and currently.

Q. Does the decline in risk-free rates offset the increase in betas?

A. Yes. Long-term risk-free rates have declined by approximately 80 basis points since late 2019 and early 2020. This implies a net increase in utilities' cost of equity of 40 basis since they hit all-time lows in late 2019 and early 2020.

Q. Do water utilities' betas, and specifically American Water's beta, imply they currently has a similar cost of equity to electric utilities?

A. Yes.

Q. What beta do you consider appropriate based on current market conditions?

A. Approximately 0.75 to 0.80. My schedules show COE estimates using a recent beta average of 0.81. Adjusting the beta toward historical averages to around 0.75 results in COE estimates that are 35 basis points lower.

Q. What betas have investment analysts been using to estimate American Water's COE?

A. Around 0.50 to 0.75.[23]

Q. Based on your CAPM analysis, what it the estimated COE for American Water and its peer group?

A. American Water's COE is between 5.75% and 7.35%. After excluding American States Water Company and California Water Services Group due to their abnormally low betas, the peer group COE range is similar to American Water's (see Schedules DM-D-4 through DM-D-7).

Q. What is the implied range if you lowered the beta to 0.75?

A. 5.4% to 6.9%.

Q. Why is there such a wide range?

A. The D&P risk premium is conditional on it being applied to a "normalized" long-term risk-free rate of 2.5%. This risk-free rate is 1.8% higher than the current 10-year US Treasury-rated used by Goldman Sachs. However, because Goldman Sachs' risk premium estimate is 6.3% versus the 6.0% used by D&P, the net difference is 1.5%.

[23] Shelby Tucker, "American Water Works Co Inc: Clear as Water; Initiating at Outperform," RBC Capital Markets, April 24, 2020, p. 33; Verity Mitchell, et. al., "American Water Works: Buy: 10-year investment plan, new CEO," HSBC Global Research, p. 1; Richard A. Verdi, "American Water Works Company Inc.: Stock Positioned for Outperformance and Compelling Returns, In Our View," Coker Palmer Institutional, November 18, 2019, p. 2.

Q. What do you consider to be the most reliable and logical range based on your CAPM estimates?

A. 5.5% to 6.0%.

Q. Are there any other reasonableness tests to show your COE estimates are rational and logical?

A. Yes. First, as I indicated earlier in my testimony, a simple rule of thumb the Chartered Financial Analyst ("CFA") Program suggests in its curriculum to estimate the COE is to add 3% to 4% risk premium to a company's bond yield to provide a fairly simple, but objective cost of equity. Being that the investment community views utility stocks as bond surrogates/substitutes, it is logical and reasonable to not add a risk premium any higher than 3% to the bond. Simply adding a 3% risk premium to the YTM on American Water's publicly-traded bonds provides a reasonableness check on more detailed COE estimates. American Water's long-term bonds have been trading at a YTM of approximately 2.75% recently. This suggests that American Water's COE should be roughly 5.75%.

Q. Based on your analysis and understanding of the utility industry's current COE, investor expectations on allowed ROEs and the COE for water utilities compared to electric utilities, what would be a fair and reasonable allowed ROE in this case?

A. 8.25% to 9.25%. However, as I will explain in further detail in the following sections of my testimony, if MAWC's authorized capital structure is set consistent with the debt capacity it creates, then a 9.25% ROE is justified since the increased financial risk causes MAWC's cost of equity to be similar to Missouri's electric utility companies.

CAPITAL STRUCTURE

Q. Will you briefly explain capital structure?

A. Capital structure represents how a company finances its assets. The typical capital structure consist of common equity, long-term debt, and short-term debt. Some utilities' capital structures may also include a small portion of preferred stock, but this has become

rare in recent years. Although short-term debt is a consistent component of a utility company's capital structure, if the balances of short-term debt are fairly consistent or below construction work in progress ("CWIP") balances, then it is fair to exclude short-term debt from the rate making capital structure. This is due to the expectation that the short-term debt and its corresponding rates are used to calculate the allowance for funds used during construction (AFUDC) capitalization rate. However, OPC (see Robert Schallenberg's Direct Testimony) discovered that MAWC has not been giving appropriate consideration to short-term debt in its calculation of the AFUDC rate. If the Commission does not order MAWC to include short-term debt in its AFUDC calculations on a going-forward basis, then MAWC's allowed ROR should be adjusted to include short-term debt.

Q. What capital structure do you recommend for purposes of setting MAWC's rate of return (ROR)?

A. Assuming the Commission orders MAWC to use short-term debt to calculate the AFUDC rate, I recommend a capital structure that consists of approximately 41.10% common equity and 58.9% long-term debt. If the Commission does not order MAWC to use short-term debt to calculate AFUDC, then I recommend a capital structure that consists of 39.18% common equity, 56.16% long-term debt and 4.66% short-term debt. The ratios in my capital structure recommendations are consistent with the proportion of debt capacity MAWC's assets support, as demonstrated by American Water's actual capital structure ratios in recent years.

Q. Why is it important to capture the cost of short-term debt in either AFUDC or the allowed ROR?

A. Because, as Mr. Schallenberg shows in the adjustment he made to MAWC's rate base, not using short-term debt to capitalize CWIP causes ratepayers to pay only long-term capital costs for AFUDC and the ROR. Because the cost of short-term debt is typically cheaper than long-term capital costs, this results in ratepayers paying a higher capital cost than is incurred by the company. Short-term debt is even cheaper now due to the Fed lowering the Fed Funds rate. I estimated MAWC, though AWCC, should only be charged 0.20%

on its short-term debt. Including the short-term debt in my capital structure results in a reduction to the annual revenue requirement of approximately $5 million.

Q. What is the basis for your capital structure recommendation?

A. My recommended capital structure is consistent with American Water's average quarterly consolidated capital structure, net of short-term debt, for the period June 30, 2019 through June 30, 2020 (see Schedule 8). This capital structure best represents the amount of debt capacity American Water considers reasonable and appropriate for its regulated utility assets, including those of MAWC. Use of this capital structure ensures that MAWCs' ratepayers receive credit for their contribution to American Water's debt capacity, which is much higher than that reflected on MAWC's balance sheet. Investors recognize that American Water has been able to take advantage of very low debt capital costs by issuing significant amounts of debt through its financing subsidiary, AWCC.[24] Although American Water provides most of the debt capital it raises through AWCC at cost to its subsidiaries, including MAWC, approximately 30% of this debt is loaned to American Water, which then uses this debt capital to purchase equity in its subsidiaries. Due to the fact that equity capital is allowed a much higher return than the cost of the debt capital used to purchase subsidiary equity, this allows American Water to achieve a much higher ROR than its cost of capital. American Water's strategy of not issuing third-party equity to fund its subsidiary equity investments has allowed it to avoid making a public offering of equity over approximately the last ten years.

