Exhibit No.	
Issues:	Return on Equity and Capital Structure
Witness:	Ann E. Bulkley
Exhibit Type:	Rebuttal
Sponsoring Party:	Missouri-American Water Company
Case No.	WR-2020-0344
Date:	January 15, 2021

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2020-0344

REBUTTAL TESTIMONY

OF

ANN E. BULKLEY

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

AFFIDAVIT

I, Ann E. Bulkley, under penalty of perjury, and pursuant to Section 509.030, RSMo, state that I am a Senior Vice President for Concentric Energy Advisors, Inc., that the accompanying testimony has been prepared by me or under my direction and supervision; that if inquiries were made as to the facts in said testimony, I would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of my knowledge and belief.

Ann E. Bulkley

January 14, 2021

REBUTTAL TESTIMONY
ANN E. BULKLEY
MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2020-0344

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REBUTTAL TESTIMONY

ANN E. BULKLEY

I. INTRODUCTION AND PURPOSE

Q. Please state your name and business address.

A. My name is Ann E. Bulkley. I am Senior Vice President of Concentric Energy Advisors, Inc. ("Concentric"). My business address is 293 Boston Post Road West, Suite 500, Marlborough, Massachusetts 01752.

Q. On whose behalf are you submitting this testimony?

A. I am testifying on behalf of Missouri-American Water Company ("MAWC" or the "Company"), a wholly-owned subsidiary of American Water Works Company, Inc. ("AWK" or "American Water").

Q. Did you previously provide Direct Testimony in this proceeding?

A. Yes. I filed Direct Testimony in this proceeding on June 30, 2020.

Q. What is the purpose of your Rebuttal Testimony?

A. The purpose of my Rebuttal Testimony is to respond to the Cost of Service Report of the Missouri Public Service Commission Staff ("Staff") and, in particular, the section sponsored by Staff witness Seoung Joun Won relating to the authorized return on equity ("ROE") and capital structure; the Direct Testimony of David Murray on behalf of the Missouri Office of Public Counsel ("OPC"); and, the Direct Testimony of Greg Meyer on behalf of the Missouri Industrial Energy Consumers ("MIEC").

Q. Are you sponsoring any schedules as part of your Rebuttal Testimony?

A. Yes, I am sponsoring Schedules AEB-1R through AEB-7R.

Q. How is the remainder of your Rebuttal Testimony organized?

A. The remainder of my Rebuttal Testimony is organized as follows:

- In Section II, I provide a summary and overview of my Rebuttal Testimony and the important factors to be considered in establishing the ROE for MAWC.
- In Section III, I respond to the capital structure recommendations of Dr. Won and Mr. Murray
- In Section IV, I discuss how the cost of capital recommendations of Dr. Won and Mr. Murray compare with the authorized returns for water utilities in other jurisdictions. I also address a point raised by Mr. Meyer about ROE and the risk of various ratemaking mechanisms such as the use of a future test year.
- In Section V, I update my ROE analysis based on market data as of November 30, 2020.
- In Section VI, I respond to Dr. Won's and Mr. Murray's testimony regarding capital market conditions and the implications for MAWC's cost of equity.
- In Section VII, I respond to Staff witness Dr. Won's ROE analyses and recommendations. (Appendix A contains more detailed critiques of the ROE approaches employed by Dr. Won.)
- In Section VIII, I respond to OPC witness Mr. Murray's ROE analyses and recommendations. (Appendix B contains more detailed critiques of the ROE approaches employed by Mr. Murray.)
- Finally, in Section IX, I summarize my conclusions and recommendations.

II. SUMMARY AND OVERVIEW

Q. What are your key conclusions and recommendations regarding the appropriate ROE and capital structure for MAWC in this proceeding?

A. My key conclusions are as follows:

1. Dr. Won and Mr. Murray both recommend imputing the consolidated capital structure of the American Water affiliated companies on MAWC for ratemaking purposes. This approach was addressed and rejected by the Commission in a case for Spire Missouri[1] that included similar circumstances as are present in this case. The Commission was clear in the Spire case that the consolidated company capital structure should not be relied upon for that operating company because under the Spire corporate structure, the Missouri company was one of five operating companies and therefore it did not represent the majority of the parent capitalization. Neither Dr. Won nor Mr. Murray have presented any evidence in this proceeding that suggests that circumstances for MAWC are different in this regard than the Missouri operations of Spire. MAWC is one of sixteen utility operating companies in AWK's Regulated Businesses segment. In addition to the regulated utility operations, AWK's operations also include a Market-Based Services segment including the Homeowner Services Group and the Military Services Group that make up approximately 15 percent of American Water's operating income. Therefore, consistent with the Spire case, it would not be reasonable to apply the American Water's consolidated capitalization to MAWC.

2. Mr. Murray's proposal to include an estimate of short-term debt in the capital structure for MAWC is another recycled proposal from the Spire case that has been considered and rejected by this Commission. Mr. Murray offers no explanation as to why MAWC should be treated differently with respect to the inclusion of short-term debt in the capital structure than Spire Missouri.

3. In making their recommendations regarding capital structure, Dr. Won and Mr. Murray fail to consider the relationship between the ROE and the capital structure in determining the overall cost of capital. Considering the relationship between the equity ratio and the required equity return, and the use of market data for a proxy group to set the ROE, it is reasonable and appropriate to evaluate the capital structure of MAWC in comparison to the capital structures of the proxy group

[1] MoPSC Case No. GR-2017-0215 (March 7, 2018)

companies. Because MAWC's actual capitalization is consistent with that of the proxy group, imputing a capital structure that differs significantly from the actual capitalization of MAWC and the proxy group would result in increased risk relative to the proxy group that should be reflected in the authorized ROE. Imputing such a capital structure would also provide incentives to the Company to align its actual capital structure to that used to set rates, which would be contrary to the best interests of Missouri customers. Dr. Won's and Mr. Murray's recommended equity ratios, in combination with their ROE recommendations, do not meet the comparable return standard of *Hope* and *Bluefield*.

4. Although Dr. Won and Mr. Murray devote many pages of testimony to discussing the results of their various ROE estimation models and attempting to explain why those models are producing reasonable results under current market conditions, they essentially discard their flawed analyses in favor of less drastic recommendations that are not supported by their own ROE estimation models.

5. The analyses of the other ROE witnesses are flawed in a number of ways including relying on unrealistically low growth projections and ignoring the uncertainty and volatility that has characterized financial markets. While I address the methodological shortcoming in Dr. Won's and Mr. Murray's respective analyses (*see* Appendices A and B), because these witnesses have placed no weight on their own analyses, it would be reasonable and appropriate for the Commission to do the same.

6. Contrary to the views of the other ROE witnesses who suggest that ROEs have declined, my Rebuttal Testimony discusses why this conclusion is mistaken and should not be relied upon. Rather, market volatility is significantly higher in 2020 than in 2017 when the Commission approved the current authorized ROE for MAWC. As such, it is reasonable that investors would require a higher return to compensate them for the increased risk associated with owning common equity in regulated water companies.

7. Updated market-based data for the proxy group companies as of November 30, 2020 supports a range of ROEs for MAWC between 9.75 percent and 10.60

percent. Furthermore, recently authorized equity ratios for water utilities support the Company's proposed capital structure of 53.00 percent common equity and 47.00 percent long-term debt for the period new rates go into effect or May 2021.

III. CAPITAL STRUCTURE

Q. Please summarize the Staff position with respect to the capital structure that should be applied to MAWC in this case.

A. Staff's position is that they have consistently recommended that the Commission impose the consolidated capital structure of American Water on MAWC for ratemaking purposes. Staff suggests that because AWCC is the primary source of MAWC's debt financing and AWK is the guarantor of debt issued by AWWC, it is reasonable for the Commission impose the consolidated capital structure of the American Water companies on MAWC for ratemaking purposes.[2] For this reason, Staff recommends a capital structure that is composed of 39.61 percent common equity, 60.35 percent long term debt, and 0.03 percent preferred equity for MAWC. Staff relies on MAWC's cost of debt and preferred stock.[3]

Q. Please summarize OPC's position with respect to the appropriate capital structure for MAWC.

A. For reasons similar to those proposed by Staff, OPC witness Murray proposes that the MAWC capital structure be set equal to American Water's average quarterly consolidated capital structure, which he states is composed of 41.10 percent equity and 58.90 percent long-term debt. Mr. Murray also suggests that the consolidated companies' short-term debt should be included in the capital structure to finance CWIP resulting in a consolidated

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[2] Staff Cost of Service Report, at 30.
[3] *Id.*, at 31.

capital structure composed of 39.18 percent equity, 56.16 percent long-term debt and 4.66 percent short-term debt.[4]

Q. Before addressing the impropriety of employing the consolidated capitalization of American Water to determine the capital structure of MAWC, do you agree with OPC Witness Murray's suggestion that it is appropriate to include short term debt in the capital structure if the consolidated capital structure is used for ratemaking purposes?

A. No, I do not. First, as discussed previously, Mr. Murray's proposal on this issue was addressed by the Commission in the Spire case where the Commission noted that the consolidated capital structure of a holding company that has many operating companies does not represent the utility-specific capital structure of any one operating company. The circumstances in this proceeding are consistent with the Spire case, where MAWC is one of many operating companies under the holding company and therefore, it is not appropriate to use the consolidated capital structure or short-term debt balance for the ratemaking capital structure of MAWC. The consolidated short-term debt balance reflects the short-term financing for the holding company, not the individual operating companies.

[4] Exhibit DM-D-8.

Q. With respect to capital structure, please discuss the options that are most often considered by utility commissions when setting a regulated utility's capital structure for ratemaking purposes.

A. The three options that are most often considered by commissions when setting a regulated utility's capital structure are as follows:

- The operating company's actual (or projected) capital structure per the financial books and records of the company when this capital structure is reflective of the way the company is operated and it is generally consistent with industry norms.
- A hypothetical capital structure can be considered, especially if there are concems that the actual per books capital structure is not reflective of the optimal capital structure for the company. The hypothetical capital structure can be based on comparable companies (e.g., set within the range of the proxy group) or determined by the Commission based on other risk factors.
- Third, the parent company's consolidated capital structure may be used. This occurs most often when the operating company represents the vast majority of the parent holding company's operations, and therefore the financing for the operating company and the holding company would be similar.

Q. Is the Company's capital structure consistent with industry norms and therefore reasonable for ratemaking purposes?

A. Yes, it is for several reasons. First, the Company's capital structure is reflective of the way the Company has been operated.[5] I also examined the capital structures of the operating companies of the proxy group as well as the capital structures that have recently been

[5] Direct Testimony of Brian W. LaGrand, pp. 12-19.

authorized for natural gas and water utilities. In each case, the Company's proposal is within the established range. As shown in Figure 1**Error! Reference source not found.** below, the Company's proposed equity ratio is within the range of actual equity ratios established by the utility operating companies held by the proxy group. In contrast, Staff and OPC's proposed equity ratios are appreciably lower than the equity ratios of the proxy companies).

Figure 1: Equity Ratios of Proxy Companies

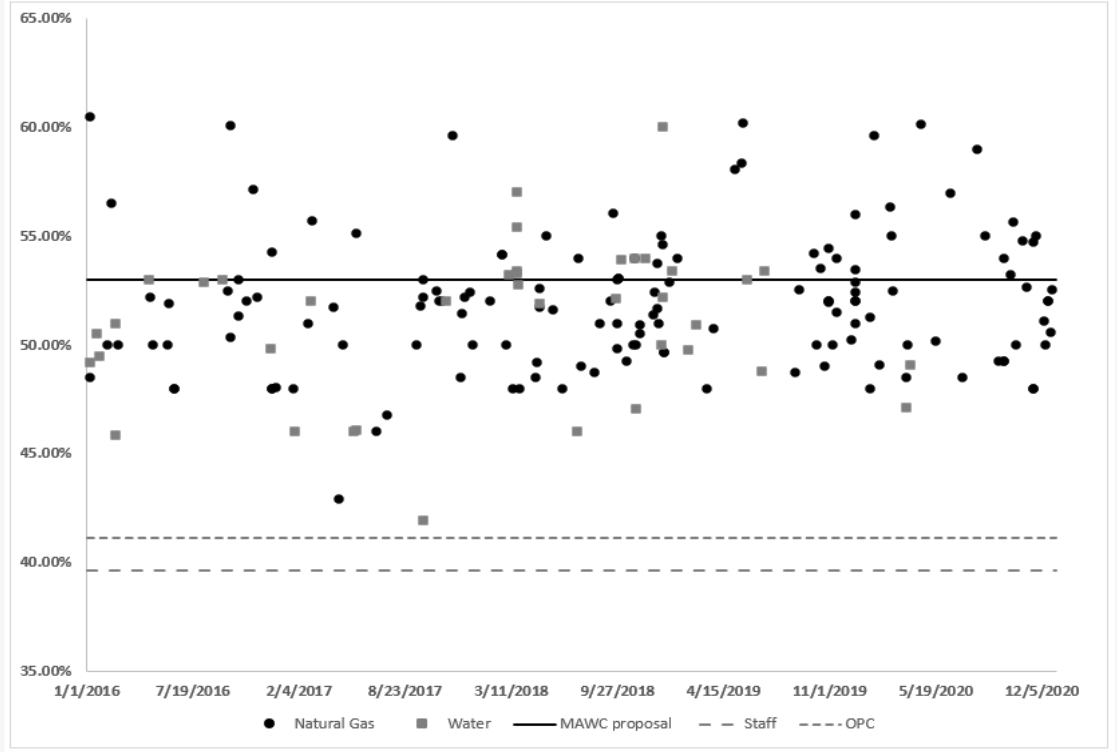
Proxy Group Company	Ticker	2019	2018	MRY
American States Water Company	AWR	65.94%	60.77%	65.94%
Atmos Energy Corporation	ATO	58.43%	59.20%	58.43%
California Water Service Group	CWT	46.55%	45.03%	46.55%
Essential Utilities, Inc.	WTRG	54.58%	54.63%	54.58%
Middlesex Water Company	MSEX	62.71%	67.60%	62.71%
Northwest Natural Gas Company	NWN	49.19%	49.33%	49.19%
One Gas Inc.	OGS	63.55%	62.03%	63.55%
SJW Corporation	SJW	54.54%	57.26%	54.54%
South Jersey Industries, Inc.	SJI	52.88%	52.82%	52.88%
Southwest Gas Corporation	SWX	48.52%	49.38%	48.52%
Spire Inc.	SR	61.80%	62.79%	61.80%
York Water Company	YORW	56.50%	56.98%	56.50%
Mean		56.27%	56.48%	56.27%
Low		46.55%	45.03%	46.55%
High		65.94%	67.60%	65.94%

Q. How do the proposed equity ratios in this case compare with the equity ratios that have been recently authorized for water and natural gas utilities?

A. As shown in Figure 2 below, the majority of the recently authorized equity ratios for natural gas and water utilities are in the range of 50-55 percent. MAWC's proposed equity ratio of 53 percent is well within the range of authorized equity ratios for companies of comparable

risk. In contrast, the Staff and OPC's proposed equity ratios are below every authorized equity ratio over this time period.

Figure 2: Average Authorized Equity Ratios for Natural Gas & Water Utilities[6]



Consequently, there is no reason to employ a capitalization that is different from the actual capital structure that MAWC employs to finance its operations in Missouri.

[6] Chart excludes jurisdictions that include zero cost items in the capital structure: Arkansas, Indiana, Michigan and Florida.

Q. In recent cases, has this Commission considered the use of the stand-alone operating company capital structure versus the holding company's consolidated capital structure that Staff and OPC recommend?

A. Yes, it has. Similar to the current case, in the Spire Missouri case, Mr. Murray, who was the witness for Staff at that time, proposed relying on the consolidated capital structure (including short-term debt), and thus using an equity ratio of 45.56 percent.[7] In its decision in that case, the Commission noted that it had formerly relied on the consolidated capital structure for Laclede Gas Company (the Missouri operating company prior to the Spire merger), when the operating company made up almost the entirety of the holding company; but that same capital structure was no longer appropriate. The Commission explained that, since the merger, the parent company now had five operating utilities in three states in addition to other investments and therefore it was not appropriate to use consolidated capital structure as the utility-specific capital structure.[8] In addition, the Commission determined that the reasonable capital structure for ratemaking purposes did not include short-term debt and that the cost of debt should be based on the cost of Spire Missouri's long-term debt.[9]

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[7] In the Matter of the Laclede Gas Company's Request to Increase its Revenue for Gas Service, Missouri Public Service Commission File No. GR-2017-0215, Amended Report and Order, March 17, 2018 at p. 40.

[8] In the Matter of Laclede Gas Company d/b/a Missouri Gas Energy's Request to Increase its Revenues for Gas Service, Missouri Public Service Commission GR-2017-0216, YG-2017-0196, February 21, 2018. 2018 WL 1315107 (Mo.P.S.C.), at 19.

[9] *Ibid* at 42.

Q. Are Staff's and OPC's respective proposals to use the holding company's consolidated capital structure for ratemaking purposes in this case consistent with the Commission's decision in the Spire case?

A. No, they are not.[10] As noted, the Commission recognized that Spire Missouri was now part of a larger holding company that had utility operations in other states and other business operations, making the consolidated capital structure inappropriate for Spire Missouri. The circumstances for MAWC are consistent with those recognized by the Commission in the Spire case. As discussed in the Rebuttal Testimony of Company witness Merante, MAWC is only one of AWK's 16 regulated operating utilities. In addition to the regulated operations, AWK also has unregulated business operations. Therefore, as the Commission determined in the Spire case, it is not appropriate to use the consolidated company capitalization as the utility-specific capital structure and the reasonable capital structure for ratemaking purposes should not include short-term debt.

