EXHIBIT 220 221

Exhibit No.:	
Issue:	Cost of Capital
Witness:	Michael P. Gorman
Type of Exhibit:	Direct Testimony
Sponsoring Parties:	Missouri Office of Public Counsel and Missouri Industrial Energy Consumers
Case No.:	WR-2017-0285
Date Testimony Prepared:	November 30, 2017

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Request for Authority to Implement General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas	**Case No. WR-2017-0285**

Direct Testimony and Schedules of

Michael P. Gorman

On behalf of

Missouri Office of Public Counsel
and
Missouri Industrial Energy Consumers

November 30, 2017

BRUBAKER & ASSOCIATES, INC.

Exhibit No. 221
Date 3/8/18 Reporter MH
File No. WR-2017-0285

Project 10440.3

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Request for Authority to Implement General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas	)	**Case No. WR-2017-0285**

STATE OF MISSOURI)
) **SS**
COUNTY OF ST. LOUIS)

Affidavit of Michael P. Gorman

Michael P. Gorman, being first duly sworn, on his oath states:

1. My name is Michael P. Gorman. I am a consultant with Brubaker & Associates, Inc., having its principal place of business at 16690 Swingley Ridge Road, Suite 140, Chesterfield, Missouri 63017. We have been retained by the Missouri Office of Public Counsel and Missouri Industrial Energy Consumers in this proceeding on their behalf.

2. Attached hereto and made a part hereof for all purposes are my direct testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. WR-2017-0285.

3. I hereby swear and affirm that the testimony and schedules are true and correct and that they show the matters and things that they purport to show.

Michael P. Gorman

Subscribed and sworn to before me this 30th day of November, 2017.

TAMMY S. KLOSSNER
Notary Public - Notary Seal
STATE OF MISSOURI
St. Charles County
My Commission Expires: Mar. 16, 2019
Commission # 15024862

Tammy S. Klossner
Notary Public

BEFORE THE PUBLIC SERVICE COMMISSION
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OF THE STATE OF MISSOURI

In the Matter of Missouri-American Water Company's Request for Authority to Implement General Rate Increase for Water and Sewer Service Provided in Missouri Service Areas	)	Case No. WR-2017-0285

Direct Testimony of Michael P. Gorman

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q WHAT IS YOUR OCCUPATION?

A I am a consultant in the field of public utility regulation and a Managing Principal of Brubaker & Associates, Inc., energy, economic and regulatory consultants.

Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A This information is included in Appendix A to this testimony.

Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

A I am testifying on behalf of the Office of the Public Counsel ("OPC") and the Missouri Industrial Energy Consumers ("MIEC").

Q WHAT IS THE SUBJECT MATTER OF YOUR TESTIMONY?

A I will address a fair rate of return on common equity as well as a fair overall rate of return on rate base for Missouri-American Water Company ("MAWC" or "Company").

I. SUMMARY

Q PLEASE SUMMARIZE YOUR DIRECT TESTIMONY.

A I recommend the Missouri Public Service Commission ("Commission") award MAWC a return on common equity of 9.00%. In deriving my recommended return, I applied three versions of the Discounted Cash Flow ("DCF") model, a risk premium model, and a Capital Asset Pricing Model ("CAPM") to two proxy groups of publicly traded utility companies that have investment risk similar to MAWC. Based on these assessments, I estimate MAWC's current market cost of equity to be 9.00%.

My recommended return on equity will provide MAWC with an opportunity to realize cash flow financial coverages and balance sheet strength that conservatively support MAWC's credit metrics at an investment grade bond rating level. Consequently, my recommended return on equity represents fair compensation for MAWC's investment risk, and it will preserve the Company's financial integrity and credit standing.

II. RATE OF RETURN

II.A. Regulated Utility Industry Market Outlook

Q PLEASE DESCRIBE THIS SECTION OF YOUR TESTIMONY.

A I began my estimate of a fair return on equity for MAWC by reviewing the market's assessment of the investment risk and credit standing of the utility industry generally and water utility industry specifically. I used this information to develop a sense of the

market's perception of the risk characteristics of water utility investments in general, which is then used to produce a refined estimate of the market's return requirement for assuming investment risk similar to MAWC's utility operations.

Q PLEASE DESCRIBE THE CREDIT RATING OUTLOOK FOR REGULATED UTILITIES.

A Regulated utilities' credit ratings have improved over the last few years and the outlook has been labeled "Stable" by credit rating agencies. Credit analysts have also observed that utilities have strong access to capital at attractive pricing (i.e., low capital costs), which has supported very large capital programs.

Standard & Poor's ("S&P") recently published a report titled "Corporate Industry Credit Research: Industry Top Trends 2017, Utilities." In that report, S&P noted the following:

> – **Ratings Outlook**: Rating trends across regulated utilities remain mostly stable supported by stable regulatory oversight, slow but steady demand for utility services, and tempered by aggressive capital spending that will keep credit metrics from improving. Emerging new political trends in historically stable regions like Europe and the U.S. may have far-reaching effect on utilities over time, but S&P Global Ratings sees little immediate influence from those factors in 2017. Sovereign rating developments can influence utility ratings in some countries and we expect them to vary in different parts of the globe.
>
> * * *
>
> – **Assumptions:** Sales growth at most utilities is closely tied to the general economic outlook in its service territory, which can vary considerably from utility to utility. We project solid regulatory support for utility earnings and cash flow, with the occasional exception due to specific political or policy issues at the local level. Capital spending will continue to be elevated in most areas, with substantial infrastructure needs.
>
> * * *

– **Industry Trends:** The utility industry in most regions is stable, consistent with our general ratings outlook and the nature of the essential products and services utilities sell.[1]

Similarly, Fitch states:

> **Strong and Stable Median Ratings:** The UDC sector has typically enjoyed strong investment-grade ratings, with the historical median centered at 'BBB' for Fitch's coverage. Key rating drivers include lower operational risks than those faced by integrated utilities, ongoing state regulatory support for the upgrade of existing T&D infrastructure, timely recovery of costs and a rising proportion of investments regulated by the Federal Energy Regulatory Commission (FERC), which Fitch continues to deem more supportive than many state regimes.
>
> **Median ROE Trends Lower:** The median authorized return on equity (ROE) has continued to inch downwards given a persistently low interest rate environment. The median ROE was 9.60% in 2016, a modest improvement of 50bps from 2015, yet remaining below the median ROE of 9.68% in 2014 and 9.73% in 2013. Fitch believes that the long-term downward trend of authorized ROEs is stabilizing at or near current levels but does not anticipate a reversal in trend anytime soon. Gas LDCs have typically fared better than electric T&D utilities.[2]

Moody's recent comments on the U.S. Utility Sector state as follows:

> **2017 Outlook - Timely Cost-Recovery Drives Stable Outlook**
>
> Our outlook for the US regulated utilities industry is stable. This outlook reflects our expectations for the fundamental business conditions in the industry over the next 12 to 18 months.
>
> **A credit-supportive regulatory environment is the main driver of our stable outlook.** Our stable outlook for the US regulated utility industry is based on our expectation that utilities will continue to recover costs in a timely manner and maintain stable cash flows.[3]

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[1] *Standard & Poor's Global Ratings*: "Industry Top Trends 2017, Utilities," February 16, 2017, at 1, emphasis added.

[2] *Fitch Ratings*: "U.S. Transmission and Distribution Utilities Handbook," May 15, 2017, at 1, emphasis added.

[3] *Moody's Investors Service*: "Regulated Utilities - US: 2017 Outlook – Timely Cost-Recovery Drives Stable Outlook," November 4, 2016, at 1, emphasis added.

Q **HAVE UTILITIES BEEN ABLE TO ACCESS EXTERNAL CAPITAL TO SUPPORT INFRASTRUCTURE CAPITAL PROGRAMS?**

A Yes. In its August 24, 2017 Capital Expenditure Update report, *RRA Financial Focus*, a division of S&P Global Market Intelligence, made several recent comments about utility capital investments:

- Across the small investor-owned water utility sector, 2016 CapEx spending was well above 2015 levels, with individual company increases ranging from 5% to 84% and the group average up 36%. Only York Water's CapEx investment dipped — the company spent $13 million last year, compared to $14 million in 2015.

- Overall water utility spending in the first half of 2017 is on track with the first half of 2016, while individual company's investments vary from -30% to +185%. American States water is on the low end of the range, with first-half 2017 CapEx totaling $46 million compared to $65 million in first-half 2016. York Water is on the upper end of the range, with first-half 2017 CapEx totaling $14 million compared to $5 million in first-half 2016.

- Company CapEx forecasts for full-year 2017 are mixed. On the upper end, CapEx forecasts for Middlesex Water and York Water are projected to exceed 2016 spending levels by 27% and 77%, respectively. On the lower end, Connecticut Water Service and American States Water forecast 2017 spending to decrease 17% and 15%, respectively, compared to 2016.

- CapEx spending tends to be rather variable year-to-year at the smaller utilities, with budgets that can swing widely based on individual projects. Additionally, American Water comprises 55%-60% of the sector's roughly $2 billion total annual CapEx spending, so comparing the group's aggregate CapEx from year to year is not necessarily meaningful.

- Our observations indicate that the trend of accelerated CapEx spending across the electric, natural gas and water utility industries is likely to continue for some time. Those familiar with the niche-water utility sector have heard the frequent-cited estimations of $385 billion to $1.3 trillion, which are needed to upgrade, replace, and expand water & wastewater infrastructure over the next 20 years range. Such estimates span across the entire water sector, including the vast sea of municipal and cooperative-owned

water entities. Decades of postponed capital spending has made these investments more imperative.[4]

Indeed, capital expenditures outlooks for utilities generally, and water utilities specifically, are projected to increase over the next two years.

Q HAVE YOU CONSIDERED CONSENSUS MARKET OUTLOOKS FOR CHANGES IN INTEREST RATES IN FORMING YOUR RECOMMENDED RETURN ON EQUITY IN THIS CASE?

A Yes. The outlook for changes in interest rates has been highly impacted by expectations that the Federal Reserve Bank Open Market Committee ("FOMC") will raise short-term interest rates, and outlooks for inflation and GDP growth after the recent Presidential election. The consensus economists are expecting continued increases in the Federal Funds Rate as the FOMC continues to normalize interest rates in response to the strengthening of the U.S. economy.

This is evident from a comparison of current and forecasted changes in the Federal Funds Rate, as shown in Table 1 below.

However, while the Federal Funds Rate is expected to increase over the next several years, consensus economists are not projecting significant increases in long-term interest rates. This is also illustrated in Table 1 below.

[4] *S&P Global Market Intelligence, RRA Financial Focus*: "Water Capital Expenditures: Accelerated CapEx spending at water utilities expected to continue," August 24, 2017, at 1.

TABLE 1

Blue Chip Financial Forecasts
Projected Federal Funds Rate, 30-Year Treasury Bond Yields, and GDP Price Index

Publication Date	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	4Q 2018	1Q 2019
Federal Funds Rate									
Jun-17	**0.7**	1.0	1.2	1.4	1.5	1.7	1.9		
Jul-17		0.9	1.2	1.3	1.5	1.7	1.9	2.1	
Aug-17		**0.9**	1.2	1.3	1.5	1.6	1.8	2.0	
Sep-17		**0.9**	1.2	1.3	1.5	1.6	1.8	2.0	
Oct-17			1.2	1.2	1.4	1.6	1.8	2.0	2.2
Nov-17			**1.2**	1.2	1.4	1.6	1.8	2.0	2.1
T-Bond, 30 yr.									
Jun-17	**3.0**	3.0	3.2	3.4	3.5	3.6	3.7		
Jul-17		2.9	3.0	3.2	3.3	3.5	3.6	3.7	
Aug-17		**2.9**	3.0	3.1	3.3	3.4	3.6	3.7	
Sep-17		**2.9**	2.9	3.1	3.2	3.4	3.5	3.6	
Oct-17			2.8	2.9	3.1	3.3	3.4	3.5	3.6
Nov-17			**2.8**	3.0	3.1	3.3	3.4	3.5	3.6
GDP Price Index									
Jun-17	**2.2**	1.5	2.0	2.1	2.2	2.1	2.2		
Jul-17		1.3	1.9	2.0	2.1	2.1	2.1	2.2	
Aug-17		**1.0**	1.7	2.0	2.1	2.1	2.1	2.2	
Sep-17		**1.0**	1.7	2.0	2.1	2.0	2.1	2.1	
Oct-17			1.7	2.0	1.9	1.9	2.1	2.1	2.2
Nov-17			**2.2**	2.0	1.9	2.0	2.1	2.1	2.2

Source and Note:
Blue Chip Financial Forecasts, June 2017 through November 2017.
Actual Yields in Bold

I note that the four increases in the Federal Funds Rate experienced over the last few years have not caused comparable changes in outlooks for changes in long-term interest rates. This is illustrated on my attached Schedule MPG-1. As shown on that schedule, the actions taken by the FOMC to increase the Federal Funds Rate have simply flattened the yield curve, and have not resulted in an increase in long-term interest rates. This is significant because cost of common equity is impacted by long-term interest rates, not short-term interest rates. As a

result, the recent increases in the Federal Funds Rate, and the expectation of continued increases in the Federal Funds Rate, have not, and are not expected to, significantly impact long-term interest rates.

In a recent Federal Reserve meeting, it also announced a strategy to begin to unwind its balance sheet position in long-term securities toward the end of this year. Currently, the Federal Reserve has built up over approximately $4.7 trillion of Treasury and mortgage-backed securities as part of a quantitative easing ("QE") program that spanned 2008 to 2014. During this QE program, the Federal Reserve procured long-term securities in an effort to support the Federal Reserve's monetary policy and mitigate long-term interest rates.

There has been concern that if the Federal Reserve starts to unwind this balance sheet position, it will cause an increase in long-term interest rates. However, the Federal Reserve announced that if it does unwind its balance sheet position, it will do so in small increments so as to not have a significant impact on long-term interest rates.[5]

For these reasons, the Federal Reserve actions on short-term interest rates have not resulted in increases in long-term interest rates. Further, the Federal Reserve's proposed plan for unwinding its balance sheet position is not expected to have a significant impact on long-term interest rates. All this indicates that the Federal Reserve QE monetary policy changes related to a strengthening economy have not and are not expected to increase long-term interest rates. Further, this outlook is reflected in consensus economists' forecasts of long-term interest rates, which indicate a relatively low capital market cost period for at least the intermediate period.

[5]Board of Governors of the Federal Reserve System, Press Release, "Federal Reserve Issues FOMC Statement," June 14, 2017.

Q **HAVE PROJECTIONS OF INTEREST RATES MODERATED MORE RECENTLY RELATIVE TO THE LAST FEW YEARS?**

A Yes. This is shown below in Table 2. There, for each quarter from 2014 through Q3, 2017, I show the prevailing quarterly average Treasury bond yield, and the projections of Treasury bond yields two years out, and five to ten years out. Significantly, actual Treasury bond yields in 2017 have been moderate and comparable to those in 2015 and 2016, and are lower than the two-year projected yields in 2015, which would cover 2017. In addition, current projections of future Treasury bond yields five and ten years out are now generally lower than they were over the last three years. Indeed, in 2014 Treasury bond yields five to ten years out were projected to increase to 5.6% from then prevailing yields of 3.26% to 3.79%. The five to ten-year projections have steadily declined through 2015 and 2016. Most recently, long-term projected Treasury bond yields are now expected to remain relatively low in the 4.3% to 4.5% range 10 years out. It is also valuable to note that 2014's five and ten year projections are much higher than 2017's two-year projections although they cover the same time period.

While the accuracy of projected increases in interest rates is uncertain, what is significant is that current costs remain low, and that consensus market economists now project that capital market costs over the next five to ten years will remain relatively low. This outlook represents a material moderation in capital market costs over this intermediate forecast period.

TABLE 2

30-Year Treasury Bond Yield Actual Vs. Projection

Description	Quarterly Average	2-Year Projected	5- to 10-Year Projected
2014			
Q1	3.79%	4.40%	5.0% - 5.5%
Q2	3.69%	4.50%	
Q3	3.44%	4.40%	5.3% - 5.6%
Q4	3.26%	4.30%	
2015			
Q1	2.97%	4.00%	4.9% - 5.1%
Q2	2.55%	3.70%	
Q3	2.83%	4.00%	4.8% - 5.0%
Q4	2.84%	3.90%	
2016			
Q1	2.96%	3.80%	4.5% - 4.8%
Q2	2.72%	3.60%	
Q3	2.64%	3.40%	4.3% - 4.6%
Q4	2.29%	3.10%	
2017			
Q1	2.82%	3.70%	4.2% - 4.5%
Q2	3.05%	3.80%	
Q3	2.91%	3.70%	4.3% - 4.5%

Sources:

Blue Chip Financial Forecasts,
December 2013 through September 2017.

