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Witness: Michael P. Gorman  
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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**

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**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**

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**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



Project 10440.3

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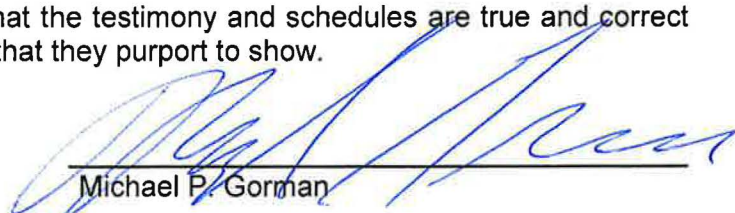
Case No. WR-2017-0285

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

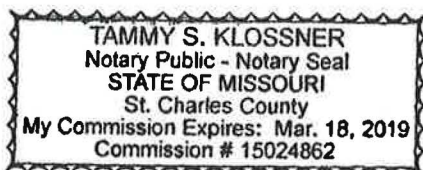
**Affidavit of Michael P. Gorman**

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 30<sup>th</sup> day of November, 2017.



  
\_\_\_\_\_  
Notary Public

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**Case No. WR-2017-0285**

**Direct Testimony of Michael P. Gorman**

1   **Q     PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

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

4   **Q     WHAT IS YOUR OCCUPATION?**

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

7   **Q     PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

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

9   **Q     ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

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

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Page 1**

1 Q WHAT IS THE SUBJECT MATTER OF YOUR TESTIMONY?

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

4 **I. SUMMARY**

5 Q PLEASE SUMMARIZE YOUR DIRECT TESTIMONY.

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

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

18 **II. RATE OF RETURN**

19 **II.A. Regulated Utility Industry Market Outlook**

20 Q PLEASE DESCRIBE THIS SECTION OF YOUR TESTIMONY.

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

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

4 **Q PLEASE DESCRIBE THE CREDIT RATING OUTLOOK FOR REGULATED**  
5 **UTILITIES.**

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

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

13 – **Ratings Outlook:** Rating trends across regulated utilities remain  
14 mostly stable supported by stable regulatory oversight, slow but steady  
15 demand for utility services, and tempered by aggressive capital  
16 spending that will keep credit metrics from improving. Emerging new  
17 political trends in historically stable regions like Europe and the U.S.  
18 may have far-reaching effect on utilities over time, but S&P Global  
19 Ratings sees little immediate influence from those factors in 2017.  
20 Sovereign rating developments can influence utility ratings in some  
21 countries and we expect them to vary in different parts of the globe.

22 \* \* \*

23 – **Assumptions:** Sales growth at most utilities is closely tied to the  
24 general economic outlook in its service territory, which can vary  
25 considerably from utility to utility. We project solid regulatory support  
26 for utility earnings and cash flow, with the occasional exception due to  
27 specific political or policy issues at the local level. Capital spending  
28 will continue to be elevated in most areas, with substantial  
29 infrastructure needs.

30 \* \* \*

1           – **Industry Trends:** The utility industry in most regions is stable,  
2 consistent with our general ratings outlook and the nature of the  
3 essential products and services utilities sell.<sup>1</sup>

4           Similarly, Fitch states:

5           **Strong and Stable Median Ratings:** The UDC sector has typically  
6 enjoyed strong investment-grade ratings, with the historical median  
7 centered at 'BBB' for Fitch's coverage. Key rating drivers include lower  
8 operational risks than those faced by integrated utilities, ongoing state  
9 regulatory support for the upgrade of existing T&D infrastructure, timely  
10 recovery of costs and a rising proportion of investments regulated by  
11 the Federal Energy Regulatory Commission (FERC), which Fitch  
12 continues to deem more supportive than many state regimes.

13           **Median ROE Trends Lower:** The median authorized return on equity  
14 (ROE) has continued to inch downwards given a persistently low  
15 interest rate environment. The median ROE was 9.60% in 2016, a  
16 modest improvement of 50bps from 2015, yet remaining below the  
17 median ROE of 9.68% in 2014 and 9.73% in 2013. Fitch believes that  
18 the long-term downward trend of authorized ROEs is stabilizing at or  
19 near current levels but does not anticipate a reversal in trend anytime  
20 soon. Gas LDCs have typically fared better than electric T&D utilities.<sup>2</sup>

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

22           **2017 Outlook - Timely Cost-Recovery Drives Stable Outlook**

23           Our outlook for the US regulated utilities industry is stable. This  
24 outlook reflects our expectations for the fundamental business  
25 conditions in the industry over the next 12 to 18 months.

26           **A credit-supportive regulatory environment is the main driver of**  
27 **our stable outlook.** Our stable outlook for the US regulated utility  
28 industry is based on our expectation that utilities will continue to  
29 recover costs in a timely manner and maintain stable cash flows.<sup>3</sup>

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<sup>1</sup>*Standard & Poor's Global Ratings:* "Industry Top Trends 2017, Utilities," February 16, 2017, at 1, emphasis added.

<sup>2</sup>*Fitch Ratings:* "U.S. Transmission and Distribution Utilities Handbook," May 15, 2017, at 1, emphasis added.

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

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

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

- 6 • Across the small investor-owned water utility sector, 2016 CapEx  
7 spending was well above 2015 levels, with individual company  
8 increases ranging from 5% to 84% and the group average up 36%.  
9 Only York Water's CapEx investment dipped — the company spent  
10 \$13 million last year, compared to \$14 million in 2015.
- 11 • Overall water utility spending in the first half of 2017 is on track  
12 with the first half of 2016, while individual company's investments  
13 vary from -30% to +185%. American States water is on the low  
14 end of the range, with first-half 2017 CapEx totaling \$46 million  
15 compared to \$65 million in first-half 2016. York Water is on the  
16 upper end of the range, with first-half 2017 CapEx totaling  
17 \$14 million compared to \$5 million in first-half 2016.
- 18 • Company CapEx forecasts for full-year 2017 are mixed. On the  
19 upper end, CapEx forecasts for Middlesex Water and York Water  
20 are projected to exceed 2016 spending levels by 27% and 77%,  
21 respectively. On the lower end, Connecticut Water Service and  
22 American States Water forecast 2017 spending to decrease 17%  
23 and 15%, respectively, compared to 2016.
- 24 • CapEx spending tends to be rather variable year-to-year at the  
25 smaller utilities, with budgets that can swing widely based on  
26 individual projects. Additionally, American Water comprises 55%-  
27 60% of the sector's roughly \$2 billion total annual CapEx spending,  
28 so comparing the group's aggregate CapEx from year to year is  
29 not necessarily meaningful.
- 30 • Our observations indicate that the trend of accelerated CapEx  
31 spending across the electric, natural gas and water utility industries  
32 is likely to continue for some time. Those familiar with the niche-  
33 water utility sector have heard the frequent-cited estimations of  
34 \$385 billion to \$1.3 trillion, which are needed to upgrade, replace,  
35 and expand water & wastewater infrastructure over the next  
36 20 years range. Such estimates span across the entire water  
37 sector, including the vast sea of municipal and cooperative-owned



1 water entities. Decades of postponed capital spending has made  
2 these investments more imperative.<sup>4</sup>

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

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

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

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

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

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<sup>4</sup>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**

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

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

**Michael P. Gorman**  
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1 result, the recent increases in the Federal Funds Rate, and the expectation of  
2 continued increases in the Federal Funds Rate, have not, and are not expected to,  
3 significantly impact long-term interest rates.

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

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

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

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<sup>5</sup>Board of Governors of the Federal Reserve System, Press Release, “Federal Reserve Issues FOMC Statement,” June 14, 2017.