Q. Do you agree with Staff that MAWC's financial risk is comparable to the financial risk of the American Water consolidated companies?

A. No, I do not. It is important to recognize that leverage defines the financial risk of a company and business risk defines leverage. Company witness Merante's rebuttal

[10] Staff lists five reasons why they believe that MAWC's capital structure should be set based on the consolidated capital structure of AWK affiliated companies rather than the actual capital structure employed by the Company: 1) American Water Capital Corp. ("AWCC") is the primary source of debt financing for MAWC, 2) the cost of MAWC's debt financing is based on the creditworthiness of the American Water consolidated operations, 3) the consolidated company is primarily a water distribution utility meaning that the business risks are similar to MAWC, 4) while the consolidated company has greater leverage, due to the diversity of its business operations its financial risk is comparable to MAWC and 5) Staff suggests that all debt issued by AWCC and allocated to MAWC is guaranteed by the parent company. Staff Cost of Service Report, at 30.

testimony discusses the differences in the business operations of AWK and MAWC. The conclusion from that analysis is consistent with the determination made by the Commission in the Spire case; there is a significant difference in the diversity of business operations between MAWC and AWK and therefore, it is reasonable and appropriate that the difference in capital structures should reflect those differences.

Q. Are Staff's comparisons of MAWC's to AWK's overall risk profile the appropriate comparisons for the determination of the appropriate capital structure to use for ratemaking purposes for MAWC?

A. No. The analysis of the financial risk of the subject company is typically performed using a comparison group of risk-comparable companies. In this case, each of the witnesses have relied on a proxy group of companies to establish an estimate of the ROE. It is reasonable and appropriate to use that risk-comparable group as the basis for comparison of the overall financial risk of MAWC, not the holding company. In determining the capital structure for ratemaking, it is reasonable and appropriate to rely on the subject company's actual capital structure unless that capital structure is significantly different from the capital structures of the proxy group companies, which, as I have demonstrated above, it is not. In fact, MAWC's equity ratio is virtually the same as the average proxy group equity ratio.

Q. What incentives are created for an operating utility if a Commission authorizes a capital structure for ratemaking purposes that is lower than its actual capital structure?

A. It is a rational expectation in finance that capital will flow to where it has the opportunity to earn the best, risk adjusted rate of return. Requiring the use of the more leveraged consolidated capital structure for ratemaking purposes than a company's actual capital

structure would create the incentive for the operating utility to match the actual capital structure with the ratemaking capital structure in order to provide the best opportunity to earn the authorized ROE. It is important to recognize that in adjusting to a lower equity ratio, there are increased risks to the operating company resulting from greater leverage, including weakened credit metrics and less access to capital on reasonable terms outside of the AWCC financing. The combined effect of these risks would likely result in increased costs for ratepayers. Company witness Merante discusses more specifically how MAWC would realign its actual capital structure by increasing dividends to the parent company or foregoing equity infusions into MAWC, or both, in order to achieve the lower equity ratio associated with an authorized ratemaking capital structure that is consistent with the consolidated capital structure.

Q. Would the imputation of the consolidated capital structure for ratemaking affect investment in MAWC?

A. Yes, it would. In fact, Company witness Merante's Rebuttal Testimony explains how investment in MAWC would be affected in order to align the actual equity ratio with that allowed equity ratio. Company witness Merante explains that if the Company operates rationally by matching its actual capitalization to the ratemaking capitalization, the equity of MAWC will be reduced through a combination of increased dividends to the parent company and forgone allocations of discretionary capital, reducing or eliminating the discretionary capital investment in MAWC.

Q. Could the use of the consolidated capital structure affect MAWC's access to capital?

A. Yes, it could. Authorizing a more leveraged capital structure could make it difficult to access capital on reasonable terms. While MAWC receives financing from AWCC, I

understand that the Company has the option to seek financing elsewhere if it can obtain better terms than offered by AWCC. As discussed by Company witness Merante, if MAWC needed to access capital from sources other than AWCC, imposing the consolidated capital structure on MAWC would result in weaker credit metrics that could limit MAWC's options for access to capital from sources other than AWCC.

Q. Why do you think that MAWC's credit metrics would be weaker if it were capitalized along the lines recommended by Staff and OPC?

A. As noted by OPC, MAWC's current FFO-to-debt ratios are in the range of 19.6 percent to 21.6 percent. OPC recognized that AWK was downgraded in 2019 when it had an FFO-to-debt ratio of 16 percent.[11] OPC further recognized AWK's FFO-to-debt ratio is expected to decline to 13 to 15 percent in 2020 and 2021. OPC is recommending that MAWC's FFO-to-debt ratio be reduced to now lower than the AWK ratio. Considering that AWK was downgraded in 2019 with an FFO-to-debt ratio of 16 percent, it would be reasonable to assume that if MAWC's FFO-to-debt ratio were to match AWK's current credit metrics MAWC's financial strength would be weakened which would limit MAWC's options for access to capital outside of AWCC financing.

[11] Mr. Murray acknowledges that his proposed capital structure will have the effect of weakening MAWC's FFO-to-debt ratio (by reducing MAWC's FFO by $15.7 million) but justifies this effect by suggesting that the MAWC FFO-to-debt ratio will not fall below the target debt ratio for AWK. Mr. Murray also notes, however, that AWK was downgraded in April 2019 due to increased leverage and the weakening of credit metrics and that AWK's credit metrics are expected to be lower in 2020 and 2021 than when the downgrade occurred. Direct Testimony of David Murray, at 34-35.

Q. Why is AWK still rated "investment grade" when it has a debt ratio similar to what Staff and OPC have proposed for MAWC?

A. As noted above, AWK benefits in ratings agencies' decisions from the diversity of the utility operations in the large AWK system as part of their risk assessment as well as its other market-based businesses. Specifically, Moody's has noted that AWK's credit profile is supported by 1) its market position as the largest U.S. investor-owned water utility holding company, 2) strong regulatory and operational diversity across 16 states, and 3) improving regulatory support as more states adopt cost recovery trackers.[12] Consequently, the rating agencies recognize that the risk of AWK is lower than that of an entity operating in one jurisdiction or in one industry and have reflected that lower risk in American Water's credit rating.

Q. Please respond to Mr. Murray's position that it is not fair to ask ratepayers to pay for higher-cost capital than AWK considers appropriate for its consolidated capital structure.

A. Mr. Murray recognizes that AWK receives the benefit of diversification of utility operations across many jurisdictions. Those benefits are transferred to MAWC customers through the lower financing costs achieved by AWCC than could otherwise be obtained if MAWC were to seek financing on a stand-alone basis. Therefore, since the AWK capital structure consolidates the risk of its many operating companies, MAWC's customers are benefiting from that consolidated (and thus lower) risk in the form of low-cost debt

[12] Moody's Investor Services, Credit Opinion, American Water Works Company, Inc., Update following downgrade, April 3, 2019.

achieved by AWCC. If MAWC is allowed to maintain its requested stand-alone capital structure, then MAWC's customers will also benefit from the resulting financial flexibility of having a significant equity component, which is important if the operating company were to need to attract capital from a source other than AWCC.

Q. Have you conducted any analysis to demonstrate that MAWC's financing through AWCC is low-cost financing?

A. Yes, I have. Figure 3 below lists the debt issuances that were made through AWCC, over the past 13 years, including the date of the issuance and the interest rate on the issuance. In addition, I have calculated the 30-day average yield on the Moody's A-rated Utility Bond Index and the Moody's Baa-rated Utility Bond index as of the date of each debt issuance. As shown in Figure 3, the interest rate obtained by AWCC has almost always been lower than the yield on the Moody's Utility Bond Index that corresponds to the AWCC rating at the time of issuance. This demonstrates that issuing debt through AWCC has consistently been the lowest cost resource available to AWK subsidiaries, including MAWC. Clearly, Missouri ratepayers have benefitted from the availability of the AWCC financing option, as opposed to MAWC obtaining financing on the open market.

Figure 3: Comparison of AWCC interest rates and Moody's Utility Bond Index

Series Reference	AWCC Moody's Rating at Issuance	AWCC S&P Rating at Issuance	Start Term Date	End of Term Date	Interest Rate	Moody's A Utility	Moody's Baa Utility
03040WAC9	Baa2	A-	10/22/2007	10/15/2037	6.59%		6.42%
03040#AJ1	Baa2	BBB+	8/1/2008	5/15/2023	6.55%		6.95%
03040WAC9	Baa2	BBB+	11/21/2011	10/15/2037	5.05%		6.19%
03040WAC9	Baa2	BBB+	6/11/2012	10/15/2037	4.93%		4.95%
03040WAC9	Baa2	BBB+	6/11/2012	10/15/2037	4.93%		4.95%
03040WAC9	Baa2	BBB+	7/2/2012	10/15/2037	4.90%		4.91%
03040WAC9	Baa2	BBB+	7/2/2012	10/15/2037	4.90%		4.91%
03040WAC9	Baa2	BBB+	7/2/2012	10/15/2037	4.90%		4.91%
03040WAC9	Baa2	BBB+	7/2/2012	10/15/2037	4.90%		4.91%
03040WAJ4	Baa2	BBB+	12/17/2012	12/1/2042	4.30%		4.44%
03040#AE2	Baa1	A-	7/31/2013	12/21/2021	3.40%		5.22%
03040WAK1	Baa1	A-	11/20/2013	3/1/2024	3.85%		5.19%
03040WAM7	A3	A	8/13/2015	9/1/2045	4.30%	4.35%	
03040WAP0	A3	A	11/17/2016	12/1/2046	4.00%	3.87%	
03040WAR6	A3	A	8/22/2017	9/1/2047	3.75%	3.93%	
03040WAQ8	A3	A	9/13/2017	9/1/2027	2.95%	3.85%	
03040WAT2	A3	A	8/9/2018	9/1/2048	4.20%	4.28%	
03040WAV7	Baa1	A	5/13/2019	6/1/2049	4.15%		4.53%
03040WAX3	Baa1	A	4/14/2020	5/1/2050	3.45%		4.05%

Q. In the case of MAWC particularly, please explain how Staff's and OPC's capital structure proposals create a mismatch of risk – and, hence, ROE - with the proxy group used to determine the ROE

A. The Staff's and OPC's capital structure proposals would require the equity ratio for MAWC to match the consolidated capital structure. The estimation of the ROE used by every ROE witness in this case, however, relies on market-based data for a proxy group of comparable companies. The market-based data for the proxy group includes the capitalization of those companies. Therefore, the ROE that is estimated is related to the equity ratios of the proxy companies. As discussed in my Direct Testimony, the *Hope* and *Bluefield* decisions form the basis for determining whether a return is just and reasonable.[13] One of the standards established by the United States Supreme Court in those cases is that

[13] *Bluefield* Water Works Co. v. Publ. Serv. Comm'n., 262 U.S. 679 (1923); Federal Power Comm'n. v. *Hope* Natural Gas Co., 320 U.S. 591 (1944).

the authorized return must be consistent with the returns for other companies with similar or comparable risk. Unless the authorized equity ratio in this case is comparable to the equity ratio for of the proxy group, the ROE will be out of sync, and the *Hope* test is violated because it requires that ROE be based on "comparable risk".

The risk factors that are considered are the business risk, the financial risk (leverage) and the regulatory risk, as follows:

- The use of a proxy group companies in similar businesses establishes comparable business risk.
- The comparability of financial risk is evaluated by comparing the leverage of the subject company (MAWC) to the proxy group. If the proxy group has lower financial risk (leverage) then the risk of the equity ratio for the subject company, the ROE that results from the proxy group analysis must be adjusted to reflect the incremental risk of the subject company.
- Finally, regulatory risk is somewhat less certain across proxy companies. Proxy companies are more like AWK in that the regulatory risk is diversified across multiple jurisdictions.

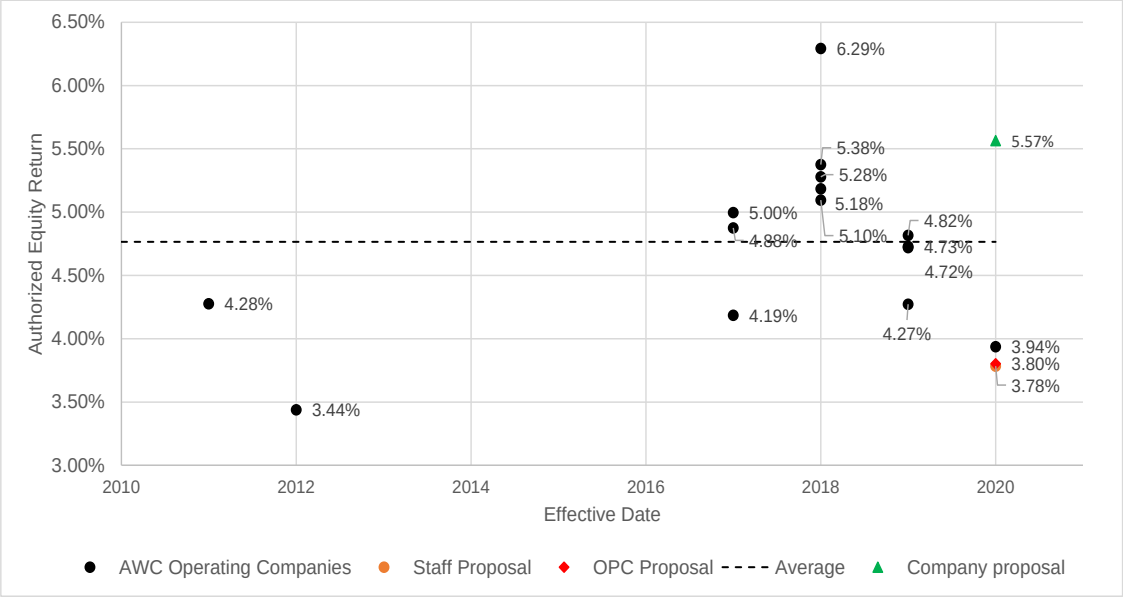
Consequently, use of the consolidated capital structure, which is more highly leveraged than the capital structures of the proxy companies would result in increased financial risk for MAWC that would need to be accounted for through an ROE that is higher than what is determined by the proxy company analysis.

Q. Do Staff or OPC compare MAWC to the other AWK operating subsidiaries?

A. Yes, but only incompletely. In setting his ROE recommendation, OPC witness Mr. Murray suggests that he considers the authorized ROEs for MAWC's affiliates with which MAWC competes for capital. Significantly, however, although OPC considers the ROEs of MAWC's affiliates, Mr. Murray has not considered the equity ratios that have been authorized for those affiliates. Staff's proposed equity ratio of 39.61 percent and its recommended ROE of 9.55 percent produces a weighted equity return ("WROE") of just 3.78 percent. OPC's proposed equity ratio of 41.10 percent and its recommended ROE of

9.25 percent, produces a WROE of just 3.80 percent. As shown in Figure 4 **Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.**below, the mean authorized ROE for the AWK operating subsidiaries is 9.77 percent and the mean equity ratio is 48.79 percent, which produces a mean weighted equity component of 4.76 percent. Thus, the weighted equity returns for MAWC proposed by Staff and OPC are 0.96 percent to 0.98 percent (i.e. 96 to 98 basis points) below the mean weighted equity return of AWK's other operating companies.

Figure 4: Authorized Weighted Cost of Equity for AWK Subsidiaries by State[14,15,16,17]



[14] Short term debt is included in the capital structure for IL, VA, KY, WV, TN.
[15] NY, and VA have Consolidated Capital Structure.
[16] TN capital structure includes a double leverage adjustment.
[17] IN includes deferred Taxes in the capital structure, for comparisons purposes it was removed.

Q. Does financial theory require aligning the equity ratio to the equity ratio used to determine the ROE?

A. Yes. If the Commission accepts Staff's proposal to impute a capital structure consisting of more debt than the Company's test year capital structure, the higher common equity cost rate related to a changed common equity ratio must be reflected in the approach. It is a fundamental tenet of finance that the greater the amount of financial risk borne by common shareholders, the greater the return required by shareholders in order to be compensated for the added financial risk imparted by the greater use of senior debt financing. In other words, the greater the debt ratio, the greater is the return required by equity investors. The cost of equity must be adjusted to reflect the additional risk associated with the more debt-heavy capital structure.

For example, as shown in Figure 5 below, the average WROE of AWK's operating subsidiaries is 4.76 percent. As shown in Figures 5 and 6 below, in order to achieve that same weighted equity return using the Staff and OPC's proposed equity ratios, the ROE for MAWC would need to be 12.04 percent and 11.61 percent respectively if the lower equity ratio were imputed.

Figure 5: Staff and OPC Proposed and AWK Average Equity Rate WROE

	AWK average	Staff	OPC
Equity Rate	48.79%	39.61%	41.10%
Cost Rate	9.77%	9.55%	9.25%
WROE	4.76%	3.78%	3.80%

Figure 6: Staff and OPC Adjusted ROEs to Meet AWK Average WROE

	AWK average	Staff	OPC
Equity Rate	48.79%	39.61%	41.10%
Cost Rate	9.77%	12.04%	11.61%
WROE	4.76%	4.77%	4.77%

For all of these reasons, the use of the consolidated capital structure recommended by Staff and OPC is not reflective of the way the Company is actually operated, is contrary to United States Supreme Court and this Commission's precedent and is incompatible with financial theory.