Q HOW SHOULD THE COMMISSION USE THIS MARKET INFORMATION IN ASSESSING A FAIR RETURN FOR MAWC?

A Market evidence is quite clear that capital market costs are near historically low levels. Regulated utilities continue to have access to large amounts of external capital to fund large capital programs; and utilities' investment grade credit standings

are stable to improving. The Commission should carefully weigh all this important observable market evidence in assessing a fair return on equity for MAWC.

II.B. MAWC's Investment Risk

Q PLEASE DESCRIBE MAWC'S INVESTMENT RISK.

A The market assessment of MAWC's investment risk is best described by credit rating analysts' reports. Its parent company, American Water Works Company, Inc. ("AWW"), has S&P and Moody's corporate credit ratings of A and A3, respectively. MAWC's corporate bonds are issued by its affiliate, American Water Capital Corp. ("AWCC"). Both credit rating agencies have a "Stable" outlook for AWW. Specifically, S&P states:

> **Business Risk: Excellent**
>
> Our assessment of AWK's[6] business risk profile reflects the company's monopolistic and lower-risk, rate-regulated water distribution business providing an essential service in regulatory jurisdictions that we generally view as supportive of credit quality. The company benefits from constructive mechanisms such as the distribution system investment charge (DSIC) in a number of its jurisdictions, which allows for the recovery of high capital spending outside of a traditional rate-case proceeding and reduces regulatory lag. In addition, the company's geographic diversity, reliability, and efficiency further supports its business risk profile. AWK's elevated capital spending requirements for infrastructure replacement, increased compliance costs to meet water quality standards, and reliance on acquisitions to provide growth enhances these strengths. The company serves approximately 3.3 million water and wastewater customers across multiple states. Based on EBITDA, we consider AWK's operations about 95% regulated utility and 5% non-regulated. Although we view the non-regulated businesses as having higher business risk compared with the regulated operations, we also recognize that AWK's unregulated businesses marginally affect the company's business risk profile because of its modest expected capital requirements, affiliation with its regulated service jurisdictions, and lower-risk service contracts.

[6]AWK is the New York Stock Exchange ticker symbol for American Water Works Company, Inc.

Financial Risk: Intermediate

Our base-case scenario forecast includes annual adjusted FFO to debt averaging around 16%, near the midpoint of the benchmark range. Adjusted OCF to debt bolsters this determination since in our base-case scenario we expect the measure to average 17%, slightly above the midpoint of the benchmark range. We expect debt leverage, as measured by adjusted debt to EBITDA, in the 4.5x-5x range, above the midpoint of the benchmark range. We expect capital spending combined with dividend distributions will result in negative discretionary cash flow. Therefore external funding needs will limit any material deleveraging. We do expect AWK will continue to fund its investments in a manner that preserves credit quality. We base our financial risk assessment on our most relaxed financial ratio benchmarks, reflecting the company's steady cash flows from its low-risk, rate-regulated water utility operations and regulatory risk management.[7]

II.C. Embedded Cost of Debt

Q WHAT IS THE COMPANY'S EMBEDDED COST OF LONG-TERM DEBT?

A The Company is proposing an embedded cost of long-term debt of 5.24% as developed on Mr. Rungren's Schedule SWR-1, page 7 of 14. This is based on a MAWC projected interest rate for the new debt issuances in 2017 and 2018 as reflected in its filing. This debt cost can be updated at true-up.

III. RETURN ON EQUITY

Q PLEASE DESCRIBE WHAT IS MEANT BY A "UTILITY'S COST OF COMMON EQUITY."

A A utility's cost of common equity is the return investors require on an investment in the utility. Investors expect to achieve their return requirement from receiving dividends and stock price appreciation.

[7] *Standard & Poor's RatingsDirect*: "American Water Works Co. Inc.," October 25, 2017 at 4-6, emphasis added.

Q PLEASE DESCRIBE THE FRAMEWORK FOR DETERMINING A REGULATED UTILITY'S COST OF COMMON EQUITY.

A In general, determining a fair cost of common equity for a regulated utility has been framed by two hallmark decisions of the U.S. Supreme Court: Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of W. Va., 262 U.S. 679 (1923) and Fed. Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944).

These decisions identify the general standards to be considered in establishing the cost of common equity for a public utility. Those general standards provide that the authorized return should: (1) be sufficient to maintain financial integrity; (2) attract capital under reasonable terms; and (3) be commensurate with returns investors could earn by investing in other enterprises of comparable risk.

Q PLEASE DESCRIBE THE METHODS YOU HAVE USED TO ESTIMATE MAWC'S COST OF COMMON EQUITY.

A I have used several models based on financial theory to estimate MAWC's cost of common equity. These models are: (1) a constant growth Discounted Cash Flow ("DCF") model using consensus analysts' growth rate projections; (2) a constant growth DCF using sustainable growth rate estimates; (3) a multi-stage growth DCF model; (4) a Risk Premium model; and (5) a Capital Asset Pricing Model ("CAPM").

Q DID YOU APPLY THESE MODELS DIRECTLY TO MAWC?

A No. I applied these models to proxy groups of publicly-traded water and natural gas utilities that reasonably approximate the investment risk of MAWC. MAWC is not a publicly traded company and therefore these models cannot be applied directly to MAWC.

III.A. Risk Proxy Groups

Q HOW DID YOU SELECT A WATER UTILITY PROXY GROUP SIMILAR IN INVESTMENT RISK TO MAWC TO ESTIMATE ITS CURRENT MARKET COST OF EQUITY?

A I relied on a water utility proxy group that I determined to be comparable in investment risk to MAWC. My recommended water utility proxy group is the same utility proxy group used by MAWC witness Mrs. Bulkley to estimate MAWC's return on equity.

In addition, I also developed a gas utility proxy group comparable to MAWC. My gas utility proxy group was developed by starting with the gas companies followed by *Value Line.* Then, I excluded WGL Holdings because it is in the process of being acquired by AltaGas. The transaction is expected to be finalized in the second quarter of 2018. I also excluded South Jersey Industries, Inc. because on October 16, 2017, it announced the acquisition of Elizabethtown Gas. Finally, I excluded Chesapeake Utilities Corporation and UGI Corp. because they are not rated by S&P or Moody's.

Q WHY DID YOU RELY ON GAS UTILITIES AS A PROXY GROUP IN ESTIMATING MAWC'S COST OF EQUITY?

A I relied on a gas utility proxy group along with the water utility proxy group to better measure MAWC's cost of equity. This was necessary for several reasons. First, gas utilities' securities are more widely followed than are water utility stocks, and therefore the estimated cost of equity from a gas utility proxy group provides a more robust estimate of MAWC's current market cost of equity. Second, the asset capitalization and operations of gas and water utilities are very similar. Both utility groups'

operations are dependent on large main investment and operations, infrastructure replacement and upgrades, and reliability and safety compliance with state, local and federal regulations. The two groups produce a better investment risk proxy than only a water utility proxy group.

For these reasons, I believe these two proxy groups are reasonable to estimate the investment risk of MAWC.

Q WHY IS IT APPROPRIATE TO EXCLUDE COMPANIES WHICH ARE INVOLVED IN MERGER AND ACQUISITION ("M&A") ACTIVITY FROM THE PROXY GROUP?

A M&A activity can distort the market factors used in DCF and risk premium studies. M&A activity can have impacts on stock prices, growth outlooks, and relative volatility in historical stock prices if the market was anticipating or expecting the M&A activity prior to it actually being announced. This distortion in the market data thus impacts the reliability of the DCF and risk premium estimates for a company involved in M&A.

Moreover, companies generally enter into M&A in order to produce greater shareholder value by combining companies. The enhanced shareholder value normally could not be realized had the two companies not combined.

When companies announce an M&A, the public assesses the proposed merger and develops outlooks on the value of the two companies after the combination based on expected synergies or other value adds created by the M&A.

As a result, the stock value before the merger is completed may not reflect the forward-looking earnings and dividend payments for the company absent the merger or on a stand-alone basis. Therefore, an accurate DCF return estimate on companies involved in M&A activities cannot be produced because their stock prices do not reflect the stand-alone investment characteristics of the companies. Rather,

the stock price more likely reflects the shareholder enhancement produced by the proposed transaction. For these reasons, it is appropriate to remove companies involved in M&A activity from a proxy group used to estimate a fair return on equity for a utility.

Q WHY IS IT APPROPRIATE TO EXCLUDE COMPANIES THAT DO NOT HAVE A BOND RATING FROM S&P OR MOODY'S?

A Credit rating agencies undertake a detailed assessment of the business and financial risk in awarding a bond rating. This bond rating is available to public capital market participants, and is a generally independent assessment of the investment risk of the subject company. While a bond rating generally assesses the credit strength of the company, it is useful in determining the predictability and strength of the company's cash flows to meet its financial obligations including cash needed to meet common equity shareholders' investment return outlooks. For these reasons, credit ratings from S&P's and Moody's are information that is available to the investment community to assess the overall investment risk of the underlying company.

Because Chesapeake Utilities and UGI do not have a bond rating from S&P or Moody's, it is not possible to determine whether or not the credit rating agencies have found that their investment risk is reasonably similar to that of MAWC or any of the other proxy group companies. Because the information was not available to determine that they are reasonably comparable in investment risk to MAWC, they were excluded from the proxy group.

Q PLEASE DESCRIBE WHY YOU BELIEVE YOUR WATER UTILITY PROXY GROUP IS REASONABLY COMPARABLE IN INVESTMENT RISK TO MAWC.

A The water proxy group is shown on page 1 of Schedule MPG-2. This proxy group has an average credit rating from S&P of A, which is identical to S&P's credit rating for MAWC (AWW)[8]. In addition to MAWC's parent Company (A3), only American States Water Company has a credit rating of A2 from Moody's.

The water proxy group has an average common equity ratio of 52.2% from S&P and 54.7% (excluding short-term debt) from *Value Line* for 2016.

I believe that my water proxy group reasonably approximates the investment risk of MAWC, and can be used to estimate a fair return on equity for MAWC.

Q PLEASE DESCRIBE WHY YOU BELIEVE YOUR GAS UTILITY PROXY GROUP IS REASONABLY COMPARABLE IN INVESTMENT RISK TO MAWC.

A The gas proxy group is shown on page 2 of Schedule MPG-2. This proxy group has an average bond rating from S&P of A-, which is a notch lower than S&P's senior unsecured bond rating for MAWC (AWW) of A. The proxy group has an average bond rating from Moody's of A3, which is identical to Moody's credit rating for MAWC (AWW).

The gas proxy group has an average common equity ratio of 48.9% from S&P and 53.1% (excluding short-term debt) from *Value Line* in 2016.

I believe that my gas proxy group reasonably approximates the investment risk of MAWC, and can be used to estimate a fair return on equity for MAWC.

[8]Bulkley Direct Testimony at 25.

III.B. Discounted Cash Flow ("DCF") Model

Q PLEASE DESCRIBE THE DCF MODEL.

A The DCF model posits that a stock price is valued by summing the present value of expected future cash flows discounted at the investor's required rate of return or cost of capital. This model is expressed mathematically as follows:

$$P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} \ldots \frac{D_\infty}{(1+K)^\infty} \quad \text{where} \quad \text{(Equation 1)}$$

P_0 = Current stock price
D = Dividends in periods 1 - ∞
K = Investor's required return

This model can be rearranged in order to estimate the discount rate or investor-required return, "K." If it is reasonable to assume that earnings and dividends will grow at a constant rate, then Equation 1 can be rearranged as follows:

$$K = D_1/P_0 + G \quad \text{(Equation 2)}$$

K = Investor's required return
D_1 = Dividend in first year
P_0 = Current stock price
G = Expected constant dividend growth rate

Equation 2 is referred to as the annual "constant growth" DCF model.

Q PLEASE DESCRIBE THE INPUTS TO YOUR CONSTANT GROWTH DCF MODEL.

A As shown in Equation 2 above, the DCF model requires a current stock price, expected dividend, and expected growth rate in dividends.

Q WHAT STOCK PRICE HAVE YOU RELIED ON IN YOUR CONSTANT GROWTH DCF MODEL?

A I relied on the average of the weekly high and low stock prices of the utilities in the proxy groups over a 13-week period ending on October 27, 2017. An average stock price is less susceptible to market price variations than a spot price. Therefore, an average stock price is less susceptible to aberrant market price movements, which may not reflect the stock's long-term value.

A 13-week average stock price reflects a period that is short enough to contain data that reasonably reflect current market expectations, but not so short as to be susceptible to market price variations that may not reflect the stock's long-term value. In my judgment, a 13-week average stock price is a reasonable balance between the need to reflect current market expectations and the need to capture sufficient data to smooth out aberrant market movements.

Q WHAT DIVIDEND DID YOU USE IN YOUR CONSTANT GROWTH DCF MODEL?

A I used the most recently paid quarterly dividend, as reported in *Value Line*.[9] This dividend was annualized (multiplied by 4) and adjusted for next quarter growth to produce the D_1 factor for use in Equation 2 above.

Q WHAT DIVIDEND GROWTH RATES HAVE YOU USED IN YOUR CONSTANT GROWTH DCF MODEL?

A There are several methods that can be used to estimate the expected growth in dividends. However, regardless of the method, for purposes of determining the market-required return on common equity, one must attempt to estimate investors'

[9] *The Value Line Investment Survey*, September 1 and October 13, 2017.

consensus about what the dividend or earnings growth rate will be, and not what an individual investor or analyst may use to make individual investment decisions.

As predictors of future returns, security analysts' growth estimates have been shown to be more accurate than growth rates derived from historical data.[10] That is, assuming the market generally makes rational investment decisions, analysts' growth projections are more likely to influence investors' decisions which are captured in observable stock prices than growth rates derived only from historical data.

For my constant growth DCF analysis, I have relied on a consensus, or mean, of professional security analysts' earnings growth estimates as a proxy for investor consensus dividend growth rate expectations. I used the average of analysts' growth rate estimates from three sources: Zacks, Yahoo! Finance and Reuters, downloaded on October 27, 2017.

Q WHAT ARE THE GROWTH RATES YOU USED IN YOUR CONSTANT GROWTH DCF MODEL?

A The growth rates I used in my DCF analysis are shown on Schedule MPG-3. The average growth rates for my water and gas proxy groups are 6.82% and 5.71%, respectively.

[10] *See, e.g.,* David Gordon, Myron Gordon, and Lawrence Gould, "Choice Among Methods of Estimating Share Yield," *The Journal of Portfolio Management*, Spring 1989.

Q WHAT ARE THE RESULTS OF YOUR CONSTANT GROWTH DCF MODEL?

A As shown on Schedule MPG-4, the average and median constant growth DCF returns for my water proxy group are 8.93% and 8.61%, respectively. The average and median constant growth DCF returns for my gas proxy group are 8.34% and 8.50%, respectively.

Q DO YOU HAVE ANY COMMENTS ON THE RESULTS OF YOUR CONSTANT GROWTH DCF ANALYSIS?

A Yes. The constant growth DCF analysis for my water proxy group is based on an average growth rate of 6.82% that is slightly offset by the lower dividend yield produced by the recently strong stock performance of the water utilities.

Similarly, the constant growth DCF analysis for my gas proxy group is based on an average growth rate of 5.71%. The growth rates for both of my proxy groups are approximately 150-260 basis points above the sustainable growth rate of 4.2% for the U.S. economy, discussed later in my testimony.

Q HOW DID YOU ESTIMATE A MAXIMUM LONG-TERM SUSTAINABLE GROWTH RATE?

A A long-term sustainable growth rate for a utility stock cannot exceed the growth rate of the economy in which it sells its goods and services. Hence, the long-term maximum sustainable growth rate for a utility investment is best proxied by the projected long-term Gross Domestic Product ("GDP"). *Blue Chip Economic Indicators* projects that over the next 5 and 10 years, the U.S. nominal GDP will grow approximately 4.20%. These GDP growth projections reflect a real growth outlook of 2.1% and an inflation outlook of 2.1% going forward. As such, the average growth

rate over the next 10 years is approximately 4.20%, which is a reasonable proxy of long-term sustainable growth.[11]

In my multi-stage growth DCF analysis, I discuss academic and investment practitioner support for using the projected long-term GDP growth outlook as a maximum sustainable growth rate projection. Hence, recognizing the long-term GDP growth rate as a maximum sustainable growth is logical, and is generally consistent with academic and economic practitioner accepted practices.

III.C. Sustainable Growth DCF

Q PLEASE DESCRIBE HOW YOU ESTIMATED A SUSTAINABLE LONG-TERM GROWTH RATE FOR YOUR SUSTAINABLE GROWTH DCF MODEL.