Q. What capital structure has American Water managed for purposes of taking advantage of debt capacity afforded by its regulated utility subsidiaries' low-risk regulated utility assets?

A. American Water's capital structure on a consolidated basis. In recent years, American Water has become even more aggressive with its use of leverage (i.e. debt) at the consolidated level. However, at the same time, American Water has reduced the amount

[24] Richard W. Sunderland, et. al., "American Water Works Company Inc.: Model Update," JP Morgan, September 30, 2020, p. 3.

of leverage shown on MAWC's balance sheet via the intercompany loans made to it from AWCC. At the very least, it would be reasonable for MAWC's capital structure to reflect a similar proportional increase in leverage at the American Water level, especially considering the fact that American Water's Moody's credit rating was downgraded in 2019 due to its increased use of leverage. The widening divergence between American Water's actual use of leverage and that potentially reflected in MAWC's requested ratemaking capital structure will simply allow AWWK to earn an even larger margin over its cost of capital from MAWC's ratepayers.

Over the last five years, based on year-end capital structures, American Water has reduced the common equity ratio in its capital structure to 41.38% from 46%. However, over the same period, based on year-end capital structures, MAWC's common equity ratio has increased from 50.35% to 52.43% (*see* Schedule DM-D-9-3).

Q. What common equity ratios has MAWC requested in its capital structure over the last three cases?

A. In Case No. WR-2017-0285, MAWC requested a common equity ratio of 51.03%. In Case No. WR-2015-0301, MAWC requested a common equity ratio of 52.37%. In Case No. WR-2011-0337, MAWC requested a common equity ratio of 50.37%.

Q. What common equity ratio is reflected in its capital structure (excluding short-term debt) as of the test year and the update period in this case?

A. 52.43% as of December 31, 2019 and 50.24% as of June 30, 2020.

Q. Has American Water's credit rating been downgraded due to its more aggressive use of leverage in recent years?

A. Yes. Moody's downgraded American Water's credit rating from 'A3' to 'Baa1' on April 1, 2019, stating the following:

> The financial profile of the company has steadily declined since 2014 with free cash flow deficits and debt issuance having outpaced cash flow growth, as the company took on nearly $6.5 billion of capital spending. For example, free cash flow deficits

have grown at a compound annual growth rate (CAGR) of around 62%, debt has grown at over 9% CAGR and FFO at roughly a 6% CAGR. For most of this time, the company was benefitting from bonus depreciation, which resulted in no cash tax payments. However, 2017 federal tax reform undid these benefits, which has also contributed in key ratios declining, such as funds from operations (FFO) to net debt dropping from 18% in 2014 to 16% in 2018 and retained cash flow (RCF) to net debt falling from 15% in 2014 to just above 12% in 2018.

Q. What have American Water's FFO/debt ratios been recently?

A. They have been in the 14.5% to 16% range during the last couple of years.[25]

Q. What are they expected to be in 2020 and 2021?

A. 13% to 15%.[26]

Q. What have MAWC's FFO/debt ratios been during the last couple years?

A. They have been in the range of 19.6% to 21.6% range.

Q. What are they expected to be in future years?

A. I don't know, but this mainly depends on the ratemaking parameters allowed in this case, with specific focus on the allowed ROR.

Q. How much lower would MAWC's FFO be if the Commission adopted your more leveraged capital structure recommendation as compared to MAWC's per books capital structure?

A. It would be approximately $15.7 million lower. This difference also incorporates my recommended lower cost of debt, but holds the allowed ROE constant.

[25] Ryan Wobbrock, et. al., American Water Works Company Inc., Moody's Investor Service, April 30, 2020; and Sloan Millman and Obioma Ugboaja, American Water Works Co. Inc., S&P Global Ratings, June 19, 2020.
[26] *Id.*

Q. Would this difference cause MAWC's FFO/debt ratio to fall below those currently being targeted at American Water?

A. No.

Q. Is it fair to MAWC ratepayers to ask them to pay for a higher-cost capital structure than American Water considers appropriate for managing its market-tested consolidated capital structure?

A. No. It is the lower risk profile of American Water's regulated utility subsidiaries that allow it to access significant amounts of debt at low costs and still be able to maintain a solid investment-grade credit rating. While American Water has consistently been charging MAWC for a more equity-rich capital structure than it considers appropriate for raising third-party capital, the fact that American Water is increasing the discrepancy between the leverage it uses in its capital structure as compared to that which it reflects in MAWC's ratemaking capital structure, is particularly troublesome.

Q. How did you approach your recommended capital structure in past MAWC rate cases?

A. For all of the MAWC cases in which I filed testimony on behalf of Staff, I recommended the Commission use American Water's consolidated capital structure to set MAWC's ROR. In those cases, I recommended the use of American Water's capital structure as of the ordered test year or any of the ordered updates.

Q. What is the main difference between your recommended capital structure approach in this case compared to your recommendations in past cases?

A. In this case, I recommend an approximate average common equity ratio for American Water over the last five quarters. I approached the capital structure in this fashion because this better captures the amount of leverage American Water is targeting over recent periods. The capital structure can fluctuate from quarter-to-quarter so the ratios on any given quarter may not match the amount of leverage the company targets when determining the amount of financial risk its assets can reasonably support.

Q. What is your recommended cost of debt in this case?

A. My recommended cost of debt is 4.29%. My cost of debt recommendation is based on an assignment of 97.58% weight to AWCC's embedded cost of debt of 4.21% and 2.42% weight to the 7.66% embedded cost of MAWC's three remaining 3rd party debt issuances from the 1990s. I applied the 4.29% embedded cost of debt to the 58.9% debt capitalization ratio in my recommended capital structure.[27]

Q. How is this different from the approach you used to recommend debt costs in past MAWC rate cases in which you sponsored ROR testimony?

