Exhibit No.:	
Issues:	Return on Equity and Capital Structure
Witness:	Ann E. Bulkley
Exhibit Type:	Direct
Sponsoring Party:	Missouri-American Water Company
Case No.:	WR-2020-0344 SR-2020-0345
Date:	June 30,2020

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2020-0344
CASE NO. SR-2020-0345

DIRECT 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

June 30, 2020
Dated

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

ANN E. BULKLEY

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name, occupation and business address.

A. My name is Ann E. Bulkley. I am employed by Concentric Energy Advisors, Inc. ("Concentric") as a Senior Vice President. 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 submitting this testimony 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. Please describe your background and professional experience in the energy and utility industries.

A. I hold a Bachelor's degree in Economics and Finance from Simmons College and a Master's degree in Economics from Boston University, with more than 20 years of experience consulting to the energy industry. I have advised numerous energy and utility clients on a wide range of financial and economic issues with primary concentrations in valuation and utility rate matters. Many of these assignments have included the determination of the cost of capital for valuation and ratemaking purposes. My qualifications and testimony listing are presented in more detail in Schedule AEB-A.

Q. Please describe Concentric's activities in energy and utility engagements.

A. Concentric provides financial and economic advisory services to many and various energy and utility clients across North America. Our regulatory, economic, and market analysis services include utility ratemaking and regulatory advisory services; energy market assessments; market entry and exit analysis; corporate and business unit strategy development; demand forecasting; resource planning; and energy contract negotiations. Our financial advisory activities include buy- and sell-side merger, acquisition, and divestiture assignments; due diligence and valuation assignments; project and corporate finance services; and transaction support services. In addition, we provide litigation support services on a wide range of financial and economic issues on behalf of clients throughout North America.

II. PURPOSE AND OVERVIEW OF TESTIMONY

Q. What is the purpose of your Direct Testimony?

A. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding MAWC's authorized return on equity ("ROE" or "cost of equity") and the reasonableness of its proposed capital structure for ratemaking purposes.

Q. Are you sponsoring any exhibits in support of your Direct Testimony?

A. Yes. My analyses and recommendations are supported by the data presented in Schedules AEB-1 through AEB-7.

Q. Please provide a brief overview of the analysis that led to your ROE recommendation.

A. As discussed in more detail below, it is important to consider the results of several analytical approaches in determining a reasonable recommendation for the Company's ROE. To develop my ROE recommendation, I first developed a proxy group that consists of water and natural gas utility companies that face risks generally comparable to those faced by MAWC. I included both water and natural gas utilities in the proxy group because a proxy group composed only of water utilities would have resulted in too small a group of only five companies. To that water and gas company proxy group, I applied the Constant Growth form of the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the Empirical Capital Asset Pricing Model ("ECAPM"), and the Expected Earnings Analysis. As discussed in more detail in Section IV of my Direct Testimony, it is appropriate to rely on multiple ROE methodologies because market conditions affect the assumptions used in each model differently. Therefore, the use of multiple ROE estimation models is beneficial to provide benchmarks and a range results to consider. For example, there are concerns among investors and regulators that the DCF model is not producing reasonable results at this time due to current conditions in capital markets. Schedule AEB-3 demonstrates that the DCF model is producing individual company results as low as 4.39 percent, which is equivalent to MAWC's cost of long-term debt of 4.40 percent. This result is not reasonable given the priority of payment and the incremental risk faced by equity holders.

My recommendation also takes into consideration the following risk factors: (1) MAWC's capital expenditure requirements; and (2) the Company's regulatory risk as compared to the proxy group. Although I did not make any specific adjustments to my ROE estimates for the foregoing factors, I considered each of them when determining where the Company's ROE should fall within the range of analytical results. Finally, I compared MAWC's proposed capital structure to the actual capital structures of the proxy group companies to evaluate the reasonableness of the Company's proposed capital structure. I found that the Company's proposed capital structure is reasonable, appropriate and consistent with the financial risk faced by MAWC's peers.

Q. Please summarize your analytical results.

A. My analytical results are summarized in Figure 1

Figure 1: Summary of Cost of Equity Results[1]

Constant Growth DCF			
	Median Low	Median	Median High
30-Day Average	8.32%	9.69%	9.88%
90-Day Average	8.17%	9.56%	9.77%
180-Day Average	8.13%	9.52%	9.71%
Constant Growth Average	8.21%	9.59%	9.79%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	10.17%	10.26%	10.60%
Bloomberg Beta	10.58%	10.66%	10.95%
ECAPM			
Value Line Beta	10.93%	10.99%	11.25%
Bloomberg Beta	11.23%	11.29%	11.51%
Expected Earnings			
	Mean		Median
Expected Earnings Analysis	11.20%		10.63%

Q. What is your conclusion regarding the appropriate authorized ROE for MAWC in this proceeding?

A. A reasonable range of ROE estimates for MAWC is from 10.00 percent to 10.80 percent. Considering the risk factors facing MAWC, I believe that an ROE of 10.50 percent is reasonable and appropriate. The required ROE should be a forward-looking estimate; therefore, the analyses supporting my recommendation rely on

[1] The analytical results included in Figure 1 reflect the results of the Constant Growth DCF analysis excluding the results for individual companies that did not meet the minimum threshold of 7.00 percent.

forward-looking inputs and assumptions (e.g., projected analyst growth rates in the DCF model, forecasted risk-free rate and Market Risk Premium in the CAPM analysis, etc.). I also take into consideration capital market conditions, including the effect of the current low interest rate environment on utility stock valuations and dividend yields, the market's expectation for long-term interest rates, and federal tax reform.

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

A. The remainder of my Direct Testimony is organized in seven sections. Section III reviews the regulatory principles pertinent to the development of the cost of capital. Section IV discusses the current and prospective capital market conditions and the effect of those conditions on MAWC's cost of equity. Section V explains my selection of a proxy group of water and natural gas utilities. Section VI describes my analyses and the analytical basis for the recommendation of the appropriate ROE for MAWC. Section VII provides a discussion of specific business and operating risks that have a direct bearing on the Company's authorized ROE in this case. Section VIII provides an assessment of the reasonableness of MAWC's proposed capital structure relative to the capital structures of the proxy group companies. Section IX presents my conclusions and recommendations on the cost of equity and capital structure.

III. REGULATORY PRINCIPLES

Q. Please describe the principles that guide the establishment of the cost of capital for a regulated utility.

A. The United States Supreme Court's *Hope* and *Bluefield* decisions established the standards for determining the fairness or reasonableness of a utility's authorized ROE. Among the standards established by the Court in those cases are: (1) consistency with other businesses having similar or comparable risks; (2) adequacy of the return to support credit quality and access to capital; and (3) the principle that the specific means of arriving at a fair return are not important, only that the end result leads to just and reasonable rates.[2] As the Court explained, "[r]ates which enable a company to operate successfully, to maintain its financial integrity, to attract capital, and to compensate its investors for the risks assumed…cannot be condemned as invalid."[3]

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[2] *Bluefield,* 262 U.S. at 692-93*; Hope,* 320 U.S., at 603.
[3] *Ibid*.

Q. Has the Missouri Public Service Commission ("Commission") provided similar guidance in establishing the appropriate return on common equity?

A. Yes. The Commission follows the precedents of the *Hope* and *Bluefield* cases and acknowledges that utility investors are entitled to a fair and reasonable return. This position was set forth by the Commission as follows:

A. A "just and reasonable" rate is one that is fair to both the utility and its customers; it is no more than is sufficient to "keep public utility plants in proper repair for effective public service, and … to insure to the investors a reasonable return upon funds invested."[4]

Q. Why is it important for a utility to be allowed the opportunity to earn a return that is adequate to attract equity capital on reasonable terms?

A. A return that is adequate to attract capital on reasonable terms enables MAWC to continue providing safe, reliable water and wastewater service while maintaining its financial integrity. That return should be commensurate with returns expected elsewhere in the market for investments of equivalent risk. If it is not, debt and equity investors will seek alternative investment opportunities for which the expected return reflects the perceived risks, thereby inhibiting MAWC's ability to

[4] 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 7.

attract capital at reasonable cost. The financial community carefully monitors the current and expected financial condition of utility companies, and the regulatory framework in which they operate. In that respect, the regulatory framework is one of the most important factors in both debt and equity investors' assessments of risk.

Q. What are your conclusions regarding regulatory guidelines and financial considerations?

A. The ratemaking process is premised on the principle that, in order for investors and companies to commit the capital needed to provide safe and reliable utility services, a utility must have the opportunity to recover the return of, and the market-required return on, its invested capital. Because utility operations are capital-intensive, regulatory decisions should enable the utility to attract capital on reasonable terms; doing so is in the long-term interests of the utility's customers.

The Commission's order in this case, therefore, should establish rates that provide MAWC with the opportunity to earn a ROE that is: (1) adequate to attract capital on reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises with similar risk.

Q. Does the fact that MAWC is owned by AWK, a publicly-traded company, affect your analysis?

A. No, it does not. In this proceeding, consistent with stand-alone ratemaking principles, it is appropriate to establish the cost of equity for MAWC, not AWK. More importantly however, it is important to establish a return on equity and capital structure that provide MAWC the ability to attract capital on reasonable terms, on a stand-alone basis, and within the AWK system. All the utility operating subsidiaries within the AWK corporate structure compete for discretionary capital. Unless MAWC is provided a reasonable opportunity to earn a market-based ROE with an appropriate capital structure, it will be at a disadvantage in attracting discretionary capital from parent company resources.

IV. CAPITAL MARKET CONDITIONS

Q. Why is it important to analyze capital market conditions?

A. The ROE estimation models rely on market data that are either specific to the proxy group, in the case of the DCF model, or the expectations of market risk, in the case of the CAPM. The results of the ROE estimation models can be affected by prevailing market conditions at the time the analysis is performed. While the ROE that is established in a rate proceeding is intended to be forward-looking, the practitioner uses current and projected market data, specifically stock prices,

dividends, growth rates and interest rates in the ROE estimation models to estimate the required return for the subject company.

As discussed in the remainder of this section, current market conditions have affected the results of the ROE estimation models. As a result, it is important to consider the effect of these conditions on the ROE estimation models when determining the appropriate range and recommended ROE for a future period. If investors do not expect current market conditions to be sustained in the future, it is possible that the ROE estimation models will not provide an accurate estimate of investors' required return during that rate period. Therefore, it is very important to consider projected market data to estimate the return for that forward-looking period.

Q. What factors are affecting the cost of equity for regulated utilities in the current and prospective capital markets?

A. The cost of equity for regulated utility companies is being affected by several factors in the current and prospective capital markets, including: (1) the current market volatility has created a short-term aberration in the market which must be carefully considered when selecting the inputs for the ROE estimation models; 2) utility stock valuations, which are inversely related to dividend yields, are currently unsustainably high given investors' demand for defensive sectors during the short-

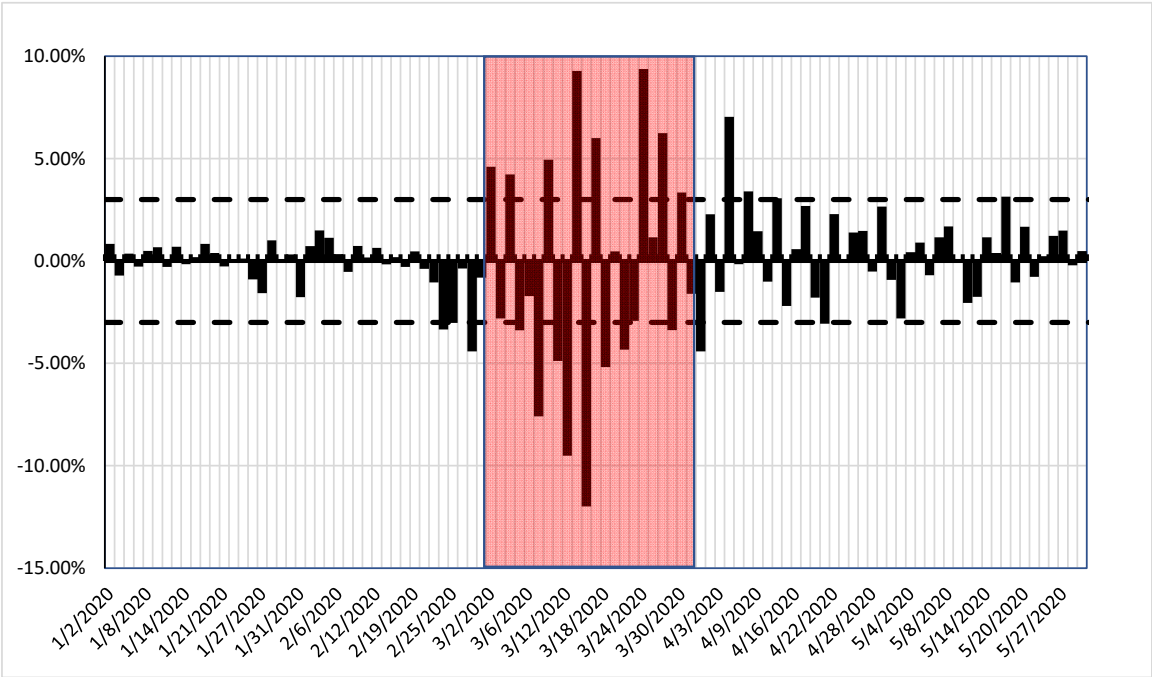
term market dislocation; and (3) recent Federal tax reform. In this section, I discuss each of these factors and how it affects the models used to estimate the cost of equity for regulated utilities.

a. Current Market Conditions

Q. Please summarize current market conditions.

A. In 2020, market conditions have been extremely volatile. In January and early February 2020, major market indices were generally increasing, many reaching new threshold levels. By mid-February, as the global health pandemic became more apparent, market conditions became increasingly more volatile. In mid-February utility stock prices reached an all-time high, followed by a significant decline in the overall market and utility stocks. Market conditions in March 2020 were more volatile than the last half of February. As shown in Figure 2 below, the S&P 500 Index swung more than 3 percent in 16 of the 22 trading days in the month of March. As discussed in more detail later in my testimony, on March 23, 2020, the Federal Reserve implemented unprecedented monetary policy measures with the goal of providing liquidity and stabilizing market conditions. The magnitude of these policies identifies the level of risk in the marketplace; however, the result has been that equity prices in April and May were less volatile than in March.

Figure 2: S&P 500 Index – Daily Price Change - January - May 2020

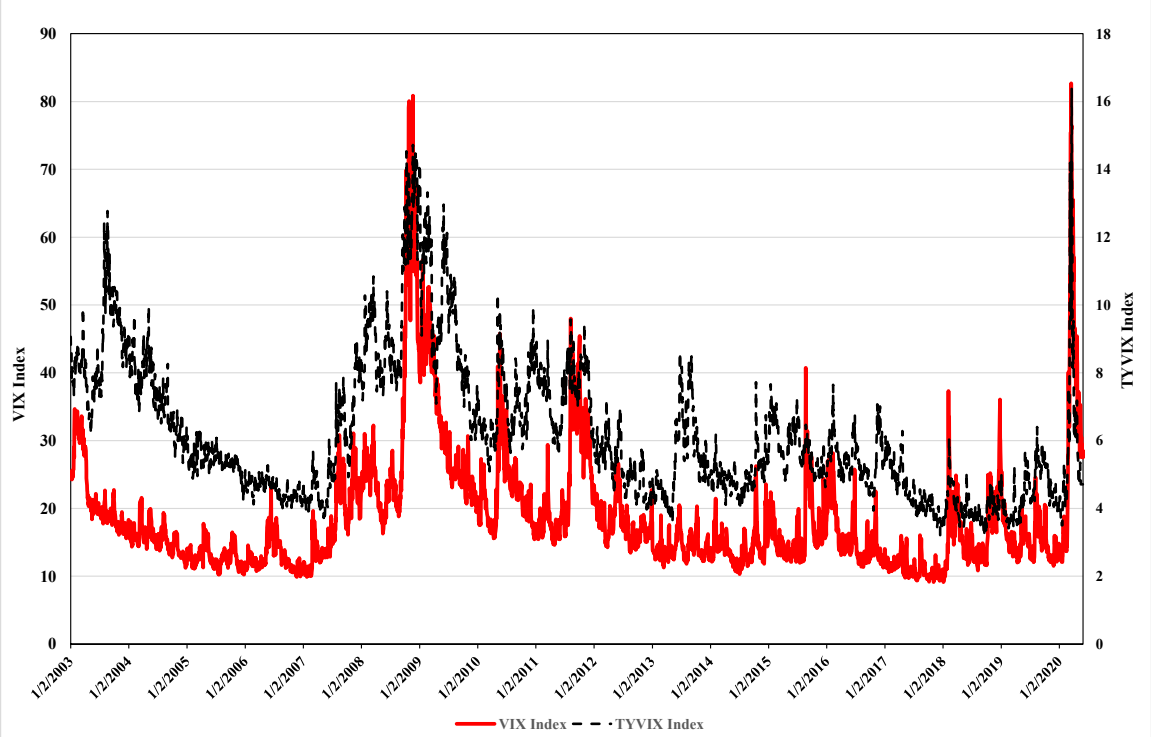


Q. Have you reviewed any other indicators that measure volatility in the financial markets?

A. Yes, I reviewed two other measures of volatility in financial markets; the CBOE Volatility Index ("VIX") and the U.S. Treasury Note Volatility Index ("TYVIX"). The VIX measures investors' expectation of volatility in the S&P 500 over the next 30 days. The TYVIX, also published by CBOE, measures investors' expectation of volatility in the 10-year Treasury Bond over the next 30 days. As shown in Figure 3, the VIX and TYVIX have recently reached levels not seen since the Great Recession of 2008/09. For example, the VIX was 82.69 on March 16, 2020. The VIX has not reached 80.00 since November of 2008; however, it is important to

note that the highest level reached during the Great Recession of 2008/09 was 80.86. Similarly, the TYVIX was 16.39 on March 19, 2020. Since at least January 2003, the TYVIX has never exceeded 15.00, including during the Great Recession of 2008/09. These data indicate that COVID-19 has caused an increase in the level of uncertainty in the market that exceeds the levels seen in the Great Recession of 2008/09.

Figure 3: CBOE VIX and TYVIX – January 2003 – May 2020

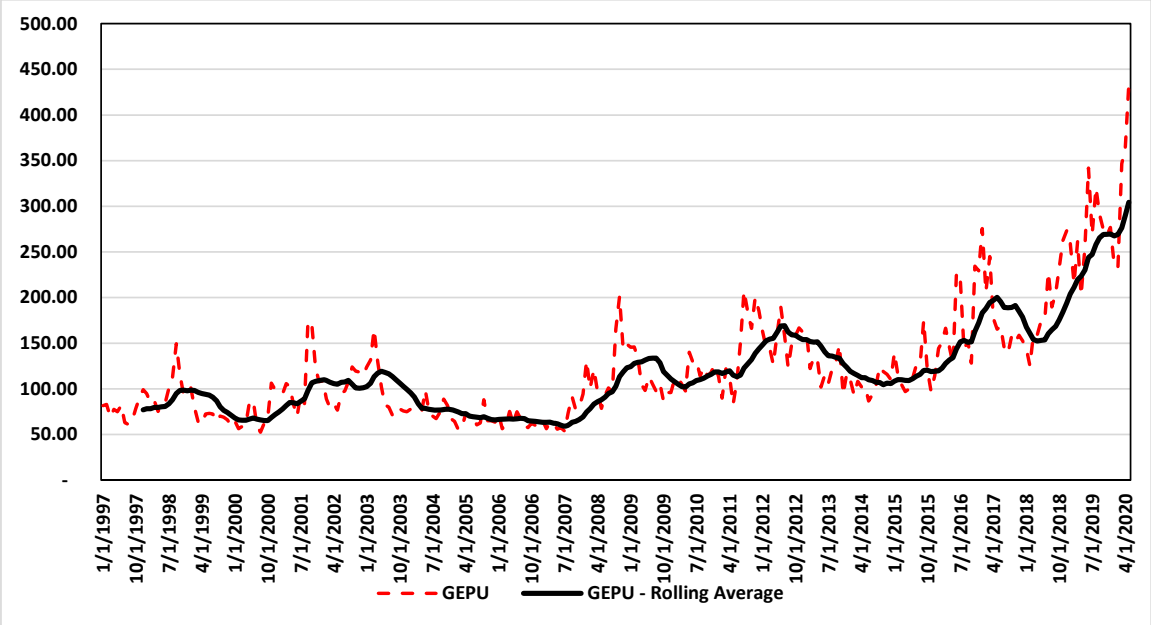


Q. Have you reviewed any indicators that measure the uncertainty in the global economy related to COVID-19?

A. Yes, I have. I reviewed the global economic policy uncertainty index developed by economists Scott Baker, Nicholas Bloom and Steven Davis. The index is a GDP-weighted average of the economic policy uncertainty index of 21 countries. The economic policy uncertainty index measures the frequency that articles in publications of a country discuss economic policy uncertainty.[5] As shown in Figure 4, uncertainty regarding global economic policy is at its highest level since at least 1997, with the largest increase occurring in the last two years as a result of the escalating trade dispute between the U.S. and China and the spread of COVID-19.