A A sustainable growth rate is based on the percentage of the utility's earnings that is retained and reinvested in utility plant and equipment. These reinvested earnings increase the earnings base (rate base). Earnings grow when plant funded by reinvested earnings is put into service, and the utility is allowed to earn its authorized return on such additional rate base investment.

The internal growth methodology is tied to the percentage of earnings retained in the company and not paid out as dividends. The earnings retention ratio is 1 minus the dividend payout ratio. As the payout ratio declines, the earnings retention ratio increases. An increased earnings retention ratio will fuel stronger growth because the business funds more investments with retained earnings.

The payout ratios of the proxy groups are shown in my Schedule MPG-5. I use these dividend payout ratios and earnings retention ratios to develop a sustainable long-term earnings retention growth rate. A sustainable long-term

[11] *Blue Chip Economic Indicators,* October 10, 2017, at 14.

earnings retention ratio will help gauge whether analysts' current three- to five-year growth rate projections can be sustained over an indefinite period of time.

Further, a closer examination of SJW Group and Atmos Energy shows that these growth rates are being driven up significantly by relatively short-term factors. Specifically, as shown on my Schedule MPG-6, page 1, the internal growth rate for SJW Group is 7.98%, while the sustained growth rate reflecting sales of additional stock increases to 12.2%. This is a 4.22 percentage point increase in the sustainable growth rate. Similarly, Atmos Energy's internal growth rate is about 5.8%, that increases to 10.47% (Schedule MPG-6, page 3). The increase in the internal growth rate for these companies is significantly different than the impact in the other companies, which reflects the outlook for significant capital investments over the next three to five years. This growth created through selling stock to the public will not be sustained indefinitely. As such, the growth rates for SJW Group and Atmos Energy are skewing the group average growth rates and inflating the DCF return estimates for these companies. Therefore, the median growth rates for the sustainable growth rate more accurately reflects the central tendencies of the proxy group results for both the water and the gas investment groups.

The data I used to estimate the long-term sustainable growth rate is based on the Company's current market-to-book ratio and on *Value Line*'s three- to five-year projections of earnings, dividends, earned returns on book equity, and stock issuances.

As shown in Schedule MPG-6, pages 1 and 3, the average sustainable growth rates for the water and gas proxy groups using this internal growth rate model are 7.42% and 6.17%, respectively.

Q WHAT IS THE DCF ESTIMATE USING THESE SUSTAINABLE LONG-TERM GROWTH RATES?

A As shown in my Schedule MPG-7, a sustainable growth DCF analysis produces water proxy group average and median DCF results for the 13-week period of 9.55% and 8.80%, respectively. The sustainable growth DCF analysis for the gas proxy group produces average and median results of 8.82% and 8.38%, respectively.

Q DO YOU HAVE ANY COMMENTS ABOUT THE RESULTS OF YOUR SUSTAINABLE GROWTH DCF ANALYSES?

A Yes. The results of my sustainable growth DCF analyses for the water and gas proxy groups are driven, in large part, by very high growth rates produced by unusually large sales of stock. For example, SJW Group's sustainable growth rate based on *Value Line's* three- to five-year projections is 12.20%, which produced a sustainable growth DCF result of almost 14.0%. This is an obvious outlier as the calculated growth rate of 12.20% is approximately 3 times that of the projected growth rate of the U.S. economy. Similarly, Atmos Energy Corporation's sustainable growth rate based on *Value Line's* three- to five-year projections is 10.47%, which produced a sustainable growth DCF result of 12.76%. Again, this is an obvious outlier as the calculated growth rate of 10.47% is approximately 2.5 times that of the projected growth rate of the U.S. economy. The most appropriate method to measure the central tendencies of the proxy groups' results in the presence of outliers, high or low, is the median rather than the average results.

III.D. Multi-Stage Growth DCF Model

Q HAVE YOU CONDUCTED ANY OTHER DCF STUDIES?

A Yes. My constant growth DCF is based on consensus analysts' growth rate projections so it is a reasonable reflection of rational investment expectations over the next three to five years. The limitation on this constant growth DCF model is that it cannot reflect a rational expectation that a period of high/low short-term growth can be followed by a change in growth to a rate that is more reflective of long-term sustainable growth. Hence, I performed a multi-stage growth DCF analysis to reflect this outlook of changing growth expectations.

Q WHY DO YOU BELIEVE GROWTH RATES CAN CHANGE OVER TIME?

A Analyst-projected growth rates over the next three to five years will change as utility earnings growth outlooks change. Utility companies go through cycles in making investments in their systems. When utility companies are making large investments, their rate base grows rapidly, which in turn accelerates earnings growth. Once a major construction cycle is completed or levels off, growth in the utility rate base slows, and the utility's earnings growth slows from an abnormally high three- to five-year rate to a lower sustainable growth rate.

As major construction cycles extend over longer periods of time, even with an accelerated construction program, the growth rate of the utility will slow simply because rate base growth will slow, and the utility has limited human and capital resources available to expand its construction program. Therefore, the three- to five-year growth rate projection can be used as a long-term sustainable growth rate, but not without making a reasonable informed judgment to determine whether it

considers the current market environment, the industry, and whether the three- to five-year growth outlook is sustainable.

Q PLEASE DESCRIBE YOUR MULTI-STAGE GROWTH DCF MODEL.

A The multi-stage growth DCF model reflects the possibility of non-constant growth for a company over time. The multi-stage growth DCF model reflects three growth periods: (1) a short-term growth period, which consists of the first five years; (2) a transition period, which consists of the next five years (6 through 10); and (3) a long-term growth period, starting in year 11 through perpetuity.

For the short-term growth period, I relied on the consensus analysts' growth projections described above in relationship to my constant growth DCF model. For the transition period, the growth rates were reduced or increased by an equal factor, which reflects the difference between the analysts' growth rates and the long-term sustainable growth rate. For the long-term growth period, I assumed each company's growth would converge to the maximum sustainable long-term growth rate, which is the GDP growth projection.

Q WHY IS THE GDP GROWTH PROJECTION A REASONABLE PROXY FOR THE MAXIMUM SUSTAINABLE LONG-TERM GROWTH RATE?

A Utilities cannot indefinitely sustain a growth rate that exceeds the growth rate of the economy in which they sell services. Utilities' earnings/dividend growth is created by increased utility investment or rate base. Such investment, in turn, is driven by service area economic growth and demand for utility service. In other words, utilities invest in plant to meet sales demand growth, and sales growth, in turn, is tied to economic growth in their service areas.

The U.S. Department of Energy, Energy Information Administration ("EIA") has observed utility sales growth tracks the U.S. GDP growth, albeit at a lower level, as shown on Schedule MPG-8. Utility sales growth has lagged behind GDP growth for more than a decade. As a result, nominal GDP growth is a very conservative proxy for utility sales growth, rate base growth, and earnings growth. Therefore, the U.S. GDP nominal growth rate is a conservative proxy for the highest sustainable long-term growth rate of a utility.

Q IS THERE RESEARCH THAT SUPPORTS YOUR POSITION THAT, OVER THE LONG TERM, A COMPANY'S EARNINGS AND DIVIDENDS CANNOT GROW AT A RATE GREATER THAN THE GROWTH OF THE U.S. GDP?

A Yes. This concept is supported in published analyst literature and academic work. Specifically, in a textbook titled "Fundamentals of Financial Management," published by Eugene Brigham and Joel F. Houston, the authors state as follows:

> The constant growth model is most appropriate for mature companies with a stable history of growth and stable future expectations. Expected growth rates vary somewhat among companies, but dividends for mature firms are often expected to grow in the future at about the same rate as nominal gross domestic product (real GDP plus inflation).[12]

The use of the economic growth rate is also supported by investment practitioners:

> **Estimating Growth Rates**
>
> One of the advantages of a three-stage discounted cash flow model is that it fits with life cycle theories in regards to company growth. In these theories, companies are assumed to have a life cycle with varying growth characteristics. Typically, the potential for

[12] *"Fundamentals of Financial Management,"* Eugene F. Brigham and Joel F. Houston, Eleventh Edition 2007, Thomson South-Western, a Division of Thomson Corporation at 298, emphasis added.

extraordinary growth in the near term eases over time and eventually growth slows to a more stable level.

* * *

Another approach to estimating long-term growth rates is to focus on estimating the overall economic growth rate. Again, this is the approach used in the *Ibbotson Cost of Capital Yearbook*. To obtain the economic growth rate, a forecast is made of the growth rate's component parts. Expected growth can be broken into two main parts: expected inflation and expected real growth. By analyzing these components separately, it is easier to see the factors that drive growth.[13]

Q IS THERE ANY ACTUAL INVESTMENT HISTORY THAT SUPPORTS THE NOTION THAT THE CAPITAL APPRECIATION FOR STOCK INVESTMENTS WILL NOT EXCEED THE NOMINAL GROWTH OF THE U.S. GDP?

A Yes. This is evident by a comparison of the compound annual growth of the U.S. GDP compared to the geometric growth of the U.S. stock market. Morningstar measures the historical geometric growth of the U.S. stock market over the period 1926-2016 to be approximately 5.8%.[14] During this same time period, the U.S. nominal compound annual growth of the U.S. GDP was approximately 6.4%.[15]

As such, the compound geometric growth of the U.S. nominal GDP has been higher but comparable to the nominal growth of the U.S. stock market capital appreciation. This historical relationship indicates the U.S. GDP growth outlook is a conservative estimate of the long-term sustainable growth of U.S. stock investments.

[13] *Morningstar, Inc., Ibbotson SBBI 2013 Valuation Yearbook* at 51-52.
[14] *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.
[15] U.S. Bureau of Economic Analysis, February 28, 2017.

Q HOW DID YOU DETERMINE A SUSTAINABLE LONG-TERM GROWTH RATE THAT REFLECTS THE CURRENT CONSENSUS OUTLOOK OF THE MARKET?

A I relied on the consensus analysts' projections of long-term GDP growth. *Blue Chip Economic Indicators* publishes consensus economists' GDP growth projections twice a year. These consensus analysts' GDP growth outlooks are the best available measure of the market's assessment of long-term GDP growth. These analyst projections reflect all current outlooks for GDP and are likely the most influential on investors' expectations of future growth outlooks. The consensus economists' published GDP growth rate outlook is 4.20% over the next five to 10 years.[16]

Therefore, I use the consensus economists' projected five- and 10-year average GDP consensus growth rates of 4.20%, as published by *Blue Chip Economic Indicators*, as an estimate of long-term sustainable growth. *Blue Chip Economic Indicators* projections provide real GDP growth projections of 2.1% and GDP inflation of 2.1%[17] over the five-year and 10-year projection periods. These consensus GDP growth forecasts represent the most likely views of market participants because they are based on published consensus economist projections.

Q DID YOU CONSIDER OTHER SOURCES OF PROJECTED LONG-TERM GDP GROWTH?

A Yes, and these sources corroborate my consensus analysts' projections, as shown below in Table 3.

[16] *Blue Chip Economic Indicators*, October 10, 2017, at 14.
[17] *Id.*

TABLE 3

GDP Forecasts

Source	Term	Real GDP	Inflation	Nominal GDP
Blue Chip Economic Indicators	5-10 Yrs	2.1%	2.1%	4.2%
EIA – Annual Earnings Outlook	29 Yrs	2.0%	2.1%	4.2%
Congressional Budget Office	6 Yrs	1.9%	2.0%	4.0%
Moody's Analytics	25 Yrs	2.0%	2.0%	4.0%
Social Security Administration	49 Yrs			4.4%
The Economist Intelligence Unit	25 Yrs	1.7%	1.9%	3.6%

The EIA, in its *Annual Energy Outlook,* projects real GDP out until 2050. In its 2017 Annual Report, the EIA projects real GDP through 2050 to be 2.0% and a long-term GDP price inflation projection of 2.1%. The EIA data supports a long-term nominal GDP growth outlook of 4.2%.[18]

Also, the Congressional Budget Office ("CBO") makes long-term economic projections. The CBO is projecting real GDP growth to be 1.9% during the next 6 years with a GDP price inflation outlook of 2.0%. The CBO 6-year outlook for nominal GDP based on this projection is 4.0%.[19]

Moody's Analytics also makes long-term economic projections. In its recent 25-year outlook to 2046, Moody's Analytics is projecting real GDP growth of 2.0%

[18]DOE/EIA Annual Energy Outlook 2017 With Projections to 2050, downloaded March 1, 2017.

[19]*CBO: The Budget and Economic Outlook: 2017 to 2027*, January 2017, downloaded March 1, 2017.

with GDP inflation of 2.0%. Based on these projections, Moody's is projecting nominal GDP growth of 4.0% over the next 25 years.[20]

The Social Security Administration ("SSA") makes long-term economic projections out to 2095. The SSA's nominal GDP projection, under its intermediate cost scenario of 49 years, is 4.4%.[21]

The Economist Intelligence Unit, a division of *The Economist* and a third-party data provider to SNL, makes a long-term economic projection out to 2050. The Economist Intelligence Unit is projecting real GDP growth of 1.7% with an inflation rate of 1.9% out to 2050. The real GDP growth projection is in line with the consensus economists. The long-term nominal GDP projection based on these outlooks is approximately 3.6%.[22]

The real GDP and nominal GDP growth projections made by these independent sources support the use of the consensus economists' five-year and 10-year projected GDP growth outlooks as a reasonable estimate of market participants' long-term GDP growth outlooks.

Q WHAT STOCK PRICE, DIVIDEND, AND GROWTH RATES DID YOU USE IN YOUR MULTI-STAGE GROWTH DCF ANALYSIS?

A I relied on the same 13-week average stock prices and the most recent quarterly dividend payment data discussed above. For stage one growth, I used the consensus analysts' growth rate projections discussed above in my constant growth DCF model. The first stage growth covers the first five years, consistent with the term of the analyst growth rate projections. The second stage, or transition stage, begins

[20] www.economy.com, *Moody's Analytics Forecast*, February 6, 2017.
[21] www.ssa.gov, "2017 OASDI Trustees Report," Table VI.G4, July 13, 2017.
[22] *SNL Financial, Economist Intelligence Unit*, downloaded on March 1, 2017.

in year 6 and extends through year 10. The second stage growth transitions the growth rate from the first stage to the third stage using a linear trend. For the third stage, or long-term sustainable growth stage, starting in year 11, I used a 4.20% long-term sustainable growth rate based on the consensus economists' long-term projected nominal GDP growth rate.

Q WHAT ARE THE RESULTS OF YOUR MULTI-STAGE GROWTH DCF MODEL?

A As shown in Schedule MPG-9, the average and median DCF returns on equity for my water proxy group using the 13-week average stock price are 6.62% and 6.60%, respectively. The average and median DCF results for my gas proxy group based on this model are 7.05% and 6.96%, respectively.

Q PLEASE SUMMARIZE THE RESULTS FROM YOUR DCF ANALYSES.

A The results from my DCF analyses are summarized in Table 4 below:

TABLE 4

Summary of DCF Results

Description	Water Proxy Group Average	Water Proxy Group Median	Gas Proxy Group Average	Gas Proxy Group Median
Constant Growth DCF Model (Analysts' Growth)	8.93%	8.61%	8.34%	8.50%
Constant Growth DCF Model (Sustainable Growth)	9.55%	8.80%	8.82%	8.38%
Multi-Stage Growth DCF Model	6.62%	6.60%	7.05%	6.96%

After a careful review of the DCF results for both proxy groups and considering the observable market data discussed above, I conclude that my DCF

studies support a return on equity of 8.6% for MAWC. This is approximately the median of the water and gas constant growth studies.

III.E. Risk Premium Model

Q PLEASE DESCRIBE YOUR BOND YIELD PLUS RISK PREMIUM MODEL.

A This model is based on the principle that investors require a higher return to assume greater risk. Common equity investments have greater risk than bonds because bonds have more security of payment in bankruptcy proceedings than common equity and the coupon payments on bonds represent contractual obligations. In contrast, companies are not required to pay dividends or guarantee returns on common equity investments. Therefore, common equity securities are considered to be riskier than bond securities.

This risk premium model is based on two estimates of an equity risk premium. First, I estimated the difference between the required return on utility common equity investments and U.S. Treasury bonds. The difference between the required return on common equity and the Treasury bond yield is the risk premium. I estimated the risk premium on an annual basis for each year over the period January 1986 through September 2017. The common equity required returns were based on regulatory commission-authorized returns for electric utility companies. Authorized returns are typically based on expert witnesses' estimates of the contemporary investor-required return.

The second equity risk premium estimate is based on the difference between regulatory commission-authorized returns on common equity and contemporary "A" rated utility bond yields by Moody's. I selected the period January 1986 through September 2017 because public utility stocks consistently traded at a premium to

book value during that period. This is illustrated in Schedule MPG-10, which shows the market-to-book ratio since 1986 for the electric utility industry was consistently above a multiple of 1.0x. Over this period, regulatory authorized returns were sufficient to support market prices that at least exceeded book value. This is an indication that regulatory authorized returns on common equity supported a utility's ability to issue additional common stock without diluting existing shares. It further demonstrates utilities were able to access equity markets without a detrimental impact on current shareholders.