A. In past MAWC rate cases in which I filed ROR testimony, I recommended American Water's overall embedded cost of debt (including 3rd party debt held at American Water's other subsidiaries) be applied to my recommended debt capitalization ratio. Although I believe MAWC's sister subsidiaries' capital structures are funded almost entirely by affiliate debt from AWCC, I am not sure what portion of their capital structures are supported by 3rd party debt. Therefore, because I know MAWC has been relying exclusively on American Water for its debt financing needs, I decided a better approach was to assign American Water's embedded cost of debt to the proportion of debt in my recommended ratemaking capital structure that is not accounted for by MAWC's 3rd party debt issuances.

Q. If you had followed the approach you used in previous MAWC rate cases, what cost of debt would you have recommended?

A. 4.26%.

Q. What does MAWC claim as its embedded cost of debt as of the updated period in this case?

A. 4.86%.

[27] I relied on information MAWC provided in response to Staff DR No. 41 and in response to OPC DR No. 3008.

Q. Has American Water communicated to investors its targeted common equity ratio?

A. Yes. The very fact that American Water's recent balance sheets shows it has consistently maintained an equity ratio of approximately 40% provides such communication. However, in reviewing various rating agency and equity analysts reports, it is clear that American Water considers this amount of financial risk to be compatible with the lower amount of business risk of its regulated utility subsidiaries, including MAWC.[28]

Q. How can the Commission determine an equitable, market-tested and objective capital structure that more closely captures the amount of debt capacity that is consistent with MAWC's business risks?

A. The Commission can more closely capture debt capacity consistent with MAWC's business risks by authorizing capital structure ratios consistent with American Water's consolidated capital structure.

SUMMARY AND CONCLUSIONS

Q. Can you summarize your main conclusions and views as it relates to an authorized ROR in this case?

A. Yes. While there is significant evidence that suggests that American Water's water utility subsidiaries, including MAWC, have lower business risk than that of electric utilities, there is also evidence that American Water offsets this lower business risk by employing a larger proportion of debt in their capital structures. Therefore, if the Commission appropriately recognizes American Water's use of higher leverage in the capital structure it authorizes MAWC, then a 9.25% allowed ROE is consistent with capturing MAWC's lower overall cost of capital because it results in lower weight being assigned to the equity in the capital structure.

[28] Durgesh Chopra, et. al, "American Water Works Company – Speed Bump On The High Road," Evercore ISI, December 11, 2019

Less than 3% of the debt on MAWC's books is third-party debt. This debt was issued in the 1990s. The rest of the debt shown on MAWC's books is affiliate debt lent to it by AWCC. Consequently, MAWC's capital structure is not managed for purposes of raising external capital. It is managed to target capital ratios for ratemaking purposes. The most objective, consequential and market-tested capital structure is that of American Water. Therefore, I recommend MAWC's ROR be set based on American Water's capital structure ratios.

If the Commission does not order MAWC to give due consideration to short-term debt when calculating the AFUDC rate applied to CWIP balances, then MAWC's authorized capital structure should include short-term debt and its corresponding cost.

Q. Does this conclude your testimony?

A. Yes.

DAVID MURRAY, CFA

Educational and Employment Background and Credentials

I have been employed as a Utility Regulatory Manager at the Office of the Public Counsel (OPC) since July 1, 2019. Prior to accepting employment with the OPC, I was the Utility Regulatory Manager of the Financial Analysis Department for the Missouri Public Service Commission (Commission) from 2009 through June 30, 2019. I accepted the position of a Public Utility Financial Analyst in June 2000 and my position was reclassified in August 2003 to an Auditor III. I was promoted to the position of Auditor IV, effective July 1, 2006. I was employed by the Missouri Department of Insurance in a regulatory position before I began my employment at the Missouri Public Service Commission.

I was authorized in October 2010 to use the Chartered Financial Analyst (CFA) designation. The use of the CFA designation requires the passage of three rigorous examinations addressing many investment related areas such as valuation analysis, portfolio management, statistical analysis, economic analysis, financial statement analysis and ethical standards. In addition to the passage of the examinations a CFA charterholder must have four years of relevant professional work experience.

In May 1995, I earned a Bachelor of Science degree in Business Administration with an emphasis in Finance and Banking, and Real Estate from the University of Missouri-Columbia. I earned a Masters in Business Administration from Lincoln University in December 2003.

In April 2007 I passed the test required to be awarded the professional designation Certified Rate of Return Analyst (CRRA) by the Society of Utility and Regulatory Financial Analysts (SURFA). I served as a board member on the SURFA Board of Directors from 2008 through 2016. I am not currently an active member of SURFA.

Case Participation

Case Participation While Employed with the Missouri Office of the Public Counsel (July 2019 through Current):

I sponsored rate of return testimony in the following cases:

Union Electric	ER-2019-0335
Empire District Electric	ER-2019-0374

Case Participation While Employed with the Staff of the Missouri Public Service Commission (July 2000 through June 2019):

In addition to supervising employees who sponsored rate of return (ROR) testimony as Manager of the Financial Analysis Department of the Missouri Public Service Commission, I directly sponsored ROR testimony in the following electric, gas and water case proceedings (I also filed ROR testimony in several other smaller proceedings that are not listed):

Union Electric	ER-2010-0036, ER-2011-0028, ER-2012-0166, ER-2014-0258, and ER-2016-0179
Empire District Electric Company	ER-2002-424, ER-2004-0570, and ER-2006-0179
Kansas City Power & Light Company	ER-2009-0089, ER-2010-0355, ER-2012-0174, and ER-2016-0285
KCP&L Greater Missouri Operations and Former Aquila Inc. dba Aquila Networks MPS and L&P	ER-2001-672, EC-2002-265, ER-2004-0034, ER-2005-0436, ER-2009-0090, ER-2012-0175, and ER-2016-0156
Spire Missouri West and former Missouri Gas Energy	GR-2001-292, GR-2004-0209, GR-2006-0422, GR-2009-0355, GR-2017-0216
Spire Missouri East (Laclede Gas)	GR-2017-0215
Missouri American Water Company	WR-2003-0500, WR-2007-0216, WR-2010-0131, and WR-2015-0131

Missouri Gas Utility	GR-2008-0060
Summit Natural Gas of Missouri	GR-2014-0086
Liberty Midstates Gas Company	GR-2018-0013

In addition to the above, I have sponsored testimony in other proceedings, such as merger applications, which involve various general financial matters.