[5] Source: Economic Policy Uncertainty: https://www.policyuncertainty.com/index.html.

Figure 4: Global Economic Policy Uncertainty Index



Q. Have rating agencies commented on the effects of current market conditions on regulated utilities?

A. Yes. Standard & Poor's recently downgraded the outlook on the entire North American utilities sector indicating that 25 percent of the industry was previously on a negative outlook or CreditWatch with negative implications and that S&P expected that COVID-19 would create incremental pressure and that a recession would lead to an increasing number of downgrades and negative outlooks.[6]

[6] Standard & Poor's Ratings Direct, COVID-19: The Outlook for North American Regulated Utilities Turns Negative, April 2, 2020.

Q. What steps have the Fed and Congress taken to stabilize financial markets and support the economy?

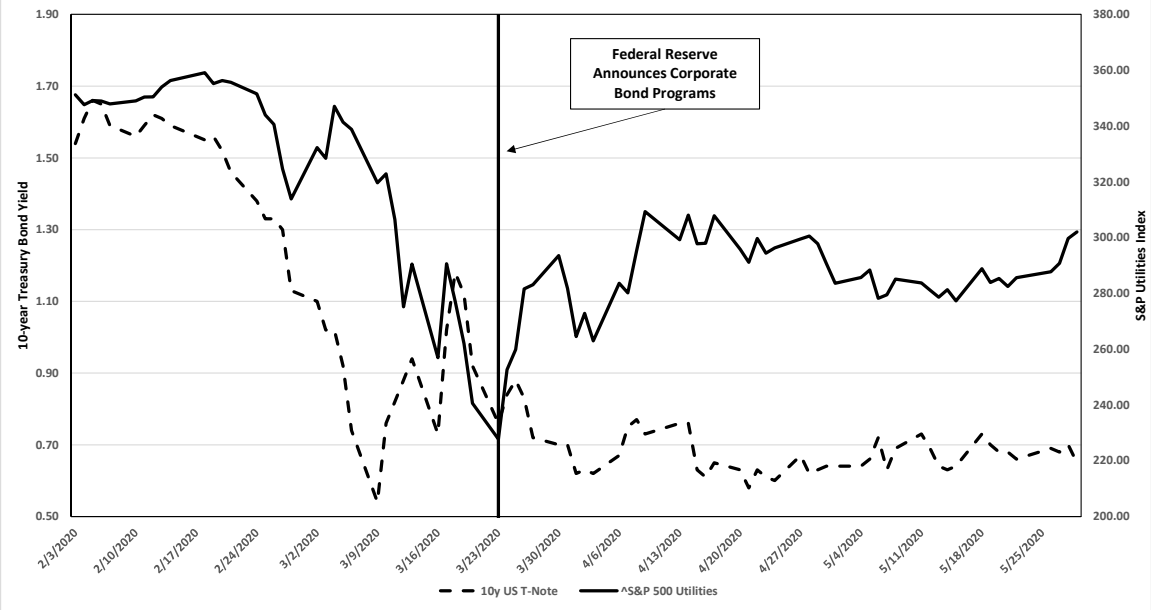
A. On March 23, 2020, the Federal Reserve began expansive programs to support credit to large employers; the Primary Market Corporate Credit Facility ("PMCCF") to provide liquidity for new issuances of corporate bonds, and the Secondary Market Corporate Credit Facility ("SMCCF") to provide liquidity for outstanding corporate debt issuances. Further, the Federal Reserve supported the flow of credit to consumers and businesses through the Term Asset-Backed Securities Loan Facility ("TALF"). Additionally, on March 27, 2020, the Coronavirus Aid, Relief, and Economic Security ("CARES") Act was signed into law which is a large fiscal stimulus package aimed at also mitigating the economic effects of the coronavirus. While these expansive programs have provided for greater price stability, as shown in Figure 3, both the VIX and the TYVIX remained well above long-term historical normal levels.

Q. How has the market responded to the unprecedented intervention by the Federal Reserve?

A. The uncertainty surrounding the spread of COVID-19 resulted in a flight-to-quality as investors purchased safer assets such as U.S. Treasuries due to increased fears of a recession. This has been increasingly evident over the past few months as investors responded to news of the number of COVID-19 cases outside of China

and the economic effects of the policies enacted to contain COVID-19. However, as discussed above, in late March, the Federal Reserve began expansive programs with the purpose of maintaining access to capital markets for corporate borrowers. These unprecedented programs resulted in lower borrowing costs for corporate firms and thus continued access to the capital needed to offset the economic effects of COVID-19. As a result, interest rates have remained low and stability has been restored in the corporate bond market. For investors, this led to allocating more funds to equities. As shown in Figure 5, while the yield on the 10-year Treasury Bond has remained relatively stable and in the range of 0.58 percent to 0.88 percent between March 23, 2019 and May 31, 2019, the S&P Utilities Index increased drastically following the Federal Reserve's announcement on March 23, 2020. Therefore, the polices of the Federal Reserve while resulting in stability in the bond markets has resulted in inflated equity prices as investors search for returns given the current low interest rate environment.

Figure 5: 10-year U.S. Treasury Bond Yield and S&P Utilities Index



Q. What are your conclusions regarding the current interest rate environment and its effect on the cost of equity for MAWC?

A. As discussed above, investors have responded to the escalation in the trade war between the U.S. and China and more recently the spread of COVID-19 by divesting higher-risk assets and purchasing lower-risk assets such as U.S. Treasury bonds or defensive sector equites such as utilities. Furthermore, the constant news regarding the spread of COVID-19 and its economic effects has resulted in an abundance of information for investors to consider. This has resulted in unprecedented volatility in financial markets as investors have rotated in and out of various assets classes responding to both positive and negative developments.

While the policies of the Federal Reserve have stabilized the corporate bond market, the result has been an increase in equity prices as investors have had to move along the risk spectrum in search of returns. Therefore, ROE estimation models which rely on recent market data must be interpreted with extreme caution. For example, the Constant Growth DCF model relies on the average share prices for the proxy companies, which have been extremely volatile in the last several months and likely currently influenced by the policies of the Federal Reserve, are not likely representative of what should be expected during the period that MAWC's rates will be in effect. This highlights two key factors that must be considered when determining the ROE for MAWC: (1) current and prospective market conditions should be considered when determining where within the range of results MAWC's ROE should be set, and (2) where possible, it is necessary to consider projected market data in each of the models which reflect economists' expectations for the market conditions that will prevail during the period that MAWC's rates will be in effect.

b. The Effect of Market Conditions on Valuations

Q. Please provide a brief summary of the recent monetary policy actions of the Federal Reserve.

A. On March 15, 2020 the Federal Reserve acknowledged that the recent spread of COVID-19 poses increased risks to economic activity in the U.S. and therefore

lowered the federal funds rate by 100 basis points, to a range of 0.00 percent to 0.25 percent.[7] This was the second unscheduled Federal Reserve meeting in March, with the first occurring on March 3rd when the Federal Reserve reduced the federal funds rate by 50 basis points. In addition to the reduction in the federal funds rate, the Federal Reserve also announced plans to increase its holdings of both Treasury and mortgage-backed securities.[8] As discussed previously, on March 23, 2020 the Federal Reserve also implemented an expansive credit program designed to provide liquidity to corporations, large employers, consumers, businesses and municipalities. This program initially targeted investment grade corporations, but in April 2020 was expanded to include corporations that were investment grade rated as of March 22, 2020. The PMCF and SCCF programs were initially funded at $75 billion, but the combined size of these programs, including the addition of below investment grade corporate debt is proposed to be up to $750 billion.[9]

It is important to view the recent Fed policy decisions in the context of the reactions to global exogenous events, especially COVID-19. The recent spread of COVID-19 has affected the global economy and caused a rise in volatility in the financial

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7 FOMC, Federal Reserve Press Release, March 15, 2020, at 1.
8 *Id*., at 2.
9 FOMC Term Sheet, Primary and Secondary Corporate Credit Facilities, April 9, 2020.

markets; thus, the Federal Reserve reacted by reducing the federal funds rate to minimize the effect of COVID-19 on the U.S. economy.

Q. How has the Federal Reserve's monetary policy affected capital markets in recent years?

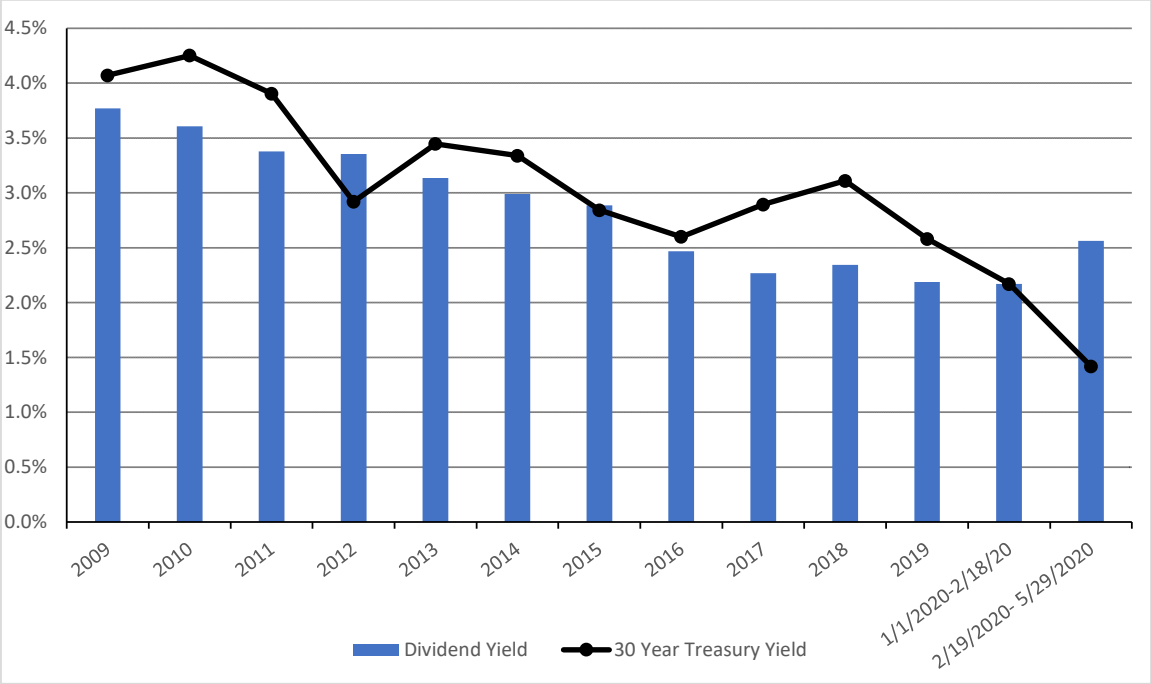
A. Extraordinary and persistent federal intervention in capital markets artificially lowered government bond yields after the Great Recession of 2008-09, as the Federal Reserve Open Market Committee ("FOMC") used monetary policy (both reductions in short-term interest rates and purchases of Treasury bonds and mortgage-backed securities) to stimulate the U.S. economy. As a result of very low or zero returns on short-term government bonds, yield-seeking investors have been forced into longer-term instruments, bidding up prices and reducing yields on those investments. As investors have moved along the risk spectrum in search of yields that meet their return requirements, there has been increased demand for dividend-paying equities, such as water utility stocks.

Q. How have recent market conditions affected the valuation and dividend yields of utility shares?

The Federal Reserve's accommodative monetary policy has caused investors to seek alternatives to the historically low interest rates available on Treasury bonds. A result of this search for higher yield is that the share prices for many common stocks, especially dividend-paying stocks such as utilities, have been driven higher,

while the dividend yields (which are computed by dividing the dividend payment by the stock price) have decreased to levels well below the historical average. As shown in **Error! Reference source not found.**, over the period from 2009 through February 18, 2020 (i.e., the peak of the market prior to the recent decline resulting from the effects of COVID-19), Treasury bond yields and utility dividend yields had declined. While investors have responded to the economic effects of COVID-19 resulting in heightened volatility and a recent decline in the market, it is important to highlight the relative performance of natural gas and water utilities during this time period. As shown in Figure 6, while the stock prices of natural gas and water utilities have declined, which has resulted in an increase in dividend yields, the average dividend yield for natural gas and water utilities over the period of February 19, 2020 through May 29, 2020 was 2.56 percent, which is still low when compared to historical dividend yields.

Figure 6: Dividend Yields for Water and Natural Gas Utility Stocks[10]



Q. Have equity analysts commented on the valuations of utility stocks?

A. Yes. Several equity analysts have recognized that utility stock valuations are very high relative to historical levels. In the water utilities industry report, Value Line noted the high valuations:

> As we mentioned earlier, these equities were historically purchased by conservative investors looking for income. Over the past several years, the profile of the stocks has changed. Indeed, no longer are the yields on these shares high. In fact, the average water equity has a much lower dividend yield than the typical stock in the Value Line universe. Moreover, utility stocks typically underperformed during bull markets and outperformed in bear markets. Over the past five years, however, many in this group posted higher total returns than

[10] Source: Bloomberg Professional. Figure 6 includes 2020 data through May 31, 2020.

> the S&P 500 Index. We attribute this to two factors: the scarcity of stocks in this sector, and the low interest rate environment. For example, only two of these equities have a market capitalization of over $5 billion. Professional money managers looking to diversify there holdings in the utility segment (electric, gas, and water) have very few options here. Therefore, a premium has to be paid to own these stocks. Furthermore, since these equities are often seen as alternative to bonds by income-investors, near-zero interest rates make them look more attractive to fixed-income accounts.[11]

This is further supported by a recent Edward Jones report on the utility sector overall which notes that utility stock prices have been pushed higher as a result of the low interest rate environment Only recently, following the beginning of the pandemic, have utility stock prices declined and traded more like historical averages.

> Utility valuations have become more attractive as shares have fallen from recent highs. On a price-to-earnings basis, shares are now trading closer to their historical averages, after trading near all-time highs. Until early this year, we have seen utility valuations moving with interest rate movements, although there have been exceptions to this. Overall, however, we believe the low-interest-rate environment has been the biggest factor in pushing utilities higher since many investors buy them for their dividend yield.[12]

Furthermore, Charles Schwab recently noted that:

> Amid the sharp drop in stocks in February and March, however, the historically low-equity-beta Utilities sector simply didn't play its traditional relative safe-haven role. The drop in interest rates could be expected to provide relative support to these sectors, which rely on high levels of debt and pay relatively high dividends. However, there were unique circumstances that overwhelmed their historical

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11 Value Line Investment Survey, Water Utility Industry, January 10, 2020, at 1786.

12 Andy Smith. Edward Jones, Utilities Sector Outlook (March 24, 2020), at 2.

> relationships. Due to the strong reach for yield that had been prevalent prior to the crisis, the high-dividend-paying Utilities sector had been bid up to record high valuations. Even the recent market volatility hasn't fully reversed that situation, so we're not confident the sector will return to its defensive roots if the markets sell off again. This is one consideration in maintaining a marketperform rating, despite heightened risk of a market pullback.[13]

As noted by equity analysts, utility stocks have experienced high valuations and low dividend yields, driven by investors moving into dividend paying stocks. This has occurred as a result of a) the low interest rates in the bond market and b) as discussed above, the increased economic uncertainty in the market which has resulted in equity investors rotating into defensive sectors such as utilities from cyclical sectors which are more likely to be affected by economic downturns. Conversely, if economic conditions improve and interest rates increase, bonds become a substitute for utility stocks and equity investors are more likely to rotate back to cyclical sectors, which results in an increase in dividend yields. As noted previously, this change in market conditions that is expected over the long-term implies that the ROE calculated using historical market data in the DCF model may understate the forward-looking cost of equity.

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[13] Charles Schwab, Utilities Sector Rating: Marketperform, May 21, 2020.

Q. What is the effect of the high valuations of utility stocks on the DCF model?

A. High valuations have the effect of depressing the dividend yields, which results in overall lower estimates of the cost of equity using the DCF model.

Q. How do the valuations of public utilities compare to the historical average?

A. Figure 7 summarizes the average historical and projected P/E ratios for the proxy companies calculated using data from Bloomberg Professional and Value Line.[14] As shown in Figure 7, the average P/E ratio for the proxy companies increased from 2018 through early 2020 as a result of uncertainty in market surrounding the trade dispute between the U.S. and China. The uncertainty resulted in investors shifting to defensive sectors such as utilities and consumer staples. Since that time, investors have become increasingly concerned with the economic effect of COVID-19 in 2020, increasing the P/E ratios for the proxy companies well above the average for 2018. As of May 29, 2020, the prices of utility stocks and thus the P/E ratios are still at unsustainable levels. For example, the average P/E ratio for the proxy group from February 19, 2020 through May 29, 2020 (i.e., the period since the decline in the market as a result of COVID-19) was 30.78 which is well above the average for the period of 2000-2020 of 21.71. It is not reasonable to expect the proxy companies to maintain P/E ratios that are well above long-term averages over the long-term.

[14] Selection of the Proxy Companies is discussed in detail in Section V of my Direct Testimony.

As shown in Figure 7, Value Line projects that P/E ratios will decline over the period of 2020 through 2023. All else equal, if P/E ratios for the proxy companies decline, as Value Line projects, the ROE results from the DCF model would be higher. Therefore, the DCF model using historical market data is likely understating the forward-looking cost of equity for the proxy group companies.

Figure 7: Average Historical Proxy Group P/E Ratios[15]

[15] Bloomberg Professional, Data through May 31, 2020 and Value Line Investment Survey, April 10, 2020 and May 29, 2020.

Q. Have you reviewed any other market indicators that compare the current valuation of utilities to the historical average?

A. Yes. To further assess how the currently low interest rate environment has affected the valuations of the companies in my proxy group, I reviewed the price/earnings to growth ("PEG") ratio for the S&P Utilities Index. The PEG ratio is commonly used by investors to determine if a company is considered over- or under-valued. The ratio compares the P/E ratio of a company to the expected growth rate of future earnings. This allows investors to compare companies with similar P/E ratios but different earnings growth projections. If two companies have a P/E ratio of 20, but Company A is growing at a rate of 6 percent and Company B is growing at a rate of 15 percent, then on a relative valuation basis Company B is the better investment.

As shown in a report published by Yardeni Research, Inc., the PEG ratio for the S&P Utilities Index is significantly higher than it has historically been because of the accommodative monetary policy pursued by the Federal Reserve following the Great Recession of 2008/09.[16] While the PEG ratio has slightly declined recently as investors have rotated out of defensive sectors and into Treasury Bonds due to the short-term economic effect of COVID-19, the PEG ratio for the S&P Utilities Index is still above the historical average. In general, stocks with lower long-term

[16] Yardeni Research, Inc. "S&P 500 Industry Briefing: Utilities." April 9, 2020, p. 5.

PEG ratios are considered better values. As the PEG ratio increases above the long-term historical average, as has been the case with the S&P Utilities Index, the stocks are considered relatively over-valued unless the growth rate increases to support the higher valuation. As of April 2, 2020, the PEG ratio for the S&P Utilities Index was close to 3.6, which indicates that many of the stocks in the index are currently trading at levels well above the historical average. This analysis supports the P/E Ratio projections produced by Value Line, which as noted above, are projecting the P/E ratios of utilities to decline over the near-term.

Q. What conclusions do you draw from your analysis of capital market conditions?

A. The important conclusions resulting from capital market conditions are:

- The assumptions used in the ROE estimation models have been affected by recent, historically atypical market conditions. Therefore, it is important to allow the results of multiple ROE estimation models to inform the decision on the appropriate ROE for MAWC in this proceeding.
- Recent market conditions reflect short-term exogenous shocks that are not expected to persist over the long-term. As a result, the recent atypical market conditions are not likely to reflect the market conditions that will be present when the rates for MAWC will be in effect.