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

3 A Yes. This is shown below in Table 2. There, for each quarter from 2014 through Q3,  
4 2017, I show the prevailing quarterly average Treasury bond yield, and the  
5 projections of Treasury bond yields two years out, and five to ten years out.  
6 Significantly, actual Treasury bond yields in 2017 have been moderate and  
7 comparable to those in 2015 and 2016, and are lower than the two-year projected  
8 yields in 2015, which would cover 2017. In addition, current projections of future  
9 Treasury bond yields five and ten years out are now generally lower than they were  
10 over the last three years. Indeed, in 2014 Treasury bond yields five to ten years out  
11 were projected to increase to 5.6% from then prevailing yields of 3.26% to 3.79%.  
12 The five to ten-year projections have steadily declined through 2015 and 2016. Most  
13 recently, long-term projected Treasury bond yields are now expected to remain  
14 relatively low in the 4.3% to 4.5% range 10 years out. It is also valuable to note that  
15 2014's five and ten year projections are much higher than 2017's two-year projections  
16 although they cover the same time period.

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

**TABLE 2**

**30-Year Treasury Bond Yield Actual Vs. Projection**

<u>Description</u>	<u>Quarterly Average</u>	<u>2-Year Projected</u>	<u>5- to 10-Year Projected</u>
<u>2014</u>			
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%	
<u>2015</u>			
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%	
<u>2016</u>			
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%	
<u>2017</u>			
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.

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

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

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

### 3 **II.B. MAWC's Investment Risk**

4 **Q PLEASE DESCRIBE MAWC'S INVESTMENT RISK.**

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

11 **Business Risk: Excellent**

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

---

<sup>6</sup>AWK is the New York Stock Exchange ticker symbol for American Water Works Company, Inc.

1 **Financial Risk: Intermediate**

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

17 **II.C. Embedded Cost of Debt**

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

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

23 **III. RETURN ON EQUITY**

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

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

---

<sup>7</sup> *Standard & Poor's RatingsDirect*. "American Water Works Co. Inc.," October 25, 2017 at 4-6, emphasis added.

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

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

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

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

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

19 Q DID YOU APPLY THESE MODELS DIRECTLY TO MAWC?

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

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1 **III.A. Risk Proxy Groups**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

---

<sup>8</sup>Bulkley Direct Testimony at 25.

1 **III.B. Discounted Cash Flow (“DCF”) Model**

2 **Q PLEASE DESCRIBE THE DCF MODEL.**

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

6 
$$P_0 = \frac{D_1}{(1+K)^1} + \frac{D_2}{(1+K)^2} + \dots + \frac{D_\infty}{(1+K)^\infty} \quad \text{where} \quad \text{(Equation 1)}$$
  
7

8  $P_0$  = Current stock price  
9  $D$  = Dividends in periods 1 -  $\infty$   
10  $K$  = Investor’s required return

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

14 
$$K = D_1/P_0 + G \quad \text{(Equation 2)}$$
  
15  $K$  = Investor’s required return  
16  $D_1$  = Dividend in first year  
17  $P_0$  = Current stock price  
18  $G$  = Expected constant dividend growth rate

19 Equation 2 is referred to as the annual “constant growth” DCF model.

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

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

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

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

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

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

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

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

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

---

<sup>9</sup>*The Value Line Investment Survey*, September 1 and October 13, 2017.

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

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

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

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

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

---

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

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

2 A As shown on Schedule MPG-4, the average and median constant growth DCF  
3 returns for my water proxy group are 8.93% and 8.61%, respectively. The average  
4 and median constant growth DCF returns for my gas proxy group are 8.34% and  
5 8.50%, respectively.

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

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

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

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

17 A A long-term sustainable growth rate for a utility stock cannot exceed the growth rate  
18 of the economy in which it sells its goods and services. Hence, the long-term  
19 maximum sustainable growth rate for a utility investment is best proxied by the  
20 projected long-term Gross Domestic Product ("GDP"). *Blue Chip Economic Indicators*  
21 projects that over the next 5 and 10 years, the U.S. nominal GDP will grow  
22 approximately 4.20%. These GDP growth projections reflect a real growth outlook of  
23 2.1% and an inflation outlook of 2.1% going forward. As such, the average growth

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1 rate over the next 10 years is approximately 4.20%, which is a reasonable proxy of  
2 long-term sustainable growth.<sup>11</sup>

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

### 8 **III.C. Sustainable Growth DCF**

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

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

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

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

---

<sup>11</sup>*Blue Chip Economic Indicators*, October 10, 2017, at 14.

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

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

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

22 As shown in Schedule MPG-6, pages 1 and 3, the average sustainable growth  
23 rates for the water and gas proxy groups using this internal growth rate model are  
24 7.42% and 6.17%, respectively.

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

3 A As shown in my Schedule MPG-7, a sustainable growth DCF analysis produces water  
4 proxy group average and median DCF results for the 13-week period of 9.55% and  
5 8.80%, respectively. The sustainable growth DCF analysis for the gas proxy group  
6 produces average and median results of 8.82% and 8.38%, respectively.

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

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

1 **III.D. Multi-Stage Growth DCF Model**

2 **Q HAVE YOU CONDUCTED ANY OTHER DCF STUDIES?**

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

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

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

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

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

3 **Q PLEASE DESCRIBE YOUR MULTI-STAGE GROWTH DCF MODEL.**

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

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

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

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

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

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

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

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

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

## 22                   **Estimating Growth Rates**

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

---

<sup>12</sup>“*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.

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

3 \* \* \*

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

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

15 **A** Yes. This is evident by a comparison of the compound annual growth of the U.S.  
16 GDP compared to the geometric growth of the U.S. stock market. Morningstar  
17 measures the historical geometric growth of the U.S. stock market over the period  
18 1926-2016 to be approximately 5.8%.<sup>14</sup> During this same time period, the U.S.  
19 nominal compound annual growth of the U.S. GDP was approximately 6.4%.<sup>15</sup>

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

---

<sup>13</sup> *Morningstar, Inc., Ibbotson SBBI 2013 Valuation Yearbook* at 51-52.

<sup>14</sup> *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.

<sup>15</sup> U.S. Bureau of Economic Analysis, February 28, 2017.

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

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

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

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

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

---

<sup>16</sup>*Blue Chip Economic Indicators*, October 10, 2017, at 14.

<sup>17</sup>*Id.*



**TABLE 3**  
**GDP Forecasts**

<u>Source</u>	<u>Term</u>	<u>Real GDP</u>	<u>Inflation</u>	<u>Nominal GDP</u>
<i>Blue Chip Economic Indicators</i>	5-10 Yrs	2.1%	2.1%	4.2%
EIA – Annual Energy 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%

1           The EIA, in its *Annual Energy Outlook*, projects real GDP out until 2050. In its  
2           2017 Annual Report, the EIA projects real GDP through 2050 to be 2.0% and a long-  
3           term GDP price inflation projection of 2.1%. The EIA data supports a long-term  
4           nominal GDP growth outlook of 4.2%.<sup>18</sup>

5           Also, the Congressional Budget Office (“CBO”) makes long-term economic  
6           projections. The CBO is projecting real GDP growth to be 1.9% during the next  
7           6 years with a GDP price inflation outlook of 2.0%. The CBO 6-year outlook for  
8           nominal GDP based on this projection is 4.0%.<sup>19</sup>

9           Moody’s Analytics also makes long-term economic projections. In its recent  
10          25-year outlook to 2046, Moody’s Analytics is projecting real GDP growth of 2.0%

<sup>18</sup>DOE/EIA Annual Energy Outlook 2017 With Projections to 2050, downloaded March 1, 2017.

<sup>19</sup>CBO: *The Budget and Economic Outlook: 2017 to 2027*, January 2017, downloaded March 1, 2017.

1 with GDP inflation of 2.0%. Based on these projections, Moody's is projecting  
2 nominal GDP growth of 4.0% over the next 25 years.<sup>20</sup>

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

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

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

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

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

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<sup>20</sup>[www.economy.com](http://www.economy.com), *Moody's Analytics Forecast*, February 6, 2017.

<sup>21</sup>[www.ssa.gov](http://www.ssa.gov), "2017 OASDI Trustees Report," Table VI.G4, July 13, 2017.

<sup>22</sup>*SNL Financial, Economist Intelligence Unit*, downloaded on March 1, 2017.