Q DO YOU BELIEVE THAT THE TIME PERIOD USED TO DERIVE THESE EQUITY RISK PREMIUM ESTIMATES IS APPROPRIATE TO FORM ACCURATE CONCLUSIONS ABOUT CONTEMPORARY MARKET CONDITIONS?

A Yes. The time period I use in this risk premium study is a generally accepted period to develop a risk premium study using "expectational" data.

Contemporary market conditions can change dramatically during the period that rates determined in this proceeding will be in effect. A relatively long period of time where stock valuations reflect premiums to book value is an indication the authorized returns on equity and the corresponding equity risk premiums were supportive of investors' return expectations and provided utilities access to the equity markets under reasonable terms and conditions. Further, this time period is long enough to smooth abnormal market movement that might distort equity risk premiums. While market conditions and risk premiums do vary over time, this historical time period is a reasonable period to estimate contemporary risk premiums.

Alternatively, some studies, such as Duff & Phelps referred to later in this testimony, have recommended that use of "actual achieved investment return data" in

a risk premium study should be based on long historical time periods. The studies find that achieved returns over short time periods may not reflect investors' expected returns due to unexpected and abnormal stock price performance. Short-term, abnormal actual returns would be smoothed over time and the achieved actual investment returns over long time periods would approximate investors' expected returns. Therefore, it is reasonable to assume that averages of annual achieved returns over long time periods will generally converge on the investors' expected returns.

My risk premium study is based on expectational data, not actual investment returns, and, thus, need not encompass a very long historical time period.

Q WHAT EQUITY RISK PREMIUMS BASED ON THIS HISTORICAL TIME PERIOD DID YOU FIND USEFUL IN MEASURING THE CURRENT MARKET COST OF EQUITY?

A Based on this analysis, as shown in Schedule MPG-11, the average indicated equity risk premium over U.S. Treasury bond yields has been 5.41%. Since the risk premium can vary depending upon market conditions and changing investor risk perceptions, I believe using an estimated range of risk premiums provides the best method to measure the current return on common equity for a risk premium methodology.

I incorporated five-year and 10-year rolling average risk premiums over the study period to gauge the variability over time of risk premiums. These rolling average risk premiums mitigate the impact of anomalous market conditions and skewed risk premiums over an entire business cycle. As shown on my Schedule MPG-11, the five-year rolling average risk premium over Treasury bonds ranged from

4.17% to 6.68%, while the 10-year rolling average risk premium ranged from 4.30% to 6.44%.

As shown on my Schedule MPG-12, the average indicated equity risk premium over contemporary Moody's utility bond yields was 4.04%. The five-year and 10-year rolling average risk premiums ranged from 2.80% to 5.52% and 3.11% to 5.09%, respectively.

Q BASED ON HISTORICAL DATA, WHAT RISK PREMIUM HAVE YOU USED TO ESTIMATE MAWC'S COST OF COMMON EQUITY IN THIS PROCEEDING?

A The equity risk premium should reflect the relative market perception of risk in the utility industry today. I have gauged investor perceptions in utility risk today in Schedule MPG-13, where I show the yield spread between utility bonds and Treasury bonds over the last 38 years. As shown in this schedule, the average utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utility bonds for this historical period are 1.51% and 1.95%, respectively. The utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utilities for 2017 are 1.13% and 1.52%, respectively. The current average "A" rated utility bond yield spread over Treasury bond yields is now lower than the 38-year average spread. The current "Baa" rated utility bond yield spread over Treasury bond yields is lower than the 38-year average spread.

A current 13-week average "A" rated utility bond yield of 3.88% when compared to the current Treasury bond yield of 2.81%, as shown in Schedule MPG-14, page 1, implies a yield spread of 107 basis points. This current utility bond yield spread is lower than the 38-year average spread for "A" rated utility bonds of

1.43%. The current spread for the "Baa" rated utility bond yield of 1.43% is also lower than the 38-year average spread of 1.95%.

These utility bond yield spreads are evidence that the market perception of utility risk is about average relative to this historical time period and demonstrate that utilities continue to have strong access to capital in the current market.

Q HOW DO YOU DETERMINE WHERE A REASONABLE RISK PREMIUM IS IN THE CURRENT MARKET?

A I observed the spread of Treasury securities relative to public utility bonds and corporate bonds in gauging whether or not the risk premium in current market prices is stable relative to the past. What this observation of market evidence clearly demonstrates is that the valuations in the current market place an above average risk premium on securities that have greater risk.

This market evidence is summarized below in Table 5, which shows the utility bond yield spreads over Treasury bond yields on average for the period 1980 through September 2017, and the corporate bond yield spreads for Aaa corporates and Baa corporates.

TABLE 5

Comparison of Yield Spreads Over Treasury Bonds

Description	Utility		Corporate	
	A	Baa	Aaa	Baa
Average Historical Spread	1.51%	1.95%	0.84%	1.93%
2016 Spread	1.33%	2.08%	1.07%	2.12%
2017 Spread	1.13%	1.52%	0.88%	1.58%

Source: Schedule MPG-13.

The observable yield spreads shown in the table above illustrate that securities of greater risk have recently had above average risk premiums relative to the long-term historical average risk premium. Specifically, A-rated utility bonds to Treasuries, a relatively low-risk investment, have a yield spread in 2017 that has been lower than, though comparable to that of, its long-term historical yield spread. The A-rated utility bond yield spread is actually below the yield spread over the last 38 years. This is an indication that low risk investments like A-rated utility bonds have premium values relative to minimal risk Treasury securities.

Only recently have Baa-rated utility bond yield spreads gone below the 38-year average of 1.95%. For example, in 2016, the Baa-rated yield spread averaged 2.08%, which is approximately 13 basis points above the long-term average of 1.95%. While the higher risk Baa utility and corporate bond yields currently have a below-average yield spread of approximately 40 basis points (1.52% vs. 1.95%), there appears to be more volatility in the spread. The higher risk Baa utility bond yields do not have the same premium valuations as their lower risk A-rated utility bond yields, and thus the yield spread for greater risk investments is wider than lower risk investments.

This illustrates that securities with greater risk, such as Baa-rated bonds versus A-rated bonds, have recently commanded above average risk premium spreads in the marketplace. Utility equity securities are greater risk than Baa utility bonds. Because greater risk securities appear to support an above-average risk premium relative to historical averages, this would support an above-average risk premium in measuring a fair return on equity for a utility stock or equity security.

Q WHAT IS YOUR RECOMMENDED RETURN FOR MAWC BASED ON YOUR RISK PREMIUM STUDY?

A To be conservative, I am recommending more weight to the high-end risk premium estimates than the low-end. Hence, I propose to provide 70% weight to my high-end risk premium estimates and 30% to the low-end. Applying these weights, the risk premium for Treasury bond yields would be approximately 5.9%,[23] which is considerably higher than the 31-year average risk premium of 5.41% and reasonably reflective of the 3.6% projected Treasury bond yield. A Treasury bond risk premium of 5.9% and projected Treasury bond yield of 3.6% produce a risk premium estimate of 9.50%.

Similarly, applying these weights to the utility risk premium indicates a risk premium of 4.7%.[24] This risk premium is above the 31-year historical average risk premium of 4.04%. This risk premium in connection with the current observable Baa utility bond yield of 4.24% produces an estimated return on equity of approximately 8.94%.

[23](4.17% * 30%) + (6.68% * 70%) = 5.93%.
[24](2.80% * 30%) + (5.52% * 70%) = 4.70%.

Based on this methodology, my Treasury bond risk premium and my utility bond risk premium indicate a return in the range of 8.9% to 9.5%, with a midpoint of 9.20%.

III.F. Capital Asset Pricing Model ("CAPM")

Q PLEASE DESCRIBE THE CAPM.

A The CAPM method of analysis is based upon the theory that the market-required rate of return for a security is equal to the risk-free rate, plus a risk premium associated with the specific security. This relationship between risk and return can be expressed mathematically as follows:

$R_i = R_f + B_i \times (R_m - R_f)$ where:

R_i = Required return for stock i
R_f = Risk-free rate
R_m = Expected return for the market portfolio
B_i = Beta - Measure of the risk for stock

The stock-specific risk term in the above equation is beta. Beta represents the investment risk that cannot be diversified away when the security is held in a diversified portfolio. When stocks are held in a diversified portfolio, firm-specific risks can be eliminated by balancing the portfolio with securities that react in the opposite direction to firm-specific risk factors (*e.g.*, business cycle, competition, product mix, and production limitations).

The risks that cannot be eliminated when held in a diversified portfolio are non-diversifiable risks. Non-diversifiable risks are related to the market in general and are referred to as systematic risks. Risks that can be eliminated by diversification are regarded as non-systematic risks. In a broad sense, systematic risks are market risks, and non-systematic risks are business risks. The CAPM theory suggests that

the market will not compensate investors for assuming risks that can be diversified away. Therefore, the only risks for which investors will be compensated are systematic or non-diversifiable risks. The beta is a measure of the systematic or non-diversifiable risks.

Q PLEASE DESCRIBE THE INPUTS TO YOUR CAPM.

A The CAPM requires an estimate of the market risk-free rate, the company's beta, and the market risk premium.

Q WHAT DID YOU USE AS AN ESTIMATE OF THE MARKET RISK-FREE RATE?

A Currently, as published in the *Blue Chip Financial Forecasts*, the consensus economists have projected the 30-year Treasury bond yield to be 3.60%.[25] I used *Blue Chip Financial Forecasts*' projected 30-year Treasury bond yield of 3.60% for my CAPM analysis.

Q WHY DID YOU USE LONG-TERM TREASURY BOND YIELDS AS AN ESTIMATE OF THE RISK-FREE RATE?

A Treasury securities are backed by the full faith and credit of the United States government, so long-term Treasury bonds are considered to have negligible credit risk. Also, long-term Treasury bonds have an investment horizon similar to that of common stock. As a result, investor-anticipated long-run inflation expectations are reflected in both common stock required returns and long-term bond yields. Therefore, the nominal risk-free rate (or expected inflation rate and real risk-free rate)

[25] *Blue Chip Financial Forecasts*, November 1, 2017, at 2.

included in a long-term bond yield is a reasonable estimate of the nominal risk-free rate included in common stock returns.

Treasury bond yields, however, do include risk premiums related to unanticipated future inflation and interest rates. A Treasury bond yield is not a completely risk-free rate. Risk premiums related to unanticipated inflation and interest rates are systematic or market risks. Consequently, for companies with betas less than 1.0, using the Treasury bond yield as a proxy for the risk-free rate in the CAPM analysis can produce an overstated estimate of the CAPM return.

Q WHAT BETA DID YOU USE IN YOUR ANALYSIS?

A As shown in Schedule MPG-15, the average *Value Line* beta estimates for the water and gas proxy groups are 0.74 and 0.73, respectively. This means that both proxy groups are less risky than the market as a whole.

Q HOW DID YOU DERIVE YOUR MARKET RISK PREMIUM ESTIMATE?

A I derived two market risk premium estimates: a forward-looking estimate and one based on a long-term historical average.

The forward-looking estimate was derived by estimating the expected return on the market (as represented by the S&P 500) and subtracting the risk-free rate from this estimate. I estimated the expected return on the S&P 500 by adding an expected inflation rate to the long-term historical arithmetic average real return on the market. The real return on the market represents the achieved return above the rate of inflation.

Duff & Phelps' *2017 SBBI Yearbook* estimates the historical arithmetic average inflation-adjusted market return over the period 1926 to 2016 as 8.9%.[26] A current consensus analysts' inflation projection, as measured by the Consumer Price Index, is 2.3%.[27] Using these estimates, the expected market return is approximately 11.40%.[28] The market risk premium then is the difference between the 11.40% expected market return and my 3.60% risk-free rate estimate, or approximately 7.80%.

My historical estimate of the market risk premium was also calculated by using data provided by Duff & Phelps in its *2017 SBBI Yearbook*. Over the period 1926 through 2016, the Duff & Phelps study estimated that the arithmetic average of the achieved total return on the S&P 500 was 12.0%[29] and the total return on long-term Treasury bonds was 6.00%.[30] The indicated market risk premium is 6.0% (12.0% - 6.0% = 6.0%).

Q HOW DOES YOUR ESTIMATED MARKET RISK PREMIUM RANGE COMPARE TO THAT ESTIMATED BY DUFF & PHELPS?

A The Duff & Phelps analysis indicates a market risk premium falls somewhere in the range of 5.5% to 6.9%. My market risk premium falls in the range of 6.0% to 7.8%. My average market risk premium of approximately 6.9% is at the high-end of the Duff & Phelps range.

[26] *Duff & Phelps, 2017 SBBI Yearbook* at 6-18.
[27] *Blue Chip Financial Forecasts*, November 1, 2017 at 2.
[28] { [(1 + 0.089) * (1 + 0.023)] – 1 } * 100.
[29] *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.
[30] *Id.*

Q **HOW DOES DUFF & PHELPS MEASURE A MARKET RISK PREMIUM?**

A Duff & Phelps makes several estimates of a forward-looking market risk premium based on actual achieved data from the historical period of 1926 through 2016 as well as normalized data. Using this data, Duff & Phelps estimates a market risk premium derived from the total return on large company stocks (S&P 500), less the income return on Treasury bonds. The total return includes capital appreciation, dividend or coupon reinvestment returns, and annual yields received from coupons and/or dividend payments. The income return, in contrast, only reflects the income return received from dividend payments or coupon yields. Duff & Phelps claims the income return is the only true risk-free rate associated with Treasury bonds and is the best approximation of a truly risk-free rate.[31] I disagree with this assessment from Duff & Phelps because it does not reflect a true investment option available to the marketplace and therefore does not produce a legitimate estimate of the expected premium of investing in the stock market versus that of Treasury bonds. Nevertheless, I will use Duff & Phelps' conclusion to show the reasonableness of my market risk premium estimates.

Duff & Phelps' range is based on several methodologies. First, Duff & Phelps estimates a market risk premium of 6.9% based on the difference between the total market return on common stocks (S&P 500) less the income return on Treasury bond investments over the 1926-2016 period.

Second, Duff & Phelps updated the Ibbotson & Chen supply-side model, which found that the 6.9% market risk premium based on the S&P 500 was influenced by an abnormal expansion of price-to-earnings ("P/E") ratios relative to earnings and dividend growth during the period, primarily over the last 30 years. Duff

[31] *Duff & Phelps, 2017 Valuation Handbook* at 3-32.

& Phelps believes this abnormal P/E expansion is not sustainable.[32] Therefore, Duff & Phelps adjusted this market risk premium estimate to normalize the growth in the P/E ratio to be more in line with the growth in dividends and earnings. Based on this alternative methodology, Duff & Phelps published a long-horizon supply-side market risk premium of 5.97%.[33]

Finally, Duff & Phelps develops its own recommended equity, or market risk, premium by employing an analysis that takes into consideration a wide range of economic information, multiple risk premium estimation methodologies, and the current state of the economy by observing measures such as the level of stock indices and corporate spreads as indicators of perceived risk. Based on this methodology, and utilizing a "normalized" risk-free rate of 3.5%, Duff & Phelps concludes the current expected, or forward-looking, market risk premium is 5.5%, implying an expected return on the market of 9.0%.[34]

Q WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?

A As shown in Schedule MPG-16, based on my low market risk premium of 6.00% and my high market risk premium of 7.8%, a risk-free rate of 3.60%, and an average water utility beta of 0.74, my CAPM analysis produces a return in the range of 8.06% to 9.40% for the water proxy group. Similarly, using the same inputs and a *Value Line* beta of 0.73 for my gas proxy group produces a return in the range of 7.95% to 9.26%. Based on my assessment of risk premiums in the market, as discussed above, I will place primary reliance on my high-end CAPM return estimates. This produces a recommended CAPM return estimate of 9.40%.

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[32] *Id.* at 3-36.
[33] *Id.*
[34] *Id.* at 3-48.

III.G. Return on Equity Summary

Q BASED ON THE RESULTS OF YOUR RETURN ON COMMON EQUITY ANALYSES DESCRIBED ABOVE, WHAT RETURN ON COMMON EQUITY DO YOU RECOMMEND FOR MAWC?

A Based on my analyses, I estimate I&M's current market cost of equity to be 9.00%.

TABLE 6

Return on Common Equity Summary

Description	Results
DCF	8.6%
Risk Premium	9.2%
CAPM	9.4%

My recommended return on common equity of 9.00% is the midpoint of my estimated range of 8.6% to 9.4%. As shown in Table 6 above, the high-end of my estimated range is based on my CAPM studies. The low-end is based on my DCF return. My risk premium result falls within my recommended range.