- As a result of the recent market volatility, it is critical to consider the results of a variety of ROE estimation models, and to consider the results of the models using forward-looking assumptions to estimate the cost of equity that will be in effect over the proposed rate period.

c. Effect of Tax Reform on the ROE and Capital Structure

Q. Are there other factors that should be considered in determining the cost of equity for MAWC?

A. Yes. The effect of the Tax Cuts and Jobs Act of 2017 ("TCJA") should also be considered in the determination of the cost of equity. The credit rating agencies have commented on the effect of the TCJA on regulated utilities. In summary, the TCJA is expected to reduce utility revenues due to the lower federal income taxes, the end of bonus depreciation, and the requirement to return excess Accumulated Deferred Income Taxes ("ADIT"). This change in revenue is expected to reduce Funds From Operations ("FFO") metrics across the sector, and absent regulatory mitigation strategies, is expected to lead to weaker credit metrics and negative ratings actions for some utilities.[17]

[17] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector," January 24, 2018.

Q. Have credit or equity analysts commented on the effect of the TCJA on utilities?

A. Yes. Each of the credit rating agencies has indicated that the TCJA is having an overall negative credit impact on regulated operating companies of utilities and their holding companies due to the reduction in cash flow that results from the change in the federal tax rate and the loss of bonus depreciation.[18,19]

Q. Has Moody's responded to the increased risk for utilities resulting from the TCJA?

A. Yes. Moody's downgraded the outlook for the entire regulated utility industry from Stable to Negative for the first time ever, citing ongoing concerns about the negative effect of the TCJA on cash flows of regulated utilities. Since mid-2018, Moody's has downgraded the credit ratings of several utilities based in part on the effects of tax reform on financial metrics. As shown in Figure 8, the downgrades have continued in recent months.

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[18] Standard & Poor's Ratings, "Industry Top Trends 2019, North America Regulated Utilities", November 8, 2018.

[19] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

Figure 8: Credit Rating Downgrades Resulting from TCJA

Utility	Rating Agency	Credit Rating before TCJA	Credit Rating after TCJA	Downgrade Date
New Jersey Natural Gas Company	Moody's	Aa3	A1	3/18/2020
Consolidated Edison Company of New York	Moody's	A3	Baa1	3/17/2020
Consolidated Edison, Inc.	Moody's	Baa1	Baa2	3/17/2020
Washington Gas Light Company	Moody's	A2	A3	1/30/2020
Public Service Co. of North Carolina, Inc.	Moody's	A3	Baa1	1/30/2020
Wisconsin Power and Light Company	Moody's	A2	A3	12/11/2019
Wisconsin Gas LLC	Moody's	A2	A3	11/20/2019
Vectren Utility Holdings	Moody's	A2	A3	10/25/2019
Southern Indiana Gas & Electric Company	Moody's	A2	A3	10/25/2019
Indiana Gas Company	Moody's	A2	A3	10/25/2019
El Paso Electric Company	Moody's	Baa1	Baa2	9/17/2019
Questar Gas Company	Moody's	A2	A3	8/15/2019
DTE Gas Company	Moody's	A2	A3	7/22/2019
South Jersey Gas Company	Moody's	A2	A3	7/17/2019
Central Hudson Gas & Electric	Moody's	A2	A3	7/12/2019
Oklahoma Gas & Electric Company	Moody's	A2	A3	5/31/2019
American Water Works	Moody's	A3	Baa1	4/1/2019
Niagara Mohawk Power Corporation	Moody's	A2	A3	3/29/2019
KeySpan Gas East Corporation (KEDLI)	Moody's	A2	A3	3/29/2019
Xcel Energy	Moody's	A3	Baa1	3/28/2019
ALLETE, Inc.	Moody's	A3	Baa1	3/26/2019
Brooklyn Union Gas Company (KEDNY)	Moody's	A2	A3	2/22/2019
Avista Corp.	Moody's	Baa1	Baa2	12/30/2018
Consolidated Edison Company of New York	Moody's	A2	A3	10/30/2018
Consolidated Edison, Inc.	Moody's	A3	Baa1	10/30/2018
Orange and Rockland Utilities	Moody's	A3	Baa1	10/30/2018

Utility	Rating Agency	Credit Rating before TCJA	Credit Rating after TCJA	Downgrade Date
New Jersey Natural Gas Company	Moody's	Aa3	A1	3/18/2020
Southwestern Public Service Company	Moody's	Baa1	Baa2	10/19/2018
Dominion Energy Gas Holdings	Moody's	A2	A3	9/20/2018
Piedmont Natural Gas Company, Inc.	Moody's	A2	A3	8/1/2018
WEC Energy Group, Inc.	Moody's	A3	Baa1	7/12/2018
Wisconsin Energy Capital	Moody's	A3	Baa1	7/12/2018
Integrys Holdings Inc.	Moody's	A3	Baa1	7/12/2018
OGE Energy Corp.	Moody's	A3	Baa1	7/5/2018
Oklahoma Gas & Electric Company	Moody's	A1	A2	7/5/2018

Q. Has the Company experienced a downgrade related to cash flow metrics resulting from tax reform?

No, MAWC does not have its own credit rating. Moody's downgraded the outlook for the entire regulated utility industry from Stable to Negative for the first time ever, citing ongoing concerns about the negative effect of the TCJA on cash flows of regulated utilities. Since mid-2018, Moody's has downgraded the credit ratings of several utilities based in part on the effects of tax reform on financial metrics. As shown in Figure 8, the downgrades have continued in recent months.

Figure 8, AWK, the parent company of MAWC, was downgraded by Moody's in April 2019 to Baa1 from A3 due, in part, to the effect of the TCJA on the cash flows of AWK. Specifically, Moody's noted:

> The financial profile of the company has steadily declined since 2014 with free cash flow deficits and debt issuance having outpaced cash flow growth, as the company took on nearly $6.5 billion of capital spending. For example, free cash flow deficits have grown at a compound annual growth rate (CAGR) of around 62%, debt has grown at over 9% CAGR and FFO at roughly a 6% CAGR. For most of this time, the company was benefitting from bonus depreciation, which resulted in no cash tax payments. However, 2017 federal tax reform undid these benefits, which has also contributed in key ratios declining, such as funds from operations (FFO) to net debt dropping from 18% in 2014 to 16% in 2018 and retained cash flow (RCF) to net debt falling from 15% in 2014 to just above 12% in 2018.[20]

Although Moody's did indicate in a recent credit opinion that the ratings outlook for AWK is stable, Moody's identified factors that would result in a downgrade. One such factor was potentially "less supportive regulatory provisions (especially in Pennsylvania and New Jersey)".[21] As noted in this report, Moody's recognizes the use of future test years, infrastructure replacement programs and decoupling as credit supporting constructive regulatory measures that exist in many of the jurisdictions that AWK operates in. Of these constructive regulatory measures, only some form of infrastructure replacement was noted in Missouri.

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[20] Moody's Investors Service, American Water Works Company, Inc. Rating Action: Moody's downgrades American Water and American Water Capital Corp. to Baa1 from A3; outlooks stable, April 1, 2019.

[21] Moody's Investors Service, American Water Works Company, Inc. Credit Opinion: Update following downgrade, April 3, 2019.

Furthermore, in June 2018, S&P noted that the AWK's consolidated financial metrics will weaken over the next few years due to tax reform, the loss of bonus depreciation and capital spending.[22]

Q. Is it reasonable to expect that investors have included the negative effects of the TCJA on the cash flows of utilities in their valuation models?

A. Not entirely. It is reasonable to expect that investors have reviewed the reports published by the credit rating agencies such as Moody's, S&P and Fitch and are therefore considering the effects of the TCJA. The implementation of the solutions to manage cash flow implications from the TCJA, however, are usually limited to rate proceedings. Utilities continue to work with regulators in the context of regulatory proceedings to determine appropriate solutions to mitigate the effect of the TCJA on cash flows. Furthermore, as shown in Moody's downgraded the outlook for the entire regulated utility industry from Stable to Negative for the first time ever, citing ongoing concerns about the negative effect of the TCJA on cash flows of regulated utilities. Since mid-2018, Moody's has downgraded the credit ratings of several utilities based in part on the effects of tax reform on financial metrics. As shown in Figure 8, the downgrades have continued in recent months.

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[22] Standard and Poor's RatingsDirect, "American Water Works Co. Inc. and Subsidiaries 'A' Ratings affirmed; Outlooks Remain Stable," June 11, 2018.

Figure 8, Moody's is continuing to evaluate the effect of the TCJA on the cash flows of individual utilities. As part of the credit evaluation, rating agencies are specifically considering the recent rate case decisions of utilities to determine if the results of these cases help to mitigate the effect of the TCJA on cash flows. Consequently, the credit rating agencies appear to be continuing to monitor the effects of the TCJA on utilities.

Q. Have other utility commissions recognized that the TCJA has had an adverse impact on utility cash flows?

A. Yes. The Oregon Public Utilities Commission ("Oregon PUC")[23], the Wyoming Public Service Commission ("Wyoming PSC")[24] and the Utah Public Service Commission ("Utah PSC")[25] have acknowledged the negative effect of the TCJA on the cash flow of utilities.

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[23] See In the Matter of Avista Corporation, dba Avista Utilities, Application for Authorization to Issue 3,500,000 Shares of Common Stock, Docket UF 4308, Order No. 19-067 (Feb. 23, 2019); In the Matter of Avista Corporation, dba Avista Utilities, Application for Authorization to Issue and Sell $600,000,000 of Debt Securities, UF 4313, Order No. 19-249 (July 30, 2019); In the Matter of Portland General Electric Company, Request for Authority to Extend the Maturity of an Existing $500 Million Revolving Credit Agreement, Docket UF 4272(3), Order No. 19-025 (Jan. 23, 2019).

[24] In the Matter of Questar Gas Company dba Dominion Energy Wyoming's Application for Approval of Amended Stipulation Previously Approved in Docket No. 30010-150-GA-16, Docket No. 30010-180-GA-18 (Record No. 15138) (Aug. 20, 2019).

[25] Report and Order, Docket No. 19-057-02, Dominion Energy Utah, February 25, 2020, at 6.

Q. Have state regulatory commissions considered market events and the utility's ability to attract capital in determining the equity return?

A. Yes. In a 2018 rate case for Consumers Energy Company in Michigan, Case No. U-18322, the Michigan Public Service Commission ("Michigan PSC") Staff recommended a 9.80 percent ROE based on the results of the DCF, CAPM and Risk Premium approaches, which was supported by the Administrative Law Judge ("ALJ").[26] In its Order issued on March 29, 2018, however, the Michigan PSC partly disagreed with the ALJ and Staff regarding expected market conditions and authorized a 10.00 percent ROE for Consumers Energy Company. The Michigan PSC noted that:

> [i]n setting the ROE at 10.00%, the Commission believes there is an opportunity for the company to earn a fair return during this period of atypical market conditions. This decision also reinforces the Commission's belief that customers do not benefit from a lower ROE if it means the utility has difficulty accessing capital at attractive terms and in a timely manner. The fact that other utilities have been able to access capital despite lower ROEs, as argued by many intervenors, is also a relevant consideration. It is also important to consider how extreme market reactions to singular events, as have occurred in the recent past, may impact how easily capital will be able to be accessed during the future test period should an unforeseen market shock occur. The Commission will continue to monitor a variety of market factors in future rate cases

[26] Michigan Public Service Commission Order, Cause No. U-18322, Consumers Energy Company, March 29, 2018, at 37.

> to gauge whether volatility and uncertainty continue to be prevalent issues that merit more consideration in setting the ROE.[27]

The Michigan PSC references "singular events" and the overall effect the events could have on the ability of a utility to access capital. Consistent with the Michigan PSC's views, it is important to consider a) that the TCJA has had a negative effect on the cash flows of utilities, and b) the effects of the increased volatility associated with the uncertainty surrounding the economic effects of COVID-19.

Q. What are your conclusions regarding the effect of the TCJA on utilities?

A. Credit rating agencies have expressed concern about the cash flow metrics of utilities, related to the negative effects of both current market conditions and the TCJA, which increases investor risk expectations for utilities. Therefore, it is increasingly important to consider a rate of return and capital structure that support the Company's cash flow metrics to enable MAWC the ability to attract capital at reasonable terms during the period that rates will be in effect.

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[27] *Id.,* at 43.

V. PROXY GROUP SELECTION

Q. Why have you used a group of proxy companies to estimate the cost of equity for MAWC?

A. In this proceeding, I am estimating the cost of equity for MAWC, which is a rate-regulated subsidiary of AWK. Because the ROE is a market-based concept, and because MAWC's stock is not publicly traded, it is necessary to establish a group of companies that are both publicly traded and are comparable to the Company in certain fundamental business and financial respects to serve as its "proxy" for purposes of the ROE estimation process. The proxy companies used in my analyses all possess a set of operating and financial risk characteristics that are substantially comparable to MAWC, and, therefore, provide a reasonable basis for deriving the appropriate ROE.

Q. Please provide a brief profile of MAWC.

A. MAWC is a wholly-owned subsidiary of AWK that provides water distribution service to approximately 470,000 customers and wastewater service to approximately 15,000 customers in Missouri.[28] In 2019, the Company had total operating revenues of $325 million, which represented 10.50 percent of AWK's total regulated operating revenues.[29] The Company generally accesses debt markets

[28] Direct Testimony of Deborah D. Dewey.
[29] *Ibid.*

through an affiliate, the American Water Capital Corp. ("AWCC"). The current credit ratings on senior unsecured debt for AWK and AWCC are as follows: (1) S&P - A (Outlook: Stable); and (2) Moody's – Baa1 (Outlook: Stable).[30]

Q. How did you select the companies in your proxy group?

A. I began with the groups of U.S. utilities that Value Line classifies as "Water Utilities" and "Natural Gas Distribution Companies". That combined group includes 17 domestic U.S. utilities. I simultaneously applied the following screening criteria to select companies that:

- pay consistent quarterly cash dividends, with no dividend reductions in the past three years, because companies that do not pay dividends cannot be analyzed using the Constant Growth DCF model;
- have investment grade long-term issuer ratings from S&P and/or Moody's;
- are covered by at least two utility industry analysts;
- have positive long-term earnings growth forecasts from at least two utility industry equity analysts;
- derive more than 70.00 percent of their total operating income from regulated operations; and

[30] SNL Financial, April 10, 2020.

- were not parties to a merger or transformative transaction during the analytical periods relied on.

Q. Did you include AWK in your proxy group?

A. No, I did not. My general practice is to exclude the subject company, or its parent holding company, from the proxy group in order to avoid the circular logic that may otherwise occur.

Q. What is the composition of your proxy group?

A. The screening criteria discussed above resulted in a proxy group consisting of the companies shown in Figure 9.

Figure 9: Proxy Group

Company	Ticker
American States Water Company	AWR
Atmos Energy Corporation	ATO
California Water Service Group	CWT
Essential Utilities, Inc.	WTRG
Middlesex Water Company	MSEX
New Jersey Resources Corporation	NJR
Northwest Natural Gas Company	NWN
ONE Gas Inc.	OGS
SJW Group	SJW
South Jersey Industries, Inc.	SJI
Southwest Gas Corporation	SWX
Spire, Inc.	SR
York Water Company	YORW

Q. Why did you include natural gas distribution companies in the proxy group?

A. Value Line currently classifies only seven companies as water utilities. Therefore, the group of water utilities is already small before screening criteria are applied. Additionally, there is a trend towards consolidation in the utility industry, which further reduces the number of available proxy companies.[31] Because there are such

[31] Chediak, Mark, et al. "Utility M&A Is So Hot Not Even Berkshire's Billions Won a Bid." Bloomberg.com, Bloomberg, 3 Jan. 2018, www.bloomberg.com/news/articles/2018-01-03/utility-m-a-is-so-hot-not-even-berkshire-s-billions-won-a-bid.

a small number of companies available for inclusion in the proxy group, I also included natural gas distribution companies.

Q. Are natural gas distribution companies reasonably comparable to water utilities to be included in a proxy group used to estimate the cost of equity for a water utility?

A. Yes, I believe that it is reasonable to rely on a combined proxy group. As noted above, due to consolidation in the water utility industry, there is only a small group of water companies that can be included in the proxy group. In addition, the screening criteria relied on for my proxy group require that a company derive more than 70 percent of its operating income from regulated operations. Therefore, the natural gas distribution companies included in my proxy group generate a large portion of their operating income from regulated operations similar to MAWC and the water utilities that will be included in the proxy group. As a result, I believe that it is appropriate to include natural gas distribution companies in my proxy group.

Q. Have other regulators considered the inclusion of natural gas distribution companies in the proxy group used to estimate the cost of equity for a water utility?

A. Yes. The Massachusetts Department of Public Utilities ("MDPU"), the Florida Public Service Commission ("FPSC"), and the Kentucky Public Service Commission ("KYPSC") have considered the results of a proxy group that includes natural gas companies when determining the authorized ROE for water and wastewater utilities. In Docket No. 17-90, the MDPU determined that the use of a natural gas utility proxy group was appropriate for the purpose of demonstrating the comparability of the investment risk of the proxy group to Aquarion Water Company.[32]

In Docket No. 20180006-WS, the Florida Public Service Commission ("FPSC") modified the methodology used to estimate the ROE for water and wastewater utilities in Florida to include a combined proxy group of natural gas and water utilities.[33] The FPSC has previously relied on a natural gas only proxy group to

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[32] Massachusetts Department of Public Utilities, Docket No. 17-90, Petition of Aquarion Water Company of Massachusetts, Inc., pursuant to G.L. c. 164, § 94, and G.L. c. 165, § 2, for Approval of a General Rate Increase as set forth in M.D.P.U. No. 3., October 31, 2018, p. 286-287.

[33] Docket No. 20180006-WS, In re. Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f),F.S., Order No. PSC-2018-0327-PAA-WS, at 7.

estimate the ROE for water and wastewater utilities[34]; however, to increase the size of the proxy group, the FPSC decided to rely on a combined proxy group. Specifically, the FPSC noted:

> The leverage formula methodology shall be modified to include a combined proxy group of natural gas and WAW utilities as proxy companies in calculating the leverage formula. We find that the selected natural gas utilities and WAW utilities derive at least 50 percent of their revenue from regulated rates. These utilities have market power and are influenced significantly by economic regulation. In Attachment 1, the returns calculated using the proxy group are adjusted to reflect the risks faced by Florida WAW utilities. The updated index consists of five natural gas companies and seven WAW companies that derive at least 50 percent of their total revenue from regulated operations. These companies have a median Standard and Poor's bond rating of "A"[35]

In Case No. 2018-00358 for Kentucky-American Water Company ("Kentucky American"), the KYPSC noted that the authorized ROE for Kentucky-American was within the range of DCF and CAPM results produced by Kentucky-American and the Attorney General.[36] To develop the DCF and CAPM models, Kentucky American and the Attorney General relied on two proxy groups: (1) a water only proxy group; and (2) a combined proxy group which included natural gas utilities.[37]

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[34] Docket No. 170006-WS, In re. Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f),F.S., Order No. PSC-17-0249-PAA-WS, at 2.

[35] Docket No. 20180006-WS, In re. Water and wastewater industry annual reestablishment of authorized range of return on common equity for water and wastewater utilities pursuant to Section 367.081(4)(f),F.S., Order No. PSC-2018-0327-PAA-WS, at 8.

[36] Case No. 2018-00358, In the matter of: Electronic Application of Kentucky-American Water Company for an Adjustment of Rates, Order, June 27, 2019, at 66.

[37] *Id*., at 55-56.

Therefore, the KYPSC has also considered, when determining the authorized ROE for a water company, ROE results based on a proxy group that includes both natural gas and water utilities.

VI. COST OF EQUITY ESTIMATION

Q. Please briefly discuss the ROE in the context of the regulated ("ROR").

A. The overall ROR for a regulated utility is based on its weighted average cost of capital, in which the costs of the individual sources of capital are weighted by their respective book values. While the costs of debt and preferred stock can be directly observed, the cost of equity is market-based and, therefore, must be estimated based on observable market data.

Q. How is the required ROE determined?

A. The required ROE is estimated by using multiple analytical techniques that rely on market-based data to quantify investor expectations regarding required equity returns, adjusted for certain incremental costs and risks. Quantitative models produce a range of reasonable results from which the market-required ROE is selected. That selection must be based on a comprehensive review of relevant data and information and does not necessarily lend itself to a strict mathematical solution. The key consideration in determining the cost of equity is to ensure that the methodologies employed reasonably reflect investors' views of the financial

markets in general and of the subject company (in the context of the proxy group) in particular.