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

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

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

11 **Q PLEASE SUMMARIZE THE RESULTS FROM YOUR DCF ANALYSES.**

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

<b>TABLE 4</b>				
<b><u>Summary of DCF Results</u></b>				
<b><u>Description</u></b>	<b><u>Water Proxy Group</u></b>		<b><u>Gas Proxy Group</u></b>	
	<b><u>Average</u></b>	<b><u>Median</u></b>	<b><u>Average</u></b>	<b><u>Median</u></b>
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%

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

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

### 3 **III.E. Risk Premium Model**

4 **Q PLEASE DESCRIBE YOUR BOND YIELD PLUS RISK PREMIUM MODEL.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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1 4.17% to 6.68%, while the 10-year rolling average risk premium ranged from 4.30%  
2 to 6.44%.

3 As shown on my Schedule MPG-12, the average indicated equity risk  
4 premium over contemporary Moody's utility bond yields was 4.04%. The five-year  
5 and 10-year rolling average risk premiums ranged from 2.80% to 5.52% and 3.11% to  
6 5.09%, respectively.

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

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

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

1 1.43%. The current spread for the “Baa” rated utility bond yield of 1.43% is also lower  
2 than the 38-year average spread of 1.95%.

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

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

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

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



**TABLE 5**

**Comparison of Yield Spreads Over Treasury Bonds**

<b>Description</b>	<b>Utility</b>		<b>Corporate</b>	
	<b>A</b>	<b>Baa</b>	<b>Aaa</b>	<b>Baa</b>
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.

1           The observable yield spreads shown in the table above illustrate that  
2 securities of greater risk have recently had above average risk premiums relative to  
3 the long-term historical average risk premium. Specifically, A-rated utility bonds to  
4 Treasuries, a relatively low-risk investment, have a yield spread in 2017 that has  
5 been lower than, though comparable to that of, its long-term historical yield spread.  
6 The A-rated utility bond yield spread is actually below the yield spread over the last  
7 38 years. This is an indication that low risk investments like A-rated utility bonds have  
8 premium values relative to minimal risk Treasury securities.

9           Only recently have Baa-rated utility bond yield spreads gone below the  
10 38-year average of 1.95%. For example, in 2016, the Baa-rated yield spread  
11 averaged 2.08%, which is approximately 13 basis points above the long-term average  
12 of 1.95%. While the higher risk Baa utility and corporate bond yields currently have a  
13 below-average yield spread of approximately 40 basis points (1.52% vs. 1.95%),  
14 there appears to be more volatility in the spread. The higher risk Baa utility bond  
15 yields do not have the same premium valuations as their lower risk A-rated utility  
16 bond yields, and thus the yield spread for greater risk investments is wider than lower  
17 risk investments.

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

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

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

17           Similarly, applying these weights to the utility risk premium indicates a risk  
18 premium of 4.7%.<sup>24</sup> This risk premium is above the 31-year historical average risk  
19 premium of 4.04%. This risk premium in connection with the current observable Baa  
20 utility bond yield of 4.24% produces an estimated return on equity of approximately  
21 8.94%.

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<sup>23</sup> $(4.17\% * 30\%) + (6.68\% * 70\%) = 5.93\%$ .

<sup>24</sup> $(2.80\% * 30\%) + (5.52\% * 70\%) = 4.70\%$ .

1                   Based on this methodology, my Treasury bond risk premium and my utility  
2                   bond risk premium indicate a return in the range of 8.9% to 9.5%, with a midpoint of  
3                   9.20%.

### 4   **III.F. Capital Asset Pricing Model (“CAPM”)**

5   **Q     PLEASE DESCRIBE THE CAPM.**

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

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

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

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

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

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

5 **Q PLEASE DESCRIBE THE INPUTS TO YOUR CAPM.**

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

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

9 A Currently, as published in the *Blue Chip Financial Forecasts*, the consensus  
10 economists have projected the 30-year Treasury bond yield to be 3.60%.<sup>25</sup> I used  
11 *Blue Chip Financial Forecasts'* projected 30-year Treasury bond yield of 3.60% for my  
12 CAPM analysis.

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

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

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<sup>25</sup>*Blue Chip Financial Forecasts*, November 1, 2017, at 2.

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

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

9 **Q WHAT BETA DID YOU USE IN YOUR ANALYSIS?**

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

13 **Q HOW DID YOU DERIVE YOUR MARKET RISK PREMIUM ESTIMATE?**

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

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

1 Duff & Phelps' *2017 SBBI Yearbook* estimates the historical arithmetic  
2 average inflation-adjusted market return over the period 1926 to 2016 as 8.9%.<sup>26</sup> A  
3 current consensus analysts' inflation projection, as measured by the Consumer Price  
4 Index, is 2.3%.<sup>27</sup> Using these estimates, the expected market return is approximately  
5 11.40%.<sup>28</sup> The market risk premium then is the difference between the 11.40%  
6 expected market return and my 3.60% risk-free rate estimate, or approximately  
7 7.80%.

8 My historical estimate of the market risk premium was also calculated by using  
9 data provided by Duff & Phelps in its *2017 SBBI Yearbook*. Over the period 1926  
10 through 2016, the Duff & Phelps study estimated that the arithmetic average of the  
11 achieved total return on the S&P 500 was 12.0%<sup>29</sup> and the total return on long-term  
12 Treasury bonds was 6.00%.<sup>30</sup> The indicated market risk premium is 6.0% (12.0% -  
13 6.0% = 6.0%).

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

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

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<sup>26</sup> *Duff & Phelps, 2017 SBBI Yearbook* at 6-18.

<sup>27</sup> *Blue Chip Financial Forecasts*, November 1, 2017 at 2.

<sup>28</sup>  $\{ [(1 + 0.089) * (1 + 0.023)] - 1 \} * 100$ .

<sup>29</sup> *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.

<sup>30</sup> *Id.*

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

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

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

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

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<sup>31</sup>*Duff & Phelps, 2017 Valuation Handbook* at 3-32.

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

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

14 **Q WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?**

15 A As shown in Schedule MPG-16, based on my low market risk premium of 6.00% and  
16 my high market risk premium of 7.8%, a risk-free rate of 3.60%, and an average water  
17 utility beta of 0.74, my CAPM analysis produces a return in the range of 8.06% to  
18 9.40% for the water proxy group. Similarly, using the same inputs and a *Value Line*  
19 beta of 0.73 for my gas proxy group produces a return in the range of 7.95% to  
20 9.26%. Based on my assessment of risk premiums in the market, as discussed  
21 above, I will place primary reliance on my high-end CAPM return estimates. This  
22 produces a recommended CAPM return estimate of 9.40%.

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<sup>32</sup>*Id.* at 3-36.

<sup>33</sup>*Id.*

<sup>34</sup>*Id.* at 3-48.



1 **III.G. Return on Equity Summary**

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

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

<b>TABLE 6</b>	
<b><u>Return on Common Equity Summary</u></b>	
<b><u>Description</u></b>	<b><u>Results</u></b>
DCF	8.6%
Risk Premium	9.2%
CAPM	9.4%

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

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

15 **Q** **DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

16 **A** Yes, it does.