Multiple-Stage Dividend Discount Model
for the Comparable Water Utility Companies

Annual Earnings Per Share Estimates

	Consensus Analysts' Discreet EPS Estimates (through yellow highlighted cell)				2025 - 2035 Transitionay Period to Perpetual Growth										
Company Name	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	$2.37	$2.53	$2.68	$2.84	$3.01	$3.19	$3.37	$3.55	$3.73	$3.92	$4.11	$4.30	$4.49	$4.67	$4.86
American Water Works Company, Inc.	$4.25	$4.57	$4.94	$5.30	$5.74	$6.20	$6.66	$7.13	$7.60	$8.06	$8.53	$8.98	$9.42	$9.83	$10.23
California Water Service Group	$1.70	$1.77	$1.93	$2.10	$2.29	$2.49	$2.69	$2.89	$3.09	$3.29	$3.49	$3.68	$3.86	$4.04	$4.20
Essential Utilities, Inc.	$1.66	$1.80	$1.89	$2.02	$2.17	$2.31	$2.46	$2.61	$2.76	$2.92	$3.07	$3.22	$3.37	$3.51	$3.65
SJW Group	$2.43	$2.61	$2.74	$2.83	$3.00	$3.17	$3.35	$3.53	$3.72	$3.90	$4.09	$4.28	$4.47	$4.65	$4.84

Dividend Payout Ratios

	Discrete Dividend Payout Ratio (through yellow highlighted cell)				Transitory Payout Ratio Until Perpetual Growth										
Company Name	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	55.27%	55.34%	55.35%	55.37%	55.39%	55.40%	55.42%	55.44%	55.45%	55.47%	55.49%	55.50%	55.52%	55.54%	55.56%
American Water Works Company, Inc.	55.06%	56.67%	56.68%	56.59%	56.49%	56.40%	56.31%	56.21%	56.12%	56.02%	55.93%	55.84%	55.74%	55.65%	55.56%
California Water Service Group	52.35%	53.67%	53.82%	53.96%	54.11%	54.25%	54.40%	54.54%	54.69%	54.83%	54.98%	55.12%	55.27%	55.41%	55.56%
Essential Utilities, Inc.	63.25%	62.78%	62.96%	62.35%	61.73%	61.11%	60.49%	59.88%	59.26%	58.64%	58.02%	57.41%	56.79%	56.17%	55.56%
SJW Group	56.38%	55.94%	55.47%	55.48%	55.49%	55.49%	55.50%	55.51%	55.52%	55.52%	55.53%	55.54%	55.54%	55.55%	55.56%

Estimated Dividends

Company Name	Cost of Equity	Stock Price	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	**5.95%**	-77.12	$1.31	$1.40	$1.48	$1.57	$1.67	$1.77	$1.87	$1.97	$2.07	$2.17	$2.28	$2.38	$2.49	$2.60	$2.70
American Water Works Company, Inc.	**6.26%**	-139.36	$2.34	$2.59	$2.80	$3.00	$3.24	$3.49	$3.75	$4.01	$4.26	$4.52	$4.77	$5.01	$5.25	$5.47	$5.68
California Water Service Group	**6.75%**	-46.33	$0.89	$0.95	$1.04	$1.13	$1.24	$1.35	$1.46	$1.57	$1.69	$1.80	$1.92	$2.03	$2.14	$2.24	$2.33
Essential Utilities, Inc.	**6.72%**	-42.63	$1.05	$1.13	$1.19	$1.26	$1.34	$1.41	$1.49	$1.56	$1.64	$1.71	$1.78	$1.85	$1.91	$1.97	$2.03
SJW Group	**6.44%**	-62.18	$1.37	$1.46	$1.52	$1.57	$1.66	$1.76	$1.86	$1.96	$2.06	$2.17	$2.27	$2.38	$2.48	$2.58	$2.69
Average	**6.42%**																

Multiple-Stage Dividend Discount Model
for the Comparable Water Utility Companies

Annual Growth Rate Estimates Until Terminal Stage

Company Name	5-YR CAGR	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	6.00%	Discrete Estimates		6.00%	6.00%	6.00%	5.80%	5.60%	5.40%	5.20%	5.00%	4.80%	4.60%	4.40%	4.20%	4.00%
American Water Works Company, Inc.	8.33%	Discrete Estimates				8.33%	7.90%	7.47%	7.03%	6.60%	6.17%	5.73%	5.30%	4.87%	4.43%	4.00%
California Water Service Group	9.00%	Discrete Estimates		9.00%	9.00%	9.00%	8.50%	8.00%	7.50%	7.00%	6.50%	6.00%	5.50%	5.00%	4.50%	4.00%
Essential Utilities, Inc.	7.04%	Discrete Estimates			7.04%	7.04%	6.74%	6.43%	6.13%	5.82%	5.52%	5.22%	4.91%	4.61%	4.30%	4.00%
SJW Group	6.00%	Discrete Estimates				6.00%	5.80%	5.60%	5.40%	5.20%	5.00%	4.80%	4.60%	4.40%	4.20%	4.00%

Source: S&P Market intelligence as of November 23, 2020.