Q. What methods did you use to determine MAWC's cost of equity?

A. I considered the results of the Constant Growth DCF model, the CAPM, the ECAPM, and an Expected Earnings analysis. As discussed in more detail below, a reasonable ROE estimate appropriately considers multiple methodologies and the reasonableness of their individual and collective results.

a. Importance of Multiple Analytical Approaches

Q. Why is it important to use more than one analytical approach?

A. Because the cost of equity is not directly observable, it must be estimated based on both quantitative and qualitative information. When faced with the task of estimating the cost of equity, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed. Several models have been developed to estimate the cost of equity, and I use multiple approaches to estimate the cost of equity. As a practical matter, however, all of the models available for estimating the cost of equity are subject to limiting assumptions or other methodological constraints. Consequently, many well-regarded finance texts recommend using multiple approaches when estimating the cost of equity. For

example, Copeland, Koller, and Murrin[38] suggest using the CAPM and Arbitrage Pricing Theory model, while Brigham and Gapenski[39] recommend the CAPM, DCF, and Bond Yield Plus Risk Premium approaches.

Q. Is it important given the current market conditions to use more than one analytical approach?

A. Yes. Low interest rates and the effects of the investor "flight to quality" can be seen in high utility share valuations, relative to historical levels and relative to the broader market. Higher utility stock valuations produce lower dividend yields and result in lower cost of equity estimates from a DCF analysis. Low interest rates also affect the CAPM in two ways: (1) the risk-free rate is lower, and (2) because the market risk premium is a function of interest rates, (i.e., it is the return on the broad stock market less the risk-free interest rate), the risk premium should move higher when interest rates are lower. Therefore, it is important to use multiple analytical approaches to moderate the impact that the current low interest rate environment is having on the ROE estimates for the proxy group and, where

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[38] Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd Ed. (New York: McKinsey & Company, Inc., 2000), at 214.

[39] Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

possible, consider using projected market data in the models to estimate the return for the forward-looking period.

Q. What are your conclusions about the results of the DCF and CAPM models?

A. Recent market data that is used as the basis for the assumptions for both models have been affected by market conditions. As a result, relying exclusively on historical assumptions in these models, without considering whether these assumptions are consistent with investors' future expectations, will underestimate the cost of equity that investors would require over the period that the rates in this case are to be in effect. In this instance, relying on the historically low dividend yields that are not expected to continue over the period that the new rates will be in effect will underestimate the ROE for MAWC.

Furthermore, as discussed in Section IV above, Treasury bond yields have experienced unprecedented volatility in recent months due to the economic effects of the coronavirus. Therefore, the use of current averages of Treasury bond yields as the estimate of the risk-free rate in the CAPM is not appropriate since recent market conditions are not expected to continue over the long-term. Instead, analysts should rely on projected yields of Treasury Bonds in the CAPM. The projected

Treasury Bond yields result in CAPM estimates that are more reflective of the market conditions that investors expect during the period that the Company's rates will be in effect**.**

b. Constant Growth DCF Model

Q. Please describe the DCF approach.

A. The DCF approach is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its most general form, the DCF model is expressed as follows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_\infty}{(1+k)^\infty} \quad [1]$$

Where P_0 represents the current stock price, D1…D∞ are all expected future dividends, and k is the discount rate, or required ROE. Equation [1] is a standard present value calculation that can be simplified and rearranged into the following form:

$$k = \frac{D_0(1+g)}{P_0} + g \quad [2]$$

Equation [2] is often referred to as the Constant Growth DCF model in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

Q. What assumptions are required for the Constant Growth DCF model?

A. The Constant Growth DCF model requires the following assumptions: (1) a constant growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings ("P/E") ratio; and (4) a discount rate greater than the expected growth rate. To the extent any of these assumptions is violated, considered judgment and/or specific adjustments should be applied to the results.

Q. What market data did you use to calculate the dividend yield in your Constant Growth DCF model?

A. The dividend yield in my Constant Growth DCF model is based on the proxy companies' current annual dividend and average closing stock prices over the 30-, 90-, and 180-trading days as of May 29, 2020.

Q. Why did you use three averaging periods for stock prices?

A. In my Constant Growth DCF model, I use an average of recent trading days to calculate the term P_0 in the DCF model to ensure that the ROE is not skewed by anomalous events that may affect stock prices on any given trading day. The averaging period should also be reasonably representative of expected capital market conditions over the long-term. However, the averaging periods that I use rely on historical prices which, as discussed above, are currently at unsustainably high levels that are not expected to continue during the period that MAWC's rates

will be in effect. The use of current prices in the Constant Growth DCF model is not consistent with forward-looking market expectations. Therefore, the results of my Constant Growth DCF model using historical data may underestimate the forward-looking cost of equity. As a result, I place more weight on the median to median-high results produced by my Constant Growth DCF model.

Q. Did you make any adjustments to the dividend yield to account for periodic growth in dividends?

A. Yes. Because utility companies tend to increase their quarterly dividends at different times throughout the year, it is reasonable to assume that dividend increases will be evenly distributed over calendar quarters. Given that assumption, it is reasonable to apply one-half of the expected annual dividend growth rate for purposes of calculating the expected dividend yield component of the DCF model. This adjustment ensures that the expected first year dividend yield is, on average, representative of the coming twelve-month period, and does not overstate the aggregated dividends to be paid during that time.

Q. Why is it important to select appropriate measures of long-term growth in applying the DCF model?

A. In its Constant Growth form, the DCF model (i.e., Equation [2]) assumes a single long-term growth rate in perpetuity. In order to reduce the long-term growth rate

to a single measure, one must assume that the dividend payout ratio remains constant and that earnings per share, dividends per share, and book value per share all grow at the same constant rate. Over the long run, however, dividend growth can only be sustained by earnings growth. For example, earnings growth rates tend to be least influenced by capital allocation decisions that companies may make in response to near-term changes in the business environment. Since such decisions may directly affect near-term dividend payout ratios, estimates of earnings growth are more indicative of long-term investor expectations than are dividend or book value growth estimates.

Q. What sources of long-term growth rates did you rely on in your Constant Growth DCF model?

A. My Constant Growth DCF model incorporates the following sources of long-term growth rates: (1) consensus long-term earnings growth estimates from Zacks Investment Research; (2) consensus long-term earnings growth estimates from Thomson First Call (provided by Yahoo! Finance); and (3) long-term earnings growth estimates from Value Line.

Q. How did you calculate the expected dividend yield?

A. I adjusted the dividend yield to reflect the growth rate that was being used in that particular scenario. This ensures that the growth rate used in the dividend yield

calculation and the growth rate used as the "g" term of the DCF model are internally consistent.

Q. Did you make any adjustments to the results of the Constant Growth DCF analysis?

A. Yes. I eliminated any ROE estimate that is below the yield on the 30-year Treasury Bond plus a minimum equity risk premium. The lower bound of 7.00 percent was established by reviewing the equity risk premium for the proxy group as calculated by my CAPM analysis.[40] As shown in Schedule AEB-4, the market risk premium ranged from 10.18 percent to 11.86 percent. The implied equity risk premium for the proxy group is calculated as the market return times the proxy group average beta. As shown in Schedule AEB-4, the proxy group had a Value Line beta of 0.746, which would result in an equity risk premium for the proxy group ranging from 7.59 percent to 8.85 percent.[41] An ROE estimate of 7.00 percent would result in an equity risk premium ranging from 3.80 percent to 5.67 percent,[42] which would result in an equity risk premium for the proxy group that is approximately 300 basis points less than the equity risk premium for the proxy group calculated using my CAPM analysis. Therefore, while a return of 7.00 percent would not be considered

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[40] Docket No. E017/GR-15-1033, In the Matter of the Application of Otter Tail Power Company for Authority to Increase Rates for Electric Service in the State of Minnesota (August 16, 2016), at 11.

[41] Calculation: Beta of 0.746 x range of 10.18 percent to 11.86 percent = 7.59 percent to 8.85 percent.

[42] Calculation: 7.00 percent minus risk-free rates which range from 1.33 percent to 3.00 percent = 4.00 percent to 5.67 percent.

reasonable for the subject company, it is necessary to establish a lower boundary in the results for the proxy group. Consequently, I have eliminated results for the proxy companies that fall below this point.

Q. Please summarize the results of your Constant Growth DCF analyses.

A. Figure 9 (see also Schedule AEB-3) presents the range of results for my proxy group. As shown in Figure 9, the median Constant Growth DCF results range from 9.52 percent to 9.69 percent and the median high Constant Growth DCF results are in the range of 9.71 percent to 9.88 percent.

Figure 9: Summary of Constant Growth DCF Results

	Median Low	Median	Median High
30-Day Average	8.32%	9.69%	9.88%
90-Day Average	8.17%	9.56%	9.77%
180-Day Average	8.13%	9.52%	9.71%

Q. How did you calculate the range of results for the Constant Growth DCF model?

A. I calculated the low DCF result using the minimum growth rate (i.e., the lowest of the Thomson First Call, Zacks, and Value Line earnings growth rates) for each of the proxy group companies. Thus, the low result reflects the minimum DCF result for the proxy group. I used a similar approach to calculate the high results, using

the highest growth rate for each proxy group company. The mean results were calculated using the average growth rates from all sources.

Q. What are your conclusions about the results of the Constant Growth DCF model?

A. As discussed previously, one primary assumption of the DCF model is a constant P/E ratio. That assumption is heavily influenced by the market price of utility stocks. To the extent that utility valuations are high and may not be sustainable, it is important to consider the results of the DCF model with caution. The median dividend yield for the proxy group on the 30-day average DCF analysis is 2.30 percent, lower than the average dividend yield for water and natural gas utilities over the last 10 years. These data points demonstrate that the current results of the DCF models are significantly affected by market conditions. Therefore, while I have given weight to the results of the Constant Growth DCF model, my recommendation also gives weight to the results of other ROE estimation models.

c. CAPM Analysis

Q. Please briefly describe the Capital Asset Pricing Model ("CAPM").

A. The CAPM is a risk premium approach that estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium to compensate investors for the non-diversifiable or "systematic" risk of that security. Systematic

risk is the risk inherent in the entire market or market segment. This form of risk cannot be diversified away using a portfolio of assets. Non-systematic risk is the risk of a specific company that can be mitigated through portfolio diversification.

The CAPM is defined by four components, each of which must theoretically be a forward-looking estimate:

$$K_e = r_f + \beta(r_m - r_f) \quad [3]$$

Where:

K_e = the required market ROE;

β = Beta coefficient of an individual security;

r_f = the risk-free ROR; and

r_m = the required return on the market as a whole.

In this specification, the term (rm – rf) represents the Market Risk Premium. According to the theory underlying the CAPM, since unsystematic risk can be diversified away, investors should only be concerned with systematic risk. Systematic risk is measured by Beta. Beta is a measure of the volatility of a security as compared to the market as a whole. Beta is defined as:

$$\beta = \frac{\text{Covariance}(r_e, r_m)}{} \quad [4]$$

$$\frac{\text{Covariance}(r_e, r_m)}{\text{Variance}(r_m)}$$

The variance of the market return (i.e., Variance (rm)) is a measure of the uncertainty of the general market. The covariance between the return on a specific security and the general market (i.e., Covariance (re, rm)) reflects the extent to which the return on that security will respond to a given change in the general market return. Thus, Beta represents the risk of the security relative to the general market.

Q. What risk-free rate did you use in your CAPM analysis?

A. I relied on three sources for my estimate of the risk-free rate: (1) the current 30-day average yield on 30-year U.S. Treasury bonds (i.e., 1.33 percent);[43] (2) the projected 30-year U.S. Treasury bond yield for Q3 2020 through Q3 2021 (i.e., 1.68 percent);[44] and (3) the projected 30-year U.S. Treasury bond yield for 2022 through 2026 (i.e., 3.00 percent).[45]

Q. Would you place more weight on one of these scenarios?

A. Yes. Based on current market conditions, I place more weight on the results of the projected yields on the 30-year Treasury bonds. As discussed previously, the estimation of the cost of equity in this case should be forward-looking because it is

43 Bloomberg Professional, as of May 29, 2020.
44 Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 2.
45 Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 14.

the return that investors would receive over the future rate period. Therefore, the inputs and assumptions used in the CAPM analysis should reflect the expectations of the market at that time. While I have included the results of a CAPM analysis that relies on the current average risk-free rate, this analysis fails to take into consideration the effect of the market's expectations for interest rates on the cost of equity.

Q. What Beta coefficients did you use in your CAPM analysis?

A. As shown in Schedule AEB-4, I used the Beta coefficients for the proxy group companies as reported by Bloomberg and Value Line. The Beta coefficients reported by Bloomberg were calculated using ten years of weekly returns relative to the S&P 500 Index. Value Line's calculation is based on five years of weekly returns relative to the New York Stock Exchange Composite Index.

Q. How did you estimate the Market Risk Premium in the CAPM?

A. I estimated the Market Risk Premium based on the expected return on the S&P 500 Index less the 30-year Treasury bond yield. I calculated the expected return on the S&P 500 Index using S&P's published dividend yield and five-year projected growth rate for the entire S&P 500 Index. As shown in Schedule AEB-4, based on S&P's five-year growth rate for the S&P 500 of 11.20 percent and dividend yield of 1.88 percent, the estimated required market return for the S&P 500 Index is 13.18

percent. The implied market risk premium over the current 30-day average of the 30-year U.S. Treasury bond yield, and projected yields on the 30-year U.S. Treasury bond, range from 10.18 percent to 11.86 percent.

Q. Have other regulators endorsed the use of a forward-looking market risk premium?

A. Yes. The Staff in the Maine Public Utilities Commission ("Maine PUC") have supported the forward-looking market risk premium. In the Bench Analysis in Docket No. 2018-00194 for Central Maine Power Company, Docket No. 2017-00198 for Emera Maine and Docket No. 2017-00065 for Northern Utilities, the Staff accepted the forward-looking methodology for calculating the market return that was proposed by the companies.[46] In each case, the market return was the expected return for the S&P 500, which was calculated using a Constant Growth DCF model. In Docket No. 2017-00198, Staff noted the following:

> Staff has no issue with the methodology used by Mr. Perkins in calculating market parameters based on the S&P 500 and used the

[46] Central Maine Power Company, Investigation into Rates and Revenue Requirements of Central Maine Power Company, Docket No. 2018-00194, Bench Analysis at 52 (February 22, 2019); Emera Maine, Request for Approval of a Proposed Rate Increase, Docket No. 2017-00198, Bench Analysis at 71-72 (December 21, 2017); Northern Utilities, Inc. d/b/a UNITIL, Request for Approval of Rate Change Pursuant to Section 307, Docket No. 2017-00065, Bench Analysis, at 15-16 (October 6, 2017).

model provided by Mr. Perkins with the revised risk free rate to re-calculate the market risk premiums.[47]

Furthermore, the Maine PUC in Docket No. 2017-0198 used the CAPM results calculated by Staff and Emera Maine as a check on the reasonableness of the DCF results in the case and did not dispute the use of the forward-looking market risk premium by the parties (i.e., Staff and Emera Maine).[48]

Q. Did you consider another form of the CAPM in your analysis?

A. Yes. I have also considered the results of an Empirical CAPM ("ECAPM" or alternatively referred to as the Zero-Beta CAPM)[49] in estimating the cost of equity for MAWC. The ECAPM calculates the product of the adjusted Beta coefficient and the market risk premium and applies a weight of 75.00 percent to that result. The model then applies a 25.00 percent weight to the market risk premium, without any effect from the Beta coefficient. The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [5] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \qquad [5]$$

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47 Emera Maine, Request for Approval of a Proposed Rate Increase, Docket No. 2017-00198, Bench Analysis, at 71-72 (December 21, 2017).

48 Emera Maine, Request for Approval of Proposed Rate Increase, Docket No. 2017-00198, June 28, 2018, at 41.

49 *See e.g.*, Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 189.

Where:

k_e = the required market ROE

β = Adjusted Beta coefficient of an individual security

r_f = the risk-free rate of return

r_m = the required return on the market as a whole

In essence, the ECAPM addresses the tendency of the "traditional" CAPM to underestimate the cost of equity for companies with low Beta coefficients such as regulated utilities. In that regard, the ECAPM is not redundant to the use of adjusted Betas; rather, it recognizes the results of academic research indicating that the risk-return relationship is different (in essence, flatter) than estimated by the CAPM, and that the CAPM underestimates the "alpha," or the constant return term.[50]

As with the CAPM, my application of the ECAPM uses the forward-looking market risk premium estimates, the three yields on 30-year Treasury securities noted earlier as the risk-free rate, and the Bloomberg and Value Line Beta coefficients.

[50] *Id*., at 191.

Q. What are the results of your CAPM analyses?

A. As shown in Figure 10 (see also Schedule AEB-4), my traditional CAPM analyses produces a range of returns from 9.58 percent to 11.48 percent. The ECAPM analysis results range from 10.70 percent to 12.12 percent. The range established by the traditional CAPM and the ECAPM is 9.58 percent to 12.12 percent with a mean of 10.96 percent.

Figure 10: Forward-Looking CAPM Results

	Current Risk-Free Rate (1.33%)	**Q3 2020- Q3 2021 Projected Risk-Free Rate (1.68%)**	**2022-2026 Projected Risk-Free Rate (3.00%)**
CAPM			
Bloomberg Beta	10.58%	10.66%	10.95%
Value Line Beta	10.17%	10.26%	10.60%
ECAPM			
Bloomberg Beta	11.23%	11.29%	11.51%
Value Line Beta	10.93%	10.99%	11.25%

d. Expected Earnings Analysis

Q. Have you considered an additional analysis to estimate the cost of equity for MAWC?

A. Yes. I have considered an Expected Earnings analysis based on the projected ROEs for each of the proxy group companies.

Q. What is an Expected Earnings Analysis?

A. The Expected Earnings methodology is a comparable earnings analysis that calculates the earnings that an investor expects to receive on the book value of a stock. The expected earnings analysis is a forward-looking estimate of investors' expected returns. The use of an Expected Earnings approach based on the proxy companies provides a range of the expected returns on a group of risk comparable companies to the subject company. This range is useful in helping to determine the opportunity cost of investing in the subject company, which is relevant in determining a company's ROE.

Q. Have any other regulators considered the use of an Expected Earnings Analysis?

A. Yes. The Washington Utilities & Transportation Commission ("WUTC"), in its order in Dockets UE-170485 and UG-170486, considered the results of the Comparable Earnings analysis[51] in establishing the authorized ROE for Avista Corporation. The WUTC noted that it tends to place more weight on the results of the DCF, CAPM and Risk Premium analyses; however, given the wide range of CAPM results presented by the ROE witnesses in the case, the WUTC decided to

[51] The Expected Earnings analysis is a form of the Comparable Earnings analysis that relies exclusively on forward-looking projections.

apply weight to the results of the Comparable Earnings analysis.[52] Specifically, the WUTC stated:

> Finally, as additional data points for our consideration of establishing Avista's ROE, we note that two witness, Mr. McKenzie for Avista and Mr. Parcell for Staff, employ the CE approach to two proxy groups of companies. The respective mid-points of each witnesses' CE analysis are 10.5 and 9.5 percent, respectively, with an average of 10.0 percent. Although we generally do not apply material weight to the CE method, having stronger reliance on the DCF, CAPM and RP methods, we are inclined to include the CE method here given the anomalous CAPM results described previously.[53]

Additionally, in its order in Docket No. ER12111052 for Jersey Central Power and Light Company, the New Jersey Board of Public Utilities ("NJ Board") noted that rate of return experts use a number of models including the DCF, CAPM, Risk Premium and Comparable Earnings to estimate the return required by investors. Specifically, the NJ Board noted:

> In determining the cost of equity capital for a regulated utility, rate of return experts typically use a variety of financial models to simulate the returns assertedly required by investors. These include Discounted Cash Flow (DCF) models, Risk Premium models, Capital Asset Pricing Models (CAPM), Comparable Earnings models and variations thereof. However, it is widely acknowledged that these economic models constitute estimates, which, although probative, are not necessarily precise. The imprecision in the

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52 *Wash. Utils. & Transp. Comm'n v. Avista Corp*., Docket Nos. UE-170485 and UG-170486, Order 07, ¶ 65 (April 26,2018). Comparable Earnings as discussed in this docket is similar to the Expected Earnings analysis developed in my Direct Testimony.