IV. OVERVIEW OF RETURN ON EQUITY RECOMMENDATIONS

Q. Please provide an overview of the other ROE witnesses' recommendations in this proceeding.

A. Figure 7 summarizes the results of the ROE analyses presented by the other witnesses in this proceeding and their final recommendations. Staff witness Dr. Won's Two-Step DCF analysis and CAPM analysis indicate a cost of equity from 4.86 percent to 10.49 percent, while OPC witness Mr. Murray's Multi-Stage DCF and CAPM results suggest a cost of equity of 5.40 percent to 7.35 percent. The fact that Dr. Won's and Mr. Murray's modeling results (with the exception of Dr. Won's CAPM results using a forward-looking market risk premium) are well below anything that has ever been authorized for a regulated water utility apparently prompted both witnesses to abandon their models, although they do not appear to cause either witness to reconsider the validity of the inputs and assumptions used in their respective models. Rather, Dr. Won simply recommends an ROE for MAWC of

9.55 percent, which is 122 basis points higher than the average results of his Two-Step DCF model and 187 basis points higher than the midpoint results of his CAPM analyses. Similarly, Mr. Murray's ROE recommendation of 9.25 percent is 250 to 355 basis points higher than his Multi-Stage DCF model results and 190 to 385 basis points higher than his CAPM results. Because their ultimate recommendations are not based on their model results, it should be apparent that both witnesses simply do not place much faith in their respective models.

Figure 7: Recommended ROE Ranges and Point Estimates of the Other ROE Witnesses

Witness	Dr. Won (Staff)	Mr. Murray (OPC)
Multi-Stage Growth DCF	7.54%-8.86%	5.95%-6.75% 5.70%-6.60%
Multi-Stage (AWK only)	N/A	6.04%-6.26%
CAPM	4.86%-10.49%	5.75%-7.35% 5.40%-6.90%
Rule of Thumb	6.85%-9.20%	5.75%
Recommendation	9.55%	9.25%
Difference between recommendation and model results		1.90%-3.85%

Q. Do the other witnesses in this proceeding discuss current market conditions?

A. Yes. While Staff witness Dr. Won and OPC witness Mr. Murray discuss current market conditions, neither witness has considered how current market conditions are affecting the models. Dr. Won, however, considers the results of a CAPM analysis that uses a forward-looking market risk premium to account for investors' expectations over the near-term. In addition, both witnesses recognize that models used to estimate the cost of equity can

produce results that are too low, and, hence, they ultimately do not rely on the results of their financial models to establish their ROE recommendations. Only Dr. Won's CAPM analysis using a forward-looking market risk premium produces a return estimate for MAWC that meets the comparable return standard. This is consistent with my position that the CAPM is currently more reflective of investors' expectations and retum requirements over the near-term and, therefore, the Commission should consider placing greater weight on the results of the CAPM when determining the ROE for MAWC.

Q. In your opinion, are the equity return recommendations of OPC witness Mr. Murray and Staff witness Dr. Won consistent with the comparable return standard?

A. No, they are not. As discussed in my Direct Testimony and above, one of the standards established by the United States Supreme Court in *Hope* and *Bluefield* for determining whether a return is just and reasonable is that the authorized return must be consistent with the returns for other companies with similar or comparable risk. [18] Both Dr. Won and Mr. Murray claim that one of the economic guidelines they used in determining the cost of equity for MAWC was the comparable return standard.[19] The only comparison developed by Dr. Won, however, is an analysis of the cost of equity using the proxy group. Dr. Won provides no additional testimony to test the reasonableness of the results of his analyses or to demonstrate how MAWC is comparable to the proxy group.[20] Mr. Murray, considers the simple average of authorized ROEs for the water utility industry for 2020 to demonstrate comparability but does not rely on this information because there were only

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[18] *Bluefield* Water Works Co. v. Publ. Serv. Comm'n., 262 U.S. 679 (1923); Federal Power Comm'n. v. *Hope* Natural Gas Co., 320 U.S. 591 (1944).

[19] Staff Cost of Service Report, at 16 and Direct Testimony of David Murray, at 4.

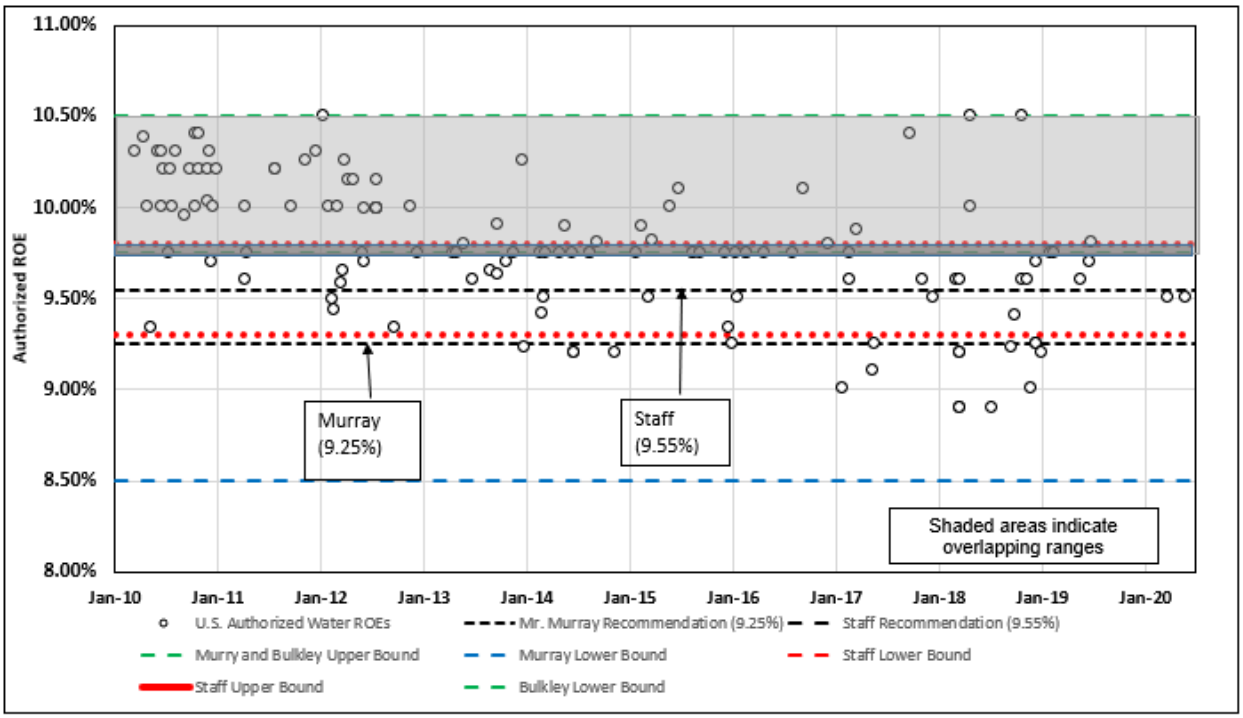
[20] Staff Cost of Service Report, at 16-17.

four data points, two of which were at 9.50 percent, along with a patently inapposite equity return of 7.46 percent in a Blue Granite Water case, and an authorized ROE for Suez Water of 8.80 percent to estimate an average authorized ROE of 8.82 percent. His final recommendation was based on a range of reasonableness set using electric returns and past Commission precedent from 8.50 percent to 10.50 percent. Within this range Mr. Murray focuses on the low end, setting his return at 9.25 percent however he suggests that this ROE should be reduced if the Commission were to adopt an equity ratio that is higher than his proposal. Neither witness compares the combined effect of their ROE recommendation and their proposed equity ratio with other comparable companies. As discussed in more detail in Section III and demonstrated in Figure 2 above, the equity rate that results from the Staff's and OPC's recommendations are far below any authorized weighted ROE for a water utility.

Q. Have you developed a comparison of the recommended ROEs of Dr. Won and Mr. Murray to the ROEs authorized by other utility regulatory commissions across the U.S.?

A. Yes. Figure 8 shows the authorized returns for water utilities in other jurisdictions since January 2010, compared to the return recommended by Dr. Won of 9.55 percent and the 9.25 percent recommendation from Mr. Murray. In addition, Figure 8 provides the ranges established by each of the witnesses in this proceeding. The shaded areas indicate where the ranges overlap. As shown in Figure 8, the majority of authorized ROEs are greater than 9.60 percent and are as high as 10.50 percent. The ranges established by the Mr. Murray and me overlap between 9.75 percent and 10.50 percent, whereas Dr. Won's range and my range overlap between 9.75 percent and 9.80 percent.

Figure 8: Recently Authorized Water Utility ROEs 2010-2020[21]



Q. Are you aware of any utilities that have experienced a credit downgrade related to the financial effects of a rate case decision?

A. Yes. Credit rating agencies take the authorized ROE into consideration in the overall risk analysis of a company. For example, Moody's recently downgraded ALLETE, Inc. from A3 to Baa1 for reasons that included the less than favorable outcome in Minnesota Power's last rate case in Minnesota. Moody's viewed Minnesota Power's recent rate case decision as credit negative for reasons which included: (1) the below average authorized ROE of 9.25 percent, which resulted in a reduction of approximately $20 million between the requested and approved revenue requirement; (2) the disallowance of certain expenses such

[21] Source: SNL Financial. Data through June 2020.

as prepaid pension expenses; and (3) the decision to not adopt the annual rate review mechanism which, if adopted, would have mitigated the effect of industrial customers scaling back production in response to changes in economic conditions.[22]

The credit rating agencies also reacted negatively to the recent rate case decision for Puget Sound Energy ("PSE") in Washington. In July 2020, PSE received a rate determination that included an authorized ROE of 9.40 percent, which represented a 10 basis point decrease in the prior authorized ROE and a common equity ratio of 48.5 percent, resulting in an overall rate of return of 7.39 percent (and an equity rate of 4.559 percent). Each of the rating agencies responded negatively to this decision. FitchRatings downgraded the outlook on PSE and its parent company Puget Energy ("PE") to negative, indicating that the rate order would:

> [s]ignificantly impair PE's consolidated credit metrics, raising FFO leverage to be approximately 6.0x through 2021, exceeding the downgrade guideline ratio of 5.5x. PE and PSE could be downgraded if mitigating actions are not forthcoming or insufficient to strengthen their credit metrics. Sustained lack of constructive regulatory relationship will also be a catalyst for a downgrade.[23]

S&P's ratings outlook for PSE and PE is negative, reflecting expectations that the FFO to debt ratio for PE would be 13 percent. S&P also stated that "[t]he decision is inconsistent with our current assessment and should the company continue to exhibit substantial

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[22] Moody's Investors Service, Credit Opinion: ALLETE, *Inc*. Update following downgrade, at 3 (April 3, 2019).

[23] FitchRatings, Rating Action Commentary, "Fitch Affirms Puget Energy and Puget Sound Energy; Outlook Revised to Negative, July 27, 2020.

regulatory lag, we would likely revise our assessment of the company's business risk profile downward."[24]

Moody's indicated that the outcome of the rate case was credit negative, recognizing a below average return on equity that was lower than the prior authorized ROE.[25]

Q. How do the Staff and OPC's proposals for MAWC compare to the equity rate that was authorized for PSE?

A. As discussed in more detail in Section III of my Rebuttal Testimony, the Staff and OPC proposals for MAWC result in equity returns that are lower than the equity return authorized for PSE. Furthermore, the FFO/debt ratio that is being targeted by Staff and OPC appears to be in the range of the PSE ratio, which S&P has raised as a concern for that company.

Q. What factors should be considered in evaluating the results of ROE models and establishing the authorized ROE?

A. The primary factors that should be considered are: (i) the importance of investors' actual return requirements and the critical role of judgment in selecting the appropriate ROE; (ii) the importance of providing a return that is comparable to returns on alternative investments with commensurate risk; (iii) the need for a return that supports a utility's

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[24] S&P Global Market Intelligence, S&P removes Puget Energy, Puget Sound Energy from CreditWatch, August 24, 2020.

[25] Moody's Investor Service, Puget Sound Energy, Inc. Puget Sound Energy's rate case outcome is credit negative, July 17, 2020.

ability to attract needed capital at reasonable terms; and (iv) the effect of current and expected capital market conditions.

Q. MIEC witness Meyer suggests that it would be appropriate to reduce the ROE if a future test year were to be used. Is it appropriate to adjust MAWC's ROE to reflect the use of a future test year?

A. No. The ROE analysis is based on data for a proxy group of companies. Therefore, it is important to evaluate the mechanisms that have been implemented by the proxy group companies in considering whether it is appropriate to propose an adjustment to the ROE for various regulatory mechanisms. Reviewing the proxy group companies, as shown in Schedule AEB-6 to my Direct Testimony, approximately 43 percent of the operating companies of the proxy group companies are in jurisdictions that use a fully forecast or partially forecast test year. The same also holds true for mechanisms such as an RSM or qualified infrastructure recovery. In each case, the penetration of such mechanisms to the proxy group must be analyzed to determine if an adjustment is necessary to the ROE based on whether the subject company has or does not have such a mechanism. Therefore, here, because the future test year is already included in the regulatory mechanisms implemented by the proxy group companies, it is not necessary to make any adjustment to MAWC's ROE for the implementation of a future test year. If, however, a forecasted test year is not used to set MAWC's rates, it would have more business risk than the proxy group and its ROE would be higher than that of the proxy group.

Q. What factors support your recommended ROE for MAWC in this case?

A. My recommended range for the ROE is reasonable and appropriate because these ranges on which it is based are:

- Based on analyses using well recognized financial models that inform the bases of my ultimate recommendations;
- Reflective of recent market volatility for equity;
- Supported by the methodologies considered by other regulatory jurisdictions;
- Supportive of stronger coverage ratios, which is an important factor for the credit rating agencies;
- Consistent with the range of ROEs awards for water utilities in other state jurisdictions; and
- Supportive of the Company's ability to attract capital to finance investments at reasonable rates, thereby providing long-term benefits to ratepayers by limiting the long-term cost of capital.

In contrast, the ROE recommendations offered by Staff and OPC are not supported by the very models upon which they purport to rely. Not only are those largely unsupported recommendations at the low end (in OPC's case, the very bottom) of the range of the ROEs authorized by regulators across the nation, but they are paired with equity ratios that produce weighted equity returns that are well below those comparable returns. Consequently, the recommendations of Staff and OPC do not satisfy the comparable return standard and, if adopted by this Commission, would likely be viewed negatively by the credit agencies who are keenly aware of the adverse effects of such provisions.

V. UPDATED RETURN ON EQUITY MARKET DATA

Q. Have you updated your ROE analyses?

A. Yes. As shown in Schedules AEB-1R through AEB-7R, I have updated my ROE analyses using market data as of November 30, 2020. The methodologies in my updated analysis

have been developed in a manner consistent with the approach taken in my Direct Testimony. I have continued to exclude results below 7.0 percent because such returns do not provide a sufficient risk premium above the long-term debt cost to compensate equity investors for the risks associated with ownership. Further, I have included Essential Utilities in my proxy group for my updated analysis because a sufficient amount of time has passed since the acquisition of Peoples Gas by Aqua America Inc. closed and therefore, Essential Utilities now meets my screening criteria. Additionally, I have included another Constant Growth DCF model using an adjusted Value Line projected earnings growth rate for Northwest Natural Holding Company ("NWN") of 5.97 percent shown in Schedule AEB-3R. This adjusted growth rate excludes the one-time financial event that affected the earnings per share data for NWN in 2017. Finally, I also included an additional CAPM and ECAPM analysis which relies on the long-term average utility Beta coefficient of 0.70 referenced by Mr. Murray.[26] Figure 9 summarizes the results of my updated analyses. These results support my updated range which is from 9.75 percent to 10.50 percent. This range is set taking into consideration the median and median high results of the Constant Growth DCF model as well as the results of the CAPM using a long-term average Beta coefficient. Furthermore, my recommended range is reasonably consistent with recently authorized returns as shown in Figure 8.

Figure 9: Summary of Updated Cost of Equity Results

Constant Growth DCF			
	Median Low	Median	Median High
30-Day Average Price	9.06%	9.74%	10.06%

[26] Direct Testimony of David Murray, at 29.

90-Day Average Price	9.12%	9.70%	10.24%
180-Day Average Price	9.35%	9.68%	10.25%
Constant Growth DCF – NWN Adjusted Value Line Growth Rate			
30-Day Average Price	9.06%	9.44%	10.05%
90-Day Average Price	9.12%	9.52%	10.03%
180-Day Average Price	9.35%	9.41%	9.94%
Capital Asset Pricing Model			
	Current Risk-Free Rate (1.61%)	Q1 2021 – Q1 2022 Projected Risk-Free Rate (1.82%)	2022-2026 Projected Risk-Free Rate (2.80%)
Value Line Beta	11.95%	11.98%	12.16%
Bloomberg Beta	11.50%	11.54%	11.75%
Capital Asset Pricing Model – Long-term Average Utility Beta			
Long-term Avg. Beta	10.38%	10.44%	10.74%
Empirical Capital Asset Pricing Model			
Value Line Beta	12.49%	12.52%	12.65%
Bloomberg Beta	12.16%	12.19%	12.35%
Empirical Capital Asset Pricing Model – Long-term Average Utility Beta			
Long-term Avg. Beta	11.32%	11.37%	11.59%
Expected Earnings Analysis			
	Mean	Median	
	10.93%	10.23%	

As shown in Figure 9 and Schedule-AEB-2R, the Constant Growth DCF median results range from 9.06 percent to 10.25 percent. When the Value Line projected earnings growth rate for NWN is adjusted to exclude the negative EPS growth rate in 2017 due to an asset impairment, the Constant DCF median results range from 9.06 percent to 10.05 percent, as shown in Schedule-AEB-3R. Dividend yields remain below historical average levels for the proxy group, suggesting that the results of the DCF model may understate the investor-required return on equity. The CAPM results shown in Schedule-AEB-4R range from 11.54 percent to 11.98 percent, and the Empirical CAPM ("ECAPM") results are between

12.19 percent to 12.52 percent.[27] The CAPM and ECAPM results are primarily attributable to significantly higher Beta coefficients reported by both Bloomberg and Value Line, as the correlation between utility returns and returns for the broader market has increased substantially. The higher Beta coefficients more than offset the decline in government bond yields that occurred in 2020. While I continue to believe that the Beta coefficients for utilities will remain elevated over the near-term as a result of the COVID-19 pandemic, I have calculated an additional CAPM and ECAPM analysis which rely on the long-term Beta coefficient for utilities of 0.70 referenced by Mr. Murray. As shown in Schedule-5R, using the near-term projected Treasury bond yields, this results in an ROE of 10.44 percent for the CAPM and 11.37 percent for the ECAPM. Therefore, even if we assume Betas decrease towards the long-term average, my CAPM and ECAPM analyses support a range of equity returns of 9.75 percent to 10.50 percent for MAWC. Finally, the mean and median results of the Expected Earnings approach are 10.93 percent and 10.23 percent, respectively, as shown in Schedule-7R.