My return on equity estimates reflect observable market evidence, the impact of Federal Reserve policies on current and expected long-term capital market costs, an assessment of the current risk premium built into current market securities, and a general assessment of the current investment risk characteristics of the water utility industry and the market's demand for utility securities.

Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A Yes, it does.

Appendix A

Qualifications of Michael P. Gorman

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140, Chesterfield, MO 63017.

Q PLEASE STATE YOUR OCCUPATION.

A I am a consultant in the field of public utility regulation and a Managing Principal with the firm of Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory consultants.

Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

A In 1983 I received a Bachelors of Science Degree in Electrical Engineering from Southern Illinois University, and in 1986, I received a Masters Degree in Business Administration with a concentration in Finance from the University of Illinois at Springfield. I have also completed several graduate level economics courses.

In August of 1983, I accepted an analyst position with the Illinois Commerce Commission ("ICC"). In this position, I performed a variety of analyses for both formal and informal investigations before the ICC, including: marginal cost of energy, central dispatch, avoided cost of energy, annual system production costs, and working capital. In October of 1986, I was promoted to the position of Senior Analyst. In this position, I assumed the additional responsibilities of technical leader on projects, and

my areas of responsibility were expanded to include utility financial modeling and financial analyses.

In 1987, I was promoted to Director of the Financial Analysis Department. In this position, I was responsible for all financial analyses conducted by the Staff. Among other things, I conducted analyses and sponsored testimony before the ICC on rate of return, financial integrity, financial modeling and related issues. I also supervised the development of all Staff analyses and testimony on these same issues. In addition, I supervised the Staff's review and recommendations to the Commission concerning utility plans to issue debt and equity securities.

In August of 1989, I accepted a position with Merrill-Lynch as a financial consultant. After receiving all required securities licenses, I worked with individual investors and small businesses in evaluating and selecting investments suitable to their requirements.

In September of 1990, I accepted a position with Drazen-Brubaker & Associates, Inc. ("DBA"). In April 1995, the firm of Brubaker & Associates, Inc. was formed. It includes most of the former DBA principals and Staff. Since 1990, I have performed various analyses and sponsored testimony on cost of capital, cost/benefits of utility mergers and acquisitions, utility reorganizations, level of operating expenses and rate base, cost of service studies, and analyses relating to industrial jobs and economic development. I also participated in a study used to revise the financial policy for the municipal utility in Kansas City, Kansas.

At BAI, I also have extensive experience working with large energy users to distribute and critically evaluate responses to requests for proposals ("RFPs") for electric, steam, and gas energy supply from competitive energy suppliers. These analyses include the evaluation of gas supply and delivery charges, cogeneration

and/or combined cycle unit feasibility studies, and the evaluation of third-party asset/supply management agreements. I have participated in rate cases on rate design and class cost of service for electric, natural gas, water and wastewater utilities. I have also analyzed commodity pricing indices and forward pricing methods for third party supply agreements, and have also conducted regional electric market price forecasts.

In addition to our main office in St. Louis, the firm also has branch offices in Phoenix, Arizona and Corpus Christi, Texas.

Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?

A Yes. I have sponsored testimony on cost of capital, revenue requirements, cost of service and other issues before the Federal Energy Regulatory Commission and numerous state regulatory commissions including: Arkansas, Arizona, California, Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Michigan, Mississippi, Missouri, Montana, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and before the provincial regulatory boards in Alberta and Nova Scotia, Canada. I have also sponsored testimony before the Board of Public Utilities in Kansas City, Kansas; presented rate setting position reports to the regulatory board of the municipal utility in Austin, Texas, and Salt River Project, Arizona, on behalf of industrial customers; and negotiated rate disputes for industrial customers of the Municipal Electric Authority of Georgia in the LaGrange, Georgia district.

Q PLEASE DESCRIBE ANY PROFESSIONAL REGISTRATIONS OR ORGANIZATIONS TO WHICH YOU BELONG.

A I earned the designation of Chartered Financial Analyst ("CFA") from the CFA Institute. The CFA charter was awarded after successfully completing three examinations which covered the subject areas of financial accounting, economics, fixed income and equity valuation and professional and ethical conduct. I am a member of the CFA Institute's Financial Analyst Society.

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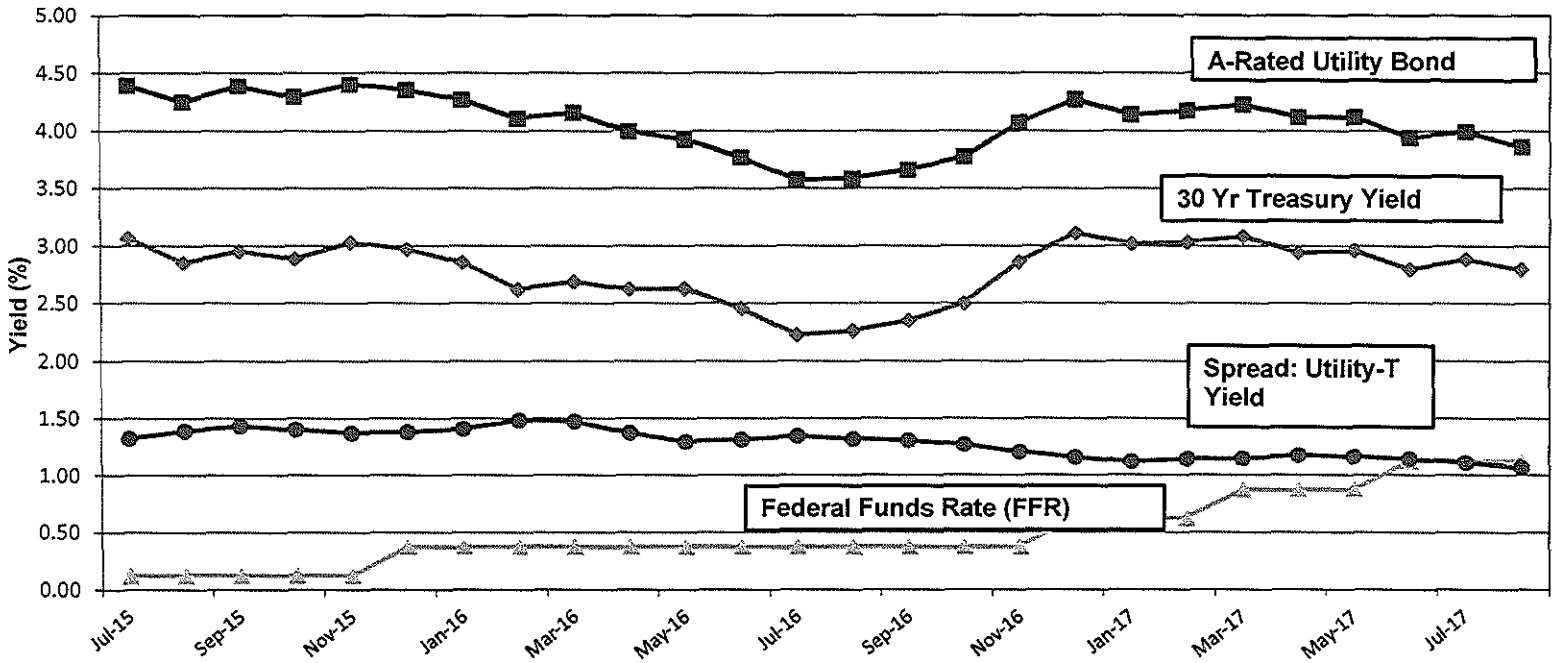
Missouri-American Water Company

Timeline of Federal Funds Rate Increases



Fed FFR Actions:

December 2015	0.25	→	0.50
December 2016	0.50	→	0.75
March 2017	0.75	→	1.00
June 2017	1.00	→	1.25

Sources:
Federal Reserve Bank of New York, https://apps.newyorkfed.org/markets/autorates/fed-funds-search-page
Board of Governors of the Federal Reserve System, https://www.federalreserve.gov/datadownload/
Moody's Credit Trends, https://credittrends.moodys.com/

Missouri-American Water Company

Proxy Group
Water Utilities

Line	Company	Credit Ratings		Common Equity Ratios	
		S&P[1]	Moody's[2]	S&P[1]	Value Line[3]
		(1)	(2)	(3)	(4)
1	American States Water Company	A+	A2	54.6%	60.6%
2	American Water Works Company, Inc.	A	A3	42.1%	47.5%
3	Aqua America, Inc.	A+	NR	NA	51.6%
4	California Water Service Group	A+	NR	49.9%	55.4%
5	Connecticut Water Service, Inc.	A	NR	50.2%	54.4%
6	Middlesex Water Company	A	NR	59.1%	61.5%
7	SJW Group	A	NR	NA	49.3%
8	York Water Company (The)	A-	NR	57.4%	57.4%
9	**Average**	**A**	**A2**	**52.2%**	**54.7%**
10	**American Water Works Co.**	**A[4]**	**A3[4]**		**51.0%[5]**

Note: If credit rating/common equity ratio unavailable for utility, subsidiary data used.

Sources:

[1] S&P Capital IQ, downloaded October 27, 2017.

[2] Moodys.com, downloaded October 27, 2017.

[3] *The Value Line Investment Survey*, October 13, 2017.

[4] Direct testimony of Ann E. Bulkley at 25.

[5] Direct testimony of Ann E. Bulkley at 53.

Missouri-American Water Company

Proxy Group
Gas Utilities

Line		Credit Ratings[1]		Common Equity Ratios	
		S&P[1]	Moody's[2]	S&P[1]	Value Line[3]
		(1)	(2)	(3)	(4)
1	Atmos Energy Corporation	A	A2	51.4%	61.3%
2	New Jersey Resources Corporation	A	Aa2	53.2%	52.3%
3	NiSource Inc.	BBB+	Baa2	34.0%	40.2%
4	Northwest Natural Gas Company	A+	A3	52.4%	55.6%
5	ONE Gas, Inc.	A	A2	58.5%	61.3%
6	Southwest Gas Holdings, Inc.	BBB+	Baa1	51.3%	51.8%
7	Spire Inc.	A-	Baa2	41.6%	49.1%
8	**Average**	**A-**	**A3**	**48.9%**	**53.1%**
9	**American Water Works Co.**	**A[4]**	**A3[4]**		**51.0%[5]**

Note: If credit rating/common equity ratio unavailable for utility, subsidiary data used.

Sources:

[1] S&P Capital IQ, downloaded October 27, 2017.

[2] Moodys.com, downloaded October 27, 2017.

[3] *The Value Line Investment Survey*, September 1, 2017.

[4] Direct testimony of Ann E. Bulkley at 25.

[5] Direct testimony of Ann E. Bulkley at 53.

Missouri-American Water Company

Consensus Analysts' Growth Rates
Water Utilities

Line	Company	Zacks[1] Estimated Growth % (1)	Zacks[1] Number of Estimates (2)	Yahoo! Finance[2] Estimated Growth % (3)	Yahoo! Finance[2] Number of Estimates (4)	Reuters[3] Estimated Growth % (5)	Reuters[3] Number of Estimates (6)	Average of Growth Rates (7)
1	American States Water Company	5.00%	NA	4.90%	NA	NA	NA	4.95%
2	American Water Works Company, Inc.	7.60%	NA	7.30%	NA	8.73%	4	7.88%
3	Aqua America, Inc.	6.30%	NA	5.60%	NA	7.50%	2	6.47%
4	California Water Service Group	5.50%	NA	9.80%	NA	NA	NA	7.65%
5	Connecticut Water Service, Inc.	6.00%	NA	6.00%	NA	6.00%	1	6.00%
6	Middlesex Water Company	NA	NA	2.70%	NA	NA	NA	2.70%
7	SJW Group	NA	NA	14.00%	NA	NA	NA	14.00%
8	York Water Company (The)	NA	NA	4.90%	NA	NA	NA	4.90%
9	**Average**	**6.08%**	**N/A**	**6.90%**	**N/A**	**7.41%**	**2**	**6.82%**
10	**Median**							**6.23%**

Sources:

[1] Zacks, http://www.zacks.com/, downloaded on October 27, 2017.

[2] Yahoo! Finance, http://finance.yahoo.com/, downloaded on October 27, 2017.

[3] Reuters, http://www.reuters.com/, downloaded on October 27, 2017.

Missouri-American Water Company

Consensus Analysts' Growth Rates
Gas Utilities

Line	Company	Zacks[1] Estimated Growth % (1)	Zacks[1] Number of Estimates (2)	Yahoo! Finance[2] Estimated Growth % (3)	Yahoo! Finance[2] Number of Estimates (4)	Reuters[3] Estimated Growth % (5)	Reuters[3] Number of Estimates (6)	Average of Growth Rates (7)
1	Atmos Energy Corporation	6.50%	NA	7.60%	NA	7.60%	1	7.23%
2	New Jersey Resources Corporation	6.00%	NA	6.00%	NA	NA	NA	6.00%
3	NiSource Inc.	5.70%	NA	7.36%	NA	5.70%	1	6.25%
4	Northwest Natural Gas Company	4.50%	NA	4.00%	NA	NA	NA	4.25%
5	ONE Gas, Inc.	6.30%	NA	6.00%	NA	6.00%	1	6.10%
6	Southwest Gas Holdings, Inc.	6.50%	NA	4.00%	NA	NA	NA	5.25%
7	Spire Inc.	5.30%	NA	4.64%	NA	4.64%	2	4.86%
8	**Average**	**5.83%**	**N/A**	**5.66%**	**N/A**	**5.99%**	**1**	**5.71%**
9	**Median**							**6.00%**

Sources:

[1] Zacks, http://www.zacks.com/, downloaded on October 27, 2017.

[2] Yahoo! Finance, http://finance.yahoo.com/, downloaded on October 27, 2017.

[3] Reuters, http://www.reuters.com/, downloaded on October 27, 2017.

Missouri-American Water Company

Constant Growth DCF Model
(Consensus Analysts' Growth Rates)
Water Utilities

Line	Company	13-Week AVG Stock Price[1] (1)	Analysts' Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	American States Water Company	$50.81	4.95%	$1.02	2.11%	7.06%
2	American Water Works Company, Inc.	$82.53	7.88%	$1.66	2.17%	10.05%
3	Aqua America, Inc.	$34.05	6.47%	$0.82	2.56%	9.03%
4	California Water Service Group	$38.85	7.65%	$0.72	2.00%	9.65%
5	Connecticut Water Service, Inc.	$57.77	6.00%	$1.19	2.18%	8.18%
6	Middlesex Water Company	$40.07	2.70%	$0.85	2.17%	4.87%
7	SJW Group	$57.27	14.00%	$0.87	1.73%	15.73%
8	York Water Company (The)	$34.12	4.90%	$0.64	1.97%	6.87%
9	**Average**	**$49.43**	**6.82%**	**$0.97**	**2.11%**	**8.93%**
10	**Median**					**8.61%**

Sources:
[1] Yahoo! Finance, downloaded October 31, 2017.
[2] Schedule MPG-3, page 1.
[3] *The Value Line Investment Survey,* October 13, 2017.

Missouri-American Water Company

Constant Growth DCF Model
(Consensus Analysts' Growth Rates)
Gas Utilities

Line	Company		13-Week AVG Stock Price[1] (1)	Analysts' Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	Atmos Energy Corporation	ATO	$86.66	7.23%	$1.80	2.23%	9.46%
2	New Jersey Resources Corporation	NJR	$43.07	6.00%	$1.02	2.51%	8.51%
3	NiSource Inc.	NI	$26.45	6.25%	$0.70	2.81%	9.07%
4	Northwest Natural Gas Company	NWN	$65.48	4.25%	$1.88	2.99%	7.24%
5	ONE Gas, Inc.	OGS	$74.40	6.10%	$1.68	2.40%	8.50%
6	Southwest Gas Holdings, Inc.	SWX	$79.54	5.25%	$1.98	2.62%	7.87%
7	Spire Inc.	SR	$75.89	4.86%	$2.10	2.90%	7.76%
8	**Average**		**$64.50**	**5.71%**	**$1.59**	**2.64%**	**8.34%**
9	**Median**						**8.50%**

Sources:
[1] Yahoo! Finance, downloaded October 31, 2017.
[2] Schedule MPG-3, page 2.
[3] *The Value Line Investment Survey*, September 1, 2017.

Note:
Eliminated South Jersey Industries and WGL because of significant M&A activity.