53 *Ibid*.

> estimates provided by these models is more pronounced as a result of the current economic environment still recovering from the Great Recession, characterized by some as the worst economy since the Great Depression.[54]

Q. How did you develop the Expected Earnings Approach?

A. I relied primarily on the projected ROE capital for the proxy companies as reported by Value Line for the period from 2023-2025. The projected ROEs are adjusted to account for the fact that the ROEs reported by Value Line are calculated on the basis of common shares outstanding at the end of the period, as opposed to average shares outstanding over the period. As shown in Schedule AEB-5, the Expected Earnings analysis results in a mean of 11.20 percent and a median of 10.63 percent for the proxy group.

VII. BUSINESS AND OPERATING RISKS

Q. Do the DCF, CAPM, ECAPM, and Expected Earnings results for the proxy group, taken alone, provide an appropriate estimate of the cost of equity for MAWC?

A. No. These results provide only a range of the appropriate estimate of MAWC's cost of equity. Several additional factors must be considered when determining

[54] BPU Docket No. ER12111052, OAL Docket No. PUC16310-12, Order Adopting Initial Decision with Modifications and Clarifications, March 18, 2015, at 71.

where the Company's cost of equity falls within the range of results. These factors, discussed below, should be considered with respect to their overall effect on MAWC's risk profile relative to the proxy group.

a. Risks Associated with Capital Expenditure Program

Q. Please summarize MAWC's capital expenditure program.

A. MAWC projects that the Company will spend approximately $1.26 billion on capital investments for the period from 2020-2024, including significant investment to replace aging infrastructure necessary to meet the needs of its customers and to comply with various regulations.

Q. How is MAWC's risk profile affected by its substantial capital expenditure program?

A. As with any utility faced with substantial capital expenditures, MAWC's risk profile is adversely affected in two significant and related ways: (1) the heightened level of investment increases the risk of under-recovery, or delayed recovery, of the invested capital; and (2) an inadequate return would put downward pressure on key credit metrics.

Q. Do credit rating agencies recognize the risks associated with elevated capital expenditures?

A. Yes. From a credit perspective, the additional pressure on cash flows associated with high levels of capital expenditures exerts corresponding pressure on credit metrics and, therefore, credit ratings. An S&P report explains:

> [T]here is little doubt that the U.S. electric industry needs to make record capital expenditures to comply with the proposed carbon pollution rules over the next several years, while maintaining safety standards and grid stability. We believe the higher capital spending and subsequent rise in debt levels could strain these companies' financial measures, resulting in an almost consistent negative discretionary cash flow throughout this higher construction period. To meet the higher capital spending requirements, companies will require ongoing and steady access to the capital markets, necessitating that the industry maintains its high credit quality. We expect that utilities will continue to effectively manage their regulatory risk by using various creative means to recover their costs and to finance their necessary higher spending.[55]

While this S&P report refers to electric utilities, the same applies to water utilities. Whereas electric utilities must respond to increasing carbon emissions, water utilities must address increasing federal and state water quality regulations. To the extent that MAWC's rates do not permit it to recover its full cost of doing business, the Company will face increased recovery risk and thus increased pressure on its

[55] S&P, Ratings Direct, "U.S. Regulated Electric Utilities' Annual Capital Spending is Poised to Eclipse $100 Billion," July 2014.

credit metrics. In an August 2016 report, S&P explains the importance of regulatory support for large capital projects:

> When applicable, a jurisdiction's willingness to support large capital projects with cash during construction is an important aspect of our analysis. This is especially true when the project represents a major addition to rate base and entails long lead times and technological risks that make it susceptible to construction delays. Broad support for all capital spending is the most credit-sustaining. Support for only specific types of capital spending, such as specific environmental projects or system integrity plans, is less so, but still favorable for creditors. Allowance of a cash return on construction work-in-progress or similar ratemaking methods historically were extraordinary measures for use in unusual circumstances, but when construction costs are rising, cash flow support could be crucial to maintain credit quality through the spending program. Even more favorable are those jurisdictions that present an opportunity for a higher return on capital projects as an incentive to investors.[56]

Q. Have credit rating agencies commented specifically on AWK's capital spending program?

A. Yes, both S&P and Moody's have observed that AWK has significant capital spending requirements. S&P states: "The combination of AWK's large capital spending, acquisitions in 2018, and the effects of tax reform have moderately weakened the company's financial measures, which we expect to remain at the

[56] S&P Global Ratings, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 7.

lower end of the range for the rating."[57] Additionally, Moody's recently commented that:

> As previously expected, the company is increasing leverage due to financial policies that target up to $8.6 billion of capex, dividend growth is approaching 10% and no equity issuances are planned over the next five years. This is reducing key financial ratios, the effect of which is being exacerbated by cash flow pressures from 2017 federal tax reform.[58]

Q. Does MAWC have an infrastructure replacement program?

A. Yes. MAWC has historically had an Infrastructure System Replacement Surcharge ("ISRS") that allows the Company to recover the cost of infrastructure replacement in St. Louis County that occurs between rate cases through a tracking mechanism. The ISRS program provides MAWC with the ability to accelerate its replacement rate of water mains to better align the replacement with the expected life of the water mains.[59] As discussed in the Direct Testimony of Company Witness LaGrand, since the last rate case, approximately 26.5 percent of MAWC's capital investment was included in the ISRS.

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57 S&P Global Ratings, "American Water Works Company, Inc.," June 7, 2019, at 3.

58 Moody's Investors Service, "Announcement of Periodic Review: Moody's announces completion of a periodic review of ratings of American Water Works Company, Inc.," August 16, 2019.

59 Missouri American Water tariff. https://amwater.com/moaw/customer-service-billing/faqs/advanced-metering-infrastructure-ami/infrastructure-system-replacement-surcharge-isrs

Q. Do the proxy group companies recover capital investments through a distribution system infrastructure surcharge?

A. Yes, the proxy companies have infrastructure and capital recovery mechanisms that address significant capital expenditure requirements. As shown in Schedule AEB-6, the companies in the proxy group have infrastructure replacement recovery mechanisms in approximately 54.5 percent of their operating jurisdictions. While MAWC does recover certain capital expenditures through a capital tracking mechanism, MAWC does still rely on rate case filings for a significant portion of the Company's capital costs.

Q. What are your conclusions regarding the effect of MAWC's capital spending program on its risk profile?

A. The Company's capital expenditure requirements as a percentage of net utility plant are significant and will continue over the next few years. Additionally, similar to a number of the operating subsidiaries of the proxy group, MAWC does have a capital tracking mechanism to recover some of the Company's projected capital expenditures. Nevertheless, a portion of MAWC's capital expenditures do not qualify for recovery through the ISRS; therefore, the Company is still dependent on rate case filings to recover some of its capital expenditures.

b. Regulatory Risks

Q. Please explain how the regulatory framework affects investors' risk assessments.

A. The ratemaking process is premised on the principle that, for investors and companies to commit the capital needed to provide safe and reliable utility services, the subject utility must have the opportunity to recover invested capital and the market-required return on such capital. Regulatory commissions recognize that because utility operations are capital intensive, regulatory decisions should enable the utility to attract capital at reasonable terms, which balance the long-term interests of investors and customers. In that respect, the regulatory framework in which a utility operates is one of the most important factors considered in both debt and equity investors' risk assessments.

Because investors have many investment alternatives, even within a given market sector, the Company's authorized return must be adequate on a relative basis to ensure its ability to attract capital under a variety of economic and financial market conditions. From the perspective of debt investors, the authorized return should enable the Company to generate the cash flow needed to meet its near-term financial obligations, make the capital investments needed to maintain and expand its systems, and maintain sufficient levels of liquidity to fund unexpected events.

This financial liquidity must be derived not only from internally-generated funds, but also from efficient access to capital markets.

From the perspective of equity investors, the authorized return must be adequate to provide a risk-comparable return on the equity portion of the Company's capital investments. Because equity investors are the residual claimants on the Company's cash flows (that is, debt interest must be paid prior to any equity dividends), equity investors are particularly concerned with the regulatory framework in which a utility operates and its effect on future earnings and cash flows.

Q. Please explain how credit rating agencies consider regulatory risk in establishing a company's credit rating.

A. Both S&P and Moody's consider the overall regulatory framework in establishing credit ratings. Moody's establishes credit ratings based on four key factors: (1) business profile; (2) financial policy; (3) leverage and coverage; and (4) uplift for structural considerations. Within the business profile criteria, stability and predictability of regulatory environment and cost and investment recovery (sufficiency and timeliness) are each given a broad rating factor of 15.0 percent, while revenue risk is given a rating factor of 5.0 percent. Therefore, Moody's

assigns regulatory risk a 35.0 percent weighting in the overall assessment of business and financial risk for regulated utilities.[60]

S&P also identifies the regulatory framework as an important factor in credit ratings for regulated utilities, stating: "One significant aspect of regulatory risk that influences credit quality is the regulatory environment in the jurisdictions in which a utility operates."[61] S&P identifies four specific factors that it uses to assess the credit implications of the regulatory jurisdictions of investor-owned regulated utilities: (1) regulatory stability; (2) tariff-setting procedures and design; (3) financial stability; and (4) regulatory independence and insulation."[62]

Q. How does the regulatory environment in which a utility operates affect its access to and cost of capital?

A. The regulatory environment can significantly affect both the access to, and cost of capital in several ways. First, the proportion and cost of debt capital available to utility companies are influenced by the rating agencies' assessment of the regulatory environment. As noted by Moody's, "the characteristics and transparency of the concession(s) and regulations under which the utility operates,

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60 Moody's Investors Service, Rating Methodology: Regulated Water Utilities, June 8, 2018, at 4.
61 Standard & Poor's, Assessing U.S. Utility Regulatory Environments, August 10, 2016, at 2.
62 *Ibid*.

the track record of the regulatory regime in setting tariffs and applying regulations consistently are key elements in assessing the overall stability of a water utility's business profile."[63]

Q. Have you conducted any analysis of the regulatory framework in Missouri relative to the jurisdictions in which the companies in your proxy group operate?

A. Yes. I have evaluated the regulatory framework in Missouri on three factors that are important in terms of providing a regulated utility an opportunity to earn its authorized ROE. These are: 1) test year convention (i.e., forecast vs. historical); 2) use of revenue decoupling mechanisms or other clauses that mitigate volumetric risk; and 3) prevalence of capital cost recovery between rate cases. The results of this regulatory risk assessment are shown in Schedule AEB-6 and summarized below.

Test year convention: MAWC is proposing a future test year in Missouri that includes the costs for the 12-month period ended May 31, 2022. The Company is projecting the future test year using base year expenses of the 12-month period ending December 31, 2019 updated for known and measurable changes through May 31, 2021. The Company then uses a monthly projection for the twelve months

[63] Moody's Investors Service, Rating Methodology: Regulated Water Utilities, June 8, 2018, at 7.

ended May 31, 2022 using known and measurable changes, adjustments based on Company experience and inflation.[64] As shown in Schedule AEB-6, 43.2 percent of the companies in the proxy group provide service in jurisdictions that use a fully or partially forecast test year.

Volumetric risk: As discussed in the testimony of Company Witness Mr. Roach, MAWC's usage from existing residential and commercial customers is affected by a long-term trend of declining use per customer. However, the need to fund significant non-revenue producing investments does not vary with usage while actual usage is affected by seasonal weather variability. As discussed in the testimony of Company Witness Mr. Watkins, the effect of having significant fixed operating costs being recovered on a variable basis results in difficulty recovering fixed costs. As a result, MAWC is proposing a revenue decoupling mechanism that would reconcile actual revenue with the revenue projection used to set rates. In order to determine the relative risk of MAWC to the proxy group, I reviewed RSM mechanisms implemented by the proxy group. As shown in Schedule AEB-6, 63.6 percent of the operating companies of the proxy group have some form of mechanism that results in increased revenue stability. Therefore, to the extent that

[64] Direct Testimony of Brian LaGrande, at 4.

MAWC is not granted its proposed revenue decoupling mechanism in this rate case, its risk would be substantially elevated, relative to the proxy group.

Capital cost recovery: As discussed previously, MAWC does have a capital tracking mechanism (the ISRS) to recover capital investment costs between rate cases in St. Louis County. The ISRS capital cost recovery mechanism, however, has only accounted for approximately 26.5 percent of capital expenditures. As shown in Schedule AEB-6, 54.5 percent of the operating companies in the proxy group have some form of capital cost recovery mechanism in place.

Q. Is there evidence that MAWC has been unable to earn its authorized return on equity?

A. Yes. As shown in Figure 12, MAWC has persistently under-earned its authorized ROE in each year since 2015. Over this period, the Company's average earned ROE was 8.26 percent as compared with the average authorized ROE of 9.75 percent, for an average under-earning of 144-155 basis points per year. This under-earning occurred even though MAWC was allowed to add a portion of its interim capital investment through the ISRS mechanism.

Figure 12: Earned vs. Authorized ROE

	EARNED ROE	AUTHORIZED ROE	EARNINGS DIFFERENTIAL (BPS)

2019	8.60%	9.75%	(115)
2018	8.40%	9.75%	(135)
2017	7.70%	9.50-10.00%[65]	(180-230)
2016	8.70%	9.75%	(105)
2015	7.90%	9.75%[66]	(185)
Average	8.26%	9.75%	(144-154)

The above data demonstrate that earnings attrition has been persistent and substantial for MAWC since 2015.

Q. What are your conclusions regarding the perceived risks related to the Missouri regulatory environment?

A. As discussed throughout this section of my testimony, both Moody's and S&P have identified the supportiveness of the regulatory environment as an important consideration in developing their overall credit ratings for regulated utilities. Considering the regulatory adjustment mechanisms, many of the companies in the proxy group have timely cost recovery (through forecasted test years, cost recovery trackers and revenue stabilization mechanisms) similar to MAWC, assuming the approval of the Company's proposed decoupling mechanism. Without approval of the Company's proposed decoupling mechanism, however, the companies in the

[65] Docket No. WR-2017-0285, Stipulation and Agreement, p. 3.
[66] Docket No. WR-2015- 0301, p. 3.

proxy group would have more timely cost recovery than MAWC. For these reasons, I conclude that the authorized ROE for MAWC should be higher than the proxy group median if the decoupling mechanism is not approved. On the other hand, my ROE recommendation for MAWC would be at or near the proxy group median if the decoupling mechanism is approved.

VIII. CAPITAL STRUCTURE

Q. What is the proposed capital structure for MAWC?

A. MAWC is proposing a ratemaking capital structure composed of 53 percent common equity and 47 percent long-term debt for the future test year ending May 31, 2022.

Q. What are some of the factors that are considered in determining whether the capital structure should have more debt or equity?

A. It is important to consider the quality and variability of cash flows, future revenues, future investment needs, the overall regulatory risk profile, and the targeted credit rating. For example, all else equal, a company with greater variability in cash flows or uncertainty in future revenues should have lower leverage than a company with more stable cash flows.

Q. How did you consider these factors for MAWC?

A. While MAWC is in a mature industry, that might suggest stability in cash flows, as discussed by Witness Roach, the Company faces declining usage, which results in declining revenues between rate cases for an existing customer base. Currently, the rate case process relies on a historical test year, which means rates are set based on historical costs and customer usage. The rate design for MAWC is structured to recover most of the fixed operating costs on a variable basis. Therefore, declining usage results in an under-recovery of fixed operating costs and an increased risk to equity holders. Consequently, while the industry may be mature and could be considered to have stable revenues as compared to other industries, that is not the case for each individual operating company within the industry. Considering MAWC in particular, the combination of declining usage and the use of a historical test year reduces the stability of revenues and therefore supports the use of a greater percentage of equity financing that creates more financial flexibility.

Another consideration, as noted by Moody's from a credit perspective, is the ability to recover plant and infrastructure replacement investments. While approximately 30-35 percent the MAWC's investments in infrastructure replacement are recovered through the ISRS capital cost recovery mechanism for St. Louis County, the recovery on and of the remainder of the investment is subject to regulatory lag, since the carrying cost of these investments is not included in rates until a rate case

proceeding. As noted by Moody's, from a credit perspective, the ability to recover the cost of replacing aging infrastructure is a significant factor in determining credit supportiveness of regulation and in evaluating the overall risk profile of the company.

Finally, as discussed earlier in my direct testimony, tax reform has strained cash flow coverage ratios across the industry, which has been monitored by the credit rating agencies and has contributed to the downgrade of many utility companies.

Q. Have you conducted any other analysis to determine if the proposed equity ratio is reasonable?

A. Yes. In addition to considering the factors discussed above, I reviewed MAWC's proposed capital structure as compared to the capital structures of the utility operating subsidiaries of the proxy companies. Because the ROE is set based on the return that is derived from the risk-comparable proxy group, it is reasonable to look to the proxy group average capital structure to benchmark the equity ratio for the Company.

Q. Please discuss your analysis of the capital structures of the proxy group companies.

A. I calculated the mean proportions of common equity, long-term debt and preferred equity for the most recent year for each of the companies in the proxy group.[67] My analysis of the capital structures is provided in Schedule AEB-7. As shown in Schedule AEB-7, the mean common equity ratio for the proxy group is 55.66 percent, within a range from 46.55 percent to 65.94 percent. MAWC's proposed equity ratio is below the mean equity ratio and well within the range of equity ratios established by the proxy group.

Q. Are there other factors to be considered in setting the Company's capital structure?

A. Yes. The credit rating agencies' response to the TCJA must also be considered when determining the equity ratio. As discussed previously in my testimony, all three rating agencies have noted that the TCJA has negative implications for utility cash flows. S&P and Fitch have specifically identified increasing the equity ratio as one approach to ensure that utilities have sufficient cash flows following the federal income tax rate reductions and the loss of bonus depreciation. Furthermore,

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[67] Long-term debt includes the current portion of long-term debt, assuming that the current portion would be refinanced with debt at maturity. This analysis was conducted at the operating subsidiary level. The data for 2019 data is not reported for all operating companies due to delays related to COVID-19.

Moody's downgrade of the rating outlook for the entire utilities sector in June 2018 stresses the importance of maintaining adequate cash flow metrics for the industry, as a whole, and MAWC, particularly, in the context of this proceeding.

Q. Please explain why the capital structure for MAWC should not be based on the consolidated capital structure of American Water.

A. The use of the American Water's consolidated capital structure for ratemaking purposes would fail to take into consideration the stand-alone principle, which is a well-established regulatory principle providing that the rate of return (both return on equity and capital structure) for a regulated utility should be set as if the utility were seeking to attract capital in financial markets based on its own individual merits and risk profile.

Q. Please explain how the risk profile MAWC and the consolidated capital structure of American Water differ.

A. While MAWC and American Water are both operating predominantly in the water utility industry, the risk profiles of these two companies differ in many respects that justify a difference in the capital structures. For example, as discussed previously, regulatory recovery mechanisms have a significant effect on the overall risk profile of an individual operating company. The greater the variability or uncertainty in revenues the greater the risk for that operating company, resulting in a capitalization

with lower leverage. American Water receives revenues from fifteen regulated utilities operating in different regulatory jurisdictions. Therefore, while there may be significant risk for an individual operating company, the diversification that American Water has across many jurisdictions likely results in less variability and less risk in the expected revenues. Therefore, it is reasonable that with greater certainty on its future revenues. American Water could take on greater leverage than MAWC.

Q. What could be a consequence of imputing a capital structure different from MAWC's own capital structure?

A. To the extent that the Company were to manage its capital structure to a ratemaking equity ratio that is lower than its actual equity ratio, the earnings of MAWC would not be retained for reinvestment in local operations but would be paid to the parent company as a dividend, or a series of dividends. In addition, MAWC could forego equity infusions from the parent company until such time as its actual equity ratio approximated the equity ratio reflected in the capital structure approved for ratemaking purposes.

Q. How would that affect MAWC's risk profile?

A. MAWC would have less cash available to invest in operations, and its financial risk profile and ability to respond to any financial downturn or periods of financial stress could be weakened.

Q. How should be imputing a capital structure different from MAWC's affect MAWC's authorized ROE?

A. If the Commission were 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 should 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. If a lower equity ratio were to be imposed than that actually funding MAWC's capital, the cost of equity must be adjusted to reflect the additional risk associated with the more debt-heavy imputed capital structure. Furthermore, it is important to recognize that the returns that are established by investors for the proxy companies take into consideration the risk related to the capitalization of those companies. To the extent that the capital structure that was authorized for MAWC were to deviate significantly from the range established by

this group, it is likely that the risk profile to equity holders would also differ, which should be reflected in the equity return.