VI. UPDATED CAPITAL MARKET CONDITIONS

Q. Please summarize the other ROE witnesses' positions on capital market conditions and the implications for the cost of equity.

A. Dr. Won and Mr. Murray devote several pages of testimony to interest rates, bond yields, Federal monetary policy, and high utility valuations with a focus on the fact that interest rates are lower than in 2017 and the expectation that interest rates will remain low.

[27] Based on near-term projected Treasury bond yields, using results for both Value Line and Bloomberg betas.

Therefore, both witnesses believe that it is appropriate that the ROE for MAWC be lower than it was in the 2017 rate case.[28]

Q. Do you agree with the other ROE witnesses' assessment of capital market conditions and the implications for the authorized ROE for MAWC in this proceeding?

A. While I agree that interest rates on government bonds have declined in recent years, I disagree with the conclusion that historically low interest rates necessarily result in a correspondingly lower cost of equity for regulated utility companies such as MAWC. As discussed in my Direct Testimony, capital market conditions have been extremely volatile in 2020.[29] Volatility has increased to levels not seen since the Great Recession of 2008/09. As shown in Figure 10, the VIX[30] has remained well above its long-term average in the months following the filing of my Direct Testimony in June 2020. Furthermore, the VIX as of November 30, 2020 is much greater than it was at the time of the Commission's decision in MAWC's last rate case.

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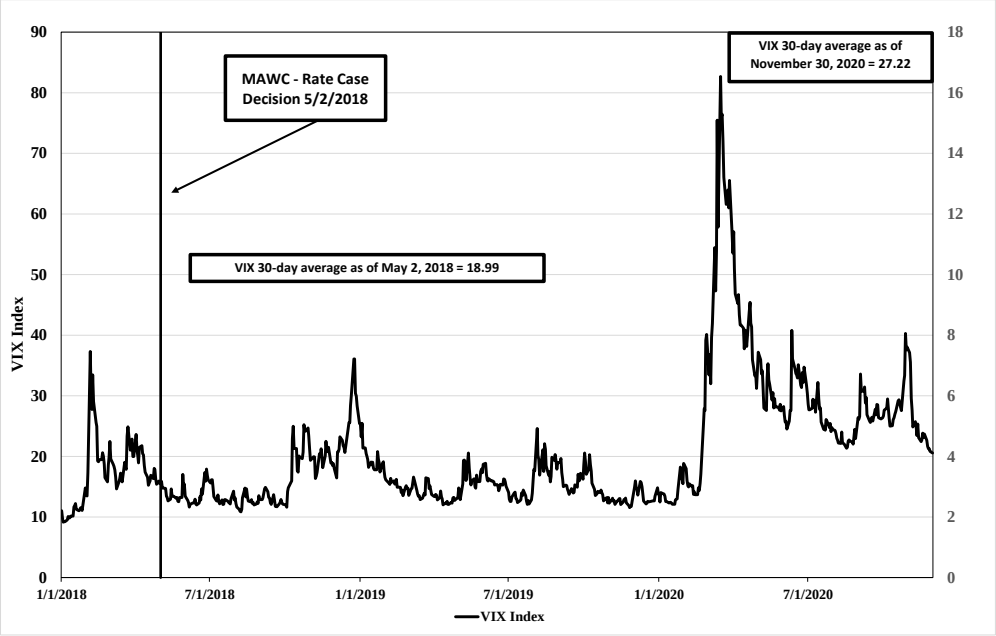
[28] Missouri Public Service Commission Staff Cost of Service Report, at 17-21. Direct Testimony of David Murray, at 9-10.

[29] Direct Testimony of Ann E. Bulkley, at 13-21.

[30] The Chicago Board Options Exchange's CBOE Volatility Index is a widely accepted measure of the stock market's expectation of volatility based on S&P 500 index options.

Figure 10: CBOE VIX January 2018 – November 2020[31]



Therefore, I disagree with the other ROE witnesses that setting the ROE for MAWC should be influenced by the current low interest rate environment without consideration of the overall market conditions that resulted in the response of the Federal Reserve and the U.S. Treasury that established the low interest rates. In essence, Dr. Won and Mr. Murray are asking the Commission to ignore recent evidence that the uncertainty and volatility that have characterized capital markets in 2020 result in higher equity risk premiums and a higher cost of common equity than at the time of the Commission's decision in MAWC's previous rate case in 2017 when the authorized ROE range was set at 9.5-10.00 percent. As I explain in my detailed critique of Dr. Won's methodologies in Appendix A, Dr. Won's

[31] Source: Bloomberg Professional.

a comparison of the cost of equity in the 2017 case and today demonstrates that the cost of equity has increased, not decreased.

Q. What is your response to Mr. Murray's contention that interest rates and capital costs have remained historically low in 2020 and that the Federal Reserve has indicated that it will keep interest rates low over the next few years?[32]

A. While Mr. Murray is correct that the Federal Reserve has indicated that they will keep the federal funds rate near zero for the near-term, the short-term federal funds rate does not have a direct effect on long-term interest rates. In fact, one of the leading indicators used by investors to determine what stage of the business cycle the economy is in is to review the yield curve, which shows the difference between long-term and short-term interest rates. A flat or inverted yield curve occurs when long-term interest rates are equal to or less than short-term interest rates, which usually occurs prior to a recession, while a steepening yield curve occurs when the difference between long-term interest rates and short-term interest rates is increasing and indicates that the economy is entering a period of economic expansion following a recession.[33]

Q. Have you reviewed the yield curve to determine investors' expectations regarding the economy over the near-term?

A. Yes, I have. Specifically, I calculated the difference between the yield on the 10-year Treasury bond and the yield on the 2-year Treasury bond from January 2018 to November 2020. I selected the 10-year Treasury bond yield to represent long-term interest rates and

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[32] Direct Testimony of David Murray, at 11.

[33] "What is a yield curve", Fidelity.com. https://www.fidelity.com/learning-center/investment-products/fixed-income-bonds/bond-yield-curve

the yield on the 2-year Treasury bond to represent short-term interest rates. As shown in Figure 11, the yield curve has been steepening and has increased to approximately 80 basis points, which is a level not seen since the beginning of 2018. The steepening of the yield curve indicates that investors expect economic growth and inflation to increase in the near-term. As a result, they are expected to rotate out of long-term government bonds to avoid being locked into low interest rates for the long-term. The steeper yield curve signals that higher yields are required by investors to invest in long-term government bonds.

Figure 11: 10-year Treasury Bond Yield Minus 2-year Treasury Bond Yield – January 2018 – November 2020[34]

Q. What have equity analysts said about the steepening of the yield curve?

A. Several equity analysts have noted that the yield curve is expected to continue to steepen into 2021, which is an indicator that the economy is entering the early expansion phase of the business cycle. For example, in a recent Bloomberg article, Morgan Stanley indicated that they expected a "V-shaped" economic recovery and therefore advised investors to underweight government bonds and overweight equities.[35] Similarly, in a recent Bloomberg article, Goldman Sachs noted:

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[34] Federal Reserve Bank of St. Louis, 10-Year Treasury Constant Maturity Minus 2-Year Treasury Constant Maturity [T10Y2Y], retrieved from FRED, Federal Reserve Bank of St. Louis; https://fred.stlouisfed.org/series/T10Y2Y, November 18, 2020.

[35] Ossinger, Joanna. "Morgan Stanley Says Go Risk-On and 'Trust the Recovery' in 2021." *Bloomberg.com*, 15 Nov. 2020, www.bloomberg.com/news/articles/2020-11-16/morgan-stanley-says-go-risk-on-and-trust-the-recovery-in-2021.

> "As the economic recovery consolidates next year, we expect to see more differentiation across the curve, with policymakers committing to keeping front-end rates low, but higher expectations for real growth and inflation driving long-end rates higher," Goldman strategists including Zach Pandl wrote in the report, released Tuesday.
>
> This should be especially true in the U.S. due to the Federal Reserve's new average inflation targeting framework, which commits the central bank to holding off on rate hikes until inflation has reached its target and is on track to overshoot it.[36]

Finally, in a recent Barron's article, Citigroup also projected that the yield on the 10-year Treasury bond is expected to increase in 2021, which prompted Citigroup's recommendation to overweight equities and favor cyclical sectors over defensive sectors such as utilities.[37]

Q. Have equity analysts specifically commented on the performance of the utility sector over the near-term?

A. Yes. In a recent article, Barron's surveyed ten market strategists and chief investment officers regarding the outlook for 2021. In addition to forecasting increases in the 10-year Treasury Bond yield and a continued steepening of the yield curve, the market strategists rated utilities as a near-consensus underweight.[38] Therefore, the market strategists surveyed by Barron's are projecting that utilities will underperform the broader market in 2021.

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[36] McCormick, Liz. "Goldman Goes All-In for Steeper U.S. Yield Curves as 2021 Theme." *Bloomberg.com*, 10 Nov. 2020, www.bloomberg.com/news/articles/2020-11-10/goldman-goes-all-in-for-steeper-u-s-yield-curves-as-2021-theme.

[37] Keown, Callum. "10-Year Treasury Yields Will Rise Into 2021, Citi Says. This 'Aggressive' Equity Strategy Can Outperform." *Barrons.com*, 16 Nov. 2020, www.barrons.com/articles/10-year-treasury-yields-will-rise-into-2021-citi-says-this-aggressive-equity-strategy-can-outperform-51605543920.

[38] Jasinski, Nicholas. "The Stock Market Could Gain Another 10% Next Year, Experts Say." Barron's, 19 Dec. 2020, www.barrons.com/articles/the-stock-market-could-gain-in-2021-51608339301.

Q. How has the utility sector performed historically during periods when the yield curve is steepening, and the economy is in the early stage of the business cycle?

A. In a recent report, Fidelity noted that the utility sector has historically been one of the worst performing sectors during the early phase of the business cycle, with a geometric average return of -10.5 percent.[39] This is important because, if the utility sector underperforms over the near-term, then the DCF model, which relies on historical averages of share prices, is likely to understate the cost of equity for MAWC over the near-term, or the period that Company's rates will be in effect.

Q. What are your conclusions regarding the effect of volatility, the policies of the Federal Reserve and the effect of a steepening yield curve on the cost of equity for MAWC?

A. As shown in Figure 10 above, volatility as measured by the VIX is still above long-term averages. As a result, there is still uncertainty in the market, which means greater risk and thus higher return requirements for investors. Second, while the Federal Reserve had indicated that it intends to keep short-term interest rates low over the next few years to support the economic recovery, this does not mean that long-term interest rates cannot increase. As demonstrated in Figure 11 above, the yield curve has been increasing since the low in August 2019. Furthermore, many equity analysts believe that long-term interest rates will increase in 2021 as the economy enters the early expansion phase of the business cycle.

[39] Fidelity Investments, "The Business Cycle Approach to Equity Sector Investing," 2020.

Q. Have either Dr. Won or Mr. Murray recognized how the current, high valuations in the utilities sector affect the results of the models used to estimate the cost of equity?

A. No, neither witness has recognized that high valuations depress the dividend yield in the DCF model. In order to determine whether the results of the DCF model are reasonable, it is important to consider whether the current market conditions will persist during the rate period. While both witnesses correctly observe that valuations for water utilities remain well above historical averages even after the decline in share prices that has occurred for many companies in this sector since February 2020, analysts do not expect the current price levels to be sustainable. For example, Charles Schwab has classified the Utilities sector as "Underperform," noting:

> The Utilities sector has tended to perform relatively better when concerns about slowing economic growth resurface, and to underperform when those worries fade. That's partly because of the sector's traditional defensive nature, given its steady revenues—people need water, gas and electric services during all phases of the business cycle. And low interest rates that typically come with a weak economy provide cheap funding for the large capital expenditures required in this industry.
>
> However, valuations have been driven up to well above their historical average in recent years, as investors reached for yield in this era of low interest rates. We think that these high valuations may decrease the sector's traditional defensive characteristics in the event of a market downturn.[40]

Therefore, to the extent that analysts and investors expect the underperformance of the sector, the current dividend yields, which reflect high stock valuations, will understate the forward-looking cost of equity.

[40] Charles Schwab, Utilities Sector Rating: Underperform, November 12, 2020.

Q. What are your conclusions regarding the recent valuations of utilities and the effect on the cost of equity for MAWC in this proceeding?

A. While the share prices of utilities have declined in response to the economic effects of the COVID-19 pandemic, current utility valuations are still well above the long-term average. The current high valuations result in low dividend yields for utilities, which means that DCF models using recent historical share price data understate investors' forward-looking return requirements. This consideration regarding the DCF model is important especially in light of the expectation that the utility sector will underperform relative to the broader market as the economy recovers from the COVID-19 pandemic. Alternatively, my CAPM analysis includes estimated returns based on near-term and longer-term projected interest rates, considers Beta coefficients that reflect the increased risk of utilities, and relies on a forward-looking estimate of the market return. Therefore, it is important to consider the results of each of the models to reflect investors' expectations of market conditions over the period that the rates established in this proceeding will be in effect.

Q. What are your conclusions regarding the effect of capital market conditions on the cost of equity for MAWC?

A. There are a few important conclusions regarding the effect of capital market conditions for MAWC:

1. Current market conditions are more volatile and have more risk than in 2017 in the Company's last rate proceeding.

2. Market conditions have affected the results of the ROE estimation models requiring consideration of the results of multiple models and exercised judgment.[41]

3. While the ROE estimation models use some historical data (i.e., stock prices and dividends in the DCF model, and bond yields in the CAPM), based on the expected change in market conditions, I believe it is also appropriate to consider near-term projections in the ROE estimation models.

4. The results of the ROE estimation models, properly specified, reflect the increase in the investor -required return on equity that results from current market conditions.

As a result, market conditions indicate that the range of 9.5% to 10.0% found reasonable in the Company's 2017 rate case has not declined but has increased to some degree. Accordingly, and contrary to the claims of Dr. Won and Mr. Murray that the cost of equity has declined, it would be appropriate to recognize a similar increase to the ROE authorized for MAWC in 2017.

[41] As discussed in my Direct Testimony, this conclusion is supported by the Federal Energy Regulatory Commission Opinion No. 569-A, (issued May 21, 2020), wherein the FERC relied on equal weighting of the DCF, CAPM and risk premium approaches to estimate the investor-required ROE for electric transmission owners.

VII. STAFF WITNESS DR. SEOUNG JOUN WON'S ROE ANALYSIS

Q. Please provide an overview of Dr. Won's ROE analyses.

A. Dr. Won develops multiple methodologies and estimates a range of results and an average ROE from each methodology. Figure 12 summarizes the results of Dr. Won's ROE estimation methodologies.

Figure 12:Comparison of Dr. Won's ROE Results to Staff's Estimation in 2017 MAWC case

Methodology	Staff 2017 Case Range	Dr. Won's Range
Two-Stage DCF[42]	6.44%-6.78%	7.54% - 8.86%
CAPM[43]	7.08%-7.82%	4.86%-10.49%
Rule of Thumb[44]	6.91%-7.33%	7%-9%
Recently Authorized ROEs for Water Utilities (only simple average provided in this case)	9.43%-9.90%	8.82%
Recently Authorized ROEs for Electric Utilities (only simple average provided in this case)	9.77%-10.17%	9.47%
Recently Authorized ROEs for Natural Gas Utilities (only simple average provided in this case)	9.44%-9.94%	9.46%
Authorized ROEs for AWC subsidiaries	NA	9.10%-10.20%

[42] *Id*., at 24.
[43] *Id*., at 25-26.
[44] *Id*., at 27.

Q. Is Dr. Won's ROE recommendation based on the results of his ROE estimation models?

A. No, it is not. Dr. Won essentially disregards the results of the majority of his ROE estimation methodologies and establishes his ROE recommendation based entirely on the results of his "comparative analysis", calculating ROEs using the Two-Stage DCF model and current data as compared with the ROE resulting from a Two-Stage DCF model using certain data from 2017 and looking at recently authorized ROEs for water, electric and gas utilities. In the case of the 2017 data, Dr. Won attempted to measure a difference in the ROE from 2017 to the current time-period using his Two-Stage DCF model results. He develops his range of results in this case by relying on the authorized ROE range from the 2017 case, adjusted for his perceived difference in returns from his comparative analysis. His point estimate is set at the midpoint of the adjusted range of results.