Missouri-American Water Company

Payout Ratios
Water Utilities

Line		Dividends Per Share		Earnings Per Share		Payout Ratio	
		2016	Projected	2016	Projected	2016	Projected
		(1)	(2)	(3)	(4)	(5)	(6)
1	American States Water Company	$0.91	$1.35	$1.62	$2.35	56.17%	57.45%
2	American Water Works Company, Inc.	$1.47	$2.35	$2.62	$4.15	56.11%	56.63%
3	Aqua America, Inc.	$0.74	$1.15	$1.32	$1.85	56.06%	62.16%
4	California Water Service Group	$0.69	$0.99	$1.01	$1.75	68.32%	56.57%
5	Connecticut Water Service, Inc.	$1.12	$1.40	$2.08	$2.65	53.85%	52.83%
6	Middlesex Water Company	$0.81	$1.02	$1.38	$2.05	58.70%	49.76%
7	SJW Group	$0.81	$1.12	$2.57	$3.00	31.52%	37.33%
8	York Water Company (The)	$0.63	$0.90	$0.92	$1.40	68.48%	64.29%
9	**Average**	**$0.90**	**$1.29**	**$1.69**	**$2.40**	**56.15%**	**54.63%**

Source:
The Value Line Investment Survey, October 13, 2017.

Missouri-American Water Company

Payout Ratios
Gas Utilities

Line		Dividends Per Share		Earnings Per Share		Payout Ratio	
		2016	Projected	2016	Projected	2016	Projected
		(1)	(2)	(3)	(4)	(5)	(6)
1	Atmos Energy Corporation	$1.68	$2.30	$3.38	$4.50	49.70%	51.11%
2	New Jersey Resources Corporation	$0.98	$1.12	$1.61	$2.15	60.87%	52.09%
3	NiSource Inc.	$0.64	$1.00	$1.00	$1.50	64.00%	66.67%
4	Northwest Natural Gas Company	$1.87	$2.00	$2.12	$3.15	88.21%	63.49%
5	ONE Gas, Inc.	$1.40	$2.45	$2.65	$4.00	52.83%	61.25%
6	Southwest Gas Holdings, Inc.	$1.80	$2.50	$3.18	$4.75	56.60%	52.63%
7	Spire Inc.	$1.96	$2.50	$3.24	$4.65	60.49%	53.76%
8	**Average**	**$1.48**	**$1.98**	**$2.45**	**$3.53**	**61.82%**	**57.29%**

Source:
The Value Line Investment Survey, September 1, 2017.

Missouri-American Water Company

Sustainable Growth Rate
Water Utilities

Line		3 to 5 Year Projections										Sustainable Growth Rate
		Dividends Per Share (1)	Earnings Per Share (2)	Book Value Per Share (3)	Book Value Growth (4)	ROE (5)	Adjustment Factor (6)	Adjusted ROE (7)	Payout Ratio (8)	Retention Rate (9)	Internal Growth Rate (10)	(11)
1	American States Water Company	$1.35	$2.35	$16.80	4.44%	13.99%	1.02	14.29%	57.45%	42.55%	6.08%	6.73%
2	American Water Works Company, Inc.	$2.35	$4.15	$39.45	6.17%	10.52%	1.03	10.83%	56.63%	43.37%	4.70%	6.58%
3	Aqua America, Inc.	$1.15	$1.85	$14.85	7.32%	12.46%	1.04	12.90%	62.16%	37.84%	4.88%	5.54%
4	California Water Service Group	$0.99	$1.75	$16.00	3.08%	10.94%	1.02	11.10%	56.57%	43.43%	4.82%	6.34%
5	Connecticut Water Service, Inc.	$1.40	$2.65	$22.80	1.68%	11.62%	1.01	11.72%	52.83%	47.17%	5.53%	9.26%
6	Middlesex Water Company	$1.02	$2.05	$16.45	4.19%	12.46%	1.02	12.72%	49.76%	50.24%	6.39%	8.07%
7	SJW Group	$1.12	$3.00	$23.90	3.01%	12.55%	1.01	12.74%	37.33%	62.67%	7.98%	12.20%
8	York Water Company (The)	$0.90	$1.40	$11.00	4.37%	12.73%	1.02	13.00%	64.29%	35.71%	4.64%	4.64%
9	**Average**	**$1.29**	**$2.40**	**$20.16**	**4.28%**	**12.16%**	**1.02**	**12.41%**	**54.63%**	**45.37%**	**5.63%**	**7.42%**
10	**Median**											**6.66%**

Sources and Notes:
Cols. (1), (2) and (3): *The Value Line Investment Survey,* October 13, 2017.
Col. (4): [Col. (3) / Page 2 Col. (2)] ^ (1/5) - 1.
Col. (5): Col. (2) / Col. (3).
Col. (6): [2 * (1 + Col. (4))] / (2 + Col. (4)).
Col. (7): Col. (6) * Col. (5).
Col. (8): Col. (1) / Col. (2).
Col. (9): 1 - Col. (8).
Col. (10): Col. (9) * Col. (7).
Col. (11): Col. (10) + Page 2 Col. (9).

Missouri-American Water Company

Sustainable Growth Rate
Water Utilities

Line	Company	13-Week Average Stock Price[1] (1)	2016 Book Value Per Share[2] (2)	Market to Book Ratio (3)	Common Shares Outstanding (in Millions)[2] 2016 (4)	Common Shares Outstanding (in Millions)[2] 3-5 Years (5)	Growth (6)	S Factor[3] (7)	V Factor[4] (8)	S * V (9)
1	American States Water Company	$50.81	$13.52	3.76	36.57	37.00	0.23%	0.86%	73.39%	0.65%
2	American Water Works Company, Inc.	$82.53	$29.24	2.82	178.10	187.50	1.03%	2.92%	64.57%	1.88%
3	Aqua America, Inc.	$34.05	$10.43	3.26	177.39	180.00	0.29%	0.96%	69.37%	0.66%
4	California Water Service Group	$38.85	$13.75	2.83	47.97	50.00	0.83%	2.35%	64.60%	1.52%
5	Connecticut Water Service, Inc.	$57.77	$20.98	2.75	11.25	12.50	2.13%	5.86%	63.69%	3.73%
6	Middlesex Water Company	$40.07	$13.40	2.99	16.30	17.00	0.84%	2.53%	66.56%	1.68%
7	SJW Group	$57.27	$20.61	2.78	20.46	23.00	2.37%	6.58%	64.02%	4.21%
8	York Water Company (The)	$34.12	$8.88	3.84	12.85	12.00	-1.36%	-5.22%	73.98%	-3.86%
9	**Average**	**$49.43**	**$16.35**	**3.13**	**62.61**	**64.88**	**1.11%**	**3.15%**	**67.52%**	**2.05%**

Sources and Notes:

[1] Yahoo! Finance, downloaded October 31, 2017.

[2] *The Value Line Investment Survey,* October 13, 2017.

[3] Expected Growth in the Number of Shares, Column (3) * Column (6).

[4] Expected Profit of Stock Investment, [1 - 1 / Column (3)].

Missouri-American Water Company

Sustainable Growth Rate
Gas Utilities

Line		3 to 5 Year Projections										Sustainable
		Dividends Per Share (1)	Earnings Per Share (2)	Book Value Per Share (3)	Book Value Growth (4)	ROE (5)	Adjustment Factor (6)	Adjusted ROE (7)	Payout Ratio (8)	Retention Rate (9)	Internal Growth Rate (10)	Growth Rate (11)
1	Atmos Energy Corporation	$2.30	$4.50	$38.50	2.93%	11.69%	1.01	11.86%	51.11%	48.89%	5.80%	10.47%
2	New Jersey Resources Corporation	$1.12	$2.15	$18.25	6.09%	11.78%	1.03	12.13%	52.09%	47.91%	5.81%	5.87%
3	NiSource Inc.	$1.00	$1.50	$13.60	1.54%	11.03%	1.01	11.11%	66.67%	33.33%	3.70%	4.17%
4	Northwest Natural Gas Company	$2.00	$3.15	$32.25	1.65%	9.77%	1.01	9.85%	63.49%	36.51%	3.60%	4.73%
5	ONE Gas, Inc.	$2.45	$4.00	$41.45	2.79%	9.65%	1.01	9.78%	61.25%	38.75%	3.79%	4.87%
6	Southwest Gas Holdings, Inc.	$2.50	$4.75	$52.90	8.59%	8.98%	1.04	9.35%	52.63%	47.37%	4.43%	6.76%
7	Spire Inc.	$2.50	$4.65	$48.30	4.52%	9.63%	1.02	9.84%	53.76%	46.24%	4.55%	6.31%
8	**Average**	**$1.98**	**$3.53**	**$35.04**	**4.02%**	**10.36%**	**1.02**	**10.56%**	**57.29%**	**42.71%**	**4.53%**	**6.17%**
9	**Median**											**5.87%**

Sources and Notes:
Cols. (1), (2) and (3): *The Value Line Investment Survey*, September 1, 2017.
Col. (4): [Col. (3) / Page 4 Col. (2)] ^ (1/5) - 1.
Col. (5): Col. (2) / Col. (3).
Col. (6): [2 * (1 + Col. (4))] / (2 + Col. (4)).
Col. (7): Col. (6) * Col. (5).
Col. (8): Col. (1) / Col. (2).
Col. (9): 1 - Col. (8).
Col. (10): Col. (9) * Col. (7).
Col. (11): Col. (10) + Page 4 Col. (9).

Missouri-American Water Company

Sustainable Growth Rate
Gas Utilities

Line	Company	13-Week Average Stock Price[1] (1)	2016 Book Value Per Share[2] (2)	Market to Book Ratio (3)	Common Shares Outstanding (in Millions)[2] 2016 (4)	Common Shares Outstanding (in Millions)[2] 3-5 Years (5)	Growth (6)	S Factor[3] (7)	V Factor[4] (8)	S * V (9)
1	Atmos Energy Corporation	$86.66	$33.32	2.60	103.93	120.00	2.92%	7.59%	61.55%	4.67%
2	New Jersey Resources Corporation	$43.07	$13.58	3.17	85.88	86.00	0.03%	0.09%	68.47%	0.06%
3	NiSource Inc.	$26.45	$12.60	2.10	323.16	330.00	0.42%	0.88%	52.36%	0.46%
4	Northwest Natural Gas Company	$65.48	$29.71	2.20	28.63	30.00	0.94%	2.07%	54.63%	1.13%
5	ONE Gas, Inc.	$74.40	$36.12	2.06	52.28	55.00	1.02%	2.10%	51.45%	1.08%
6	Southwest Gas Holdings, Inc.	$79.54	$35.03	2.27	47.48	52.00	1.84%	4.17%	55.96%	2.33%
7	Spire Inc.	$75.89	$38.73	1.96	45.65	50.00	1.84%	3.60%	48.97%	1.76%
8	**Average**	**$64.50**	**$28.44**	**2.34**	**98.14**	**103.29**	**1.29%**	**2.93%**	**56.20%**	**1.64%**

Sources and Notes:

[1] Yahoo! Finance, downloaded October 31, 2017.

[2] *The Value Line Investment Survey*, September 1, 2017.

[3] Expected Growth in the Number of Shares, Column (3) * Column (6).

[4] Expected Profit of Stock Investment, [1 - 1 / Column (3)].

Missouri-American Water Company

Constant Growth DCF Model
(Sustainable Growth Rate)
Water Utilities

Line	Company	13-Week AVG Stock Price[1] (1)	Sustainable Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	American States Water Company	$50.81	6.73%	$1.02	2.14%	8.87%
2	American Water Works Company, Inc.	$82.53	6.58%	$1.66	2.14%	8.73%
3	Aqua America, Inc.	$34.05	5.54%	$0.82	2.54%	8.08%
4	California Water Service Group	$38.85	6.34%	$0.72	1.97%	8.31%
5	Connecticut Water Service, Inc.	$57.77	9.26%	$1.19	2.25%	11.51%
6	Middlesex Water Company	$40.07	8.07%	$0.85	2.28%	10.35%
7	SJW Group	$57.27	12.20%	$0.87	1.70%	13.90%
8	York Water Company (The)	$34.12	4.64%	$0.64	1.97%	6.61%
9	**Average**	**$49.43**	**7.42%**	**$0.97**	**2.12%**	**9.55%**
10	**Median**					**8.80%**

Sources:

[1] Yahoo! Finance, downloaded October 31, 2017.

[2] Schedule MPG-6, page 1.

[3] *The Value Line Investment Survey,* October 13, 2017.

Missouri-American Water Company

Constant Growth DCF Model
(Sustainable Growth Rate)
Gas Utilities

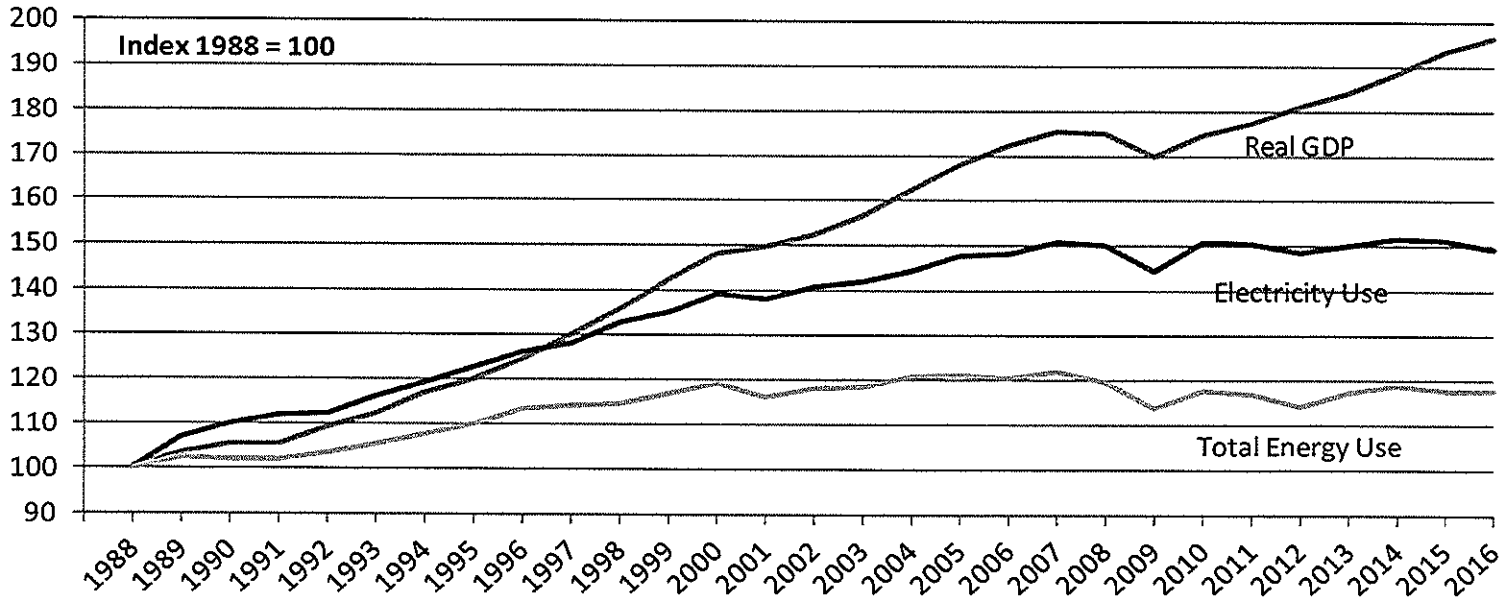
Line	Company	13-Week AVG Stock Price[1] (1)	Sustainable Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	Atmos Energy Corporation	$86.66	10.47%	$1.80	2.29%	12.76%
2	New Jersey Resources Corporation	$43.07	5.87%	$1.02	2.51%	8.38%
3	NiSource Inc.	$26.45	4.17%	$0.70	2.76%	6.92%
4	Northwest Natural Gas Company	$65.48	4.73%	$1.88	3.01%	7.73%
5	ONE Gas, Inc.	$74.40	4.87%	$1.68	2.37%	7.24%
6	Southwest Gas Holdings, Inc.	$79.54	6.76%	$1.98	2.66%	9.42%
7	Spire Inc.	$75.89	6.31%	$2.10	2.94%	9.25%
8	**Average**	**$64.50**	**6.17%**	**$1.59**	**2.65%**	**8.82%**
9	**Median**					**8.38%**

Sources:
[1] Yahoo! Finance, downloaded October 31, 2017.
[2] Schedule MPG-6, page 3.
[3] *The Value Line Investment Survey*, September 1, 2017.

Note:
Eliminated South Jersey Industries and WGL because of significant M&A activity.

Missouri-American Water Company

Electricity Sales Are Linked to U.S. Economic Growth



Note:
1988 represents the base year. Graph depicts increases or decreases from the base year.