Q. What are your conclusions about MAWC's proposed capital structure?

A. Because this proceeding will set rates for future service, the capital structure components should be developed from estimates for the period during which those rates will be in effect. Considering the actual capital structures of the proxy group operating companies, I believe that the pro forma capital structure as of May 31, 2022 that is composed of 47 percent long-term debt and 53 percent common equity is reasonable. The proposed capital structure reflects the capital that is intended to be in place to fund the Company's rate base. Furthermore, the capital structure reflects a reasonable equity layer that provides a greater degree of financial flexibility which is important based on the uncertainties in the cash flows of the business resulting from declining use, the historical test year and the inability to include ongoing investment in rate base between rate cases. Each of these factors creates some level of instability in cash flows that are better managed through a thicker equity ratio. In addition, based on the cash flow concerns raised by credit rating agencies as a result of the TCJA and taking into consideration current market conditions, it is reasonable to rely on a higher equity ratio than the Company may have relied on previously.

Finally, comparing the pro forma capital structure to the capital structures of the proxy group companies shows that the pro forma capital structure is within the range of equity ratios established by the capital structures of the utility operating subsidiaries of the proxy companies.

IX. CONCLUSIONS AND RECOMMENDATION

Q. What is your conclusion regarding a fair ROE for MAWC?

A. Based on the various quantitative analyses discussed in my Direct Testimony and the qualitative analyses presented in my Direct Testimony, a reasonable range of ROE results for MAWC is from 10.00 percent to 10.80 percent. I am recommending that the Commission set the Company's rate of return on common equity at 10.50 percent. The recommended ROE takes into consideration the conditions in capital markets that are causing the DCF model to understate the cost of equity, including the effect of current market conditions on utility stock valuations and dividend yields. Finally, the recommendation takes into consideration the relative business risks of MAWC as compared to the proxy group. The proposed ROE would enable the company to maintain its financial integrity and attract capital at reasonable terms under a variety of economic and financial market conditions, while continuing to provide safe, reliable and affordable water and wastewater service to customers in Missouri.

Q. What is your conclusion with respect to MAWC's proposed capital structure?

A. My conclusion is that MAWC's proposed capital structure consisting of 53 percent common equity and 47 percent long-term debt is reasonable considering the variability of the Company's cash flows resulting from factors such as declining use, historical test years for ratemaking purposes and the inability to recover investments in certain assets between rate proceedings. Furthermore, this capital structure is within the range established by the capital structures for the proxy group companies.

Q. Does this conclude your Direct Testimony?

A. Yes.

CONCENTRIC ENERGY ADVISORS

ANN E. BULKLEY
Senior Vice President

Ms. Bulkley has more than two decades of management and economic consulting experience in the energy industry. Ms. Bulkley has extensive state and federal regulatory experience on both electric and natural gas issues including rate of return, cost of equity and capital structure issues. Ms. Bulkley has provided expert testimony on the cost of capital in more than 30 regulatory proceedings before regulatory commissions in Arizona, Arkansas, Colorado, Connecticut, Kansas, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Texas, South Dakota, West Virginia, and the Federal Energy Regulatory Commission. In addition, Ms. Bulkley has prepared and provided supporting analysis for at least forty Federal and State regulatory proceedings. In addition, Ms. Bulkley has worked on acquisition teams with investors seeking to acquire utility assets, providing valuation services including an understanding of regulation, market expected returns, and the assessment of utility risk factors. Ms. Bulkley has assisted clients with valuations of public utility and industrial properties for ratemaking, purchase and sale considerations, ad valorem tax assessments, and accounting and financial purposes. In addition, Ms. Bulkley has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring and regulatory and litigation support. Prior to joining Concentric, Ms. Bulkley held senior expertise-based consulting positions at several firms, including Reed Consulting Group and Navigant Consulting, Inc. where she specialized in valuation. Ms. Bulkley holds an M.A. in economics from Boston University and a B.A. in economics and finance from Simmons College. Ms. Bulkley is a Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

REPRESENTATIVE PROJECT EXPERIENCE

Regulatory Analysis and Ratemaking

Ms. Bulkley has provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking. Specific services have included: cost of capital and return on equity testimony, cost of service and rate design analysis and testimony, development of ratemaking strategies; development of merchant function exit strategies; analysis and program development to address residual energy supply and/or provider of last resort obligations; stranded costs assessment and recovery; performance-based ratemaking analysis and design; and many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation).

Cost of Capital

Ms. Bulkley has provided expert testimony on the cost of capital in more than 30 regulatory proceedings before regulatory commissions in Arizona, Arkansas, Colorado, Connecticut, Kansas, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New Mexico, New York, North Dakota, Oklahoma, Pennsylvania, Texas, South Dakota, West Virginia, and the Federal Energy Regulatory Commission. In addition, Ms. Bulkley has prepared and provided supporting analysis for at least forty Federal and State regulatory proceedings in which she did not testify.

Valuation

Ms. Bulkley has provided valuation services to utility clients, unregulated generators and private equity clients for a variety of purposes including ratemaking, fair value, ad valorem tax, litigation and damages, and acquisition. Ms. Bulkley's appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice.

Representative projects/clients have included:

- Northern Indiana Fuel and Light: Provided expert testimony regarding the fair value of the company's natural gas distribution system assets. Valuation relied on cost approach.
- Kokomo Gas: Provided expert testimony regarding the fair value of the company's natural gas distribution system assets. Valuation relied on cost approach.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost and comparable sales approaches.
- Confidential Utility Client: Prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.
- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis and a risk analysis.
- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.
- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approached. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.

- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

Ratemaking

Ms. Bulkley has assisted several clients with analysis to support investor-owned and municipal utility clients in the preparation of rate cases. Sample engagements include:

- Assisted several investor-owned and municipal clients on cost allocation and rate design issues including the development of expert testimony supporting recommended rate alternatives.

Worked with Canadian regulatory staff to establish filing requirements for a rate review of a newly regulated electric utility. Analyzed and evaluated rate application. Attended hearings and conducted investigation of rate application for regulatory staff. Prepared, supported and defended recommendations for revenue requirements and rates for the company. Developed rates for gas utility for transportation program and ancillary services.

Strategic and Financial Advisory Services

Ms. Bulkley has assisted several clients across North America with analytically based strategic planning, due diligence and financial advisory services.

Representative projects include:

- Preparation of feasibility studies for bond issuances for municipal and district steam clients.
- Assisted in the development of a generation strategy for an electric utility. Analyzed various NERC regions to identify potential market entry points. Evaluated potential competitors and alliance partners. Assisted in the development of gas and electric price forecasts. Developed a framework for the implementation of a risk management program.
- Assisted clients in identifying potential joint venture opportunities and alliance partners. Contacted interviewed and evaluated potential alliance candidates based on company-established criteria for several LDCs and marketing companies. Worked with several LDCs and unregulated marketing companies to establish alliances to enter into the retail energy market. Prepared testimony in support of several merger cases and participated in the regulatory process to obtain approval for these mergers.
- Assisted clients in several buy-side due diligence efforts, providing regulatory insight and developing valuation recommendations for acquisitions of both electric and gas properties.

PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. (2002 – Present)
Senior Vice President
Vice President
Assistant Vice President
Project Manager

Navigant Consulting, Inc. (1995 – 2002)
Project Manager

Cahners Publishing Company (1995)
Economist

EDUCATION

Boston University
M.A., Economics, 1995

Simmons College
B.A., Economics and Finance, 1991

CERTIFICATIONS

Certified General Appraiser licensed in the Commonwealth of Massachusetts and the State of New Hampshire.

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
Arizona Public Service Company	10/19	Arizona Public Service Company	Docket No. E-01345A-19-0236	Return on Equity
Tucson Electric Power Company	04/19	Tucson Electric Power Company	Docket No. E-01933A-19-0028	Return on Equity
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity
Arkansas Public Service Commission				
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
Colorado Public Utilities Commission				
Public Service Company of Colorado	02/20	Public Service Company of Colorado	20AL-0049G	Return on Equity
Public Service Company of Colorado	05/19	Public Service Company of Colorado	19AL-0268E	Return on Equity
Public Service Company of Colorado	01/19	Public Service Company of Colorado	19AL-0063ST	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity
Connecticut Public Utilities Regulatory Authority				
Connecticut Natural Gas Corporation	06/18	Connecticut Natural Gas Corporation	Docket No. 18-05-16	Return on Equity
Yankee Gas Services Co. d/b/a Eversource Energy	06/18	Yankee Gas Services Co. d/b/a Eversource Energy	Docket No. 18-05-10	Return on Equity
The Southern Connecticut Gas Company	06/17	The Southern Connecticut Gas Company	Docket No. 17-05-42	Return on Equity
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Panhandle Eastern Pipe Line Company, LP	10/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-78-000 RP19-78-001	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Panhandle Eastern Pipe Line Company, LP	08/19	Panhandle Eastern Pipe Line Company, LP	Docket Nos. RP19-1523	Return on Equity
Sea Robin Pipeline Company LLC	11/18	Sea Robin Pipeline Company LLC	Docket# RP19-352-000	Return on Equity
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
Idaho Public Utilities Commission				
PacifiCorp d/b/a Rocky Mountain Power	06/20	PacifiCorp d/b/a Rocky Mountain Power	PAC-E-20-03	Return on Equity
Indiana Utility Regulatory Commission				
Indiana and Michigan American Water Company	09/18	Indiana and Michigan American Water Company	IURC Cause No. 45142	Return on Equity
Northern Indiana Public Service Company	09/17	Northern Indiana Public Service Company	Cause No. 44988	Fair Value
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
Kansas Corporation Commission				
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity
Kentucky Public Service Commission				
Kentucky American Water Company	11/18	Kentucky American Water Company	Docket No. 2018-00358	Return on Equity
Maine Public Utilities Commission				
Central Maine Power	10/18	Central Maine Power	Docket No. 2018-00194	Return on Equity
Maryland Public Service Commission				
Maryland American Water Company	06/18	Maryland American Water Company	Case No. 9487	Return on Equity
Massachusetts Appellate Tax Board				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Hopkinton LNG Corporation	03/20	Hopkinton LNG Corporation	Docket No.	Valuation of LNG Facility
FirstLight Hydro Generating Company	06/17	FirstLight Hydro Generating Company	Docket No. F-325471 Docket No. F-325472 Docket No. F-325473 Docket No. F-325474	Valuation of Electric Generation Assets
Massachusetts Department of Public Utilities				
Berkshire Gas Company	05/18	Berkshire Gas Company	DPU 18-40	Rate Case
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity
Michigan Tax Tribunal				
New Covert Generating Co., LLC.	03/18	The Township of New Covert Michigan	MTT Docket No. 000248TT and 16-001888-TT	Valuation of Electric Generation Assets
Covert Township	07/14	New Covert Generating Co., LLC.	Docket No. 399578	Valuation of Electric Generation Assets
Minnesota Public Utilities Commission				
Allete, Inc. d/b/a Minnesota Power	11/19	Allete, Inc. d/b/a Minnesota Power	E015/GR-19-442	Return on Equity
CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	10/19	CenterPoint Energy Resources Corporation d/b/a CenterPoint Energy Minnesota Gas	G-008/GR-19-524	Return on Equity
Great Plains Natural Gas Co.	09/19	Great Plains Natural Gas Co.	Docket No. G004/GR-19-511	Return on Equity
Minnesota Energy Resources Corporation	10/17	Minnesota Energy Resources Corporation	Docket No. G011/GR-17-563	Return on Equity
Missouri Public Service Commission				
Missouri American Water Company	06/17	Missouri American Water Company	Case No. WR-17-0285 Case No. SR-17-0286	Return on Equity
Montana Public Service Commission				
Montana-Dakota Utilities Co.	09/18	Montana-Dakota Utilities Co.	D2018.9.60	Return on Equity
New Hampshire - Board of Tax and Land Appeals				

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Public Service Company of New Hampshire d/b/a Eversource Energy	11/19 12/19	Public Service Company of New Hampshire d/b/a Eversource Energy	Master Docket No. 28873-14-15-16-17PT	Valuation of Utility Property and Generating Assets
New Hampshire Public Utilities Commission				
Public Service Company of New Hampshire	05/19	Public Service Company of New Hampshire	DE-19-057	Return on Equity
New Hampshire-Merrimack County Superior Court				
Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	04/18	Northern New England Telephone Operations, LLC d/b/a FairPoint Communications, NNE	220-2012-CV-1100	Valuation of Utility Property
New Hampshire-Rockingham Superior Court				
Eversource Energy	05/18	Public Service Commission of New Hampshire	218-2016-CV-00899 218-2017-CV-00917	Valuation of Utility Property
New Jersey Board of Public Utilities				
New Jersey American Water Company, Inc.	12/19	New Jersey American Water Company, Inc.	WR19121516	Return on Equity
Public Service Electric and Gas Company	04/19	Public Service Electric and Gas Company	EO18060629 GO18060630	Return on Equity
Public Service Electric and Gas Company	02/18	Public Service Electric and Gas Company	GR17070776	Return on Equity
Public Service Electric and Gas Company	01/18	Public Service Electric and Gas Company	ER18010029 GR18010030	Return on Equity
New Mexico Public Regulation Commission				
Southwestern Public Service Company	07/19	Southwestern Public Service Company	19-00170-UT	Return on Equity
Southwestern Public Service Company	10/17	Southwestern Public Service Company	Case No. 17-00255-UT	Return on Equity
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. 16-00269-UT	Return on Equity
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. 15-00296-UT	Return on Equity
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. 15-00139-UT	Return on Equity
New York State Department of Public Service				
Corning Natural Gas Corporation	02/20	Corning Natural Gas Corporation	Case No. 20-G-0101	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
New York State Electric and Gas Company Rochester Gas and Electric	05/19	New York State Electric and Gas Company Rochester Gas and Electric	19-E-0378 19-G-0379 19-E-0380 19-G-0381	Return on Equity
Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	04/19	Brooklyn Union Gas Company d/b/a National Grid NY KeySpan Gas East Corporation d/b/a National Grid	19-G-0309 19-G-0310	Return on Equity
Central Hudson Gas and Electric Corporation	07/17	Central Hudson Gas and Electric Corporation	Gas 17-G-0460 Electric 17-E-0459	Return on Equity
Niagara Mohawk Power Corporation	04/17	National Grid USA	Case No. 17-E-0238 17-G-0239	Return on Equity
Corning Natural Gas Corporation	06/16	Corning Natural Gas Corporation	Case No. 16-G-0369	Return on Equity
National Fuel Gas Company	04/16	National Fuel Gas Company	Case No. 16-G-0257	Return on Equity
KeySpan Energy Delivery	01/16	KeySpan Energy Delivery	Case No. 15-G-0058 Case No. 15-G-0059	Return on Equity
New York State Electric and Gas Company Rochester Gas and Electric	05/15	New York State Electric and Gas Company Rochester Gas and Electric	Case No. 15-G-0284 Case No. 15-E-0285 Case No. 15-G-0286	Return on Equity
North Dakota Public Service Commission				
Northern States Power Company	12/12	Northern States Power Company	C-PU-12-813	Return on Equity
Northern States Power Company	12/10	Northern States Power Company	C-PU-10-657	Return on Equity
Oklahoma Corporation Commission				
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
Oregon Public Service Commission				
PacifiCorp d/b/a Pacific Power & Light	02/20	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-374	Return on Equity
Pennsylvania Public Utility Commission				
American Water Works Company Inc.	04/17	Pennsylvania-American Water Company	Docket No. R-2017-2595853	Return on Equity
South Dakota Public Utilities Commission				
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Texas Public Utility Commission				
Southwestern Public Service Commission	08/19	Southwestern Public Service Commission	Docket No. D-49831	Return on Equity
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity
Utah Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	05/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20-035-04	Return on Equity
Virginia State Corporation Commission				
Virginia American Water Company, Inc.	11/18	Virginia American Water Company, Inc.	Docket No. PUR-2018-00175	Return on Equity
Washington Utilities Transportation Commission				
Cascade Natural Gas Corporation	06/20	Cascade Natural Gas Corporation	Docket No. UG-200568	Return on Equity
PacifiCorp d/b/a Pacific Power & Light	12/19	PacifiCorp d/b/a Pacific Power & Light	Docket No. UE-191024	Return on Equity
Cascade Natural Gas Corporation	04/19	Cascade Natural Gas Corporation	Docket No. UG-190210	Return on Equity
West Virginia Public Service Commission				
West Virginia American Water Company	04/18	West Virginia American Water Company	Case No. 18-0573-W-42T Case No. 18-0576-S-42T	Return on Equity
Wisconsin Public Service Commission				
Wisconsin Electric Power Company and Wisconsin Gas LLC	03/19	Wisconsin Electric Power Company and Wisconsin Gas LLC	Docket No. 05-UR-109	Return on Equity
Wisconsin Public Service Corp.	03/19	Wisconsin Public Service Corp.	6690-UR-126	Return on Equity
Wyoming Public Service Commission				
PacifiCorp d/b/a Rocky Mountain Power	03/20	PacifiCorp d/b/a Rocky Mountain Power	Docket No. 20000-578-ER-20	Return on Equity
Montana-Dakota Utilities Co.	05/19	Montana-Dakota Utilities Co.	30013-351-GR-19	Return on Equity

SUMMARY OF ROE ANALYSES RESULTS[1]

Constant Growth DCF			
	Median Low	Median	Median High
30-Day Average	8.32%	9.69%	9.88%
90-Day Average	8.17%	9.56%	9.77%
180-Day Average	8.13%	9.52%	9.71%
Constant Growth Average	8.21%	9.59%	9.79%
CAPM			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Value Line Beta	10.17%	10.26%	10.60%
Bloomberg Beta	10.58%	10.66%	10.95%
ECAPM			
Value Line Beta	10.93%	10.99%	11.25%
Bloomberg Beta	11.23%	11.29%	11.51%
Expected Earnings			
	Mean		Median
Expected Earnings Analysis	11.20%		10.63%

Notes:

[1] The analytical results included in the table reflect the results of the Constant Growth DCF analysis excluding the results for individual companies that did not meet the minimum threshold of 7 percent.