Multiple-Stage Dividend Discount Model
for the Comparable Water Utility Companies

Annual Earnings Per Share Estimates

	Consensus Analysts' Discreet EPS Estima (through yellow highlighted cell)				2025 - 2035 Transitionay Period to Perpetual Growth										
Company Name	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	$2.37	$2.53	$2.68	$2.84	$3.01	$3.19	$3.36	$3.54	$3.72	$3.89	$4.07	$4.24	$4.41	$4.57	$4.73
American Water Works Company, Inc.	$4.25	$4.57	$4.94	$5.30	$5.74	$6.19	$6.65	$7.11	$7.56	$8.01	$8.44	$8.86	$9.26	$9.63	$9.96
California Water Service Group	$1.70	$1.77	$1.93	$2.10	$2.29	$2.49	$2.68	$2.88	$3.08	$3.27	$3.45	$3.63	$3.80	$3.95	$4.09
Essential Utilities, Inc.	$1.66	$1.80	$1.89	$2.02	$2.17	$2.31	$2.46	$2.60	$2.75	$2.89	$3.04	$3.18	$3.31	$3.44	$3.56
SJW Group	$2.43	$2.61	$2.74	$2.83	$3.00	$3.17	$3.35	$3.52	$3.70	$3.87	$4.05	$4.22	$4.39	$4.55	$4.71

Dividend Payout Ratios

	Discrete Dividend Payout Ratio (through yellow highlighted cell)				Transitory Payout Ratio Until Perpetual Growth										
Company Name	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	55.27%	55.34%	55.78%	56.22%	56.67%	57.11%	57.56%	58.00%	58.45%	58.89%	59.33%	59.78%	60.22%	60.67%	61.11%
American Water Works Company, Inc.	55.06%	56.67%	56.68%	57.05%	57.42%	57.79%	58.16%	58.53%	58.90%	59.26%	59.63%	60.00%	60.37%	60.74%	61.11%
California Water Service Group	52.35%	53.67%	54.24%	54.82%	55.39%	55.96%	56.53%	57.11%	57.68%	58.25%	58.82%	59.39%	59.97%	60.54%	61.11%
Essential Utilities, Inc.	63.25%	62.78%	62.96%	62.81%	62.65%	62.50%	62.35%	62.19%	62.04%	61.88%	61.73%	61.57%	61.42%	61.27%	61.11%
SJW Group	56.38%	55.94%	55.47%	55.94%	56.41%	56.88%	57.35%	57.82%	58.29%	58.76%	59.23%	59.70%	60.17%	60.64%	61.11%

Estimated Dividends

Company Name	Cost of Equity	Stock Price	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	**5.71%**	-77.12	$1.31	$1.40	$1.50	$1.60	$1.71	$1.82	$1.93	$2.05	$2.17	$2.29	$2.41	$2.53	$2.66	$2.78	$2.89
American Water Works Company, Inc.	**6.04%**	-139.36	$2.34	$2.59	$2.80	$3.02	$3.30	$3.58	$3.87	$4.16	$4.45	$4.75	$5.03	$5.32	$5.59	$5.85	$6.09
California Water Service Group	**6.58%**	-46.33	$0.89	$0.95	$1.05	$1.15	$1.27	$1.39	$1.52	$1.64	$1.77	$1.90	$2.03	$2.16	$2.28	$2.39	$2.50
Essential Utilities, Inc.	**6.55%**	-42.63	$1.05	$1.13	$1.19	$1.27	$1.36	$1.44	$1.53	$1.62	$1.71	$1.79	$1.87	$1.96	$2.03	$2.11	$2.17
SJW Group	**6.24%**	-62.18	$1.37	$1.46	$1.52	$1.58	$1.69	$1.80	$1.92	$2.04	$2.16	$2.28	$2.40	$2.52	$2.64	$2.76	$2.88
Average	**6.23%**																

Multiple-Stage Dividend Discount Model
for the Comparable Water Utility Companies

Annual Growth Rate Estimates Until Terminal Stage

Company Name	Analysts' Estimiated 5-YR CAGR	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
American States Water Company	6.00%	Discrete Estimates		6.00%	6.00%	6.00%	5.75%	5.50%	5.25%	5.00%	4.75%	4.50%	4.25%	4.00%	3.75%	3.50%
American Water Works Company, Inc.	8.33%		Discrete Estimates			8.33%	7.85%	7.37%	6.88%	6.40%	5.92%	5.43%	4.95%	4.47%	3.98%	3.50%
California Water Service Group	9.00%	Discrete Estimates		9.00%	9.00%	9.00%	8.45%	7.90%	7.35%	6.80%	6.25%	5.70%	5.15%	4.60%	4.05%	3.50%
Essential Utilities, Inc.	7.04%		Discrete Estimates		7.04%	7.04%	6.69%	6.33%	5.98%	5.62%	5.27%	4.92%	4.56%	4.21%	3.85%	3.50%
SJW Group	6.00%		Discrete Estimates			6.00%	5.75%	5.50%	5.25%	5.00%	4.75%	4.50%	4.25%	4.00%	3.75%	3.50%

Source: S&P Market intelligence as of November 23, 2020.

CAPITAL ASSET PRICING MODEL (CAPM) COST OF COMMON EQUITY ESTIMATES
FOR WATER PEER GROUP, INCLUDING AMERICAN WATER, BASED ON 20-YEAR US TREASURY

	(1)	(2)	(3)	(4)
Company Name	20-Year Risk Free Rate	Beta	Equity Risk Premium	CAPM Cost of Common Equity
American Water Works Company	**1.20%**	**0.81**	**6.00%**	**6.03%**
American States Water Company	1.20%	0.54	6.00%	4.44%
California Water Service Group	1.20%	0.55	6.00%	4.49%
Essential Utilities, Inc.	1.20%	0.82	6.00%	6.10%
Middlesex Water Company	1.20%	0.75	6.00%	5.69%
SJW Group	1.20%	0.80	6.00%	6.02%
The York Water Company	1.20%	0.86	6.00%	6.35%
Average		0.732		5.59%
Average without American States and California	**1.20%**	**0.81**	**6.00%**	**6.04%**

Column 1 = Average of last 3 Months of 20-Year Treasuries obtained from the St. Louis Federal Reserve website at https://fred.stlouisfed.org/series/GS20

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. I used a template provided by S&P Market Intelligence that calculates raw betas based on the Value Linen approach. This approach measures the covariance of the company's weekly returns with that of the S&P 500 divided by the variance of the S&P 500 returns over an historical 5 year period. This raw beta is then adjusted by the Blume formula, which is the following: Adjusted Beta = 0.35 + 0.67 * Unadjusted Beta

Column 3 = The equity risk premium selected base on consideration of historical achieved earned return spreads and risk premiums used by equity analysts covering American Water's stock.

Column 4 = (Column 1 + (Column 2 * Column 3)).