Sources:
U.S. Energy Information Administration
Federal Reserve Bank of St. Louis

Missouri-American Water Company

Multi-Stage Growth DCF Model
Water Utilities

Line	Company	13-Week AVG Stock Price[1] (1)	Annualized Dividend[2] (2)	First Stage Growth[3] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[4] (9)	Multi-Stage Growth DCF (10)
1	American States Water Company	$50.81	$1.02	4.95%	4.83%	4.70%	4.58%	4.45%	4.33%	4.20%	6.36%
2	American Water Works Company, Inc.	$82.53	$1.66	7.88%	7.26%	6.65%	6.04%	5.43%	4.81%	4.20%	6.85%
3	Aqua America, Inc.	$34.05	$0.82	6.47%	6.09%	5.71%	5.33%	4.96%	4.58%	4.20%	7.10%
4	California Water Service Group	$38.85	$0.72	7.65%	7.08%	6.50%	5.93%	5.35%	4.78%	4.20%	6.60%
5	Connecticut Water Service, Inc.	$57.77	$1.19	6.00%	5.70%	5.40%	5.10%	4.80%	4.50%	4.20%	6.59%
6	Middlesex Water Company	$40.07	$0.85	2.70%	2.95%	3.20%	3.45%	3.70%	3.95%	4.20%	6.13%
7	SJW Group	$57.27	$0.87	14.00%	12.37%	10.73%	9.10%	7.47%	5.83%	4.20%	7.15%
8	York Water Company (The)	$34.12	$0.64	4.90%	4.78%	4.67%	4.55%	4.43%	4.32%	4.20%	6.21%
9	**Average**	**$49.43**	**$0.97**	**6.82%**	**6.38%**	**5.95%**	**5.51%**	**5.07%**	**4.64%**	**4.20%**	**6.62%**
10	**Median**										**6.60%**

Sources:
[1] Yahoo! Finance, downloaded October 31, 2017.
[2] *The Value Line Investment Survey,* October 13, 2017.
[3] Schedule MPG-3, page 1.
[4] *Blue Chip Economic Indicators*, October 10, 2017 at 14.

Missouri-American Water Company

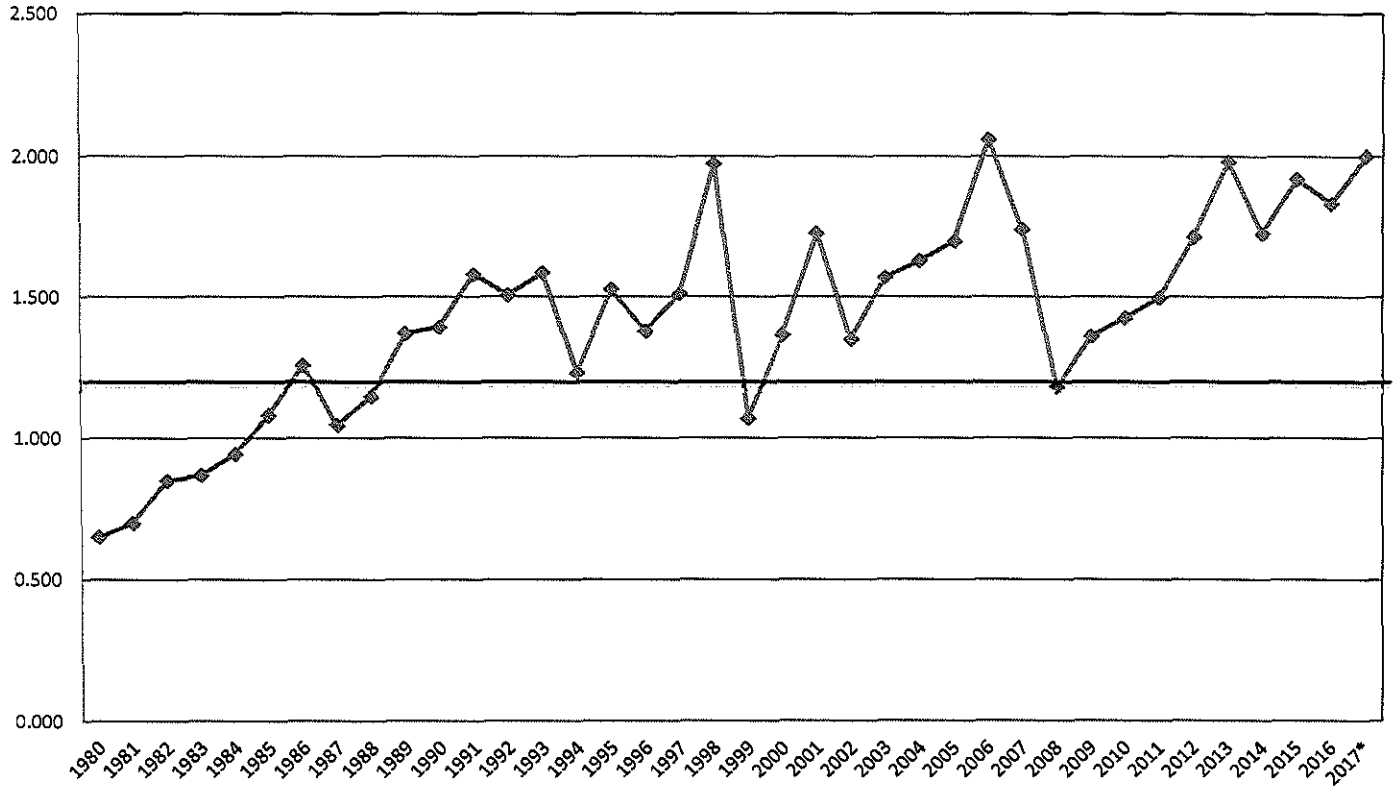
Multi-Stage Growth DCF Model
Gas Utilities

Line	Company	13-Week AVG Stock Price[1] (1)	Annualized Dividend[2] (2)	First Stage Growth[3] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[4] (9)	Multi-Stage Growth DCF (10)
1	Atmos Energy Corporation	$86.66	$1.80	7.23%	6.73%	6.22%	5.72%	5.21%	4.71%	4.20%	6.82%
2	New Jersey Resources Corporation	$43.07	$1.02	6.00%	5.70%	5.40%	5.10%	4.80%	4.50%	4.20%	6.96%
3	NiSource Inc.	$26.45	$0.70	6.25%	5.91%	5.57%	5.23%	4.88%	4.54%	4.20%	7.34%
4	Northwest Natural Gas Company	$65.48	$1.88	4.25%	4.24%	4.23%	4.23%	4.22%	4.21%	4.20%	7.19%
5	ONE Gas, Inc.	$74.40	$1.68	6.10%	5.78%	5.47%	5.15%	4.83%	4.52%	4.20%	6.85%
6	Southwest Gas Holdings, Inc.	$79.54	$1.98	5.25%	5.08%	4.90%	4.73%	4.55%	4.38%	4.20%	6.96%
7	Spire Inc.	$75.89	$2.10	4.86%	4.75%	4.64%	4.53%	4.42%	4.31%	4.20%	7.20%
8	**Average**	**$64.50**	**$1.59**	**5.71%**	**5.46%**	**5.20%**	**4.95%**	**4.70%**	**4.45%**	**4.20%**	**7.05%**
9	**Median**										**6.96%**

Sources:
[1] Yahoo! Finance, downloaded October 31, 2017.
[2] *The Value Line Investment Survey*, September 1, 2017.
[3] Schedule MPG-3, page 2.
[4] *Blue Chip Economic Indicators*, October 10, 2017 at 14.

Missouri-American Water Company

Common Stock Market/Book Ratio



Source:
1980 - 2000: Mergent Public Utility Manual.
2001 - 2015: AUS Utility Reports, multiple dates.
2016 - 2017: Value Line Investment Survey, multiple dates.
* Value Line Investment Survey Reports, August 18, September 1, September 15, and October 27, 2017.

Missouri-American Water Company

Equity Risk Premium - Treasury Bond

Line	Year	Authorized Gas Returns[1] (1)	30 yr. Treasury Bond Yield[2] (2)	Indicated Risk Premium (3)	Rolling 5 - Year Average (4)	Rolling 10 - Year Average (5)
1	1986	13.46%	7.80%	5.66%		
2	1987	12.74%	8.58%	4.16%		
3	1988	12.85%	8.96%	3.89%		
4	1989	12.88%	8.45%	4.43%		
5	1990	12.67%	8.61%	4.06%	4.44%	
6	1991	12.46%	8.14%	4.32%	4.17%	
7	1992	12.01%	7.67%	4.34%	4.21%	
8	1993	11.35%	6.60%	4.75%	4.38%	
9	1994	11.35%	7.37%	3.98%	4.29%	
10	1995	11.43%	6.88%	4.55%	4.39%	4.42%
11	1996	11.19%	6.70%	4.49%	4.42%	4.30%
12	1997	11.29%	6.61%	4.68%	4.49%	4.35%
13	1998	11.51%	5.58%	5.93%	4.73%	4.55%
14	1999	10.66%	5.87%	4.79%	4.89%	4.59%
15	2000	11.39%	5.94%	5.45%	5.07%	4.73%
16	2001	10.95%	5.49%	5.46%	5.26%	4.84%
17	2002	11.03%	5.43%	5.60%	5.45%	4.97%
18	2003	10.99%	4.96%	6.03%	5.47%	5.10%
19	2004	10.59%	5.05%	5.54%	5.62%	5.25%
20	2005	10.46%	4.65%	5.81%	5.69%	5.38%
21	2006	10.40%	4.90%	5.50%	5.70%	5.48%
22	2007	10.22%	4.83%	5.39%	5.66%	5.55%
23	2008	10.39%	4.28%	6.11%	5.67%	5.57%
24	2009	10.22%	4.07%	6.15%	5.79%	5.70%
25	2010	10.15%	4.25%	5.90%	5.81%	5.75%
26	2011	9.92%	3.91%	6.01%	5.91%	5.80%
27	2012	9.94%	2.92%	7.02%	6.24%	5.95%
28	2013	9.68%	3.45%	6.23%	6.26%	5.97%
29	2014	9.78%	3.34%	6.44%	6.32%	6.06%
30	2015	9.60%	2.84%	6.76%	6.49%	6.15%
31	2016	9.54%	2.60%	6.94%	6.68%	6.29%
32	2017 [3]	9.75%	2.92%	6.83%	6.64%	6.44%
33	**Average**	**11.03%**	**5.61%**	**5.41%**	**5.36%**	**5.36%**
34	**Minimum**				**4.17%**	**4.30%**
35	**Maximum**				**6.68%**	**6.44%**

Sources:

[1] *Regulatory Research Associates, Inc* ., Regulatory Focus, Major Rate Case Decisions, Jan. 1997 p. 5, and Jan. 2011 p. 3. *S&P Global Market Intelligence*, RRA Regulatory Focus, Major Rate Case Decisions, January-September 2017, October 26, 2017, p. 5.

[2] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/.
The yields from 2002 to 2005 represent the 20-Year Treasury yields obtained from the Federal Reserve Bank.

[3] Data includes January - September 2017.

Missouri-American Water Company

Equity Risk Premium - Utility Bond

Line	Year	Authorized Gas Returns[1] (1)	Average "A" Rated Utility Bond Yield[2] (2)	Indicated Risk Premium (3)	Rolling 5 - Year Average (4)	Rolling 10 - Year Average (5)
1	1986	13.46%	9.58%	3.88%		
2	1987	12.74%	10.10%	2.64%		
3	1988	12.85%	10.49%	2.36%		
4	1989	12.88%	9.77%	3.11%		
5	1990	12.67%	9.86%	2.81%	2.96%	
6	1991	12.46%	9.36%	3.10%	2.80%	
7	1992	12.01%	8.69%	3.32%	2.94%	
8	1993	11.35%	7.59%	3.76%	3.22%	
9	1994	11.35%	8.31%	3.04%	3.21%	
10	1995	11.43%	7.89%	3.54%	3.35%	3.16%
11	1996	11.19%	7.75%	3.44%	3.42%	3.11%
12	1997	11.29%	7.60%	3.69%	3.49%	3.22%
13	1998	11.51%	7.04%	4.47%	3.64%	3.43%
14	1999	10.66%	7.62%	3.04%	3.64%	3.42%
15	2000	11.39%	8.24%	3.15%	3.56%	3.45%
16	2001	10.95%	7.76%	3.19%	3.51%	3.46%
17	2002	11.03%	7.37%	3.66%	3.50%	3.50%
18	2003	10.99%	6.58%	4.41%	3.49%	3.56%
19	2004	10.59%	6.16%	4.43%	3.77%	3.70%
20	2005	10.46%	5.65%	4.81%	4.10%	3.83%
21	2006	10.40%	6.07%	4.33%	4.33%	3.92%
22	2007	10.22%	6.07%	4.15%	4.43%	3.96%
23	2008	10.39%	6.53%	3.86%	4.32%	3.90%
24	2009	10.22%	6.04%	4.18%	4.27%	4.02%
25	2010	10.15%	5.47%	4.68%	4.24%	4.17%
26	2011	9.92%	5.04%	4.88%	4.35%	4.34%
27	2012	9.94%	4.13%	5.81%	4.68%	4.55%
28	2013	9.68%	4.48%	5.20%	4.95%	4.63%
29	2014	9.78%	4.28%	5.50%	5.22%	4.74%
30	2015	9.60%	4.12%	5.48%	5.38%	4.81%
31	2016	9.54%	3.93%	5.61%	5.52%	4.94%
32	2017[3]	9.75%	4.05%	5.70%	5.50%	5.09%
33	**Average**	**11.03%**	**6.99%**	**4.04%**	**3.99%**	**3.95%**
34	**Minimum**				**2.80%**	**3.11%**
35	**Maximum**				**5.52%**	**5.09%**

Sources:

[1] *Regulatory Research Associates, Inc.*, Regulatory Focus, Major Rate Case Decisions, Jan. 1997 p. 5, and Jan. 2011 p. 3. *S&P Global Market Intelligence*, RRA Regulatory Focus, Major Rate Case Decisions, January-September 2017, October 26, 2017, p. 5.

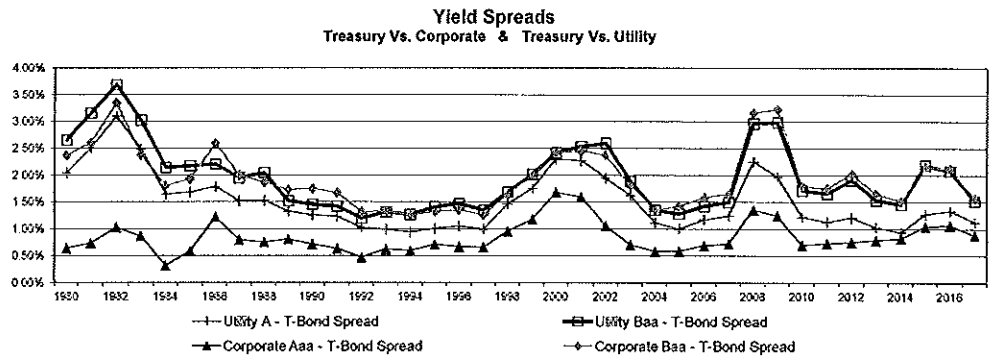
[2] Mergent Public Utility Manual, Mergent Weekly News Reports, 2003.
The utility yields for the period 2001-2009 were obtained from the Mergent Bond Record.
The utility yields from 2010-2017 were obtained from http://credittrends.moodys.com/.

[3] Data includes January - September 2017.