PROXY GROUP SCREENING DATA AND RESULTS - FINAL PROXY GROUP

Company	Ticker	[1] Dividends	[2] S&P Credit Rating Between BBB- and AAA	[3] Covered by More Than 1 Analyst	[4] Positive Growth Rates from at least two sources (Value Line, Yahoo! First Call, and Zacks)	[5] % Regulated Operating Income > 70%	[6] Announced Merger
American States Water Co	AWR	Yes	A+	Yes	Yes	82.12%	No
Atmos Energy Corporation	ATO	Yes	A	Yes	Yes	100.00%	No
California Water Service Group	CWT	Yes	A+	Yes	Yes	96.14%	No
Essential Utilities, Inc.	WTRG	Yes	A	Yes	Yes	99.80%	No
Middlesex Water Company	MSEX	Yes	A	Yes	Yes	93.03%	No
New Jersey Resources Corporation	NJR	Yes	AA-	Yes	Yes	71.28%	No
Northwest Natural Gas Company	NWN	Yes	A+	Yes	Yes	100.00%	No
ONE Gas Inc.	OGS	Yes	A	Yes	Yes	100.00%	No
SJW Group	SJW	Yes	A-	Yes	Yes	98.37%	No
South Jersey Industries, Inc.	SJI	Yes	BBB	Yes	Yes	88.13%	No
Southwest Gas Corporation	SWX	Yes	BBB+	Yes	Yes	82.14%	No
Spire, Inc.	SR	Yes	A-	Yes	Yes	97.43%	No
York Water Company	YORW	Yes	A-	Yes	Yes	100.00%	No

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks
[4] Source: Yahoo! Finance, Value Line Investment Survey, and Zacks
[5] Source: Form 10-K's for 2018, 2017, and 2016
[6] Source: SNL Financial News Releases

30-DAY CONSTANT GROWTH DCF -- MAWC PROXY GROUP

										All Proxy Group			With Exclusions		
		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE	Low ROE	Mean ROE	High ROE
American States Water Co	AWR	$1.22	$79.27	1.54%	1.58%	6.50%	6.00%	4.90%	5.80%	6.48%	7.38%	8.09%		7.38%	8.09%
Atmos Energy Corporation	ATO	$2.30	$100.19	2.30%	2.38%	7.00%	7.50%	7.20%	7.23%	9.38%	9.61%	9.88%	9.38%	9.61%	9.88%
California Water Service Group	CWT	$0.85	$46.54	1.83%	1.90%	6.50%	9.80%	NA%	8.15%	8.39%	10.05%	11.72%	8.39%	10.05%	11.72%
Essential Utilities, Inc.	WTRG	$0.94	$41.46	2.26%	2.34%	10.00%	6.40%	5.90%	7.43%	8.23%	9.78%	12.37%	8.23%	9.78%	12.37%
Middlesex Water Company	MSEX	$1.03	$61.58	1.66%	1.70%	6.00%	2.70%	NA%	4.35%	4.39%	6.05%	7.71%			7.71%
New Jersey Resources Corporation	NJR	$1.25	$33.28	3.76%	3.84%	2.00%	6.00%	6.00%	4.67%	5.79%	8.51%	9.87%		8.51%	9.87%
Northwest Natural Gas Company	NWN	$1.91	$62.94	3.03%	3.26%	26.50%	3.75%	NA%	15.13%	6.84%	18.39%	29.94%		18.39%	29.94%
ONE Gas Inc.	OGS	$2.16	$81.08	2.66%	2.74%	6.50%	5.00%	5.50%	5.67%	7.73%	8.41%	9.25%	7.73%	8.41%	9.25%
SJW Group	SJW	$1.28	$58.57	2.19%	2.31%	6.00%	14.00%	14.00%	11.33%	8.25%	13.64%	16.34%	8.25%	13.64%	16.34%
South Jersey Industries, Inc.	SJI	$1.18	$27.25	4.33%	4.57%	12.50%	10.20%	10.20%	10.97%	14.75%	15.53%	17.10%	14.75%	15.53%	17.10%
Southwest Gas Corporation	SWX	$2.28	$74.52	3.06%	3.17%	8.00%	8.20%	6.00%	7.40%	9.15%	10.57%	11.38%	9.15%	10.57%	11.38%
Spire, Inc.	SR	$2.49	$71.83	3.47%	3.55%	5.50%	4.65%	4.70%	4.95%	8.20%	8.50%	9.06%	8.20%	8.50%	9.06%
York Water Company	YORW	$0.72	$42.17	1.71%	1.76%	7.00%	4.90%	NA%	5.95%	6.65%	7.71%	8.77%		7.71%	8.77%
Median				2.30%	2.38%	6.50%	6.00%	6.00%	7.23%	8.20%	9.61%	9.88%	8.32%	9.69%	9.88%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 30-day average as of May 29, 2020
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])
[12] Equals [9] if greater than 7.00%
[13] Equals [10] if greater than 7.00%
[14] Equals [11] if greater than 7.00%

90-DAY CONSTANT GROWTH DCF -- MAWC PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group [9]	[10]	[11]	With Exclusions [12]	[13]	[14]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE	Low ROE	Mean ROE	High ROE
American States Water Co	AWR	$1.22	$83.36	1.46%	1.51%	6.50%	6.00%	4.90%	5.80%	6.40%	7.31%	8.01%		7.31%	8.01%
Atmos Energy Corporation	ATO	$2.30	$105.33	2.18%	2.26%	7.00%	7.50%	7.20%	7.23%	9.26%	9.50%	9.77%	9.26%	9.50%	9.77%
California Water Service Group	CWT	$0.85	$50.11	1.70%	1.77%	6.50%	9.80%	NA%	8.15%	8.25%	9.92%	11.58%	8.25%	9.92%	11.58%
Essential Utilities, Inc.	WTRG	$0.94	$44.54	2.10%	2.18%	10.00%	6.40%	5.90%	7.43%	8.07%	9.62%	12.21%	8.07%	9.62%	12.21%
Middlesex Water Company	MSEX	$1.03	$62.34	1.64%	1.68%	6.00%	2.70%	NA%	4.35%	4.37%	6.03%	7.69%			7.69%
New Jersey Resources Corporation	NJR	$1.25	$35.70	3.50%	3.58%	2.00%	6.00%	6.00%	4.67%	5.54%	8.25%	9.61%		8.25%	9.61%
Northwest Natural Gas Company	NWN	$1.91	$66.01	2.89%	3.11%	26.50%	3.75%	NA%	15.13%	6.70%	18.24%	29.78%		18.24%	29.78%
ONE Gas Inc.	OGS	$2.16	$84.89	2.54%	2.62%	6.50%	5.00%	5.50%	5.67%	7.61%	8.28%	9.13%	7.61%	8.28%	9.13%
SJW Group	SJW	$1.28	$62.96	2.03%	2.15%	6.00%	14.00%	14.00%	11.33%	8.09%	13.48%	16.18%	8.09%	13.48%	16.18%
South Jersey Industries, Inc.	SJI	$1.18	$27.84	4.24%	4.47%	12.50%	10.20%	10.20%	10.97%	14.66%	15.44%	17.00%	14.66%	15.44%	17.00%
Southwest Gas Corporation	SWX	$2.28	$72.33	3.15%	3.27%	8.00%	8.20%	6.00%	7.40%	9.25%	10.67%	11.48%	9.25%	10.67%	11.48%
Spire, Inc.	SR	$2.49	$76.32	3.26%	3.34%	5.50%	4.65%	4.70%	4.95%	7.99%	8.29%	8.85%	7.99%	8.29%	8.85%
York Water Company	YORW	$0.72	$43.81	1.65%	1.69%	7.00%	4.90%	NA%	5.95%	6.59%	7.64%	8.70%		7.64%	8.70%
Median				2.18%	2.26%	6.50%	6.00%	6.00%	7.23%	7.99%	9.50%	9.77%	8.17%	9.56%	9.77%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 90-day average as of May 29, 2020
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])
[12] Equals [9] if greater than 7.00%
[13] Equals [10] if greater than 7.00%
[14] Equals [11] if greater than 7.00%

180-DAY CONSTANT GROWTH DCF -- MAWC PROXY GROUP

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	All Proxy Group [9]	[10]	[11]	With Exclusions [12]	[13]	[14]
Company	Ticker	Annualized Dividend	Stock Price	Dividend Yield	Expected Dividend Yield	Value Line Earnings Growth	Yahoo! Finance Earnings Growth	Zacks Earnings Growth	Average Growth Rate	Low ROE	Mean ROE	High ROE	Low ROE	Mean ROE	High ROE
American States Water Co	AWR	$1.22	$85.88	1.42%	1.46%	6.50%	6.00%	4.90%	5.80%	6.36%	7.26%	7.97%		7.26%	7.97%
Atmos Energy Corporation	ATO	$2.30	$107.90	2.13%	2.21%	7.00%	7.50%	7.20%	7.23%	9.21%	9.44%	9.71%	9.21%	9.44%	9.71%
California Water Service Group	CWT	$0.85	$51.14	1.66%	1.73%	6.50%	9.80%	NA%	8.15%	8.22%	9.88%	11.54%	8.22%	9.88%	11.54%
Essential Utilities, Inc.	WTRG	$0.94	$44.93	2.09%	2.16%	10.00%	6.40%	5.90%	7.43%	8.05%	9.60%	12.19%	8.05%	9.60%	12.19%
Middlesex Water Company	MSEX	$1.03	$62.82	1.63%	1.67%	6.00%	2.70%	NA%	4.35%	4.35%	6.02%	7.68%			7.68%
New Jersey Resources Corporation	NJR	$1.25	$39.60	3.16%	3.23%	2.00%	6.00%	6.00%	4.67%	5.19%	7.90%	9.25%		7.90%	9.25%
Northwest Natural Gas Company	NWN	$1.91	$67.97	2.81%	3.02%	26.50%	3.75%	NA%	15.13%	6.61%	18.15%	29.68%		18.15%	29.68%
ONE Gas Inc.	OGS	$2.16	$88.44	2.44%	2.51%	6.50%	5.00%	5.50%	5.67%	7.50%	8.18%	9.02%	7.50%	8.18%	9.02%
SJW Group	SJW	$1.28	$66.60	1.92%	2.03%	6.00%	14.00%	14.00%	11.33%	7.98%	13.36%	16.06%	7.98%	13.36%	16.06%
South Jersey Industries, Inc.	SJI	$1.18	$29.78	3.96%	4.18%	12.50%	10.20%	10.20%	10.97%	14.36%	15.15%	16.71%	14.36%	15.15%	16.71%
Southwest Gas Corporation	SWX	$2.28	$77.17	2.95%	3.06%	8.00%	8.20%	6.00%	7.40%	9.04%	10.46%	11.28%	9.04%	10.46%	11.28%
Spire, Inc.	SR	$2.49	$79.51	3.13%	3.21%	5.50%	4.65%	4.70%	4.95%	7.85%	8.16%	8.72%	7.85%	8.16%	8.72%
York Water Company	YORW	$0.72	$43.79	1.65%	1.69%	7.00%	4.90%	NA%	5.95%	6.59%	7.64%	8.70%		7.64%	8.70%
Median				2.13%	2.21%	6.50%	6.00%	6.00%	7.23%	7.85%	9.44%	9.71%	8.13%	9.52%	9.71%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals 180-day average as of May 29, 2020
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.50 x [8])
[5] Source: Value Line
[6] Source: Yahoo! Finance
[7] Source: Zacks
[8] Equals Average ([5], [6], [7])
[9] Equals [3] x (1 + 0.50 x Minimum ([5], [6], [7]) + Minimum ([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.50 x Maximum ([5], [6], [7]) + Maximum ([5], [6], [7])
[12] Equals [9] if greater than 7.00%
[13] Equals [10] if greater than 7.00%
[14] Equals [11] if greater than 7.00%

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

$K = Rf + \beta (Rm - Rf)$

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE
American States Water Co	AWR	1.33%	0.60	13.18%	11.86%	8.44%	9.63%
Atmos Energy Corporation	ATO	1.33%	0.80	13.18%	11.86%	10.81%	11.41%
California Water Service Group	CWT	1.33%	0.60	13.18%	11.86%	8.44%	9.63%
Essential Utilities, Inc.	WTRG	1.33%	0.60	13.18%	11.86%	8.44%	9.63%
Middlesex Water Company	MSEX	1.33%	0.70	13.18%	11.86%	9.63%	10.52%
New Jersey Resources Corporation	NJR	1.33%	0.90	13.18%	11.86%	12.00%	12.30%
Northwest Natural Gas Company	NWN	1.33%	0.80	13.18%	11.86%	10.81%	11.41%
ONE Gas Inc.	OGS	1.33%	0.80	13.18%	11.86%	10.81%	11.41%
SJW Group	SJW	1.33%	0.60	13.18%	11.86%	8.44%	9.63%
South Jersey Industries, Inc.	SJI	1.33%	0.95	13.18%	11.86%	12.59%	12.74%
Southwest Gas Corporation	SWX	1.33%	0.90	13.18%	11.86%	12.00%	12.30%
Spire, Inc.	SR	1.33%	0.80	13.18%	11.86%	10.81%	11.41%
York Water Company	YORW	1.33%	0.65	13.18%	11.86%	9.03%	10.07%
Mean			0.746			10.17%	10.93%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Source: Value Line Reports, April 10, 2020; May 29, 2020
[3] Source: Schedule AEB-4, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

$K = Rf + \beta (Rm - Rf)$

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q3 2020 - Q3 2021)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE
American States Water Co	AWR	1.68%	0.60	13.18%	11.50%	8.58%	9.73%
Atmos Energy Corporation	ATO	1.68%	0.80	13.18%	11.50%	10.88%	11.46%
California Water Service Group	CWT	1.68%	0.60	13.18%	11.50%	8.58%	9.73%
Essential Utilities, Inc.	WTRG	1.68%	0.60	13.18%	11.50%	8.58%	9.73%
Middlesex Water Company	MSEX	1.68%	0.70	13.18%	11.50%	9.73%	10.60%
New Jersey Resources Corporation	NJR	1.68%	0.90	13.18%	11.50%	12.03%	12.32%
Northwest Natural Gas Company	NWN	1.68%	0.80	13.18%	11.50%	10.88%	11.46%
ONE Gas Inc.	OGS	1.68%	0.80	13.18%	11.50%	10.88%	11.46%
SJW Group	SJW	1.68%	0.60	13.18%	11.50%	8.58%	9.73%
South Jersey Industries, Inc.	SJI	1.68%	0.95	13.18%	11.50%	12.61%	12.75%
Southwest Gas Corporation	SWX	1.68%	0.90	13.18%	11.50%	12.03%	12.32%
Spire, Inc.	SR	1.68%	0.80	13.18%	11.50%	10.88%	11.46%
York Water Company	YORW	1.68%	0.65	13.18%	11.50%	9.16%	10.16%
Mean			0.746			10.26%	10.99%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 2
[2] Source: Source: Value Line Reports, April 10, 2020; May 29, 2020
[3] Source: Schedule AEB-4, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

$K = Rf + \beta (Rm - Rf)$

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2022 - 2026)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE
American States Water Co	AWR	3.00%	0.60	13.18%	10.18%	9.11%	10.13%
Atmos Energy Corporation	ATO	3.00%	0.80	13.18%	10.18%	11.15%	11.66%
California Water Service Group	CWT	3.00%	0.60	13.18%	10.18%	9.11%	10.13%
Essential Utilities, Inc.	WTRG	3.00%	0.60	13.18%	10.18%	9.11%	10.13%
Middlesex Water Company	MSEX	3.00%	0.70	13.18%	10.18%	10.13%	10.89%
New Jersey Resources Corporation	NJR	3.00%	0.90	13.18%	10.18%	12.17%	12.42%
Northwest Natural Gas Company	NWN	3.00%	0.80	13.18%	10.18%	11.15%	11.66%
ONE Gas Inc.	OGS	3.00%	0.80	13.18%	10.18%	11.15%	11.66%
SJW Group	SJW	3.00%	0.60	13.18%	10.18%	9.11%	10.13%
South Jersey Industries, Inc.	SJI	3.00%	0.95	13.18%	10.18%	12.68%	12.80%
Southwest Gas Corporation	SWX	3.00%	0.90	13.18%	10.18%	12.17%	12.42%
Spire, Inc.	SR	3.00%	0.80	13.18%	10.18%	11.15%	11.66%
York Water Company	YORW	3.00%	0.65	13.18%	10.18%	9.62%	10.51%
Mean			0.746			10.60%	11.25%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 14
[2] Source: Source: Value Line Reports, April 10, 2020; May 29, 2020
[3] Source: Schedule AEB-4, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

K = Rf + β (Rm − Rf)

Company	Ticker	[1] Current 30-day average of 30-year U.S. Treasury bond yield	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE
American States Water Co	AWR	1.33%	0.63	13.18%	11.86%	8.75%	9.86%
Atmos Energy Corporation	ATO	1.33%	0.76	13.18%	11.86%	10.40%	11.09%
California Water Service Group	CWT	1.33%	0.65	13.18%	11.86%	8.99%	10.04%
Essential Utilities, Inc.	WTRG	1.33%	0.81	13.18%	11.86%	10.96%	11.51%
Middlesex Water Company	MSEX	1.33%	0.76	13.18%	11.86%	10.36%	11.07%
New Jersey Resources Corporation	NJR	1.33%	0.81	13.18%	11.86%	10.94%	11.50%
Northwest Natural Gas Company	NWN	1.33%	0.73	13.18%	11.86%	10.02%	10.81%
ONE Gas Inc.	OGS	1.33%	0.85	13.18%	11.86%	11.44%	11.87%
SJW Group	SJW	1.33%	0.83	13.18%	11.86%	11.17%	11.67%
South Jersey Industries, Inc.	SJI	1.33%	0.84	13.18%	11.86%	11.30%	11.77%
Southwest Gas Corporation	SWX	1.33%	0.88	13.18%	11.86%	11.78%	12.13%
Spire, Inc.	SR	1.33%	0.75	13.18%	11.86%	10.23%	10.97%
York Water Company	YORW	1.33%	0.84	13.18%	11.86%	11.24%	11.73%
Mean			0.781			10.58%	11.23%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-4, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

K = Rf + β (Rm − Rf)

Company	Ticker	[1] Near-term projected 30-year U.S. Treasury bond yield (Q3 2020 - Q3 2021)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE
American States Water Co	AWR	1.68%	0.63	13.18%	11.50%	8.89%	9.96%
Atmos Energy Corporation	ATO	1.68%	0.76	13.18%	11.50%	10.48%	11.16%
California Water Service Group	CWT	1.68%	0.65	13.18%	11.50%	9.12%	10.14%
Essential Utilities, Inc.	WTRG	1.68%	0.81	13.18%	11.50%	11.02%	11.56%
Middlesex Water Company	MSEX	1.68%	0.76	13.18%	11.50%	10.45%	11.13%
New Jersey Resources Corporation	NJR	1.68%	0.81	13.18%	11.50%	11.01%	11.55%
Northwest Natural Gas Company	NWN	1.68%	0.73	13.18%	11.50%	10.11%	10.88%
ONE Gas Inc.	OGS	1.68%	0.85	13.18%	11.50%	11.49%	11.91%
SJW Group	SJW	1.68%	0.83	13.18%	11.50%	11.23%	11.72%
South Jersey Industries, Inc.	SJI	1.68%	0.84	13.18%	11.50%	11.35%	11.81%
Southwest Gas Corporation	SWX	1.68%	0.88	13.18%	11.50%	11.82%	12.16%
Spire, Inc.	SR	1.68%	0.75	13.18%	11.50%	10.31%	11.03%
York Water Company	YORW	1.68%	0.84	13.18%	11.50%	11.30%	11.77%
Mean			0.781			10.66%	11.29%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 2
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-4, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

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

K = Rf + β (Rm − Rf)

Company	Ticker	[1] Projected 30-year U.S. Treasury bond yield (2022 - 2026)	[2] Beta (β)	[3] Market Return (Rm)	[4] Market Risk Premium (Rm − Rf)	[5] ROE (K)	[6] ECAPM ROE
American States Water Co	AWR	3.00%	0.63	13.18%	10.18%	9.38%	10.33%
Atmos Energy Corporation	ATO	3.00%	0.76	13.18%	10.18%	10.79%	11.39%
California Water Service Group	CWT	3.00%	0.65	13.18%	10.18%	9.59%	10.49%
Essential Utilities, Inc.	WTRG	3.00%	0.81	13.18%	10.18%	11.27%	11.75%
Middlesex Water Company	MSEX	3.00%	0.76	13.18%	10.18%	10.76%	11.37%
New Jersey Resources Corporation	NJR	3.00%	0.81	13.18%	10.18%	11.26%	11.74%
Northwest Natural Gas Company	NWN	3.00%	0.73	13.18%	10.18%	10.47%	11.15%
ONE Gas Inc.	OGS	3.00%	0.85	13.18%	10.18%	11.68%	12.06%
SJW Group	SJW	3.00%	0.83	13.18%	10.18%	11.45%	11.89%
South Jersey Industries, Inc.	SJI	3.00%	0.84	13.18%	10.18%	11.56%	11.97%
Southwest Gas Corporation	SWX	3.00%	0.88	13.18%	10.18%	11.98%	12.28%
Spire, Inc.	SR	3.00%	0.75	13.18%	10.18%	10.64%	11.28%
York Water Company	YORW	3.00%	0.84	13.18%	10.18%	11.51%	11.93%
Mean			0.781			10.95%	11.51%

Notes:
[1] Source: Blue Chip Financial Forecasts, Vol. 39, No. 6, June 1, 2020, at 14
[2] Source: Bloomberg Professional
[3] Source: Schedule AEB-4, page 3
[4] Equals [3] - [1]
[5] Equals [1] + [2] x [4]
[6] Equals [1] + 0.25 x ([4]) + 0.75 x ([2] x [4])

MARKET RISK PREMIUM DERIVED FROM S&P EARNINGS AND ESTIMATE REPORT

[7] S&P's estimate of the S&P 500 Dividend Yield	1.88%
[8] S&P's estimate of the S&P 500 Growth Rate	11.20%
[9] S&P 500 Estimated Required Market Return	13.18%

Notes:
[7] Source: S&P Dow Jones Indices, S&P 500 Earnings and Estimate Report, May 29, 2020
[8] Source: S&P Dow Jones Indices, S&P 500 Earnings and Estimate Report, May 29, 2020
[9] Equals ([7] x (1 + (0.5 x [8]))) + [8]