CAPITAL ASSET PRICING MODEL (CAPM) COST OF COMMON EQUITY ESTIMATES
FOR WATER PEER GROUP, INCLUDING AMERICAN WATER, BASED ON 20-YEAR US TREASURY

	(1)	(2)	(3)	(4)
Company Name	30-Year Risk Free Rate	Beta	Equity Risk Premium	CAPM Cost of Common Equity
American Water Works Company	**1.42%**	**0.805**	**6.00%**	**6.25%**
American States Water Company	1.42%	0.541	6.00%	4.66%
California Water Service Group	1.42%	0.549	6.00%	4.71%
Essential Utilities, Inc.	1.42%	0.817	6.00%	6.32%
Middlesex Water Company	1.42%	0.749	6.00%	5.92%
SJW Group	1.42%	0.805	6.00%	6.25%
The York Water Company	1.42%	0.859	6.00%	6.58%
Average		**0.73**		**5.81%**
Average without American States and California	**1.42%**	**0.81**	**6.00%**	**6.26%**

Column 1 = Average of last 3 Months of 30-Year Treasuries obtained from the St. Louis Federal Reserve website at https://fred.stlouisfed.org/series/GS20

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. I used a template provided by S&P Market Intelligence that calculates raw betas based on the Value Linen approach. This approach measures the covariance of the company's weekly returns with that of the S&P 500 divided by the variance of the S&P 500 returns over an historical 5 year period. This raw beta is then adjusted by the Blume formula, which is the following: Adjusted Beta = 0.35 + 0.67 * Unadjusted Beta

Column 3 = The equity risk premium selected base on consideration of historical achieved earned return spreads and risk premiums used by equity analysts covering American Water's stock.

Column 4 = (Column 1 + (Column 2 * Column 3)).

CAPITAL ASSET PRICING MODEL (CAPM) COST OF COMMON EQUITY ESTIMATES
FOR WATER PEER GROUP, INCLUDING AMERICAN WATER, BASED ON D&P NORMALIZED RISK-FREE RATE

	(1)	(2)	(3)	(4)
Company Name	D&P Normalized Risk-free Rate	Beta	D&P Equity Risk Premium	CAPM Cost of Common Equity
American Water Works Company	**2.50%**	**0.805**	**6.00%**	**7.33%**
American States Water Company	2.50%	0.541	6.00%	5.74%
California Water Service Group	2.50%	0.549	6.00%	5.79%
Essential Utilities, Inc.	2.50%	0.817	6.00%	7.40%
Middlesex Water Company	2.50%	0.749	6.00%	6.99%
SJW Group	2.50%	0.805	6.00%	7.33%
The York Water Company	2.50%	0.859	6.00%	7.66%
Average		0.73		6.89%
Average without American States and California	**2.50%**	**0.81**	**6.00%**	**7.34%**

Column 1 = D&P Most Recent Guidance on Normalized Risk-free Rate as of June 30, 2020
https://www.duffandphelps.com/insights/publications/cost-of-capital/us-normalized-risk-free-rate-lowered-june-30-2020

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. I used a template provided by S&P Market Intelligence that calculates raw betas based on the Value Linen approach. This approach measures the covariance of the company's weekly returns with that of the S&P 500 divided by the variance of the S&P 500 returns over an historical 5 year period. This raw beta is then adjusted by the Blume formula, which is the following:
Adjusted Beta = 0.35 + 0.67 * Unadjusted Beta

Column 3 = D&P guidance as of June 30, 2020 on equity risk premium to be used in conjunction with normalized risk-free rate.
https://www.duffandphelps.com/insights/publications/cost-of-capital/us-normalized-risk-free-rate-lowered-june-30-2020

Column 4 = (Column 1 + (Column 2 * Column 3)).

CAPITAL ASSET PRICING MODEL (CAPM) COST OF COMMON EQUITY ESTIMATES FOR VARIOUS PROXY GROUPS AND AMEREN BASED ON 10-YEAR US TREASURY AND GOLDMAN SACHS' EQUITY RISK PREMIUM

	(1)	(2)	(3)	(4)
Company Name	10-Year Risk Free Rate	Beta	Equity Risk Premium	CAPM Cost of Common Equity
American Water Works Company	**0.69%**	**0.805**	**6.30%**	**5.76%**
American States Water Company	0.69%	0.541	6.30%	4.10%
California Water Service Group	0.69%	0.549	6.30%	4.15%
Essential Utilities, Inc.	0.69%	0.817	6.30%	5.84%
Middlesex Water Company	0.69%	0.749	6.30%	5.41%
SJW Group	0.69%	0.805	6.30%	5.76%
The York Water Company	0.69%	0.859	6.30%	6.10%
Average		**0.73**		**5.30%**
Average without American States and California	**0.69%**	**0.81**	**6.30%**	**5.77%**

Column 1 = Average of last 3 Months of 10-Year Treasuries obtained from the St. Louis Federal Reserve website at https://fred.stlouisfed.org/series/GS20

Column 2 = Beta is a measure of the movement and relative risk of an individual stock to the market as a whole. I used a template provided by S&P Market Intelligence that calculates raw betas based on the Value Linen approach. This approach measures the covariance of the company's weekly returns with that of the S&P 500 divided by the variance of the S&P 500 returns over an historical 5 year period. This raw beta is then adjusted by the Blume formula, which is the following: Adjusted Beta = 0.35 + 0.67 * Unadjusted Beta

Column 3 = The equity risk premium is consistent with that used by Goldman Sachs as of August 14, 2020.

Column 4 = (Column 1 + (Column 2 * Column 3)).