Q. What is your response to the approach used by Dr. Won to develop his recommended ROE for MAWC?

A. There are many flaws in Dr. Won's comparative analysis, which are discussed in detail in Appendix A to my Rebuttal Testimony. As noted above, Dr. Won abandoned his DCF and CAPM models. With respect to his comparison to the Company's 2017 rate case, the most critical flaws in Dr. Won's analyses are 1) the authorized ROE range in the 2017 case was not based on the result of Staff's models in that case, and 2) the foundation of his comparison is simply incorrect. The 2017 ROE estimate that Dr. Won relies on as his comparison point is not an estimate that was developed by any witness in the 2017 case. Rather than relying on the data from the 2017 case to compare to his current analysis, Dr. Won develops his own estimate of what the ROE might have been in 2017 and uses that

estimate as the basis for his comparison. Because, since the very basis of his comparison of the cost of equity is faulty and the ROE in the 2017 case was not based on any one model, it is impossible to credibly apply a "comparative analysis" to adjust the ROE range from the 2017 case. Therefore, Dr. Won's recommendation should be rejected. Furthermore, Dr. Won pointedly ignores the fact that his ROE recommendation of 9.55% in this case is lower than the Commission's authorized 9.70% ROE in the 2017 case even though his DCF result is higher than Staff's DCF result in the 2017 case, indicating that the cost of equity has increased since then. This leaves only Dr. Won's comparison to authorized ROE's for other utilities. With respect to other utilities, Dr. Won made no effort to compare the equity ratios associated with those authorized ROEs to the sub-40% equity ratio he used for MAWC. Even a modest risk differential for MAWC's increased financial risk under Dr. Won's capital structure proposal would result in an ROE that is greater than 10% for MAWC.

Q. Have you reviewed each of the methodologies that Dr. Won developed and that are summarized in Figure 12?

A. Yes, I have. I respond to each of the methodologies developed by Dr. Won in Appendix A to my Rebuttal Testimony. Based on my review of those approaches summarized in Appendix A and the fact that Dr. Won has disregarded these approaches, I believe it is reasonable and appropriate for the Commission to disregard Dr. Won's additional analyses summarized in Figure 12.

VIII. OPC WITNESS MR. MURRAY'S ROE ANALYSIS

Q. Please summarize Mr. Murray's ROE analyses.

A. Mr. Murray also develops several cost of equity analyses including the multi-stage DCF and the CAPM. Mr. Murray uses AWK as well as a proxy group of water utilities in these analyses. In addition, Mr. Murray also develops a Rule of Thumb approach and considers recently authorized ROEs. As shown in Figure 13 the results of Mr. Murray's ROE estimation methodologies range from 5.71 percent to 7.34 percent.

Figure 13: Results of Mr. Murray's ROE Estimation Methodologies

Methodology	Range
Multi-Stage DCF (AWK, 4% long-term growth rate) [45]	6.26%
Multi-Stage DCF (Water Proxy Group, 4% long-term [46] growth rate)	5.95% - 6.75%
Multi-Stage DCF (AWK, 3.5% long-term growth rate) [47]	6.04%
Multi-Stage DCF (Water Proxy Group, 3.5% long-term [48] growth rate)	5.71% - 6.58%
CAPM	5.77% - 7.34%
Rule of Thumb[49]	5.75%

Q. Is Mr. Murray's ROE recommendation based on the results of his ROE models?

A. No, it is not. While Mr. Murray concludes that MAWC's cost of equity is in the range of 5.5 percent to 6.5 percent based on his models, Mr. Murray acknowledges that his

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45 *Id*., at 23.
46 Direct Testimony of David Murray, at 20.
47 Direct Testimony of David Murray, at 20.
48 Direct Testimony of David Murray, at 20.
49 *Id*., at 31.

recommendation is not based on the results of any of his analyses. Rather, he relies on: 1) the authorized ROEs for MAWC's affiliates with which MAWC competes for capital; 2) recently authorized ROEs for electric utilities in Missouri; and 3) the Commission's "zone of reasonableness" standard, which considers the industry average authorized ROE. Mr. Murray recommends the Commission use an authorized ROE of 9.50 percent for its reasonableness standard based on recently authorized ROEs for electric utilities because he believes the cost of equity for water and electric utilities is similar.[50] This would result in a zone of reasonableness of 8.50 percent to 10.50 percent since the Commission has defined the zone of reasonableness as 100 basis points above and below the recent national average authorized ROE.[51] Mr. Murray selects a range of 8.50 percent to 9.25 percent as the fair and reasonable range for MAWC's ROE. Stated another way, he selects a "range" that starts at the lowest point of the zone of reasonableness and ends 25 basis points below the mid-point of the range. Moreover, Mr. Murray defaults to the use of this arbitrarily low range because he cannot ultimately rely on his Multi-Stage DCF analysis due to the unreasonably low results produced by the model. Mr. Murray does, however, rely on his discarded Multi-Stage DCF analysis to support his contention that the cost of equity for MAWC is much lower than the authorized ROEs that have recently been approved for other electric and water utilities across the U.S. Thus, Mr. Murray recommends an ROE that is toward the low-end of the zone of reasonableness of 8.50 percent to 10.50 percent

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50 *Id*., at 5.

51 In the Matter of Missouri Gas Energy and its Tariff Filing to Implement a General Rate Increase for Natural Gas Service, Report and Order, Missouri Public Service Commission, Case No. GR-2009-0355. February 10, 2010, at 36.

based on the very DCF analysis that he found unreliable to set the ROE. The irrationality and circularity of such an approach should be apparent.

Q. Please summarize your conclusions about the way in which Mr. Murray arrives at his recommended ROE for MAWC.

A. While I have responded to each of the methodologies presented by Mr. Murray in Appendix B to my Rebuttal Testimony, it is important to recognize that his own ROE recommendation is not based on the results of any of the models that he develops. Instead, Mr. Murray's ROE recommendation is based on his establishment of a "zone of reasonableness" of 8.50 percent to 10.50 percent that ignores the results of his models and which he develops based on recently authorized ROEs for water and electric utilities using Commission guidance. Notably, none of Mr. Murray's ROE estimation models result in ROEs that fall within this established range. Rather than questioning the assumptions used in his models, Mr. Murray nevertheless relies on his discarded ROE estimation models to argue for his own range at the low end of the alleged "zone of reasonableness." Reliance on his mis-specified models has resulted in Mr. Murray understating the cost of equity for MAWC. The critical assumptions that I have identified in Mr. Murray's models that result in understated results include:

1) failure to consider that interest rates are expected to increase, which will result in a decline in the valuations of water utilities over the near-term;

2) reliance on an unreasonably low long-term growth rates in the Multi-Stage DCF analysis, which does not support the current valuation premium for water utilities which assumes water utilities will maintain current earnings growth projections for the long-term;

3) understated MRP estimates in his CAPM and "Rule of Thumb" analyses that do not reflect the inverse relationship between interest rates and the MRP.

If Mr. Murray had specified his models appropriately, he would have produced estimates of the cost of equity more in line with the model results included in my Direct Testimony. Further, he would have concluded that the cost of equity is not lower than the recently authorized ROE for electric and water utilities. As a result, I do not believe it is reasonable to rely on Mr. Murray's final recommended ROE.

IX. SUMMARY AND RECOMMENDATIONS

Q. Please summarize your conclusions and recommendations regarding the appropriate ROE for MAWC in this proceeding.

A. The results of my ROE analysis, which are updated using market data through November 30, 2020, continue to support a range of reasonable ROE results for water utilities between 9.75 percent and 10.60 percent. While the analytical results of ROE estimation models provide a starting point, my recommendation also considers other factors, including company-specific risk factors, capital market conditions and the capital attraction standard. Considering the financial and business risk factors facing MAWC, and the uncertainty and volatility that have characterized capital markets in 2020, I continue to believe that an ROE of 10.50 percent is reasonable and appropriate.

- Nothing in the other ROE witnesses' testimony has caused me to change my range of results or my ROE recommendation.

- Neither Dr. Won nor Mr. Murray rely on the results of any of their models to underlie or inform their respective ROE recommendations of 9.55 percent and 9.25 percent.
- Dr. Won's reliance on a comparison of his Two-Step DCF results for MAWC in this proceeding to those for the same model at the time of MAWC's last rate case in 2017 does not provide sufficient support for his ROE recommendation. Similarly, Mr. Murray's DCF, CAPM and Rule of Thumb methods do not support his ultimate recommendation. Finally, recently authorized ROEs for water distribution companies are within the range established in my Direct Testimony.

Q. What is your recommendation regarding a reasonable capital structure for MAWC in this proceeding?

A. I continue to support the Company's proposed capital structure of 53.00 percent common equity and 47.00 percent long-term debt as reasonable. This is supported by the fact that MAWC's actual capital structure is consistent with the actual capital structures of the operating utility companies in the proxy group used to determine the Company's ROE. That capital structure also represents the manner in which MAWC is actually capitalized. Any lower imputed equity ratio would require a commensurate adjustment to increase the ROE, negatively affect MAWC's ability to attract discretionary capital and would present negative incentives for the Company to adjust its equity ratio, reducing investment in Missouri and weakening the credit metrics for the Company.

Q. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

APPENDIX A: DETAILED RESPONSE TO STAFF WITNESS DR. WON'S ROE ANALYSIS

Q. What are the principal areas of disagreement with the methodologies that Dr. Won uses as the basis for his modeling?

A. I have many areas of disagreement on the technical aspects of Dr. Won's analysis and the assumptions he relies on in each of his methodologies. As a practical matter, however, Dr. Won does not actually rely on any of those analyses to support his recommendation for MAWC, as they all produce results that are significantly below his recommended ROE of 9.55 percent. Rather, Dr. Won's ROE recommendation is based on a comparison of the results of his Two-step DCF model in this case to the results of the same model in the last MAWC rate case. While I disagree with many aspects of Dr. Won's DCF, CAPM and other benchmarking analyses, the fact is that Dr. Won has not relied on those models in the development of his recommendation. Therefore, while my response to Dr. Won will address each methodology at a high level, I will focus more specifically on the Two-Step DCF methodology and the comparison underlying his recommended return.

A. Response to Dr. Won's Two-Step DCF Analysis

Q. Please summarize Dr. Won's specification of the Two-Step DCF model.

A. Dr. Won's DCF analysis is a two-stage model that he claims is consistent with FERC's approach to the DCF model. In particular, he relies on projected earnings growth rates from Value Line in the first five-year period, and projected GDP growth as the long-term growth rate in subsequent years.[52] Dr. Won relies on three-month average stock prices for

[52] Missouri Public Service Commission Staff Cost of Service Report, at Schedule 15-1.

the water utility proxy companies for June through August 2020.[53] He considers a range of estimates for the long-term growth rate from 4.0 percent to 5.9 percent.[54] As shown in Schedule SJW-11, Dr. Won's sources include the nominal Gross Domestic Product ("GDP") growth rate published by the Congressional Budget Office of 4.20 percent, the projected GDP growth rate of 4.00 percent from the Federal Open Market Committee, and the Social Security Administration's projected GDP growth rate of 5.90 percent. Dr. Won averages these three GDP growth rates to derive his long-term growth rate of 4.70 percent. Schedule SJW-13, 1 shows the results of Dr. Won's Two-Step DCF analysis, which range from 7.54 percent to 8.86 percent, with an average DCF result of 8.33 percent.

Q. Are the results of Dr. Won's Two-Step DCF model reasonable?

A. No, they are not. The results of Dr. Won's Two-Step DCF analysis are so low as to be unreasonable compared to the authorized equity returns for water distribution companies in other jurisdictions. The only jurisdiction that has authorized an ROE as low as the results of Dr. Won's Two-Step DCF model is South Carolina in 2020. In that decision for Blue Granite Water, however, the South Carolina commission selected an ROE of 7.46 percent because it was punishing the utility for poor service quality. The other two ROE decisions that Dr. Won includes in his 2020 average are both at 9.50 percent. The *Hope* and *Bluefield* decisions, which Dr. Won acknowledges are standards to be followed in setting a just and reasonable return,[55] require the authorized return to be comparable to other returns

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53 *Id.*, at Schedule 12.
54 *Id.*, at Schedule 15-1 through 15-3.
55 Staff Cost of Service Report, at 15-16.

available to investors in companies with similar risk. Dr. Won's Two-Step DCF results clearly violate this standard.

Q. Did Staff perform a Two-Step DCF analysis in the 2017 MAWC rate case?

A. No. Staff performed Constant Growth and Multi-Stage DCF analyses in the 2017 MAWC rate case. The results of the Staff's Constant Growth DCF analysis ranged from 6.14 percent to 7.14 percent, as shown on Schedule 13 of Staff witness Jeffrey Smith's 2017 attachments, while the results of Staff's Multi-Stage DCF analysis ranged from 6.44 percent to 6.78 percent, depending on the long-term growth rate used in stage three of the Staff model, as shown in Schedules 15-1 through 15-3 of Mr. Smith's 2017 attachments.

Q. Did Staff's 2017 ROE analysis for MAWC produce a Multi-Stage DCF result of 8.53 percent, as Dr. Won suggests?

A. No, it did not. It is important to note that the ROE estimate that Dr. Won shows on Schedule SJW-13.2 is not the result of any analysis that was prepared by Staff in the 2017 case. Dr. Won develops this "2017 ROE estimate" (8.53 percent) using a combination of some of the assumptions relied upon by the Staff in the MAWC 2017 case, some assumptions that he uses in the current case and certain data points that do not tie out to either case. Dr. Won then compares that result; his "2017 ROE estimate", developed using this mismatch of assumptions to the results of his Two-Stage DCF result using current market data through August 2020. Dr. Won suggests that this comparison demonstrates a reduction in the ROE from 2017 to the current case.

The comparison that Dr. Won develops in Schedule SJW-13.1 and 13.2 is meaningless because 1) the ROE result that he has developed has nothing to do with the results generated

or considered in the 2017 case, and 2) the ROE result does not reflect any measure of the market required ROE at that time in 2017. Dr. Won incorrectly considers the result of this analysis a reflection of the ROE in 2017. Further, he then incorrectly suggests that a comparison of the results of that analysis to his DCF ROE estimate using current market data provides any meaningful information about the relative cost of equity between 2017 and the current case.

Q. What were the results of Staff's DCF analysis in the 2017 MAWC case?

A. In the 2017 MAWC case, the results of Staff's Multi-Stage DCF analyses were from 6.44 percent to 6.78 percent. Comparing the actual results of Staff's model in 2017 to the result from Dr. Won's Two-Step DCF analysis using market data from June through August 2020 (8.33 percent shown on schedule SJW-13.1 demonstrates a significant increase in the cost of equity, which is contrary to his claim, and Mr. Murray's, that the cost of equity has declined since the 2017 case.

Q. How did Dr. Won derive the 8.53 percent that he refers to as Staff's DCF results in the 2017 MAWC rate case?

A. Dr. Won selects certain assumptions from the DCF analysis that Staff developed for the 2017 MAWC rate case and uses those assumptions in combination with his current assumptions in the Two-Step DCF model that he has developed in this proceeding to derive an ROE of 8.53 percent that he suggests are "DCF Cost of Common Equity (COE) Estimates" using data from the 2017 rate case. Key differences between the Staff's 2017 analysis and the model that Dr. Won specified as a "2017" case are:

1) Dr. Won develops the "2017 ROE estimate" using only the Value Line projected EPS growth rates that Staff relied on in the 2017 case (Mr. Smith's Schedule 13), rather than the average of the Value Line and Reuters projected EPS growth rates (Smith Schedule 15) that Mr. Smith used in Staff's 2017 Multi-Stage DCF analysis.

2) Dr. Won does not rely on the GDP growth rates that Staff used in the 2017 case, but rather relies on his current estimate of projected GDP growth rate of 4.70 percent as the long-term growth rate in his 2017 -Step DCF analysis.[56] The stock prices for the proxy group companies shown in Dr. Won's 2017 Two-Step DCF analysis are not consistent with the stock prices that Staff relied upon in its Constant Growth DCF analysis.[57]

3) Dr. Won's Two-Step DCF analysis assigns 2/3 weight to the short-term EPS growth rate and 1/3 weight to the long-term projected GDP growth rate, whereas Staff's 2017 Multi-Stage DCF analysis used a three-stage DCF model, with projected EPS growth in Stage 1 (Years 1-5), long-term GDP growth in Stage 3 (after Year 11), and a transitional growth rate in Stage 2 (Years 6-10).

Q. What is your conclusion regarding Dr. Won's comparison of 2017 and 2020 ROE estimates?

A. Dr. Won's analysis does not develop an ROE estimate that relies entirely on market data from 2017. Furthermore, his use of this model, which is to suggest a reduction in the

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[56] *In the 2017 MAWC case, Staff's projected GDP growth rates were 4.0 percent, 4.2 percent, and 4.4 percent. See schedule 15 of Mr. Smith's Multi-Stage DCF analysis.*

[57] See Schedule 13 of Mr. Smith's testimony. I recognize that while the stock prices Dr. Won relies on are not consistent with the 2017 case, the average dividend yield for the proxy group in Dr. Won's "2017" analysis is consistent with the 2017 MAWC case.

settlement ROE from the 2017 case, is entirely misplaced. Settlements are the product of negotiations between parties. Therefore, it is unreasonable to suggest that the ROE that was determined in the 2017 case could be based on any one model that was produced at that time. However, Dr. Won's proposal in the current case is even more unrealistic. Dr. Won suggests that it is reasonable to adjust the settlement ROE to determine the ROE in the current case by relying on data that was never presented in the 2017 case; his "2017 ROE estimate" (8.53 percent). Even if it were appropriate to adjust a settlement value to determine the current ROE, which it is not, this "2017 ROE estimate" is not based entirely on 2017 data and is not a result or a methodology that was considered in the 2017 case. It is therefore unreasonable to suggest that a comparison of this estimate and a current market estimate of the ROE could be used as the basis for an adjustment to a 2017 negotiated settlement ROE value.