EXPECTED EARNINGS ANALYSIS

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]
		Value Line ROE 2023-2025	Value Line Total Capital 2019	Value Line Common Equity Ratio 2019	Total Equity 2019	Value Line Total Capital 2023-2025	Value Line Common Equity Ratio 2023-2025	Total Equity 2023-2025	Compound Annual Growth Rate	Adjustment Factor	Adjusted Return on Common Equity
American States Water Co	AWR	14.00%	1,082.50	55.60%	601.87	1,565.00	51.50%	805.98	6.01%	1.029	14.41%
Atmos Energy Corporation	ATO	9.00%	9,279.70	62.00%	5,753.41	16,000.00	60.00%	9,600.00	10.78%	1.051	9.46%
California Water Service Group	CWT	12.50%	1,566.70	49.80%	780.22	1,500.00	56.50%	847.50	1.67%	1.008	12.60%
Essential Utilities, Inc.	WTRG	10.50%	6,824.20	56.90%	3,882.97	9,800.00	45.00%	4,410.00	2.58%	1.013	10.63%
Middlesex Water Company	MSEX	14.50%	556.70	58.20%	324.00	515.00	60.50%	311.58	-0.78%	0.996	14.44%
New Jersey Resources Corporation	NJR	9.50%	3,088.90	50.20%	1,550.63	4,580.00	56.50%	2,587.70	10.79%	1.051	9.99%
Northwest Natural Gas Company	NWN	11.50%	1,672.00	51.80%	866.10	1,825.00	52.50%	958.13	2.04%	1.010	11.62%
ONE Gas Inc.	OGS	9.50%	3,415.50	62.30%	2,127.86	4,400.00	62.00%	2,728.00	5.09%	1.025	9.74%
SJW Group	SJW	9.50%	2,173.00	41.00%	890.93	1,825.00	64.50%	1,177.13	5.73%	1.028	9.76%
South Jersey Industries, Inc.	SJI	12.00%	3,493.90	40.80%	1,425.51	4,850.00	43.50%	2,109.75	8.16%	1.039	12.47%
Southwest Gas Corporation	SWX	9.50%	4,806.40	52.10%	2,504.13	7,000.00	55.50%	3,885.00	9.18%	1.044	9.92%
Spire, Inc.	SR	7.00%	4,625.60	55.00%	2,544.08	7,200.00	55.00%	3,960.00	9.25%	1.044	7.31%
York Water Company	YORW	13.00%	228.70	58.70%	134.25	250.00	64.00%	160.00	3.57%	1.018	13.23%
Mean											11.20%
Median											10.63%

Notes:
[1] Source: Value Line Reports, April 10, 2020; May 29, 2020
[2] Source: Value Line Reports, April 10, 2020; May 29, 2020
[3] Source: Value Line Reports, April 10, 2020; May 29, 2020
[4] Equals [2] x [3]
[5] Source: Value Line Reports, April 10, 2020; May 29, 2020
[6] Source: Value Line Reports, April 10, 2020; May 29, 2020
[7] Equals [5] x [6]
[8] Equals ([7] / [4]) ^ (1/5) - 1
[9] Equals 2 x (1 + [8]) / (2 + [8])
[10] Equals [1] x [9]

COMPARISON OF MISSOURI-AMERICAN AND PROXY GROUP COMPANIES
CAPITAL COST RECOVERY MECHANISMS

Company	Ticker	State	Utility Type	Full/Partial Future Test Year	Infrastructure Replacement Surcharge	Revenue Stabilization or Decoupling	Citations
American States Water Co							2019 10-K, page 36, 44; Company Investor Presentation; RRA
	AWR	California	Water	Fully Forecast	No	Full	
Atmos Energy Corporation							2019 10-K, pages 7-8, 10-11; S&P Global Market Intelligence, Regulator
	ATO	Colorado	Gas	Historical	Yes	No	
	ATO	Kansas	Gas	Historical	Yes	Partial	
	ATO	Kentucky	Gas	Fully Forecast	Yes	Partial	
	ATO	Louisiana	Gas	Historical	Yes	Partial	
	ATO	Mississippi	Gas	Partially Forecast	Yes	Partial	
	ATO	Tennessee	Gas	Fully Forecast	No	Partial	
	ATO	Texas	Gas	Historical	Yes	Partial	
	ATO	Virginia	Gas	Historical	Yes	Partial	
California Water Service Group							2019 10-K, page 8-13; S&P Global Market Intelligence; K'Anapali Division,
	CWT	California	Water	Fully Forecast	No	Full	Docket No. 2015-0230, Order No. 33953; RRA
	CWT	Hawaii	Water	Partially Forecast	No	No	
	CWT	New Mexico	Water	Historical	No	No	
	CWT	Washington	Water	Historical	No	No	
Essential Utilities, Inc.							2019 10-K, page 9-10; S&P Global Market Intelligence, Regulatory Focus:
	WTR	Pennsylvania	Water	Fully Forecast	Yes	No	Adjustment Clauses, dated November 12, 2019; S&P Global Market
	WTR	Ohio	Water	Partially Forecast	Yes	No	Intelligence; RRA
	WTR	Illinois	Water	Fully Forecast	Yes	Full	
	WTR	Texas	Water	Historical	No	No	
	WTR	New Jersey	Water	Partially Forecast	Yes	No	
	WTR	North Carolina	Water	Historical	Yes	No	
	WTR	Indiana	Water	Partially Forecast	Yes	No	
	WTR	Virginia	Water	Historical	Yes	No	
	WTR	Kentucky	Gas	Historical	Yes	Partial	
	WTR	West Virginia	Gas	Historical	Yes	No	
Middlesex Water Company							
	MSEX	New Jersey	Water	Partially Forecast	Yes	No	2019 10-K, page 6-7; Middlesex Water Company, Twin Lake Utilities, and
	MSEX	Delaware	Water	Historical	Yes	No	Tidwater Utilities Tariffs; NJBPU Docket WR19030418, Order 10/25/19; PPUC
	MSEX	Pennsylvania	Water	Historical	No	No	Docket R-2019-3010958, Recommended Decision 2/18/20; S&P Global Market
New Jersey Resources Corporation							S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated
	NJR	New Jersey	Gas	Partially Forecast	Yes	Full	November 12, 2019; RRA
Northwest Natural Gas Company							S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated
	NWN	Oregon	Gas	Fully Forecast	No	Partial	November 12, 2019; RRA
	NWN	Washington	Gas	Historical	No	No	
ONE Gas, Inc.							S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated
	OGS	Kansas	Gas	Historical	Yes	Partial	November 12, 2019; RRA
	OGS	Oklahoma	Gas	Historical	No	Partial	
	OGS	Texas	Gas	Historical	Yes	Partial	
SJW Group							
	SJW	California	Water	Fully Forecast	No	No	SJW 2019 10-K, page 5-8, 33, 34; RRA
	CTWS	Connecticut	Water	Historical	Yes	Full	
	CTWS	Maine	Water	Historical	Yes	No	
	SJW	Texas	Water	Historical	No	No	
South Jersey Industries, Inc.							S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated
	SJI	New Jersey	Gas	Partially Forecast	Yes	Full	November 12, 2019; RRA
Southwest Gas Corporation							S&P Global Market Intelligence, Regulatory Focus: Adjustment Clauses, dated
	SWX	Arizona	Gas	Historical	Yes	Full	November 12, 2019; RRA
	SWX	California	Gas	Fully Forecast	No	Full	
	SWX	Nevada	Gas	Historical	Yes	Full	
Spire, Inc.							2019 10-K pages 124-128; S&P Global Market Intelligence, Regulatory Focus:
	SR	Alabama	Gas	Fully Forecast	No	Full	Adjustment Clauses, dated November 12, 2019; RRA
	SR	Mississippi	Gas	Historical	No	Full	
	SR	Missouri	Gas	Historical	Yes	Partial	
York Water Company							
	YORW	Pennsylvania	Water	Fully Forecast	Yes	No	2019 10-K, pp. 43; S&P Global Market Intelligence; RR/

Proxy Group Totals									
				Fully Forecast	11	Yes	28	Full	11
				Partially Forecast	8	No	16	Partial	13
				Historical	25			No	20
				Forecast	43.18%	Infra Surcharge	63.6%	RDM	54.5%

Missouri - American Water	AWK	Missouri	Water	Fully Forecast	Yes	Proposing	

CAPITAL STRUCTURE ANALYSIS

COMMON EQUITY RATIO [1]

Proxy Group Company	Ticker	2019 [3]	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		54.72%	54.72%
Middlesex Water Company	MSEX	57.27%	60.24%	57.27%
New Jersey Resources Corporation	NJR		61.92%	61.92%
Northwest Natural Gas Company	NWN	49.19%	49.33%	49.19%
One Gas Inc.	OGS	63.55%	62.03%	63.55%
SJW Group	SJW	51.69%	57.26%	51.69%
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		55.66%	56.34%	56.07%
LOW		46.55%	45.03%	46.55%
HIGH		65.94%	62.79%	65.94%

COMMON EQUITY RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019 [3]	2018	MRY
Golden State Water / Bear Valley	AWR	65.94%	60.77%	65.94%
Atmos Energy Corporation	ATO	58.43%	59.20%	58.43%
California Water Service	CWT	46.46%	44.81%	46.46%
New Mexico Water Service	CWT		63.40%	63.40%
Washington Water Service	CWT	52.53%	56.71%	52.53%
Aqua Pennsylvania	WTRG		53.05%	53.05%
Peoples Gas Company	WTRG		68.12%	68.12%
Aqua Ohio Water	WTRG		58.39%	61.27%
Aqua Ohio Wastewater	WTRG		57.65%	60.35%
Aqua Illinois	WTRG		53.52%	53.52%
Aqua Texas	WTRG		48.65%	48.65%
Aqua Indiana Aboite Division	WTRG		100.00%	100.00%
Aqua Indiana Consumers Indiana Div	WTRG		100.00%	100.00%
Aqua Indiana Darlington Div	WTRG		100.00%	100.00%
Aqua Indiana Heir Division	WTRG		100.00%	100.00%
Aqua Indiana Southeastern Utilities	WTRG		100.00%	100.00%
Aqua Indiana Wedgewood Park	WTRG		100.00%	100.00%
Aqua Indiana White Oak Div	WTRG		100.00%	100.00%
Aqua Indiana Wildwood Shores Div	WTRG		100.00%	100.00%
Aqua Indiana Wymberly Division	WTRG		100.00%	100.00%
Delta Gas	WTRG		57.84%	57.84%
Peoples Gas of WV	WTRG		47.30%	48.10%
Middlesex Water Company	MSEX	57.27%	60.24%	57.27%
New Jersey Natural Gas Company	NJR		61.92%	61.92%
Northwest Natural Gas Company	NWN	49.19%	49.33%	49.19%
Kansas Gas Service Company, Inc	OGS	63.55%	62.20%	63.55%
Oklahoma Natural Gas Company	OGS		61.94%	61.94%
Texas Gas Service Company, Inc	OGS		61.95%	61.95%
San Jose Water	SJW	51.46%	55.49%	51.46%
CT Water	SJW		55.59%	55.59%
Avon Water	SJW		91.63%	91.63%
Heritage Village Water	SJW		80.27%	80.27%
Maine Water Co.	SJW	54.21%	54.97%	54.21%
Canyon Lake Water Service Company	SJW		69.74%	69.74%
South Jersey Gas Company	SJI	52.88%	52.82%	52.88%
Southwest Gas Corporation	SWX	48.52%	49.38%	48.52%
Spire Alabama Inc.	SR	66.82%	71.48%	66.82%
Spire Gulf Inc.	SR		45.31%	45.31%
Spire Mississippi Inc	SR		100.00%	100.00%
Spire Missouri Inc	SR	59.05%	58.91%	59.05%
York Water Company	YORW	56.50%	56.98%	56.50%

Notes:
[1] Ratios are weighted by actual common capital, preferred equity, and long-term debt of Operating Subsidiaries
[2] Natural Gas Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

[3] 2019 data for certain operating companies has not been reported due to delays resulting from COVID-19.

CAPITAL STRUCTURE ANALYSIS

LONG-TERM DEBT RATIO [1]

Proxy Group Company	Ticker	2019 [3]	2018	MRY
American States Water Company	AWR	34.06%	39.23%	34.06%
Atmos Energy Corporation	ATO	41.57%	40.80%	41.57%
California Water Service Group	CWT	53.45%	54.97%	53.45%
Essential Utilities, Inc	WTRG		45.28%	45.28%
Middlesex Water Company	MSEX	42.36%	39.17%	42.36%
New Jersey Resources Corporation	NJR		38.08%	38.08%
Northwest Natural Gas Company	NWN	50.81%	50.67%	50.81%
One Gas Inc.	OGS	36.45%	37.97%	36.45%
SJW Group	SJW	48.31%	42.74%	48.31%
South Jersey Industries, Inc.	SJI	47.12%	47.18%	47.12%
Southwest Gas Corporation	SWX	51.48%	50.62%	51.48%
Spire Inc.	SR	38.20%	37.21%	38.20%
York Water Company	YORW	43.50%	43.02%	43.50%
MEAN		44.30%	43.61%	43.90%
LOW		34.06%	37.21%	34.06%
HIGH		53.45%	54.97%	53.45%

LONG-TERM DEBT RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019 [3]	2018	MRY
Golden State Water / Bear Valley	AWR	34.06%	39.23%	34.06%
Atmos Energy Corporation	ATO	41.57%	40.80%	41.57%
California Water Service	CWT	53.54%	55.19%	53.54%
New Mexico Water Service	CWT		36.60%	36.60%
Washington Water Service	CWT	47.47%	43.29%	47.47%
Aqua Pennsylvania	WTRG		46.95%	46.95%
Peoples Gas Company	WTRG		31.88%	31.88%
Aqua Ohio Water	WTRG		41.61%	41.61%
Aqua Ohio Wastewater	WTRG		42.35%	42.35%
Aqua Illinois	WTRG		46.48%	46.48%
Aqua Texas	WTRG		51.35%	51.35%
Aqua Indiana Aboite Division	WTRG		0.00%	0.00%
Aqua Indiana Consumers Indiana Div	WTRG		0.00%	0.00%
Aqua Indiana Darlington Div	WTRG		0.00%	0.00%
Aqua Indiana Heir Division	WTRG		0.00%	0.00%
Aqua Indiana Southeastern Utilities	WTRG		0.00%	0.00%
Aqua Indiana Wedgewood Park	WTRG		0.00%	0.00%
Aqua Indiana White Oak Div	WTRG		0.00%	0.00%
Aqua Indiana Wildwood Shores Div	WTRG		0.00%	0.00%
Aqua Indiana Wymberly Division	WTRG		0.00%	0.00%
Delta Gas	WTRG		42.16%	42.16%
Peoples Gas of WV	WTRG		52.70%	52.70%
Middlesex Water Company	MSEX	42.36%	39.17%	42.36%
New Jersey Natural Gas Company	NJR		38.08%	38.08%
Northwest Natural Gas Company	NWN	50.81%	50.67%	50.81%
Kansas Gas Service Company, Inc	OGS	36.45%	37.80%	36.45%
Oklahoma Natural Gas Company	OGS		38.06%	38.06%
Texas Gas Service Company, Inc	OGS		38.05%	38.05%
San Jose Water	SJW	48.54%	44.51%	48.54%
CT Water	SJW		44.41%	44.41%
Avon Water	SJW		8.37%	8.37%
Heritage Village Water	SJW		19.73%	19.73%
Maine Water Co.	SJW	45.79%	45.03%	45.79%
Canyon Lake Water Service Company	SJW		30.26%	30.26%
South Jersey Gas Company	SJI	47.12%	47.18%	47.12%
Southwest Gas Corporation	SWX	51.48%	50.62%	51.48%
Spire Alabama Inc.	SR	33.18%	28.52%	33.18%
Spire Gulf Inc.	SR		54.69%	54.69%
Spire Mississippi Inc	SR		0.00%	0.00%
Spire Missouri Inc	SR	40.95%	41.09%	40.95%
York Water Company	YORW	43.50%	43.02%	43.50%

Notes:
[1] Ratios are weighted by actual common capital, preferred equity, and long-term debt of Operating Subsidiaries
[2] Natural Gas Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

[3] 2019 data for certain operating companies has not been reported due to delays resulting from COVID-19.

CAPITAL STRUCTURE ANALYSIS

PREFERRED EQUITY RATIO [1]

Proxy Group Company	Ticker	2019 [3]	2018	MRY
American States Water Company	AWR	0.00%	0.00%	0.00%
Atmos Energy Corporation	ATO	0.00%	0.00%	0.00%
California Water Service Group	CWT	0.00%	0.00%	0.00%
Essential Utilities, Inc	WTRG		0.00%	0.00%
Middlesex Water Company	MSEX	0.37%	0.59%	0.37%
New Jersey Resources Corporation	NJR		0.00%	0.00%
Northwest Natural Gas Company	NWN	0.00%	0.00%	0.00%
One Gas Inc.	OGS	0.00%	0.00%	0.00%
SJW Group	SJW	0.00%	0.00%	0.00%
South Jersey Industries, Inc.	SJI	0.00%	0.00%	0.00%
Southwest Gas Corporation	SWX	0.00%	0.00%	0.00%
Spire Inc.	SR	0.00%	0.00%	0.00%
York Water Company	YORW	0.00%	0.00%	0.00%
MEAN		0.03%	0.05%	0.03%
LOW		0.00%	0.00%	0.00%
HIGH		0.37%	0.59%	0.37%

PREFERRED EQUITY RATIO - UTILITY OPERATING COMPANIES [2]

Company Name	Ticker	2019 [3]	2018	MRY
Golden State Water / Bear Valley	AWR	0.00%	0.00%	0.00%
Atmos Energy Corporation	ATO	0.00%	0.00%	0.00%
California Water Service	CWT	0.00%	0.00%	0.00%
New Mexico Water Service	CWT		0.00%	0.00%
Washington Water Service	CWT	0.00%	0.00%	0.00%
Aqua Pennsylvania	WTRG		0.00%	0.00%
Peoples Gas Company	WTRG		0.00%	0.00%
Aqua Ohio Water	WTRG		0.00%	0.00%
Aqua Ohio Wastewater	WTRG		0.00%	0.00%
Aqua Illinois	WTRG		0.00%	0.00%
Aqua Texas	WTRG		0.00%	0.00%
Aqua Indiana Aboite Division	WTRG		0.00%	0.00%
Aqua Indiana Consumers Indiana Div	WTRG		0.00%	0.00%
Aqua Indiana Darlington Div	WTRG		0.00%	0.00%
Aqua Indiana Heir Division	WTRG		0.00%	0.00%
Aqua Indiana Southeastern Utilities	WTRG		0.00%	0.00%
Aqua Indiana Wedgewood Park	WTRG		0.00%	0.00%
Aqua Indiana White Oak Div	WTRG		0.00%	0.00%
Aqua Indiana Wildwood Shores Div	WTRG		0.00%	0.00%
Aqua Indiana Wymberly Division	WTRG		0.00%	0.00%
Delta Gas	WTRG		0.00%	0.00%
Peoples Gas of WV	WTRG		0.00%	0.00%
Middlesex Water Company	MSEX	0.37%	0.59%	0.37%
New Jersey Natural Gas Company	NJR		0.00%	0.00%
Northwest Natural Gas Company	NWN	0.00%	0.00%	0.00%
Kansas Gas Service Company, Inc	OGS	0.00%	0.00%	0.00%
Oklahoma Natural Gas Company	OGS		0.00%	0.00%
Texas Gas Service Company, Inc	OGS		0.00%	0.00%
San Jose Water	SJW	0.00%	0.00%	0.00%
CT Water	SJW		0.00%	0.00%
Avon Water	SJW		0.00%	0.00%
Heritage Village Water	SJW		0.00%	0.00%
Maine Water Co.	SJW	0.00%	0.00%	0.00%
Canyon Lake Water Service Company	SJW		0.00%	0.00%
South Jersey Gas Company	SJI	0.00%	0.00%	0.00%
Southwest Gas Corporation	SWX	0.00%	0.00%	0.00%
Spire Alabama Inc.	SR	0.00%	0.00%	0.00%
Spire Gulf Inc.	SR		0.00%	0.00%
Spire Mississippi Inc	SR		0.00%	0.00%
Spire Missouri Inc	SR	0.00%	0.00%	0.00%
York Water Company	YORW	0.00%	0.00%	0.00%

Notes:
[1] Ratios are weighted by actual common capital, preferred equity, and long-term debt of Operating Subsidiaries
[2] Natural Gas Subsidiaries with data listed as N/A from SNL Financial have been excluded from the analysis.

[3] 2019 data for certain operating companies has not been reported due to delays resulting from COVID-19.