American Water Consolidated Capital Structures
Quarterly for the Period 6/30/2019 - 6/30/2020
(*Dollars in thousands)*

Capital Components	6/30/2019	9/30/2019	12/31/2019	3/31/2020[1]	6/30/2020	**Average**
Common Equity	$6,027,000.0	$6,190,000.0	$6,121,000.0	$6,243,000.0	$6,338,000.0	**$6,183,800.0**
Preferred Stock	6,000.0	6,000.0	5,000.0	4,000.0	4,000.0	**$5,000.0**
Long-Term Debt	8,667,000.0	8,669,000.0	8,667,000.0	8,670,000.0	9,658,000.0	**$8,866,200.0**
Short-Term Debt	397,000.0	474,000.0	786,000.0	1,141,000.0	920,000.0	**$743,600.0**
	$15,097,000.0	$15,339,000.0	$15,579,000.0	$16,058,000.0	$16,920,000.0	**$15,798,600.0**

Capital Components	6/30/2019	9/30/2019	12/31/2019	3/31/20201	6/30/2020	**Average**
Common Equity	39.92%	40.35%	39.29%	38.88%	37.46%	**39.18%**
Preferred Stock	0.04%	0.04%	0.03%	0.02%	0.02%	**0.03%**
Long-Term Debt	57.41%	56.52%	55.63%	53.99%	57.08%	**56.13%**
Short-Term Debt	2.63%	3.09%	5.05%	7.11%	5.44%	**4.66%**
	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

Capital Components	6/30/2019	9/30/2019	12/31/2019	3/31/20201	6/30/2020	**Average**
Common Equity	41.00%	41.64%	41.38%	41.85%	39.61%	**41.10%**
Preferred Stock	0.04%	0.04%	0.03%	0.03%	0.03%	**0.03%**
Long-Term Debt	58.96%	58.32%	58.59%	58.12%	60.36%	**58.87%**
Total	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

Missouri American Water Company's Capital Structures
Quarterly for the Period 6/30/2019 - 6/30/2020
(*Dollars in thousands)*

Capital Components	6/30/2019	9/30/2019	12/31/2019	3/31/20201	6/30/2020	**Average**
Common Equity	$689,345.00	$708,378.0	$778,765.0	$773,869.0	$824,109.0	**$754,893.2**
Preferred Stock	$500.00	$250.0	250	250.0	250.0	**$300.0**
Long-Term Debt	$706,241.00	$706,263.0	706,285.0	706,307.0	816,104.0	**$728,240.0**
Short-Term Debt	$64,343.00	$65,936.0	36,360.0	122,729.0	87,622.0	**$75,398.0**
Total	$1,460,429.0	$1,480,827.0	$1,521,660.0	$1,603,155.0	$1,728,085.0	**$1,558,831.2**

Capital Components	6/30/2019	9/30/2019	12/31/2019	3/31/20201	6/30/2020	**Average**
Common Equity	47.20%	47.84%	51.18%	48.27%	47.69%	**48.44%**
Preferred Stock	0.03%	0.02%	0.02%	0.02%	0.01%	**0.02%**
Long-Term Debt	48.36%	47.69%	46.42%	44.06%	47.23%	**46.75%**
Short-Term Debt	4.41%	4.45%	2.39%	7.66%	5.07%	**4.79%**
	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

Capital Components	6/30/2019	9/30/2019	12/31/2019	3/31/20201	6/30/2020	**Average**
Common Equity	49.38%	50.07%	52.43%	52.27%	50.24%	**50.88%**
Preferred Stock	0.04%	0.02%	0.02%	0.02%	0.02%	**0.02%**
Long-Term Debt	50.59%	49.92%	47.55%	47.71%	49.75%	**49.10%**
Total	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

Note: 1. Includes current maturities on long-term debt.
2. Includes redeemable preferred stock.
3. Includes current maturities on preferred stock.

Sources:
Missouri-American Water Company's response to Staff Data Request Nos. 159 and 229, as well as
Schedule 6-1 in the Appendices to Staff's Cost of Service Report in Case No. WR-2010-0131.

Historical Consolidated Capital Structures for American Water

(*Dollars in thousands)*

Capital Components	2010	2011	2012	2013	2014
Common Equity	$4,132,272.0	$4,240,384.0	$4,443,268.0	$4,727,804.0	$4,915,000.0
Preferred Stock[1,2]	22,135.0	21,137.0	18,861.0	17,177.0	15,000.0
Long-Term Debt[1]	5,430,227.0	5,368,805.0	5,306,428.0	5,227,055.0	5,488,000.0
Short-Term Debt	228,905.0	515,050.0	269,985.0	630,307.0	450,000.0
	$9,813,539.0	$10,145,376.0	$10,038,542.0	$10,602,343.0	$10,868,000.0

Capital Components	2015	2016	2017	2018	2019
Common Equity	$5,049,000.0	$5,218,000.0	$5,385,000.0	$5,864,000.0	$6,121,000.0
Preferred Stock[1,2]	$12,000.0	$10,000.0	$8,000.0	$7,000.0	$5,000.0
Long-Term Debt[1]	$5,916,000.0	$6,323,000.0	$6,812,000.0	$7,640,000.0	$8,667,000.0
Short-Term Debt	$628,000.0	$849,000.0	$905,000.0	$964,000.0	$786,000.0
	$11,605,000.0	$12,400,000.0	$13,110,000.0	$14,475,000.0	$15,579,000.0

Historical Consolidated Capital Structures for Missouri-American Water Company

(*Dollars in thousands)*

Capital Components	2010	2011	2012	2013	2014
Common Equity	$413,150.0	$435,152.0	$446,793.0	$474,431.0	$485,204.0
Preferred Stock[1,2]	2,596.0	2,295.0	2,000.0	1,750.0	1,500.0
Long-Term Debt[1]	409,276.0	433,834.0	448,494.0	468,450.0	468,461.0
Short-Term Debt	4,273.0	5,890.0	30,749.0	38,466.0	84,321.0
Total	$829,295.0	$877,171.0	$928,036.0	$983,097.0	$1,039,486.0

Capital Components	2015	2016	2017	2018	2019
Common Equity	$526,454.00	$569,572.4	$644,862.0	$682,960.0	$778,764.0
Preferred Stock[1,2]	$1,250.00	$1,000.0	750.0	500.0	250.0
Long-Term Debt[1]	$517,822.00	$566,964.0	586,549.0	631,599.0	706,285.0
Short-Term Debt	$39,900.00	$32,811.0	0.0	48,770.0	36,106.0
Total	$1,085,426.0	$1,170,347.4	$1,232,161.0	$1,363,829.0	$1,521,405.0

Note: 1. Includes current maturities.
2. Includes redeemable preferred stock.

Sources:
Missouri-American Water Company's response to Staff DR No. 36 in Case No. WR-2020-0344, Staff DR No. 229 in Case No. WR-2015-0301, and Staff DR No. 174 in Case No. WR-2017-0285.