What is evident is that Dr. Won's application of the Two-Step DCF model in 2020 produces average results of 8.33 percent, which are 155 to 189 basis points higher than the results of 6.44 percent to 6.78 percent based on Mr. Smith's application of the Multi-Stage DCF model in 2017.

Q. Does Dr. Won's Two-Step DCF analysis follow FERC's current methodology?

A. No, it does not. Dr. Won indicates that he has followed FERC's ROE methodology from Opinion No. 569, which involved the MISO transmission owners.[58] Dr. Won's methodology, however, is not consistent with FERC's most recent determination in the

[58] *Id*., at 24.

MISO transmission owners' case. In addition to changing its overall methodology for setting the ROE to rely on an equal weighting of the DCF, CAPM and Risk Premium methodologies, FERC also adjusted its application of the two-stage DCF model in Opinion No. 569-A. The following revisions that were recently specified by FERC were not applied in Dr. Won's specification of the Two-Step DCF model:

- FERC assigns 80 percent weight to the short-term earnings per share growth rate and 20 percent to the long-term GDP growth 20 percent.
- FERC has consistently relied on earnings growth rates from I/B/E/S (which are the same as those reported on Yahoo! Finance), not Value Line, as Dr. Won has used in his Two-Step DCF analysis.
- FERC relies on six months of high and low stock prices for the proxy group companies to compute the dividend yield, not the three months of stock price data that Dr. Won has relied upon.
- FERC uses Global Insights as the source of its projected GDP growth rate, rather than the sources upon which Dr. Won has relied in his DCF analysis.
- Finally, FERC excludes high and low outliers from the results of the DCF, CAPM and Risk Premium methodologies. Dr. Won has not indicated whether he has excluded outliers and, if so, how that determination was made.

Q. Even if Dr. Won had applied the FERC's two-stage DCF methodology consistent with the recent Opinion 569-A, would it be reasonable to rely exclusively on the results of this methodology to set the ROE?

A. No. The FERC has recognized that exclusive reliance on the results of the DCF model is not appropriate based on recent market conditions. Therefore, Dr. Won's reliance on FERC's DCF methodology, without recognizing that FERC is only giving this

methodology one third to one half of the weight in its final ROE determination, is not appropriate. As discussed in Opinion No. 569-A, in prior electric transmission ROE cases, FERC sought to depart from its prior approach of relying exclusively on the DCF model because it was less confident that the midpoint of their zone of reasonableness, set using this model, reflected the ROE that would meet the *Hope* and *Bluefield* standards as a result of anomalous market conditions and bond yields that were at historic lows.[59] Therefore, FERC determined that it would rely on multiple models, weighting the results of the DCF, CAPM and Risk Premium models equally in electric transmission cases, and the DCF and the CAPM equally in natural gas pipeline cases.[60]

Q. What are the primary drivers of the unreasonably low results of Dr. Won's Two-Step DCF analyses?

A. There are two main factors that contribute to the unreasonably low results of Dr. Won's Two-Step DCF model: 1) the dividend yield; and 2) the long-term growth rate. As discussed in my Direct Testimony, dividend yields for water utilities are currently at historically low levels due to current market conditions.[61] The current dividend/price relationship cannot be expected to be maintained in perpetuity. Dr. Won indicates that the average P/E ratio for the water companies in his proxy group is 63.04x, which is substantially higher than the long-term average P/E ratio for water utilities.[62] One assumption of the DCF model is that the P/E ratio will remain constant in perpetuity. Industry analysts have commented that current valuations for water utilities are clearly not

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59 FERC Opinion No. 569-A, issued May 21, 2020, at P4.
60 FERC Policy Statement on Determining Return on Equity for Natural Gas and Oil Pipelines, May 2020.
61 Direct Testimony of Ann E. Bulkley, Figure 6, at 25.
62 Missouri Public Service Commission Staff Cost of Service Report, at 20.

sustainable. As such, it is not reasonable to set the forward-looking cost of equity for MAWC based on the DCF model when the underlying assumptions of that model are being violated.

In my Direct Testimony I noted that Value Line reported that the prices of water utility stocks appear to be more than fully valued.[63] Value Line's review of the industry at that time indicated that the demand for the sector was attributable to two factors, scarcity of stocks in the sector and the low interest rate environment.[64] In their more recent report Value Line noted that the sector has not kept pace with the S&P 500, and that they do not think the gains achieved in this sector are sustainable.[65] These data all suggest that utility stock prices are distorted, and that the dividend yield in the DCF model, while measurable using current market data, may not be a reliable indicator of the future performance of these stocks.

Q. What is your opinion of the long-term growth rate used in Dr. Won's Two-Step DCF model?

A. The long-term growth rate that Dr. Won relies on results in an understated cost of equity. Dr. Won uses long-term GDP growth rate projections of 4.00 percent, 4.20 percent, and 5.90 percent. Only the 5.90 percent GDP growth rate is generally consistent with the long-term historical growth rate in nominal GDP reported by the Bureau of Economic Analysis ("BEA") of 5.56 percent. The other two projected GDP growth rates are 130 to 150 basis points lower than the historical GDP growth rate, and therefore may understate a

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63 Direct Testimony of Ann E. Bulkley, at 26.
64 Value Line Investment Survey, Water Utility Industry, January 10, 2020, at 1786.
65 Value Line Investment Survey, Water Utility Industry, October 2, 2020, at 1788.

reasonable expectation of long-term economic growth. If Dr. Won had relied on his highest projected GDP growth rate of 5.90 percent, the average results of his Two-Step DCF analysis would be 8.73 percent. Furthermore, holding all else constant in his Two-Step DCF model, in order to achieve a return that is consistent with Dr. Won's ROE recommendation of 9.55 percent, his Two-Step DCF model would need to rely on a growth rate of 8.35 percent, or 245 basis points higher than the highest long-term growth rate considered by Dr. Won.

Q. What would be the results of Dr. Won's Two-Step DCF analysis if he had followed the FERC's methodology?

A. As shown in Schedule AEB-XR, if Dr. Won had followed FERC's methodology in his Two-Step DCF analysis, the range of reasonableness for his proxy group would be from 6.55 percent to 14.66 percent, with a midpoint of 9.58 percent and a median of 8.87 percent.

Q. Has Dr. Won made any attempt to reconcile his Two-Step DCF model results with his recommended ROE?

A. Yes. Dr. Won attempts to justify his recommended ROE using a benchmarking analysis. Rather than relying on the results of his DCF model, Dr. Won compares the DCF results in the Company's last case and his DCF results in this case. Dr. Won suggests that the ROE range that was agreed to in the Company's 2017 settlement, and approved by the Commission, can be interpreted as the Commission's perspective on the relationship between the COE and the ROE. Based on that unfounded assumption, Dr. Won suggests that, as long as that relationship has not changed, it is appropriate to rely on a comparison

of his DCF results from 2017 to his current DCF results to adjust the range of reasonableness from 2017 to an appropriate range in this current case.[66]

Q. What is your response?

A. First, it is important to recognize that the Commission approved a settlement in the Company's last rate case. There is no evidence that supports Dr. Won's theory that the Commission has established any relationship between the result from Staff's model in the 2017 case and the ROE range that was established in the settlement agreement. Rather, it appears that Dr. Won would like to suggest there is some relationship in order to justify his benchmarking methodology rather than have to address the unreasonably low results derived from his Two-Step DCF model.

Q. Do you agree with the comparative analysis that Dr. Won uses to support his recommended ROE of 9.55 percent?

A. No, I do not. First, it is important to recognize that Dr. Won's Two-Step DCF model is not producing results that he can rely on. There is no circumstance in recent authorized ROEs where a regulatory commission has determined that the cost of equity for a water utility is in the range of 7.54 percent to 8.86 percent, as suggested by Dr. Won's model.[67] Furthermore, I do not agree with the way in which Dr. Won arrives at his recommended ROE by relying on benchmarking to the analysis performed by Staff in the MAWC 2017 case. Finally, while Dr. Won relies on FERC precedent to support his DCF methodology, he has not applied that method consistent with FERC's current approach and in relying

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66 *Id.*, at 28.

67 Excluding the Blue Granite case, where management performance was also an issue.

entirely on his DCF result, he has ignored the broader discussion by FERC addressing the deficiencies of the DCF model and their approach to address its unreliability in current market conditions.

Consistent with FERC's recent determinations in Opinion No. 569-A, I believe it is important to give some weight to the results of many financial models to estimate the cost of equity for MAWC. While Dr. Won's comparative analysis ultimately results in an ROE recommendation that is generally in line with the average of authorized equity returns for water companies in 2019 and 2020 (excluding the Blue Granite decision in South Carolina), as shown in Figure 8, the range of authorized returns is very broad, which makes it important to recognize that the average result cannot be the only consideration with respect to authorized ROEs.

In addition, it is important to keep in mind that recent economic and capital market conditions are dramatically different now than when most of the recently authorized returns were determined. The uncertainty and volatility that has characterized capital markets in 2020 does not support a conclusion that the cost of equity has declined or stayed the same. Investors require compensation for the additional risks associated with owning common equity, and it would be hard to argue that the equity risk premium has not increased when market conditions are so volatile and capital markets have required such extraordinary intervention and support from the Federal Reserve and the U.S. Congress. For all of these reasons, I do not agree that Dr. Won's comparative analysis is a reasonable approach to estimate the cost of equity for MAWC in this case.

B. Capital Asset Pricing Model

Q. Please summarize Dr. Won's application of the CAPM.

A. Dr. Won states that he develops the CAPM as a test of the reasonableness of his DCF results.[68] Dr. Won's CAPM analysis uses a risk-free rate based on the average yield on the 30-year Treasury bond for the three months ending August 2020, Value Line Betas for the water utility proxy group, and two measures of the market risk premium. The first, which Dr. Won refers to as the "extreme lower bound of the MRP estimates,"[69] is 4.50 percent, which is the geometric average based on market data from 1926-2018. The second, which Dr. Won refers to as the "extreme upper bound of the MRP estimates,"[70] is based on my calculation of the projected total market return for the S&P 500 less Dr. Won's risk-free rate. The results of Dr. Won's CAPM analyses range from 4.86 percent to 10.49 percent, with a midpoint of 7.68 percent. Dr. Won concludes that the results of his CAPM analysis support the range of results produced by his DCF analysis.[71]

Q. Does Dr. Won rely on his CAPM analysis to establish his recommended ROE for MAWC?

A. No, he does not. Dr. Won's recommendation is based on the benchmarking analysis performed using the results of his Two-Step DCF model. Dr. Won simply suggests that the CAPM results support those of his DCF analysis.

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68 Missouri Public Service Commission Staff Cost of Service Report, at 25.
69 *Id*., at 26.
70 *Ibid*.
71 *Id*., at 44.

Q. Do you agree with the range and point estimate resulting from Dr. Won's CAPM analysis?

A. No. Using the "extreme lower bound" to estimate the MRP results in an ROE of 4.86 percent, which is only 165 basis points above the current yield on the Moody's Baa utility bond index. This is an insufficient risk premium to assume the risk associated with holding equity, particularly in the current market environment when water utility Betas are high, indicating that their shares are trading more like the overall market. Therefore, this "extreme lower bound" is of no probative value and cannot simply be averaged with his other scenario to derive an ROE from this methodology.

Q. What risk-free rate does Dr. Won use in his CAPM analysis?

A. Dr. Won relies on a current risk-free rate of 1.39 percent, which was the three-month average yield on the 30-year Treasury bond as of August 2020. My primary concern with Dr. Won's risk-free rate is that the estimation of the cost of equity is a forward-looking analysis. Financial markets are expecting interest rates on 30-year government bonds to increase to 1.90 percent by the fourth quarter of 2021, and to approximately 2.80 percent during the period from 2022-2026.[72] As equity investors consider their return requirements, they must factor in expectations for higher interest rates on government bonds. Dr. Won's exclusive reliance on current government bond yields does not reflect the market's expectations regarding interest rates over the rate period. I also question why

[72] Blue Chip Financial Forecasts, Vol. 39, No 12, December 1, 2020, at 2 and 14.

Dr. Won used the average risk-free rate for the three months ending in August when more recent market data was available.

Q. Do you agree with any of the assumptions used to develop the "extreme lower bound MRP" scenario?

A. While I agree with the Value Line Beta estimates relied upon by Dr. Won, I disagree with all other aspects of this scenario including the interest rate relied on as the risk-free rate, the calculation of the historical MRP using geometric averages of stock returns and the total return on government bonds. Nevertheless, because Dr. Won does not rely on his methodology, and the result of this approach demonstrates that his assumptions are unreasonable, I have not addressed each of these assumptions in the remainder of my response. Further, many of Dr. Won's assumptions used in this scenario were also relied upon by OPC witness Murray and are addressed in my response to this witness.

C. Rule of Thumb methodology

Q. Please summarize Dr. Won's "Rule of Thumb" analysis.

A. The "Rule of Thumb" methodology presented by Dr. Won is a form of the risk premium methodology that adds an average utility bond yield to an estimate of the market risk premium. In his specification of this approach, Dr. Won relies on the three-month average yield on Moody's A-rated and Baa-rated utility bonds through August 2020 of 2.85 percent and 3.20 percent and an estimated market risk premium of 4.00 to 6.00 percent to establish a range of returns from 6.85 percent to 9.20 percent.[73]

[73] Missouri Public Service Commission Staff Cost of Service Report, at 27.

Q. Do you agree with this methodology?

A. I agree that it is generally appropriate to rely on properly-specified risk premium methodologies. However, similar to his CAPM analysis, Dr. Won's specification of this risk premium approach relies on historical estimates of the market risk premium and does not take into consideration the inverse relationship between interest rates and the equity risk premium. Furthermore, this methodology relies on the return on the market as a whole and does not appear to provide any adjustment for the return requirements of different industries. Therefore, the results of this methodology are not reflective of the expected return for a water utility. Finally, the use of the three-month average yield on utility bonds is outdated and does not reflect the expectation of rising interest rates. As such, this methodology is not reflective of investor return requirements over the rate period.

D. Authorized Returns in Other Jurisdictions

Q. Please summarize Dr. Won's analysis of authorized returns in other jurisdictions.

A. Dr. Won summarizes the authorized returns for water utilities, electric utilities and gas distribution companies in other jurisdictions from 2010-2020.[74] Dr. Won's data indicate that the average authorized ROE for water utilities has been in the range of 9.41 percent to 10.16 percent over this period.[75] \

[74] *Id*., at 28.

[75] As discussed previously, I excluded the authorized ROE for Blue Granite Water in 2020 because it includes a penalty for service quality issues.

Q. What are your conclusions about these authorized returns?

A. Dr. Won's recommended ROE of 9.55 percent is 22 basis points below the average authorized ROE for water utilities from 2010-2020 of 9.77 percent and 235 basis points below the highest ROE award during this period for a water utility. Dr. Won has presented no evidence regarding the relative risk of MAWC and the proxy group companies. Furthermore, based on the methodology that Dr. Won relies on for his recommendation, he suggests that the return for MAWC in this proceeding should be 20 basis points lower than the authorized ROE in the 2017 settlement agreement because the results of his Two-Step DCF method have declined by 20 basis points. As I explained previously, this is not a relevant appropriate comparison.

In addition, Dr. Won's ROE recommendation of 9.55 percent is combined with a proposed capital structure that contains 39.61 percent common equity. The average authorized equity ratio for the water utilities in Staff's table over the last three years has been 50.71 percent,[76] which is 11.1 percentage points higher than the equity ratio that Dr. Won has recommended for MAWC. As discussed in more detail in Section III of my Rebuttal Testimony on capital structure, if the Commission were to adopt Dr. Won's capital structure recommendation, it would be necessary to make a substantial upward adjustment in the authorized ROE for MAWC to compensate equity investors for the additional financial risk of a much more highly-leveraged capital structure.

[76] Analysis includes authorized equity ratios for 2018-2020.

APPENDIX B: DETAILED RESPONSE TO OPC WITNESS MR. MURRAY'S ROE ANALYSIS

Q. What are the principal areas of disagreement with the methodologies that Mr. Murray uses as the basis for his modeling?

A. I have many areas of disagreement on the technical aspects of Mr. Murray's analysis and the assumptions relied on in each of his methodologies. As a practical matter, however, as with Dr. Won, Mr. Murray also did not actually rely on any of those analyses, as his models produce results that are 191 to 354 basis points below his recommended ROE of 9.25 percent.

Mr. Murray's recommendation appears to be primarily based on recently authorized ROEs for electric utilities, which he uses to develop a range of reasonableness standard based on prior Commission guidance. His selection of 9.50 percent as the average authorized ROE to be used in the calculation of the Commission's reasonableness standard results in a zone of reasonableness of 8.50 percent to 10.50 percent, which is well above the results produced by his Multi-Stage DCF and CAPM analyses shown in Figure 13. While I disagree with many aspects of Mr. Murray's Multi-Stage DCF analysis, the CAPM, and the "Rule of Thumb" analysis, it appears that Mr. Murray also recognizes the flaws in his development of these approaches, as he has not specifically relied on the results of any of his analyses in the development of his ROE recommendation. Therefore, while my response will address each methodology, it is important to note that Mr. Murray's recommendation suggests that it is appropriate for the Commission to reject his analyses and rely only on recently authorized ROEs in setting the ROE for MAWC.