## Appendix A

### Qualifications of Michael P. Gorman

1    **Q     PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

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

4    **Q     PLEASE STATE YOUR OCCUPATION.**

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

8    **Q     PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK  
9        EXPERIENCE.**

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

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

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

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

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

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

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

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

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

9 **Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?**

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

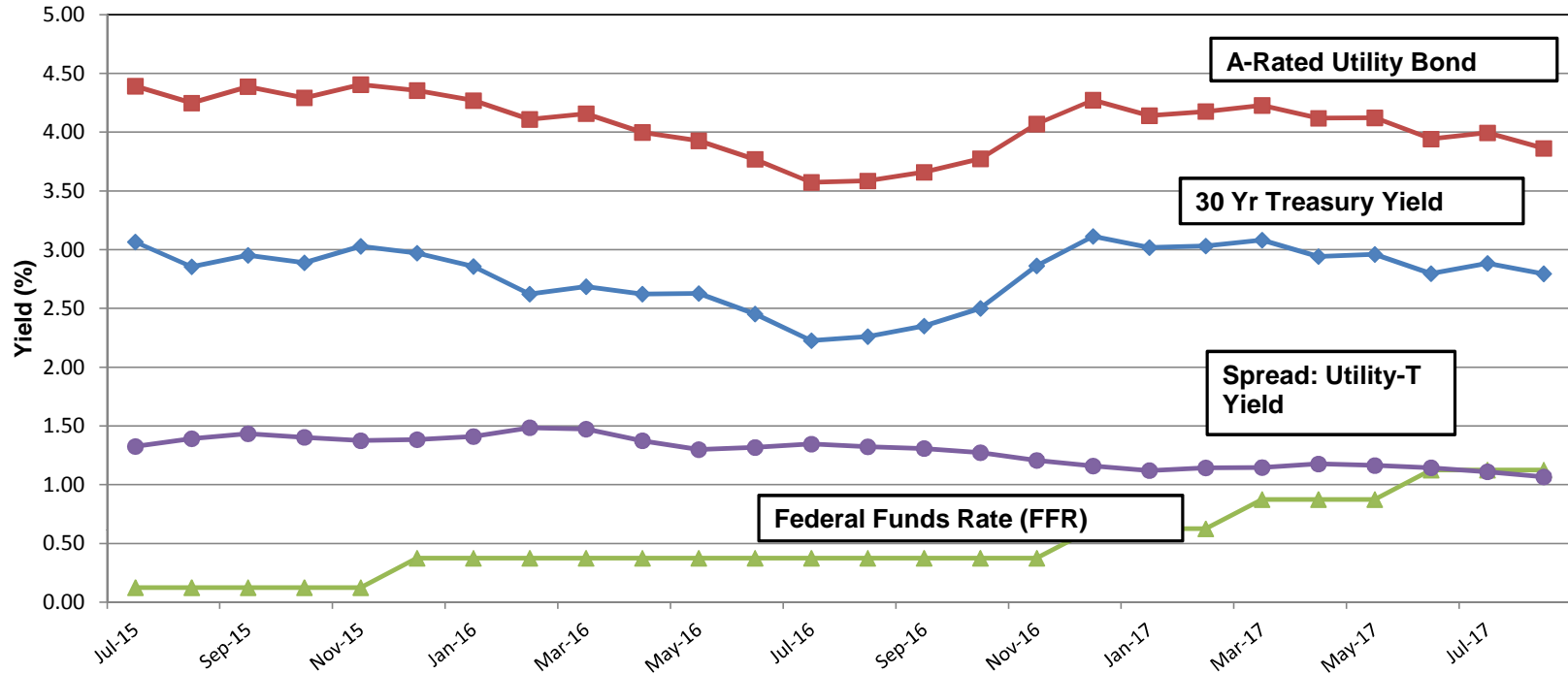
1 Q PLEASE DESCRIBE ANY PROFESSIONAL REGISTRATIONS OR  
2 ORGANIZATIONS TO WHICH YOU BELONG.

3 A I earned the designation of Chartered Financial Analyst (“CFA”) from the CFA  
4 Institute. The CFA charter was awarded after successfully completing three  
5 examinations which covered the subject areas of financial accounting, economics,  
6 fixed income and equity valuation and professional and ethical conduct. I am a  
7 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.moody.com/>

# Missouri-American Water Company

## Proxy Group Water Utilities

<u>Line</u>	<u>Company</u>	<u>Credit Ratings</u>		<u>Common Equity Ratios</u>	
		<u>S&amp;P<sup>1</sup></u> (1)	<u>Moody's<sup>2</sup></u> (2)	<u>S&amp;P<sup>1</sup></u> (3)	<u>Value Line<sup>3</sup></u> (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	<b>Average</b>	<b>A</b>	<b>A2</b>	<b>52.2%</b>	<b>54.7%</b>
10	<b>American Water Works Co.</b>	<b>A<sup>4</sup></b>	<b>A3<sup>4</sup></b>		<b>51.0%<sup>5</sup></b>

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

Sources:

<sup>1</sup> S&P Capital IQ, downloaded October 27, 2017.

<sup>2</sup> Moodys.com, downloaded October 27, 2017.

<sup>3</sup> *The Value Line Investment Survey*, October 13, 2017.

<sup>4</sup> Direct testimony of Ann E. Bulkley at 25.

<sup>5</sup> Direct testimony of Ann E. Bulkley at 53.

# Missouri-American Water Company

## Proxy Group Gas Utilities

<u>Line</u>		<u>Credit Ratings<sup>1</sup></u>		<u>Common Equity Ratios</u>	
		<u>S&amp;P<sup>1</sup></u> (1)	<u>Moody's<sup>2</sup></u> (2)	<u>S&amp;P<sup>1</sup></u> (3)	<u>Value Line<sup>3</sup></u> (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	<b>Average</b>	<b>A-</b>	<b>A3</b>	<b>48.9%</b>	<b>53.1%</b>
9	<b>American Water Works Co.</b>	<b>A<sup>4</sup></b>	<b>A3<sup>4</sup></b>		<b>51.0%<sup>5</sup></b>

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

Sources:

<sup>1</sup> S&P Capital IQ, downloaded October 27, 2017.

<sup>2</sup> Moodys.com, downloaded October 27, 2017.

<sup>3</sup> *The Value Line Investment Survey*, September 1, 2017.

<sup>4</sup> Direct testimony of Ann E. Bulkley at 25.

<sup>5</sup> Direct testimony of Ann E. Bulkley at 53.



# Missouri-American Water Company

## Consensus Analysts' Growth Rates Water Utilities

<u>Line</u>	<u>Company</u>	<u>Zacks</u> <sup>1</sup>		<u>Yahoo! Finance</u> <sup>2</sup>		<u>Reuters</u> <sup>3</sup>		<u>Average of Growth Rates</u> (7)
		<u>Estimated Growth %</u> (1)	<u>Number of Estimates</u> (2)	<u>Estimated Growth %</u> (3)	<u>Number of Estimates</u> (4)	<u>Estimated Growth %</u> (5)	<u>Number of Estimates</u> (6)	
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	<b>Average</b>	<b>6.08%</b>	<b>N/A</b>	<b>6.90%</b>	<b>N/A</b>	<b>7.41%</b>	<b>2</b>	<b>6.82%</b>
10	<b>Median</b>							<b>6.23%</b>

Sources:

<sup>1</sup> Zacks, <http://www.zacks.com/>, downloaded on October 27, 2017.

<sup>2</sup> Yahoo! Finance, <http://finance.yahoo.com/>, downloaded on October 27, 2017.

<sup>3</sup> Reuters, <http://www.reuters.com/>, downloaded on October 27, 2017.

# Missouri-American Water Company

## Consensus Analysts' Growth Rates Gas Utilities

<u>Line</u>	<u>Company</u>	<u>Zacks</u> <sup>1</sup>		<u>Yahoo! Finance</u> <sup>2</sup>		<u>Reuters</u> <sup>3</sup>		<u>Average of Growth Rates</u> (7)
		<u>Estimated Growth %</u>	<u>Number of Estimates</u>	<u>Estimated Growth %</u>	<u>Number of Estimates</u>	<u>Estimated Growth %</u>	<u>Number of Estimates</u>	
		(1)	(2)	(3)	(4)	(5)	(6)	
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	<b>Average</b>	<b>5.83%</b>	<b>N/A</b>	<b>5.66%</b>	<b>N/A</b>	<b>5.99%</b>	<b>1</b>	<b>5.71%</b>
9	<b>Median</b>							<b>6.00%</b>

Sources:

<sup>1</sup> Zacks, <http://www.zacks.com/>, downloaded on October 27, 2017.

<sup>2</sup> Yahoo! Finance, <http://finance.yahoo.com/>, downloaded on October 27, 2017.

<sup>3</sup> Reuters, <http://www.reuters.com/>, downloaded on October 27, 2017.

# Missouri-American Water Company

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

<u>Line</u>	<u>Company</u>	<u>13-Week AVG Stock Price</u> <sup>1</sup> (1)	<u>Analysts' Growth</u> <sup>2</sup> (2)	<u>Annualized Dividend</u> <sup>3</sup> (3)	<u>Adjusted Yield</u> (4)	<u>Constant Growth DCF</u> (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	<b>Average</b>	<b>\$49.43</b>	<b>6.82%</b>	<b>\$0.97</b>	<b>2.11%</b>	<b>8.93%</b>
10	<b>Median</b>					<b>8.61%</b>

Sources:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> Schedule MPG-3, page 1.