Historical Consolidated Capital Structures for American Water with Short-Term Debt

(*Dollars in thousands)*

Capital Components	2010	2011	2012	2013	2014
Common Equity	42.11%	41.80%	44.26%	44.59%	45.22%
Preferred Stock	0.23%	0.21%	0.19%	0.16%	0.14%
Long-Term Debt	55.33%	52.92%	52.86%	49.30%	50.50%
Short-Term Debt	2.33%	5.08%	2.69%	5.94%	4.14%
	100.00%	100.00%	100.00%	100.00%	100.00%

Capital Components	2015	2016	2017	2018	2019
Common Equity	43.51%	42.08%	41.08%	40.51%	39.29%
Preferred Stock	0.10%	0.08%	0.06%	0.05%	0.03%
Long-Term Debt	50.98%	50.99%	51.96%	52.78%	55.63%
Short-Term Debt	5.41%	6.85%	6.90%	6.66%	5.05%
	100.00%	100.00%	100.00%	100.00%	100.00%

Historical Consolidated Capital Structures for Missouri-American Water Company with Short-Term Debt

(*Dollars in thousands)*

Capital Components	2010	2011	2012	2013	2014
Common Equity	49.82%	49.61%	48.14%	48.26%	46.68%
Preferred Stock	0.31%	0.26%	0.22%	0.18%	0.14%
Long-Term Debt	49.35%	49.46%	48.33%	47.65%	45.07%
Short-Term Debt	0.52%	0.67%	3.31%	3.91%	8.11%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Capital Components	2015	2016	2017	2018	2019
Common Equity	48.50%	48.67%	52.34%	50.08%	51.19%
Preferred Stock	0.12%	0.09%	0.06%	0.04%	0.02%
Long-Term Debt	47.71%	48.44%	47.60%	46.31%	46.42%
Short-Term Debt	3.68%	2.80%	0.00%	3.58%	2.37%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Note: 1. Includes current maturities.
2. Includes redeemable preferred stock.

Sources:
Missouri-American Water Company's response to Staff DR No. 36 in Case No. WR-2020-0344, Staff DR No. 229 in Case No. WR-2015-0301, and Staff DR No. 174 in Case No. WR-2017-0285.
S&P Market Intelligence for American Water capital structure informatinon.

Historical Consolidated Capital Structures for American Water with Short-Term Debt

(*Dollars in thousands)*

Capital Components	2010	2011	2012	2013	2014
Common Equity	43.11%	44.03%	45.49%	47.41%	47.18%
Preferred Stock	0.23%	0.22%	0.19%	0.17%	0.14%
Long-Term Debt	56.66%	55.75%	54.32%	52.42%	52.68%
	100.00%	100.00%	100.00%	100.00%	100.00%

Capital Components	2015	2016	2017	2018	2019
Common Equity	46.00%	45.17%	44.12%	43.40%	41.38%
Preferred Stock	0.11%	0.09%	0.07%	0.05%	0.03%
Long-Term Debt	53.89%	54.74%	55.81%	56.55%	58.59%
	100.00%	100.00%	100.00%	100.00%	100.00%

Historical Consolidated Capital Structures for Missouri-American Water Company with Short-Term Debt

(*Dollars in thousands)*

Capital Components	2010	2011	2012	2013	2014
Common Equity	50.08%	49.94%	49.79%	50.22%	50.80%
Preferred Stock	0.31%	0.26%	0.22%	0.19%	0.16%
Long-Term Debt	49.61%	49.79%	49.98%	49.59%	49.05%
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Equity Ratio Difference	**6.96%**	**5.91%**	**4.31%**	**2.81%**	**3.62%**

Capital Components	2015	2016	2017	2018	2019
Common Equity	50.35%	50.07%	52.34%	51.93%	52.43%
Preferred Stock	0.12%	0.09%	0.06%	0.04%	0.02%
Long-Term Debt	49.53%	49.84%	47.60%	48.03%	47.55%
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Equity Ratio Difference	**4.36%**	**4.90%**	**8.21%**	**8.53%**	**11.05%**

Note: 1. Includes current maturities.
2. Includes redeemable preferred stock.

Sources:

Missouri-American Water Company's response to Staff DR No. 36 in Case No. WR-2020-0344, Staff DR No. 229 in Case No. WR-2015-0301, and Staff DR No. 174 in Case No. WR-2017-0285.

S&P Market Intelligence for American Water capital structure informatinon.

Recommended Rate Making Capital Structure
for Missouri American Water Company
if Short-Term Debt Applied to AFUDC

Capital Component		Dollar Amount	Percentage of Capital
Common Stock Equity	$	674,072	41.10%
Preferred Stock	$	-	0.00%
Long-Term Debt	$	966,141	58.90%
Short-Term Debt	$	-	0.00%
Total Capitalization	**$**	**1,640,213**	**100.00%**

Recommended Rate Making Capital Structure
for Missouri American Water Company
if Short-Term Debt Not Applied to AFUDC

Capital Component		Dollar Amount	Percentage of Capital
Common Stock Equity	$	642,645	39.18%
Preferred Stock	$	-	0.00%
Long-Term Debt	$	921,108	56.16%
Short-Term Debt	$	76,460	4.66%
Total Capitalization	**$**	**1,640,213**	**100.00%**

Recommended Alllowed Rate of Return as of June 30, 2020
for Missouri American Water Company
if Short-Term Debt Applied to AFUDC

Capital Component	Percentage of Capital	Cost	After-Tax ROR	Pre-Tax ROR
Common Stock Equity	41.10%	9.25%	3.80%	4.99%
Long-Term Debt	58.90%	4.29%	2.53%	2.53%
Total	**100.00%**		**6.33%**	**7.52%**

Recommended Alllowed Rate of Return as of June 30, 2020
for Missouri American Water Company
if Short-Term Debt Not Applied to AFUDC

Capital Component	Percentage of Capital	Cost	After-Tax ROR	Pre-Tax ROR
Common Stock Equity	39.18%	9.25%	3.62%	4.76%
Long-Term Debt	56.16%	4.29%	2.41%	2.41%
Short-Term Debt	4.66%	0.20%	0.01%	0.01%
Total	**100.00%**		**6.04%**	**7.18%**

Sources:
St. Louis Federal Reserve website for 30-day commercial paper rate for short-term debt cost;
Tax Rate Provided in Company's Revenue Requirement Workpapers.