A. Proxy Group Composition

Q. Please summarize the composition of Mr. Murray's proxy group.

A. Mr. Murray doesn't specifically discuss the screening criteria he uses to develop his proxy group; he only states that he has relied on a proxy group of seven water utilities and has excluded Consolidated Water Company since it owns desalination plants in the Bahamas and Cayman Islands and is involved in manufacturing.[77] He appears to acknowledge the small number of publicly traded water utilities as the reason for his inclusion of most of the companies classified by Value Line as water utilities.[78] It is important to note that while Mr. Murray indicates that he has included seven water companies in his proxy group, his Multi-Stage DCF and CAPM analyses only rely on the results for five companies. Mr. Murray excludes Middlesex Water and York Water Company from his Multi-Stage DCF analysis because the companies are not "widely" followed by investment analysts[79] and American States Water Company and California Water Service Group from his CAPM analysis due to "abnormally low" Beta coefficients.[80]

Q. Do you have any concerns with the proxy group that Mr. Murray has relied on to conduct his analysis?

A. Yes. As noted above, Mr. Murray has relied on one group of five water utilities companies in his Multi-Stage DCF analysis and a separate group of five water companies in his CAPM analysis. Thus, Mr. Murray relies on a very small group of companies to develop his Multi-

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77 *Id.*, at 22.
78 *Ibid.*
79 *Ibid.*
80 *Id.*, at 30.

Stage DCF and CAPM analyses. The smaller the size of the proxy group, the greater the chance the proxy group average could be affected by the results of one company. In fact, Mr. Murray excludes American States Water Company and California Water Service Group from his CAPM analysis because each company has a low Beta coefficient, which produces unreasonably low CAPM results that would have excessively reduced the proxy group average. Therefore, while it is important to maintain a proxy group that is generally comparable to the risk profile and operating characteristics of MAWC, it is also important to establish a proxy group that is sufficiently large. Given the small number of utilities included in Mr. Murray's proxy group, his proxy group has not balanced this goal.

A. To increase the size of his proxy group while still including companies that are considered comparable to MAWC, Mr. Murray should have included natural gas utilities. As discussed in my Direct Testimony, similar to the water utilities, natural gas utilities generate a substantial portion of their operating income from regulated operations.[81] Therefore, I conclude that there are significant similarities between the business and operating risks of water and gas distribution companies. Furthermore, several regulatory commissions such as the Massachusetts Department of Public Utilities, the Florida Public Service Commission, and the Kentucky Public Service Commission have considered the results of a proxy group that includes natural gas companies when determining the authorized ROE for water and wastewater utilities.[82]

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[81] Direct Testimony of Ann E. Bulkley, at 45.

[82] *Id.*, at 46-48.

Q. What is your conclusion regarding Mr. Murray's proxy group for MAWC?

A. My primary conclusion is that the composition of the proxy group is not a significant driver in the current proceeding in the development of Mr. Murray's ROE estimation models. While I believe that it is reasonable and appropriate to include gas distribution companies in the proxy group for MAWC to increase the size of the group and mitigate the possible effects of any one outlier company, I have limited my response on this issue to focus more attention on what is causing the unreasonably low ROE results of Mr. Murray's Multi-Stage DCF and CAPM analyses.

B. Response to Mr. Murray's Multi-Stage DCF Analysis

Q. Please explain how Mr. Murray conducts his Multi-Stage DCF analysis.

A. Mr. Murray's Multi-Stage DCF analysis includes three stages, the first two of which have defined time horizons, while the third assumes cash flows in perpetuity. In the first stage, Mr. Murray relies on analyst estimates of annual dividends per share ("DPS") and earnings per share ("EPS") which were available for the next two to three years. As noted above, since this information was not available for York Water Company and Middlesex Water Company, Mr. Murray excludes those companies from his Multi-Stage DCF analysis. In the final year of the first stage, Mr. Murray calculates the estimated dividend payout ratio based on the analysts' estimated annual DPS and EPS. His second stage then models an equal percentage change in the dividend payout ratio from the end of the first stage until the terminal year (i.e., year 15), at which point Mr. Murray assumes a payout ratio that retains sufficient earnings to ensure each company in his group maintains a perpetual

growth rate of 3.5 percent to 4.0 percent.[83] Mr. Murray contends that his long-term growth rate range of 3.5 percent to 4.0 percent is based on his review of reports from equity analysts. Based on a long-term growth rate of 4.0 percent, Mr. Murray's Multi-Stage DCF analysis produces a ROE estimate for AWK of 6.26 percent and a range of results for the proxy group between 5.95 percent and 6.75 percent, with a mean of approximately 6.40 percent, while a long-term growth rate of 3.5 percent produces a ROE estimate for AWK of 6.04 percent and a range of results for the proxy group between 5.70 percent and 6.60 percent, with a mean of approximately 6.25 percent.[84]

Q. Does Mr. Murray's Multi-Stage DCF analysis reflect the increased risk for utilities as measured by Beta?

A. No, it does not. In Docket No. ER-2019-0374 for Empire District Electric Company ("Empire"), Mr. Murray noted that his Multi-Stage DCF analysis supported a COE of 6.5 percent to 6.75 percent,[85] while the electric proxy group average Value Line Beta that Mr. Murray relied on in his CAPM was 0.50.[86] In the current proceeding for MAWC, Mr. Murray notes the increase in Beta that occurred between the time period used to develop his analysis in the rate case for Empire and the timed period used in the current proceeding for MAWC:

> 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

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[83] Direct Testimony of David Murray, at 22.
[84] *Ibid*.
[85] Docket No. ER-2019-0374, Direct Testimony of David Murray, January 15, 2020, at 35.
[86] *Id*., at 39.

> 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.[87]

Given the increase that has occurred in the Beta coefficients for both electric and water utilities, we should expect Mr. Murray's Multi-Stage DCF results to increase to reflect the increased risk of utilities. Nevertheless, as noted above, Mr. Murray's Multi-Stage DCF results for his water proxy group ranged from 5.70 percent to 6.75 percent. Therefore, Mr. Murray's Multi-Stage DCF analysis is not accurately reflecting changes in market conditions. This means the model will not provide a reasonable estimate of investors' return requirements since investors respond to changes in capital market conditions.

Q. Are the results of Mr. Murray's Multi-Stage DCF model reasonable?

A. No. The results of Mr. Murray's Multi-Stage DCF analysis are so low as to be unreasonable and are not reflective of the cost of equity. Not a single regulatory jurisdiction has authorized an ROE as low as the results of Mr. Murray's Multi-Stage DCF model, which provides reasonable context that he has either failed to consider or rejected. The *Hope* and *Bluefield* decisions, which Mr. Murray acknowledges are standards to be upheld, require the authorized return to be just and reasonable, as well as comparable to other returns available to investors in companies with similar risk. [88] Mr. Murray's Multi-Stage DCF results clearly violate this standard.

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87 Direct Testimony of David Murray, at 29.

88 *Id.*, at 4.

Q. Does Mr. Murray offer any attempt to reconcile his model results with his recommended ROE?

A. Yes. Mr. Murray attempts to reconcile the difference between the results of his ROE estimation models and his recommendation by suggesting that average allowed ROEs have been greater than the cost of equity. Therefore, according to Mr. Murray, the results of the modern financial models must be reconciled with the principles of *Hope* and *Bluefield* which require the return to be just and reasonable and commensurate to the return available to investors in assets of similar risk.[89] Thus, Mr. Murray develops a zone of reasonableness based on recent authorized returns and prior Commission guidance, but places his recommendation in the bottom half of the recommended range to reflect the lower capital costs indicated by his models.

Q. Do you agree with Mr. Murray that allowed ROEs are overstating the cost of equity?

A. No, I do not. Mr. Murray's conclusion is solely reliant on the assumption that he has appropriately specified the Multi-Stage DCF model, the result of which he does not use in setting his recommended ROE. Mr. Murray's specification of and reliance on the Multi-Stage DCF model to estimate the cost of equity is, however, incorrect. As discussed in my Direct and Rebuttal Testimonies, dividend yields for water utilities are currently at historically low levels due to the unsustainably high valuations that are a result of recent market conditions.[90] Mr. Murray acknowledges the high valuations of water utilities, which he attributes to: a) high growth rate expectations; and b) the low interest rate

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89 *Ibid*.

90 Direct Testimony of Ann E. Bulkley, Figure 6, at 25.

environment.[91] While we agree that the low interest rate environment has resulted in increased valuations of the utility sector and water utilities in particular, we disagree with respect to the direction of interest rates over the near-term, or the period that MAWC's rate will be in effect. As discussed in Section VI above, if interest rates increase as expected, then the current valuation premium that Mr. Murray attributes to the low interest rate environment will decrease. Furthermore, Mr. Murray attributes part of the valuation premium of water utilities to earnings growth expectations. Specifically, he cites to an 8.33 percent earnings growth rate for AWK.[92] If investors expect AWK and other water utilities to sustain their earnings growth rate over the long-term, then Mr. Murray's long-term growth rate assumption of 3.5 percent to 4.0 percent, which is well below current earnings growth rate projections, would result in a decline in the valuations for water utilities. Investors would not pay a valuation premium for a growth rate that is well below the growth rate they expect.

Q. Do investors expect interest rates to increase over the near-term?

A. Yes. As discussed in Section VI, the yield curve is steepening which means long-term interest rates are increasing as the Federal Reserve keeps short-term interest rates low. This has historically been an indication that investors believe the economy is entering the early expansion phase of the business cycle. As the economy improves and long-term interest rates increase, investors rotate from defensive sectors such as utilities into cyclical sectors which have been most affected by the COVID-19 pandemic. Fidelity noted that utilities

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91 Direct Testimony of David Murray, at 15.

92 *Ibid*.

historically underperform during this period of the business cycle.[93] This is also consistent with Figure 7 of my Direct Testimony, which shows that Value Line projects the stock prices of the water and natural gas companies in my proxy group to decline in the forecast period. Mr. Murray's Multi-Stage DCF model estimated using current stock price data assumes the interest rate valuation premium will continue over the near-term. This is, however, counter to the expectation of investors. As a result, if utility stock prices decline as expected, then Mr. Murray's Multi-Stage DCF model will understate the cost of equity for MAWC over the period that rates will be in effect.

Q. What is your opinion of the long-term growth rate used in Mr. Murray's Multi-Stage DCF model?

A. Mr. Murray relies on a long-term growth rate range of 3.5 percent to 4.0 percent, which he notes is based on his review of the historical growth for his water utility proxy group, fundamentals for the water utility industry and reports from equity analysts.[94] This long-term growth rate range appears to be equal to the range relied on by Wells Fargo in the calculation of their Dividend Discount Model ("DDM") for each of the water utilities covered by the bank.[95] Mr. Murray's long-term growth rate assumption, however, is not consistent with the stock prices that he relies on to calculate his Multi-Stage DCF model. As Mr. Murray notes, part of the reason for the higher valuations of water utilities particularly relative to electric and natural gas companies is the expectation that water

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93 Fidelity Investments, "The Business Cycle Approach to Equity Sector Investing," 2020.
94 Direct Testimony of David Murray, at 23.
95 Neil Kalton, Sarah Akers, and Jonathan Reeder, "Shuffling the Water Deck – Downgrade AWK & CWT," Wells Fargo, March 26, 2019, at 2.

utilities will sustain current earnings growth rates for the foreseeable future. For example, Bank of America recently commented on the prospective earnings growth for AWK:

> The exhibit below reflects our latest EPS estimates. While our formal five year estimates remain unchanged, we see clear visibility for the company to continue to grow at an elevated 7-10% growth rate well into the future and expect management to roll forward their outlook through 2025 early next year. We perceive no material challenges to the company with an increasingly attractive set of municipal opportunities before the company between expanded FMV legislation as well as municipal budget pressures heading into '21. This theme was echoed on multiple occasions across our conference. With the water industry particularly fragmented relative to electric and gas peers and against a wave of favorable legislation shaping up across states, we see the latest pandemic's impact on muni budgets as a further tailwind to accelerate additional tuck-ins.[96]

If equity analysts expect the long-term growth rate to decline to a range 3.5 percent to 4.00 percent, then they would remove the valuation premium related to earnings growth for water utilities and likely reduce their estimated price targets.

Q. Have you reviewed Wells Fargo's DDM, which Mr. Murray cites as a source for his long-term growth rate estimate?

A. Yes. The purpose of Wells Fargo's DDM is to develop valuations for each of the water utilities by calculating an implied 12-month price target and then comparing the 12-month price target to the current price of each stock. As shown in **Error! Reference source not found.** below, in a March 2019 report, Wells Fargo's DDM model which assumed long-term growth between 3.5 percent and 4.0 percent produced an implied 12-month price

[96] Julien Dumoulin-Smith, Ryan Greenwald, Richard Ciciarelli, Aric Li, Anya Shelekhin, Dariusz Lozny and Harris Pollans, "American Water Works: Coming in too Deep: Upgrading back to Neutral," Bank of America Securities, December 14, 2020.

target for each of the water utilities that was either well below or equivalent to the current price.

Figure 14: Wells Fargo DDM as of March 2019[97]

Company	Ticker	Implied 12-Month Price	Current Price	Implied Upside/Downside
American States Water Company	AWR	$55.59	$71.94	-23%
American Water Works Company Inc.	AWK	$108.38	$107.20	1%
Aqua America, Inc.	WTR	$37.55	$37.52	0%
California Water Service Group	CWT	$41.33	$54.67	-24%
Connecticut Water Service	CTWS	$59.15	$68.50	-14%
SJW Corporation	SJW	$62.28	$63.64	-2%

If Wells Fargo had assumed a higher long-term growth rate more consistent with expected earnings growth, the results of the DDM model would have been more in line with the current price of each water stock. This is important to note because Mr. Murray is assuming this low long-term growth rate with the current price of water utility stocks. This results in an understated cost of equity estimate. The only way to maintain the current high valuation with a low long-term growth rate is to assume an extremely low COE. If Mr. Murray were

[97] *Id*., at 3.

to assume a long-term growth rate more consistent with current earnings growth projections, he would have obtained a much higher ROE estimate.

Furthermore, Wells Fargo's DDM also assumed a range of earned ROEs from 10.5 percent to 11.0 percent for each of the water utilities.[98] Finally, as Wells Fargo noted, the DDM is not their primary valuation method. To value the water utilities, Wells Fargo's preferred methodology is the relative P/E approach, which involves adjusting the current P/E ratio for the water utility sector for factors such as expected growth, management quality, as well as other factors and applying that multiple to projected earnings growth.[99]

Q. What are equity analysts' current recommendations regarding water utility stocks given current valuations?

A. While equity analysts have indicated that they expect water utilities to sustain earnings growth rate projections over the long-term, there is still concern over the valuations of those utilities. Mr. Murray attributes this additional valuation premium above what can be justified by earnings growth to the effects of the low interest rate environment. This additional valuation premium has resulted in many equity analysts avoiding a "buy" rating for water utilities. In fact, Bank of America assigned only a neutral rating to AWK even though Bank of America expects AWK to achieve its estimated EPS growth target range

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98 Neil Kalton, Sarah Akers, and Jonathan Reeder, "Shuffling the Water Deck – Downgrade AWK & CWT," Wells Fargo, March 26, 2019, at 3.

99 *Id*., at 2.

of 7 percent to 10 percent over the long-term.[100] As shown in Figure 15, Zacks' recommendation for investors is "hold" for a majority of water utilities included in Mr. Murray's water proxy group with a value ranking of "D" indicating that most of the water utilities are expensively priced. This highlights that, while equity analysts expect robust earnings growth over the long-term term, the earnings growth isn't enough to support the current high valuations. Therefore, as interest rates increase over the near-term, water utility valuations are expected to decline to levels more in line with what can be supported by projected long-term earnings growth.

[100] Julien Dumoulin-Smith, Ryan Greenwald, Richard Ciciarelli, Aric Li, Anya Shelekhin, Dariusz Lozny and Harris Pollans, "American Water Works: Coming in too Deep: Upgrading back to Neutral," Bank of America Securities, December 14, 2020.

Figure 15: Mr. Murray's Water Utility Proxy Group –
Zacks' Ranking as of November 30, 2020

Company	Ticker	Zacks Recommendation [101]	Zacks Value Growth Momentum ("VGM") Score [102]			
			Value	Growth	Momentum	VGM
American Water Works Company	AWK	Hold	D	C	B	D
American States Water Company	AWR	Sell	D	C	B	D
California Water Service Group	CWT	Strong Buy	D	C	B	C
Essential Utilities, Inc.	WTRG	Hold	D	C	C	D
Middlesex Water Company	MSEX	Hold	D	C	B	D
SJW Corporation	SJW	Hold	C	C	D	C
York Water Company	YORW	Hold	D	D	D	F

Q. What specification of the DCF model do you believe is most appropriate for estimating the cost of equity for MAWC?

A. As discussed in my Direct Testimony, I relied on the Constant Growth form of the DCF model which I estimated using projected earnings growth rates from Yahoo!, Zacks and Value Line as the inputs for the long-term growth rate.[103] A Constant Growth DCF model is appropriate for the utility industry because utilities are considered a mature industry as a result of their regulated status and relatively stable demand. Thus, financial projections such as earnings growth rates are also likely to be relatively stable over the long-term. This is consistent with the views of equity analysts which, as discussed above, project that water

[101] Zacks' Ranking consist of strong buy, buy, hold, sell and strong sell.
[102] Zacks VGM Score: Stocks are graded into five groups: A, B, C, D and F with A being the highest ranking and F being the lowest rankings.
[103] Direct Testimony of Ann E. Bulkley, at 52-58.

utilities will be able to sustain earning growth projections over the long-term. In fact, Mr. Murray has also acknowledged that the earnings growth projections may be sustainable for more than five years:

> 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%.[104]

Thus, Mr. Murray should have considered the Constant Growth form of the DCF model, which would have reflected long-term growth rates that more closely support the share prices he relies on to calculate his Multi-Stage analysis. However, as discussed above, utility valuations are expected to decline over the near-term as interest rates increase and the economy enters the early expansion phase of the business cycle. As a result, the Constant Growth DCF model which relies on current valuations, still understates the forward-looking cost of equity during the period that MAWC's rates will be in effect, but to a much lesser degree than the Multi-Stage DCF model as specified by Mr. Murray.