<sup>3</sup> *The Value Line Investment Survey*, October 13, 2017.

# Missouri-American Water Company

## Constant Growth DCF Model (Consensus Analysts' Growth Rates)

### Gas Utilities

<u>Line</u>	<u>Company</u>		<u>13-Week AVG Stock Price<sup>1</sup></u> (1)	<u>Analysts' Growth<sup>2</sup></u> (2)	<u>Annualized Dividend<sup>3</sup></u> (3)	<u>Adjusted Yield</u> (4)	<u>Constant Growth DCF</u> (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	<b>Average</b>		<b>\$64.50</b>	<b>5.71%</b>	<b>\$1.59</b>	<b>2.64%</b>	<b>8.34%</b>
9	<b>Median</b>						<b>8.50%</b>

Sources:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> Schedule MPG-3, page 2.

<sup>3</sup> *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

<u>Line</u>		<u>Dividends Per Share</u>		<u>Earnings Per Share</u>		<u>Payout Ratio</u>	
		<u>2016</u>	<u>Projected</u>	<u>2016</u>	<u>Projected</u>	<u>2016</u>	<u>Projected</u>
		(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	<b>Average</b>	<b>\$0.90</b>	<b>\$1.29</b>	<b>\$1.69</b>	<b>\$2.40</b>	<b>56.15%</b>	<b>54.63%</b>

Source:

*The Value Line Investment Survey, October 13, 2017.*

# Missouri-American Water Company

## Payout Ratios Gas Utilities

<u>Line</u>		<u>Dividends Per Share</u>		<u>Earnings Per Share</u>		<u>Payout Ratio</u>	
		<u>2016</u> <u>(1)</u>	<u>Projected</u> <u>(2)</u>	<u>2016</u> <u>(3)</u>	<u>Projected</u> <u>(4)</u>	<u>2016</u> <u>(5)</u>	<u>Projected</u> <u>(6)</u>
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	<b>Average</b>	<b>\$1.48</b>	<b>\$1.98</b>	<b>\$2.45</b>	<b>\$3.53</b>	<b>61.82%</b>	<b>57.29%</b>

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
		Dividends	Earnings	Book Value	Book Value		Adjustment	Adjusted	Payout	Retention	Internal	Growth
		<u>Per Share</u>	<u>Per Share</u>	<u>Per Share</u>	<u>Growth</u>	<u>ROE</u>	<u>Factor</u>	<u>ROE</u>	<u>Ratio</u>	<u>Rate</u>	<u>Growth Rate</u>	<u>Rate</u>
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(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	<b>Average</b>	<b>\$1.29</b>	<b>\$2.40</b>	<b>\$20.16</b>	<b>4.28%</b>	<b>12.16%</b>	<b>1.02</b>	<b>12.41%</b>	<b>54.63%</b>	<b>45.37%</b>	<b>5.63%</b>	<b>7.42%</b>
10	<b>Median</b>											<b>6.66%</b>

### 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

<u>Line</u>	<u>Company</u>	<u>13-Week</u>	<u>2016</u>	<u>Market</u>	<u>Common Shares</u>		<u>Growth</u>	<u>S Factor</u> <sup>3</sup>	<u>V Factor</u> <sup>4</sup>	<u>S * V</u>
		<u>Average</u>	<u>Book Value</u>	<u>to Book</u>	<u>Outstanding (in Millions)</u> <sup>2</sup>					
		<u>Stock Price</u> <sup>1</sup>	<u>Per Share</u> <sup>2</sup>	<u>Ratio</u>	<u>2016</u>	<u>3-5 Years</u>	<u>(6)</u>	<u>(7)</u>	<u>(8)</u>	<u>(9)</u>
		(1)	(2)	(3)	(4)	(5)				
1	American States Water Company	\$50.81	\$13.52	3.76	36.57	37.00	0.23%	0.88%	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	<b>Average</b>	<b>\$49.43</b>	<b>\$16.35</b>	<b>3.13</b>	<b>62.61</b>	<b>64.88</b>	<b>1.11%</b>	<b>3.15%</b>	<b>67.52%</b>	<b>2.05%</b>

Sources and Notes:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> *The Value Line Investment Survey*, October 13, 2017.

<sup>3</sup> Expected Growth in the Number of Shares, Column (3) \* Column (6).

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



# Missouri-American Water Company

## Sustainable Growth Rate Gas Utilities

<u>Line</u>		<u>3 to 5 Year Projections</u>										<u>Sustainable Growth Rate</u>
		<u>Dividends</u>	<u>Earnings</u>	<u>Book Value</u>	<u>Book Value</u>	<u>ROE</u>	<u>Adjustment</u>	<u>Adjusted</u>	<u>Payout</u>	<u>Retention</u>	<u>Internal</u>	
		<u>Per Share</u>	<u>Per Share</u>	<u>Per Share</u>	<u>Growth</u>	<u>Factor</u>	<u>ROE</u>	<u>Ratio</u>	<u>Rate</u>	<u>Growth Rate</u>	<u>Rate</u>	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(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	<b>Average</b>	<b>\$1.98</b>	<b>\$3.53</b>	<b>\$35.04</b>	<b>4.02%</b>	<b>10.36%</b>	<b>1.02</b>	<b>10.56%</b>	<b>57.29%</b>	<b>42.71%</b>	<b>4.53%</b>	<b>6.17%</b>
9	<b>Median</b>											<b>5.87%</b>

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

<u>Line</u>	<u>Company</u>	<u>13-Week</u>	<u>2016</u>	<u>Market</u>	<u>Common Shares</u>		<u>Growth</u>	<u>S Factor</u> <sup>3</sup>	<u>V Factor</u> <sup>4</sup>	<u>S * V</u>
		<u>Average</u>	<u>Book Value</u>	<u>to Book</u>	<u>Outstanding (in Millions)</u> <sup>2</sup>					
		<u>Stock Price</u> <sup>1</sup>	<u>Per Share</u> <sup>2</sup>	<u>Ratio</u>	<u>2016</u>	<u>3-5 Years</u>	<u>(6)</u>	<u>(7)</u>	<u>(8)</u>	<u>(9)</u>
		(1)	(2)	(3)	(4)	(5)				
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	<b>Average</b>	<b>\$64.50</b>	<b>\$28.44</b>	<b>2.34</b>	<b>98.14</b>	<b>103.29</b>	<b>1.29%</b>	<b>2.93%</b>	<b>56.20%</b>	<b>1.64%</b>

Sources and Notes:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> *The Value Line Investment Survey*, September 1, 2017.

<sup>3</sup> Expected Growth in the Number of Shares, Column (3) \* Column (6).

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

# Missouri-American Water Company

## Constant Growth DCF Model (Sustainable Growth Rate) Water Utilities

<u>Line</u>	<u>Company</u>	<u>13-Week AVG Stock Price<sup>1</sup></u> (1)	<u>Sustainable Growth<sup>2</sup></u> (2)	<u>Annualized Dividend<sup>3</sup></u> (3)	<u>Adjusted Yield</u> (4)	<u>Constant Growth DCF</u> (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	<b>Average</b>	<b>\$49.43</b>	<b>7.42%</b>	<b>\$0.97</b>	<b>2.12%</b>	<b>9.55%</b>
10	<b>Median</b>					<b>8.80%</b>

Sources:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> Schedule MPG-6, page 1.

<sup>3</sup> *The Value Line Investment Survey*, October 13, 2017.

# Missouri-American Water Company

## Constant Growth DCF Model

### (Sustainable Growth Rate)

#### Gas Utilities

<u>Line</u>	<u>Company</u>	<u>13-Week AVG Stock Price<sup>1</sup></u> (1)	<u>Sustainable Growth<sup>2</sup></u> (2)	<u>Annualized Dividend<sup>3</sup></u> (3)	<u>Adjusted Yield</u> (4)	<u>Constant Growth DCF</u> (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	<b>Average</b>	<b>\$64.50</b>	<b>6.17%</b>	<b>\$1.59</b>	<b>2.65%</b>	<b>8.82%</b>
9	<b>Median</b>					<b>8.38%</b>

Sources:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> Schedule MPG-6, page 3.