Missouri-American Water Company

Bond Yield Spreads

Line	Year	T-Bond Yield[1] (1)	Public Utility Bond A[2] (2)	Public Utility Bond Baa[2] (3)	Public Utility Bond A-T-Bond Spread (4)	Public Utility Bond Baa-T-Bond Spread (5)	Corporate Bond Aaa[3] (6)	Corporate Bond Baa[3] (7)	Corporate Bond Aaa-T-Bond Spread (8)	Corporate Bond Baa-T-Bond Spread (9)	Utility to Corporate Baa Spread (10)	Utility to Corporate A-Aaa Spread (11)
1	1980	11.30%	13.34%	13.95%	2.04%	2.65%	11.94%	13.67%	0.64%	2.37%	0.28%	1.40%
2	1981	13.44%	15.95%	16.60%	2.51%	3.16%	14.17%	16.04%	0.73%	2.60%	0.56%	1.78%
3	1982	12.76%	15.86%	16.45%	3.10%	3.69%	13.79%	16.11%	1.03%	3.35%	0.34%	2.07%
4	1983	11.18%	13.66%	14.20%	2.48%	3.02%	12.04%	13.55%	0.86%	2.38%	0.65%	1.62%
5	1984	12.39%	14.03%	14.53%	1.64%	2.14%	12.71%	14.19%	0.32%	1.80%	0.34%	1.32%
6	1985	10.79%	12.47%	12.96%	1.68%	2.17%	11.37%	12.72%	0.58%	1.93%	0.24%	1.10%
7	1986	7.80%	9.58%	10.00%	1.78%	2.20%	9.02%	10.39%	1.22%	2.59%	-0.39%	0.56%
8	1987	8.58%	10.10%	10.53%	1.52%	1.95%	9.38%	10.58%	0.80%	2.00%	-0.05%	0.72%
9	1988	8.96%	10.49%	11.00%	1.53%	2.04%	9.71%	10.83%	0.75%	1.87%	0.17%	0.78%
10	1989	8.45%	9.77%	9.97%	1.32%	1.52%	9.26%	10.18%	0.81%	1.73%	-0.21%	0.51%
11	1990	8.61%	9.86%	10.06%	1.25%	1.45%	9.32%	10.36%	0.71%	1.75%	-0.30%	0.54%
12	1991	8.14%	9.36%	9.55%	1.22%	1.41%	8.77%	9.80%	0.63%	1.67%	-0.25%	0.59%
13	1992	7.67%	8.69%	8.86%	1.02%	1.19%	8.14%	8.98%	0.47%	1.31%	-0.12%	0.55%
14	1993	6.60%	7.59%	7.91%	0.99%	1.31%	7.22%	7.93%	0.62%	1.33%	-0.02%	0.37%
15	1994	7.37%	8.31%	8.63%	0.94%	1.26%	7.96%	8.62%	0.59%	1.25%	0.01%	0.35%
16	1995	6.88%	7.89%	8.29%	1.01%	1.41%	7.59%	8.20%	0.71%	1.32%	0.09%	0.30%
17	1996	6.70%	7.75%	8.17%	1.05%	1.47%	7.37%	8.05%	0.67%	1.35%	0.12%	0.38%
18	1997	6.61%	7.60%	7.95%	0.99%	1.34%	7.26%	7.86%	0.66%	1.26%	0.09%	0.34%
19	1998	5.58%	7.04%	7.26%	1.46%	1.68%	6.53%	7.22%	0.95%	1.64%	0.04%	0.51%
20	1999	5.87%	7.62%	7.88%	1.75%	2.01%	7.04%	7.87%	1.18%	2.01%	0.01%	0.58%
21	2000	5.94%	8.24%	8.36%	2.30%	2.42%	7.62%	8.36%	1.68%	2.42%	-0.01%	0.62%
22	2001	5.49%	7.76%	8.03%	2.27%	2.54%	7.08%	7.95%	1.59%	2.45%	0.08%	0.68%
23	2002	5.43%	7.37%	8.02%	1.94%	2.59%	6.49%	7.80%	1.06%	2.37%	0.22%	0.88%
24	2003	4.96%	6.58%	6.84%	1.62%	1.89%	5.67%	6.77%	0.71%	1.81%	0.08%	0.91%
25	2004	5.05%	6.16%	6.40%	1.11%	1.35%	5.63%	6.39%	0.58%	1.35%	0.00%	0.53%
26	2005	4.65%	5.65%	5.93%	1.00%	1.28%	5.24%	6.06%	0.59%	1.42%	-0.14%	0.41%
27	2006	4.90%	6.07%	6.32%	1.17%	1.42%	5.59%	6.48%	0.69%	1.58%	-0.16%	0.48%
28	2007	4.83%	6.07%	6.33%	1.24%	1.50%	5.56%	6.48%	0.72%	1.65%	-0.15%	0.52%
29	2008	4.28%	6.53%	7.25%	2.25%	2.97%	5.63%	7.45%	1.35%	3.17%	-0.20%	0.90%
30	2009	4.07%	6.04%	7.06%	1.97%	2.99%	5.31%	7.30%	1.24%	3.23%	-0.24%	0.73%
31	2010	4.25%	5.47%	5.96%	1.22%	1.71%	4.95%	6.04%	0.70%	1.79%	-0.08%	0.52%
32	2011	3.91%	5.04%	5.57%	1.13%	1.66%	4.64%	5.67%	0.73%	1.76%	-0.10%	0.40%
33	2012	2.92%	4.13%	4.83%	1.21%	1.90%	3.67%	4.94%	0.75%	2.02%	-0.11%	0.46%
34	2013	3.45%	4.48%	4.98%	1.03%	1.53%	4.24%	5.10%	0.79%	1.65%	-0.12%	0.24%
35	2014	3.34%	4.28%	4.80%	0.94%	1.46%	4.16%	4.86%	0.82%	1.52%	-0.06%	0.12%
36	2015	2.84%	4.12%	5.03%	1.27%	2.19%	3.89%	5.00%	1.05%	2.16%	0.03%	0.23%
37	2016	2.60%	3.93%	4.67%	1.33%	2.08%	3.66%	4.71%	1.07%	2.12%	-0.04%	0.27%
38	2017[4]	2.92%	4.05%	4.44%	1.13%	1.52%	3.80%	4.50%	0.88%	1.58%	-0.06%	0.25%
39	Average	6.62%	8.13%	8.57%	1.51%	1.95%	7.46%	8.55%	0.84%	1.93%	0.01%	0.67%



Sources:

[1] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/.

[2] The utility yields for the period 1980-2000 were obtained from Mergent Public Utility Manual, Mergent Weekly News Reports, 2003.
The utility yields for the period 2001-2009 were obtained from the Mergent Bond Record.
The utility yields for the period 2010-2017 were obtained from http://credittrends.moodys.com/.

[3] The corporate yields for the period 1980-2009 were obtained from the St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/.
The corporate yields from 2010-2017 were obtained from http://credittrends.moodys.com/.

[4] Data includes January - September 2017.

Missouri-American Water Company

Treasury and Utility Bond Yields

Line	Date	Treasury Bond Yield[1] (1)	"A" Rated Utility Bond Yield[2] (2)	"Baa" Rated Utility Bond Yield[2] (3)
1	10/27/17	2.93%	3.94%	4.28%
2	10/20/17	2.89%	3.91%	4.26%
3	10/13/17	2.81%	3.85%	4.19%
4	10/06/17	2.91%	3.95%	4.30%
5	09/29/17	2.86%	3.92%	4.28%
6	09/22/17	2.80%	3.88%	4.25%
7	09/15/17	2.77%	3.86%	4.23%
8	09/08/17	2.67%	3.78%	4.15%
9	09/01/17	2.77%	3.85%	4.23%
10	08/25/17	2.75%	3.83%	4.20%
11	08/18/17	2.78%	3.85%	4.22%
12	08/11/17	2.79%	3.86%	4.22%
13	08/04/17	2.84%	3.90%	4.27%
14	**Average**	**2.81%**	**3.88%**	**4.24%**
15	**Spread To Treasury**		**1.07%**	**1.43%**

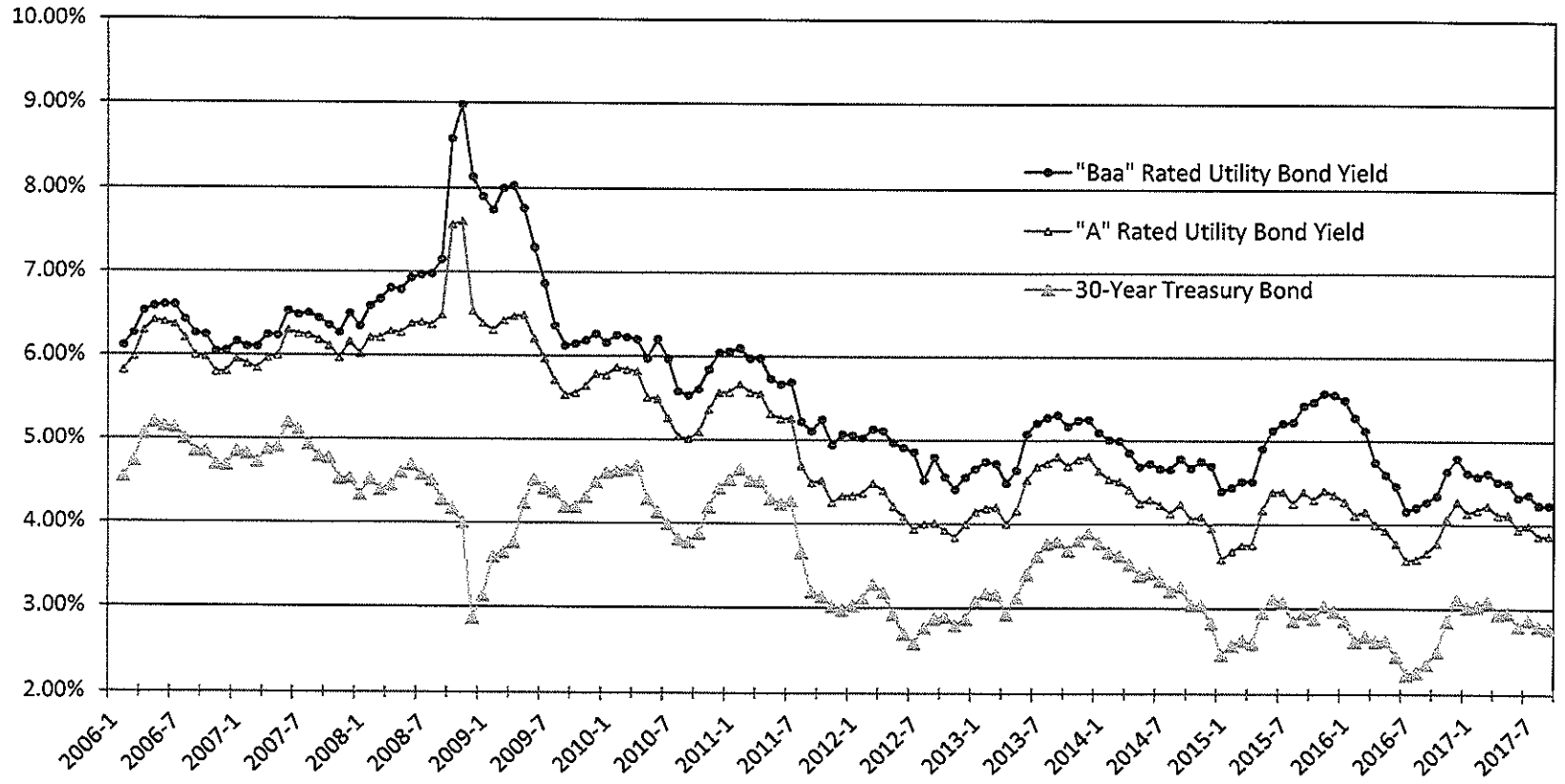
Sources:

[1] St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org.

[2] http://credittrends.moodys.com/.

Missouri-American Water Company

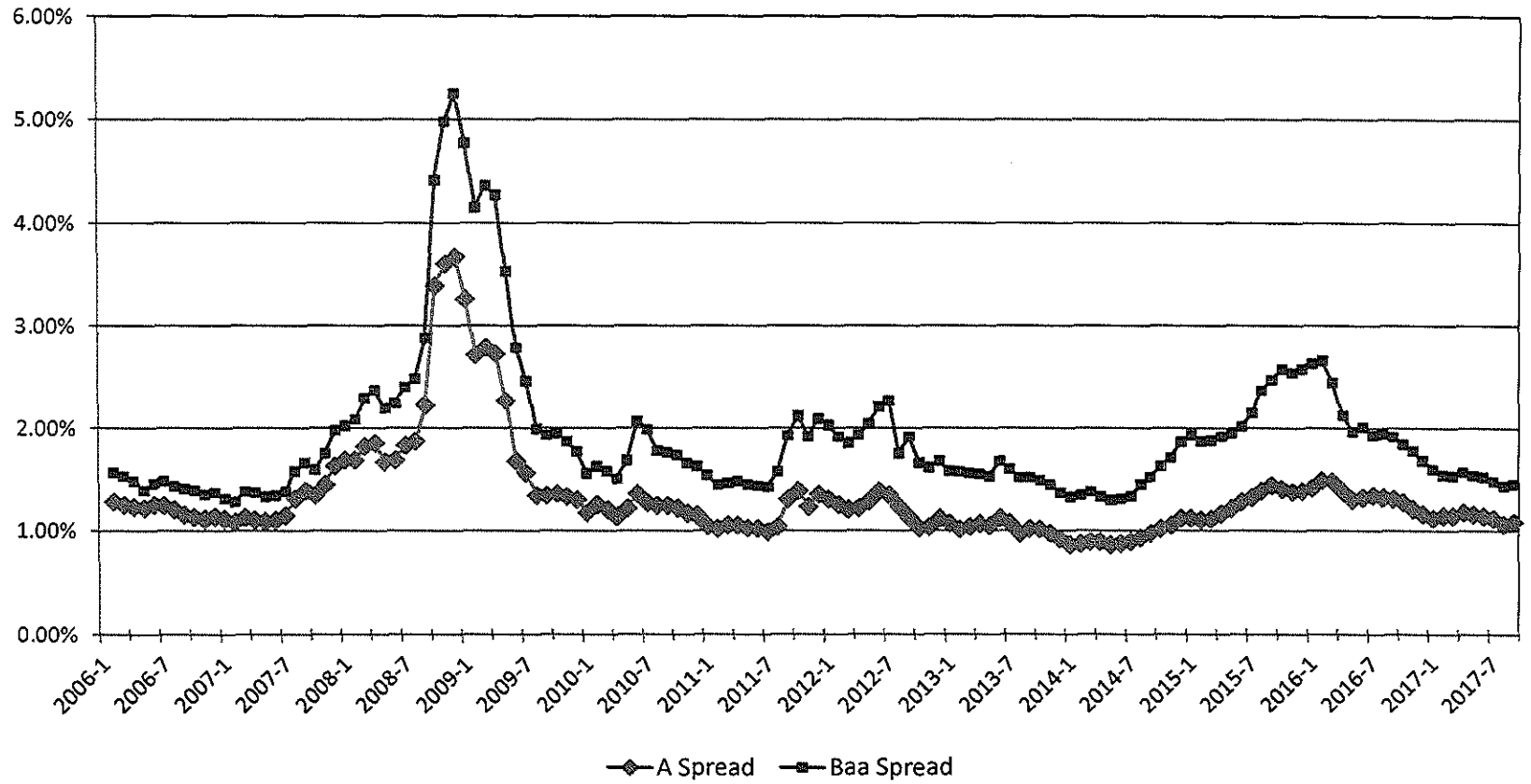
Trends in Bond Yields



Sources:
Mergent Bond Record.
www.moodys.com, Bond Yields and Key Indicators.
St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/

Missouri-American Water Company

Yield Spread Between Utility Bonds and 30-Year Treasury Bonds



Sources:
Mergent Bond Record.
www.moodys.com, Bond Yields and Key Indicators.
St. Louis Federal Reserve: Economic Research, http://research.stlouisfed.org/

Missouri-American Water Company

Value Line Beta
Water Utilities

Line	Company	Beta
1	American States Water Company	0.80
2	American Water Works Company, Inc.	0.65
3	Aqua America, Inc.	0.70
4	California Water Service Group	0.80
5	Connecticut Water Service, Inc.	0.65
6	Middlesex Water Company	0.80
7	SJW Group	0.75
8	York Water Company (The)	0.80
9	**Average**	**0.74**

Source:
The Value Line Investment Survey,
October 13, 2017.

Missouri-American Water Company

Value Line Beta
Gas Utilities

Line	Company	Beta
1	Atmos Energy Corporation	0.70
2	New Jersey Resources Corporation	0.80
3	NiSource Inc.	NMF
4	Northwest Natural Gas Company	0.70
5	ONE Gas, Inc.	0.70
6	Southwest Gas Holdings, Inc.	0.75
7	Spire Inc.	0.70
8	**Average**	**0.73**

Source:
The Value Line Investment Survey,
September 1, 2017.

Missouri-American Water Company

CAPM Return
Water Utilities

Line	Description	High Market Risk Premium (1)	Low Market Risk Premium (2)
1	Risk-Free Rate[1]	3.60%	3.60%
2	Risk Premium[2]	7.80%	6.00%
3	Beta[3]	0.74	0.74
4	**CAPM**	**9.40%**	**8.06%**

Sources:

[1] *Blue Chip Financial Forecasts*; November 1, 2017, at 2.

[2] *Duff & Phelps, 2017 SBBI Yearbook* at 6-17 and 6-18, and *Duff & Phelps, 2017 Valuation Handbook* at 3-36 and 3-48.

[3] Schedule MPG-15, page 1.

Missouri-American Water Company

CAPM Return
Gas Utilities

Line	Description	High Market Risk Premium (1)	Low Market Risk Premium (2)
1	Risk-Free Rate[1]	3.60%	3.60%
2	Risk Premium[2]	7.80%	6.00%
3	Beta[3]	0.73	0.73
4	**CAPM**	**9.26%**	**7.95%**

Sources:

[1] *Blue Chip Financial Forecasts*; November 1, 2017, at 2.

[2] *Duff & Phelps, 2017 SBBI Yearbook* at 6-17 and 6-18, and *Duff & Phelps, 2017 Valuation Handbook* at 3-36 and 3-48.

[3] Schedule MPG-15, page 2.