Q. Please summarize your conclusions regarding Mr. Murray's Multi-Stage DCF analysis.

A. While Mr. Murray does not ultimately rely on his Multi-Stage DCF analysis due to the unreasonably low results produced by the model, he inconsistently then does rely on his

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[104] Direct Testimony of David Murray, at 2.

Multi-Stage DCF analysis to support his contention that the cost of equity for MAWC is much lower than the authorized ROEs that have recently been approved for other electric and water utilities across the U.S. Based on his self-admittedly unreliable model, Mr. Murray recommends an ROE that is toward the low-end of the zone of reasonableness of 8.50 percent to 10.50 percent based on recent authorized returns. This conclusion is incorrect for two reasons. First, the current valuations of utilities are based in part on the sustainability of current projections of earnings growth. Mr. Murray's long-term sustainable growth rate range of 3.5 percent to 4.0 percent is much lower than current earnings growth projections and thus implies much lower water utility valuations than the stock prices he relies on to calculate his Multi-Stage DCF analysis. This results in a ROE estimate that is unreasonably low. Second, interest rates are expected to increase over the near-term; thus, the current valuation premium that water utilities have as a result of the low interest rate environment will decline to reflect the increasing capital costs. This will increase the results of the DCF model. Thus, I conclude that Mr. Murray's Multi-Stage DCF model is neither providing reasonable estimates of the cost of equity for water utilities and nor supports his conclusion that the cost of equity for water utilities is much lower than recently authorized ROEs.

C. Capital Asset Pricing Model

Q. Please summarize Mr. Murray's application of the CAPM.

A. Mr. Murray develops four separate specifications of the CAPM analysis. The first CAPM analysis uses a risk-free rate that appears to be based on the average yield on the 20-year

Treasury bond for the three months ending October 2020,[105] recalculated Betas for the water utility proxy group, and a MRP of 6.00 percent, which Mr. Murray contends is based on the historical MRP from Ibbotson and MRPs reported by the equity analysts covering AWK. The second CAPM analysis uses a risk-free rate based on the average yield on the 30-year Treasury bond for the three months ending October 2020,[106] recalculated Betas for the water utility proxy group, and a MRP of 6.00 percent, which Mr. Murray contends is based on the historical MRP from Ibbotson and MRPs reported by the equity analysts covering AWK. The third CAPM analysis uses the normalized risk-free rate reported by Duff and Phelps, recalculated Betas for the water utility proxy group, and a MRP of 6.00 percent as reported by Duff and Phelps. Finally, the fourth CAPM analysis uses a risk-free rate based on the average yield on the 10-year Treasury bond for the three months ending October 2020,[107] recalculated Betas for the water utility proxy group, and a MRP of 6.30 percent as reported by Goldman Sachs. The results of Mr. Murray's CAPM analyses range from 5.75 percent to 7.30 percent.[108] Mr. Murray also re-estimates his CAPM analysis using his estimate of the long-term average Beta for utilities of 0.75 as opposed to the current Value Line Betas, which results in a CAPM range of 5.4 percent to 6.9 percent.

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105 DM-D-4 note for Column 1 cites to the St. Louis Federal Reserve for the GS20 series. The three-month average of the 20-year Treasury yield as of October 2020 based on that series is 1.23 percent, which compares most closely to Mr. Murray's estimate of 1.20 percent.

106 DM-D-5 note for Column 1 cites to the St. Louis Federal Reserve for the GS20 series. The three-month average of the 20-year Treasury yield as of October 2020 based on that series is 1.45 percent, which compares most closely with Mr. Murray's estimate of 1.42 percent.

107 DM-D-7 note for Column 1 cites to the St. Louis Federal Reserve for the GS20 series. The three-month average of the 30-year Treasury yield as of October 2020 based on the GS10 series is 0.71 percent, which compares most closely to Mr. Murry's estimate of 0.69 percent.

108 *Id*., at 30.

Ultimately, Mr. Murray concludes that his CAPM analyses support a COE range of 5.50 percent to 6.00 percent.[109]

Q. Do you agree with the risk-free rate that Mr. Murray uses in his CAPM analysis?

A. While I do not specifically dispute the normalized risk-free rate of 2.50 percent that Mr. Murray relies on in one of his CAPM analyses, I do not agree with Mr. Murray's reliance on the three-month average 10-year, 20-year and 30-year Treasury Bond yields in his remaining CAPM analyses. As discussed in Section VI of my Rebuttal Testimony, volatility in the stock and bond markets has been at elevated levels since mid-February 2020 due to investor uncertainty regarding the economic effects of the COVID-19 pandemic. Investors have had to respond to both positive and negative developments regarding COVID-19 and the policy response of the Federal Reserve and the U.S. Congress. The increased volatility in the market directly affects the three-month historical average of Treasury Bond yields. Reviewing the data that Mr. Murray relied upon from the St. Louis Federal Reserve demonstrates that while bond yields declined at the start of the pandemic, reaching lows in April 2020, the yields on the 10, 20 and 30-year Treasury bonds have been generally increasing since that point.[110] Relying on a three-month average of increasing yields will understate the current yield on the bonds.

Furthermore, the cost of equity is being estimated for the forward-looking period when the Company's rates will be in effect. Therefore, it is equally important that the risk-free rate be reflective of the expected risk-free rate during MAWC's rate period. As discussed in

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109 *Id.*, at 31.

110 Based on data from the St. Louis Federal Reserve GS10, GS20 and GS 30 series.

Section VI of my Rebuttal Testimony, investors are expecting the economy to enter the early expansion phase of the business cycle, which means government bond yields should increase over the near-term. Given that recent market volatility is largely related to short-term events, it is not reasonable to assume that current market conditions will be reflective of the market conditions that will exist in the future. Considering the demonstrated increases in the bond yields since the low point in the market in April 2020, resulting from the pandemic, and the forward-looking nature of the analysis that is being performed, I believe Mr. Murray should have placed primary weight on the normalized risk-free rate of 2.50 percent, which is Duff and Phelps' estimate of the expected long-term risk-free rate.[111] Furthermore, I believe it is also important to rely on, as I have in my Direct Testimony, interest rate projections that reflect the views of economists regarding the interest rates that are expected to prevail during the period that the Company's rates will be in effect.

Q. Do you have any other concerns with the risk-free rate relied on by Mr. Murray?

A. Yes. In addition to the yield on the 30-year Treasury bond, Mr. Murray has also relied on the yields on the 10-year and 20-year Treasury bonds as the estimate of the risk-free rate. However, in determining the security most relevant to the application of the CAPM, it is important to select the term (or maturity) that best matches the life of the underlying investment. As noted by Morningstar:

> The traditional thinking regarding the time horizon of the chosen Treasury security is that it should match the time horizon of whatever is being valued… Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years,

[111] Duff and Phelps, 2019 Cost of Capital Handbook, Chapter 3, at 2-3.

> the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years.[112]

Because electric, natural gas and water utility assets represent long-duration investments, it is appropriate to use yields on long-term Treasury bonds as the risk-free rate component of the CAPM. In my view, the 30-year Treasury bond is the appropriate security for that purpose. Therefore, I do not agree with Mr. Murray's consideration of the 10-year and 20-year Treasury bonds as the estimate of the risk-free rate in his CAPM analysis.

Q. What Beta coefficients are relied on by Mr. Murray?

A. Mr. Murray calculates raw Beta coefficients for the companies in his Water proxy group using a template provided by S&P Market Intelligence, and then attempts to adjust those Betas using the Blume formula. The result of that analysis suggests a Beta for the proxy group of 0.81. Mr. Murray states, however, that he believes the appropriate Beta coefficient based on current market conditions is 0.75 to 0.80; and utility Beta coefficients have historically been in the range of 0.70 to 0.75. Therefore, Mr. Murray also estimates his CAPM analysis using a Beta coefficient of 0.75, which he contends is equivalent to the long-term historical average Beta coefficient for utilities.[113]

Q. What is your response to Mr. Murray's consideration of the long-term average Beta coefficient for the utility industry?

A. Mr. Murray has relied on Value Line as the source of his Beta coefficients in his CAPM analysis for many years. Mr. Murray offers no explanation as to why he has decided not

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[112] Morningstar Inc., Ibbotson SBBI 2013 Valuation Yearbook, at 44.
[113] Direct Testimony of David Murray, at 30.

to rely on Value Line and to instead recalculate his own estimates of Beta in this proceeding. Furthermore, as Beta coefficients have increased to reflect the higher correlation between utility stocks and the broader market since February 2020, Mr. Murray now calculates an alternative CAPM analysis using a lower proxy group average Beta, which he suggests represents the long-term average for utilities. Utilities have traditionally been a "safe-haven" for investors, but that has not been true since the onset of the market's response to the COVID-19 pandemic. The Value Line Beta coefficients have appropriately increased to reflect the higher correlation between utility stocks and the broader market, as measured by the NYSE Composite Index. It is not reasonable for Mr. Murray to apply a lower estimate of Beta now when he has consistently relied on Value Line as the source of his Beta coefficients for many years when the relative risk of utility stocks was much lower than it is in today's market.

Q. Did Mr. Murray consider a long-term average Beta coefficient for his proxy group when Value Line Beta coefficients were lower than his long-term average Beta coefficient?

A. No, he did not. In Docket No. ER-2019-0374 for Empire, the average Beta coefficient for Mr. Murray's electric proxy group was 0.50, which is well below his long-term average Beta coefficient for utilities of 0.75.[114] Significantly, however, Mr. Murray did not calculate an alternative CAPM in the proceeding for Empire based on a long-term average of Beta. He relied solely on his proxy group average of 0.50 and noted that this proxy group average Beta implied that investors require half of the risk premium for the market

[114] Docket No. ER-2019-0374, Direct Testimony of David Murray, January 15, 2020, at 39.

to invest in utilities. In the Empire proceeding, Mr. Murray relied on Beta to conclude that the risks for utilities had decreased. In this case, however, where Betas have clearly increased significantly, Mr. Murray does not acknowledge that higher Betas would suggest a higher risk premium, and a higher ROE in the current market conditions.

Q. What MRP does Mr. Murray use in his CAPM analysis?

A. Mr. Murray uses three separate MRPs in his CAPM analysis: (a) a MRP of 6.00 percent, which he contends is based on the historical MRP from Ibbotson and MRPs reported by the equity analysts covering AWK; (b) a MRP of 6.00 percent, as reported by Duff and Phelps; and (c) a MRP of 6.30 percent, as reported by Goldman Sachs.[115]

Q. What is your concern with Mr. Murray's MRP estimates?

A. Given the current low yields on Treasury bonds, and the inverse relationship between interest rates and the MRP, and the higher Betas for the proxy group, Mr. Murray's range of MRPs from 6.00 percent to 6.30 percent is understated. First, from a practical standpoint, the results of his CAPM analysis are significantly below any return that has been authorized by any U.S. regulatory jurisdiction in at least 40 years. The primary reason for the unreasonably low results from Mr. Murray's CAPM is due to his selection of the MRP. Based on historical data from Duff & Phelps, the market risk premium from 1926-2019 is 7.15 percent.[116] The historical income-only return on government bonds used to calculate the historical MRP over the same period has been approximately 4.94 percent,

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[115] Direct Testimony of David Murray, at 28.

[116] The market risk premium from 1926-2019 is calculated as the average return on large company stocks from 1926-2019 minus the average income only return on long-term government bonds from 1926-2019 (i.e., 12.09 percent – 4.94 percent = 7.15 percent). Source: Duff & Phelps, Valuation Handbook: Guide to Cost of Capital, 2020, CRSP Deciles Size Study – Supplementary Data Exhibits.

while the 30-day average risk-free rate on long-term government bonds as of November 30, 2020 is 1.61 percent. Because interest rates on long-term government bonds are well below the historical average of 4.94 percent, the inverse relationship between interest rates and the MRP implies that the MRP should be well above the long-term historical average of 7.15 percent. The MRP range used by Mr. Murray of 6.00 percent to 6.30 percent suggests that the expected MRP is currently 85 to [115] basis points lower than the historical average MRP of 7.15 percent.

Q. Do you have any other concerns with the MRPs relied on by Mr. Murray?

A. Yes. As shown in Figure 16, the implied market returns for the MRPs cited by Mr. Murray range from 6.99 percent to 8.50 percent. These returns are unreasonably low especially when compared to the recent historical returns for Large Company Stocks. As shown in Figure 17, the actual average market return for Large Company Stocks from 2009 to 2019 (i.e., the period for the Great Recession of 2008/09) was 15.27 percent, as reported by Duff & Phelps. Therefore, the range of implied market returns considered by Mr. Murray of 6.99 percent to 8.50 percent is well below and cannot be reconciled with recent returns for the market.

Figure 16: Mr. Murray's Implied Market Returns[117]

Source	Implied MRP	Risk-Free Rate	Implied Market Return
Historical / Equity Analyst MRP & 20-year Treasury Bond yield	6.00%	1.20%	7.20%
Historical / Equity Analyst MRP & 30-year Treasury Bond yield	6.00%	1.42%	7.42%

[117] Source: DM-D-4 through DM-D-7.

Source	Implied MRP	Risk-Free Rate	Implied Market Return
Duff & Phelps MRP and Normalized Risk-free Rate	6.00%	2.50%	8.50%
Goldman Sachs MRP & 10-year Treasury Bond yield	6.30%	0.69%	6.99%

Figure 17: Duff and Phelps – Total Return for Large Company Stocks – 2009-2019[118]

Year	Large Company Stock Total Return
2009	26.46%
2010	15.06%
2011	2.11%
2012	16.00%
2013	32.39%
2014	13.69%
2015	1.38%
2016	11.96%
2017	21.83%
2018	-4.38%
2019	31.49%
Average	**15.27%**

Q. What is your conclusion regarding Mr. Murray's CAPM analysis?

A. My conclusion is that Mr. Murray's CAPM results of 5.40 percent to 7.35 percent are not reasonable estimates of the cost of equity for MAWC. Similar to his Multi-Stage DCF analysis, Mr. Murray's misspecification of the CAPM has resulted in the incorrect

[118] Source: Duff and Phelps, Cost of Capital Navigator.

conclusion that the cost of equity is well below recently authorized ROEs for water utilities. In particular, Mr. Murray's CAPM analysis fails to take into consideration the inverse relationship between interest rates and the MRP. This results in: 1) an MRP that is well below the historical MRP using large company stocks (7.15 percent); and 2) an implied market return that is well below the long-term average total return for large company stocks since 1926, as reported by Duff & Phelps, of 12.09 percent and recent market returns for large company stocks since 2009 of 15.27 percent. As such, the results of Mr. Murray's CAPM analysis are not representative of the forward-looking cost of equity for MAWC in this proceeding and thus, I recommend the Commission place zero weight on Mr. Murray's CAPM analysis.

D. Rule of Thumb Methodology

Q. Please summarize Mr. Murray's "Rule of Thumb" analysis.

A. The "Rule of Thumb" methodology that Mr. Murray relies on is another risk premium methodology. This methodology relies on an estimated MRP of 3.0 percent to 4.0 percent plus the yield to maturity on AWK's publicly traded bonds. However, Mr. Murray selects the low-end of the risk premium range of 3.0 percent because he contends that investors view utilities as bond "surrogates/substitutes".[119] Mr. Murray notes that the current Yield to Maturity ("YTM") on AWK's publicly traded bonds is approximately 2.75 percent, which when combined with the 3.0 percent risk premium, results in a ROE estimate for MAWC of 5.75 percent.[120]

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[119] Direct Testimony of David Murray, at 31.

[120] *Ibid*.

Q. Do you agree with this methodology?

A. As discussed in my response to Dr. Won, this specification of the risk premium approach relies on historical estimates of the MRP and does not take into consideration the effect on the MRP of current market conditions. There are a number of studies which have shown that the MRP is inversely related to the level of interest rates. For example, in a March 1998 article titled *Interest Rate Risk and Utility Risk Premia During 1982-93* in Managerial and Decision Economics, Dr. S. Keith Berry used a regression approach to analyze the relationship between authorized returns on equity for regulated utilities and utility bond yields. The author found that there was an inverse relationship between utility risk premia and interest rates.[121] Similarly, in a Spring 1986 article in Financial Management, Dr. Robert S. Harris also showed that there was a negative relationship between utility risk premia and interest rates.[122]

Adding a risk premium based on a historical average interest rate level to the current YTM on AWK's publicly traded bonds, which is significantly below historical averages, results in a vastly understated estimate of the current cost of equity for MAWC. Finally, the use of the current YTM on AWK's publicly traded bonds does not reflect the expectation of rising interest rates. As such, this methodology is not reflective of investor return requirements over the rate period.

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[121] S. Keith Berry, *Interest Rate Risk and Utility Risk Premia during 1982-93,* Managerial and Decision Economics, Vol. 19, No. 2 (March, 1998), at 7.

[122] Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return,* Financial Management, Spring 1986, at 66.