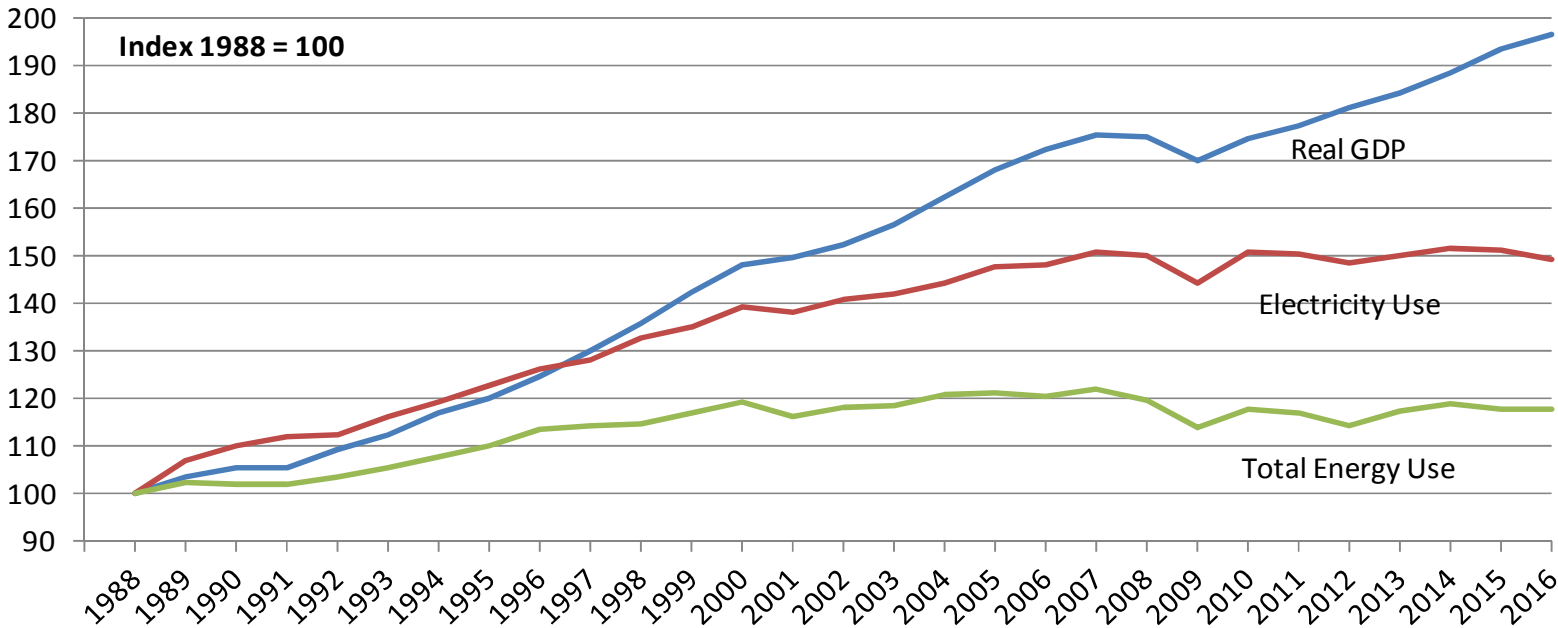
<sup>3</sup> *The Value Line Investment Survey*, September 1, 2017.

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 <sup>1</sup> (1)	Annualized Dividend <sup>2</sup> (2)	First Stage Growth <sup>3</sup> (3)	Second Stage Growth					Third Stage Growth <sup>4</sup> (9)	Multi-Stage Growth DCF (10)
					Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)		
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	<b>Average</b>	<b>\$49.43</b>	<b>\$0.97</b>	<b>6.82%</b>	<b>6.38%</b>	<b>5.95%</b>	<b>5.51%</b>	<b>5.07%</b>	<b>4.64%</b>	<b>4.20%</b>	<b>6.62%</b>
10	<b>Median</b>										<b>6.60%</b>

Sources:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

<sup>2</sup> *The Value Line Investment Survey*, October 13, 2017.

<sup>3</sup> Schedule MPG-3, page 1.

<sup>4</sup> *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	Annualized	First Stage	Second Stage Growth					Third Stage	Multi-Stage
		Stock Price <sup>1</sup>	Dividend <sup>2</sup>	Growth <sup>3</sup>	Year 6	Year 7	Year 8	Year 9	Year 10	Growth <sup>4</sup>	Growth DCF
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(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	<b>Average</b>	<b>\$64.50</b>	<b>\$1.59</b>	<b>5.71%</b>	<b>5.46%</b>	<b>5.20%</b>	<b>4.95%</b>	<b>4.70%</b>	<b>4.45%</b>	<b>4.20%</b>	<b>7.05%</b>
9	<b>Median</b>										<b>6.96%</b>

Sources:

<sup>1</sup> Yahoo! Finance, downloaded October 31, 2017.

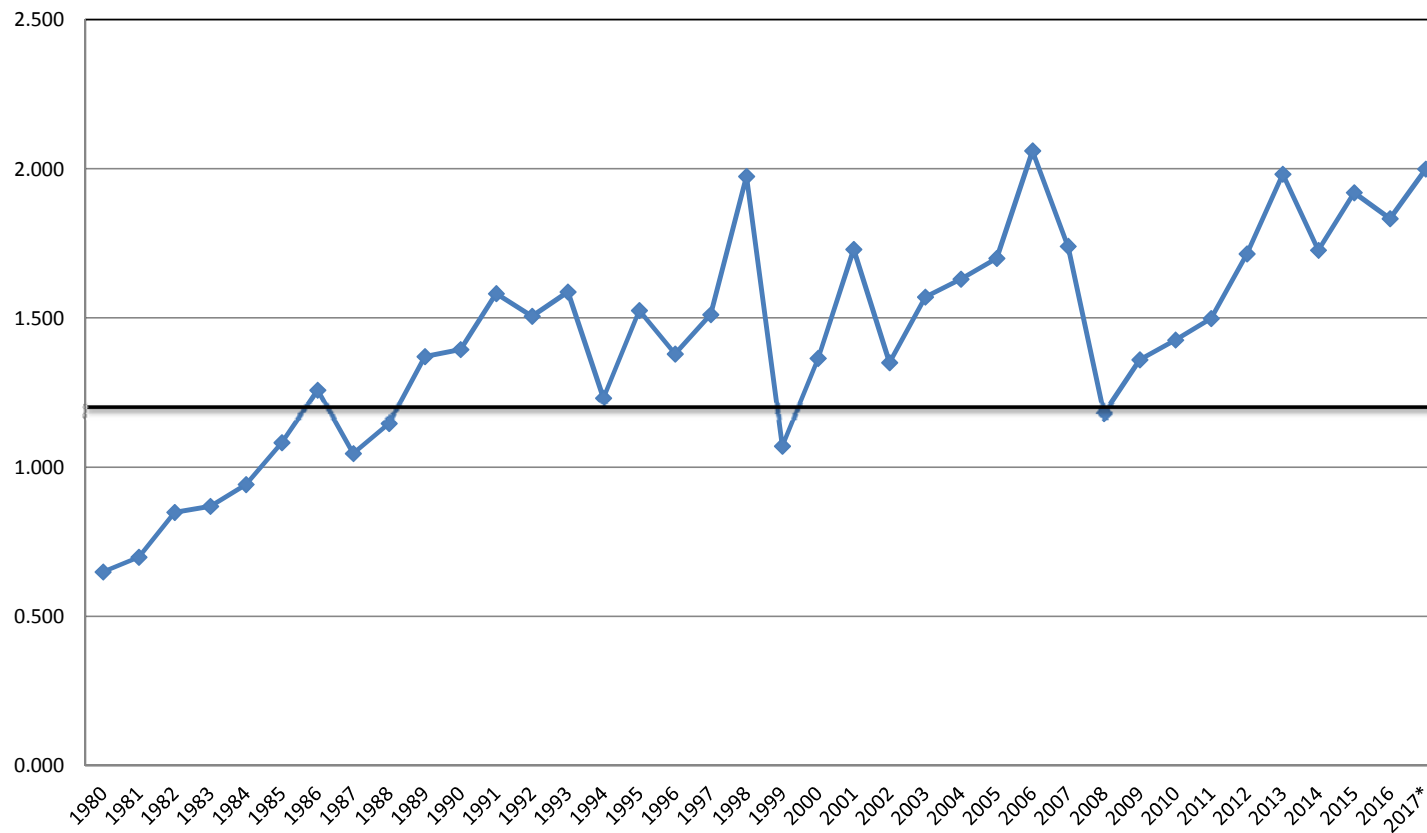
<sup>2</sup> *The Value Line Investment Survey*, September 1, 2017.

<sup>3</sup> Schedule MPG-3, page 2.

<sup>4</sup> *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

<u>Line</u>	<u>Year</u>	<u>Authorized Gas Returns<sup>1</sup></u> (1)	<u>30 yr. Treasury Bond Yield<sup>2</sup></u> (2)	<u>Indicated Risk Premium</u> (3)	<u>Rolling 5 - Year Average</u> (4)	<u>Rolling 10 - Year Average</u> (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 <sup>3</sup>	9.75%	2.92%	6.83%	6.64%	6.44%
33	<b>Average</b>	<b>11.03%</b>	<b>5.61%</b>	<b>5.41%</b>	<b>5.36%</b>	<b>5.36%</b>
34	<b>Minimum</b>				<b>4.17%</b>	<b>4.30%</b>
35	<b>Maximum</b>				<b>6.68%</b>	<b>6.44%</b>

Sources:

<sup>1</sup> *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.

<sup>2</sup> 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.

<sup>3</sup> Data includes January - September 2017.

# Missouri-American Water Company

## Equity Risk Premium - Utility Bond

<u>Line</u>	<u>Year</u>	<u>Authorized Gas Returns<sup>1</sup></u> (1)	<u>Average "A" Rated Utility Bond Yield<sup>2</sup></u> (2)	<u>Indicated Risk Premium</u> (3)	<u>Rolling 5 - Year Average</u> (4)	<u>Rolling 10 - Year Average</u> (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 <sup>3</sup>	9.75%	4.05%	5.70%	5.50%	5.09%
33	<b>Average</b>	<b>11.03%</b>	<b>6.99%</b>	<b>4.04%</b>	<b>3.99%</b>	<b>3.95%</b>
34	<b>Minimum</b>				<b>2.80%</b>	<b>3.11%</b>
35	<b>Maximum</b>				<b>5.52%</b>	<b>5.09%</b>

Sources:

<sup>1</sup> 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.

<sup>2</sup> 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/>.

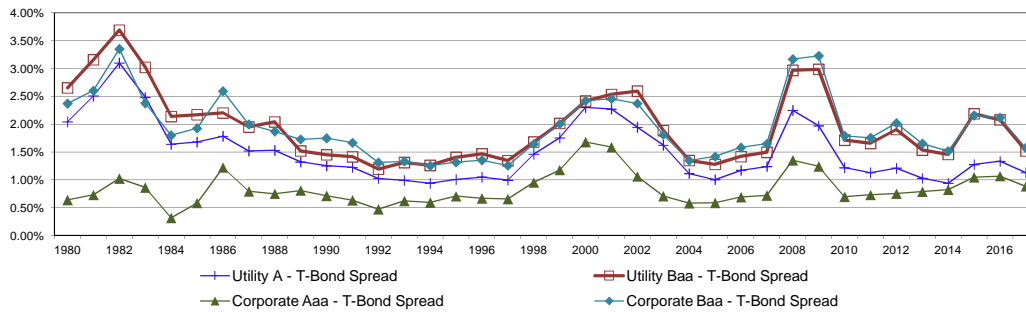
<sup>3</sup> Data includes January - September 2017.

# Missouri-American Water Company

## Bond Yield Spreads

Line	Year	T-Bond Yield <sup>1</sup> (1)	Public Utility Bond				Corporate Bond				Utility to Corporate	
			A <sup>2</sup> (2)	Baa <sup>2</sup> (3)	A-T-Bond Spread (4)	Baa-T-Bond Spread (5)	Aaa <sup>3</sup> (6)	Baa <sup>3</sup> (7)	Aaa-T-Bond Spread (8)	Baa-T-Bond Spread (9)	Baa Spread (10)	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 <sup>4</sup>	2.92%	4.05%	4.44%	1.13%	1.52%	3.80%	4.50%	0.88%	1.58%	-0.06%	0.25%
39	<b>Average</b>	<b>6.62%</b>	<b>8.13%</b>	<b>8.57%</b>	<b>1.51%</b>	<b>1.95%</b>	<b>7.46%</b>	<b>8.55%</b>	<b>0.84%</b>	<b>1.93%</b>	<b>0.01%</b>	<b>0.67%</b>

**Yield Spreads**  
Treasury Vs. Corporate & Treasury Vs. Utility



Sources:

- <sup>1</sup> St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org/>.
- <sup>2</sup> The utility yields for the period 1980-2009 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/>.
- <sup>3</sup> 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/>.
- <sup>4</sup> Data includes January - September 2017.

# Missouri-American Water Company

## Treasury and Utility Bond Yields

<u>Line</u>	<u>Date</u>	<u>Treasury Bond Yield<sup>1</sup></u> (1)	<u>"A" Rated Utility Bond Yield<sup>2</sup></u> (2)	<u>"Baa" Rated Utility Bond Yield<sup>2</sup></u> (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	<b>Average</b>	<b>2.81%</b>	<b>3.88%</b>	<b>4.24%</b>
15	<b>Spread To Treasury</b>		<b>1.07%</b>	<b>1.43%</b>

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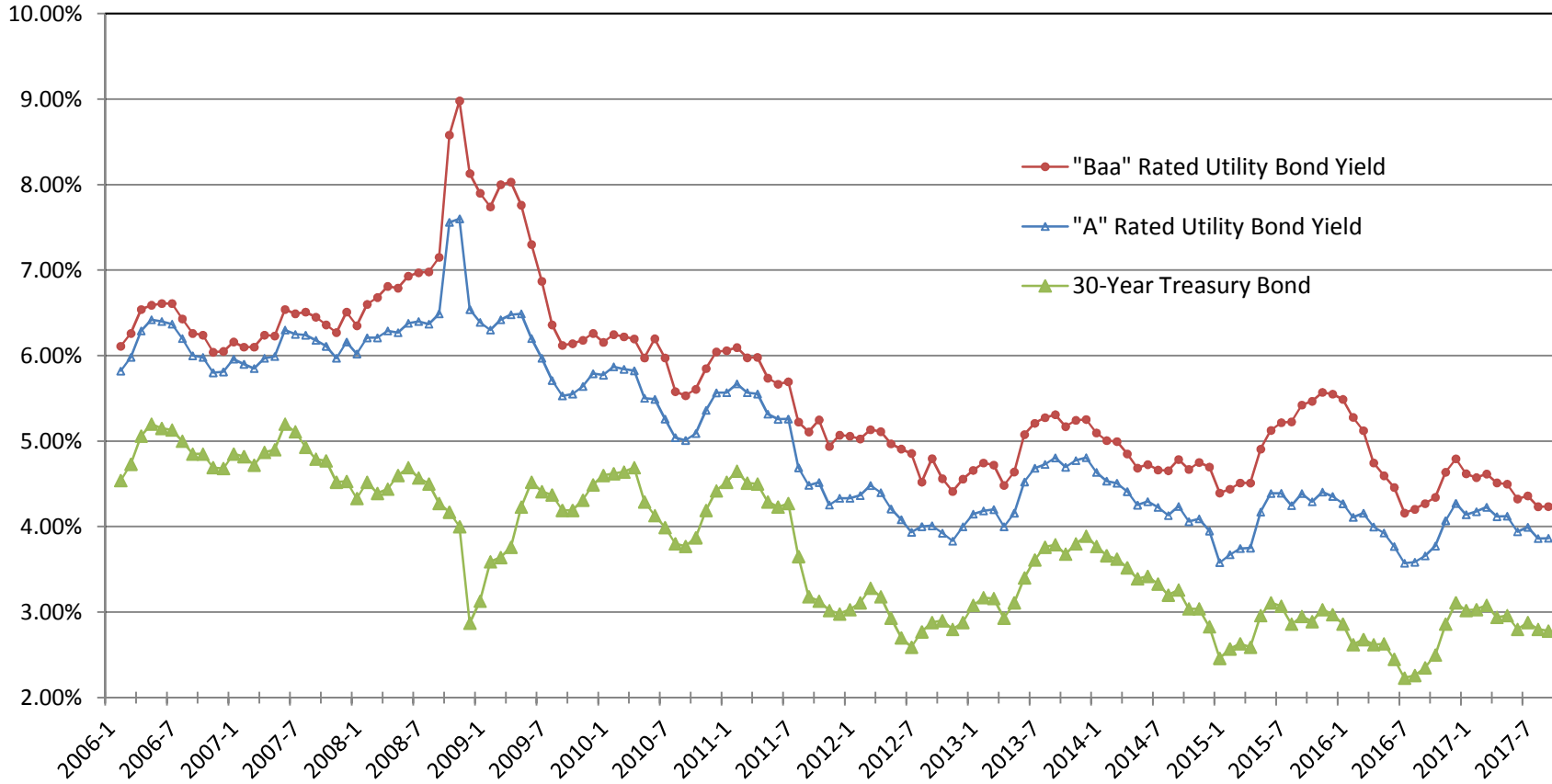
Sources:

<sup>1</sup> St. Louis Federal Reserve: Economic Research, <http://research.stlouisfed.org>.

<sup>2</sup> <http://credittrends.moody.com/>.

# Missouri-American Water Company

## Trends in Bond Yields



Sources:

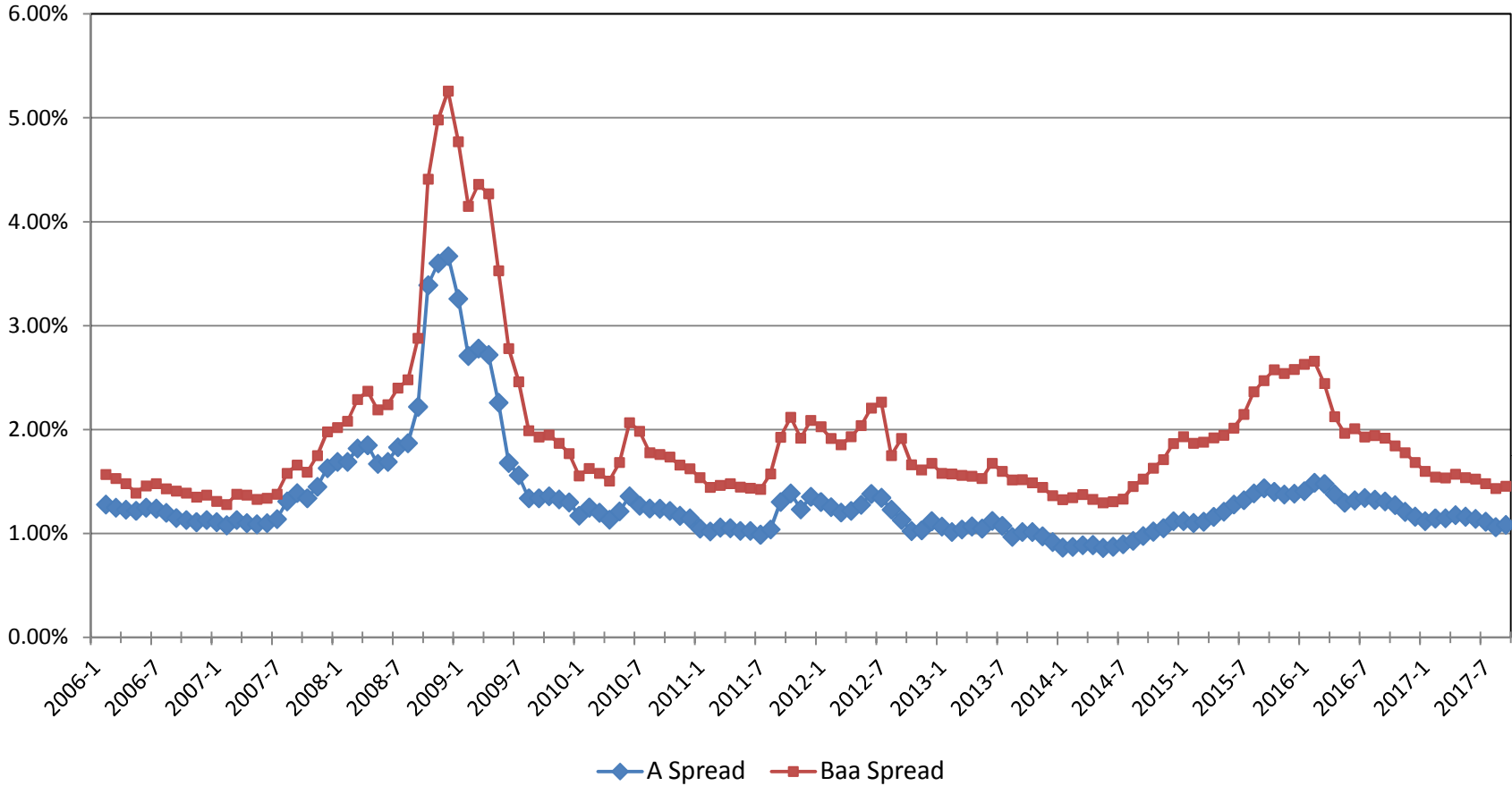
Mergent Bond Record.

[www.moodys.com](http://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

<u>Line</u>	<u>Company</u>	<u>Beta</u>
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	<b>Average</b>	<b>0.74</b>

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

# Missouri-American Water Company

## Value Line Beta Gas Utilities

<u>Line</u>	<u>Company</u>	<u>Beta</u>
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	<b>Average</b>	<b>0.73</b>

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



# Missouri-American Water Company

## CAPM Return Water Utilities

<u>Line</u>	<u>Description</u>	<u>High Market Risk Premium (1)</u>	<u>Low Market Risk Premium (2)</u>
1	Risk-Free Rate <sup>1</sup>	3.60%	3.60%
2	Risk Premium <sup>2</sup>	7.80%	6.00%
3	Beta <sup>3</sup>	0.74	0.74
4	<b>CAPM</b>	<b>9.40%</b>	<b>8.06%</b>

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Sources:

<sup>1</sup> *Blue Chip Financial Forecasts*; November 1, 2017, at 2.

<sup>2</sup> *Duff & Phelps, 2017 SBBI Yearbook* at 6-17 and 6-18, and  
*Duff & Phelps, 2017 Valuation Handbook* at 3-36 and 3-48.

<sup>3</sup> Schedule MPG-15, page 1.

# Missouri-American Water Company

## CAPM Return Gas Utilities

<u>Line</u>	<u>Description</u>	<u>High Market Risk Premium (1)</u>	<u>Low Market Risk Premium (2)</u>
1	Risk-Free Rate <sup>1</sup>	3.60%	3.60%
2	Risk Premium <sup>2</sup>	7.80%	6.00%
3	Beta <sup>3</sup>	0.73	0.73
4	<b>CAPM</b>	<b>9.26%</b>	<b>7.95%</b>

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Sources:

<sup>1</sup> *Blue Chip Financial Forecasts*; November 1, 2017, at 2.

<sup>2</sup> *Duff & Phelps, 2017 SBBI Yearbook* at 6-17 and 6-18, and  
*Duff & Phelps, 2017 Valuation Handbook* at 3-36 and 3-48.

<sup>3</sup> Schedule MPG-15, page 2.