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Case No.:	WR-2017-0285
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**BEFORE THE PUBLIC SERVICE COMMISSION
 OF THE STATE OF MISSOURI**

In the Matter of Missouri-American Water
 Company's Request for Authority to
 Implement General Rate Increase for
 Water and Sewer Service Provided in
 Missouri Service Areas

Case No. WR-2017-0285

Rebuttal Testimony and Schedules of

Michael P. Gorman

On behalf of

**Missouri Office of Public Counsel
 and
 Missouri Industrial Energy Consumers**

January 17, 2018



Project 10440.3

Exhibit No. 222
 Date 3/5/18 Reporter MI
 File No. WR-2017-0285

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STATE OF MISSOURI)
COUNTY OF ST. LOUIS) SS

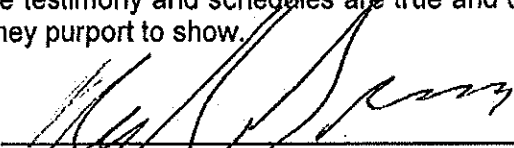
Affidavit of Michael P. Gorman

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 rebuttal testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. WR-2017-0285.

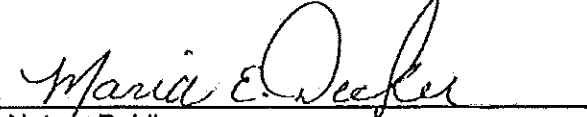
3. I hereby swear and affirm that the testimony and schedules are true and correct and that they show the matters and things that they purport to show.



Michael P. Gorman

Subscribed and sworn to before me this 17th day of January, 2018.

MARIA E. DECKER
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis City
My Commission Expires: May 5, 2021
Commission # 13706793



Notary Public

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Case No. WR-2017-0285

**Table of Contents to the
Rebuttal Testimony of Michael P. Gorman**

	<u>Page</u>
I. SUMMARY.....	2
II. MAWC'S PROPOSED CAPITAL STRUCTURE.....	3
III. FINANCIAL INTEGRITY.....	7
IV. RESPONSE TO MAWC WITNESS MS. BULKLEY.....	11
IV.A. Summary of Rebuttal to Ms. Bulkley.....	11
IV.B. Bulkley DCF.....	18
IV.B.1. Bulkley Constant Growth DCF.....	18
IV.B.2. Bulkley Projected Stock Price DCF.....	19
IV.C. Bulkley Expected Earnings Analysis.....	20
IV.D. Bulkley CAPM Studies.....	22
IV.E. Additional Risks.....	26
Schedule MPG-R-1 through Schedule MPG-R-9	

**Michael P. Gorman
Table of Contents**

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Case No. WR-2017-0285

Rebuttal 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 ARE YOU THE SAME MICHAEL P. GORMAN WHO PREVIOUSLY FILED
5 TESTIMONY IN THIS CASE?

6 A Yes. On November 30, 2017 I filed direct testimony on behalf of the Office of the
7 Public Counsel ("OPC") and the Missouri Industrial Energy Consumers ("MIEC").

8 Q WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

9 A I will respond to Missouri-American Water Company ("MAWC" or "Company") witness
10 Ann Bulkley and her proposed return on equity recommendation of 10.80%. I will
11 also respond to the Company's proposed capital structure as sponsored by MAWC
12 witness Scott Rungren.

Michael P. Gorman
Page 1

1 I. SUMMARY

2 Q PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS IN YOUR
3 REBUTTAL TESTIMONY.

4 A My findings and recommendations are summarized as follows:

5 1. MAWC's proposed capital structure includes more common equity than MAWC's
6 actual capital structure over the last several years. The Company's proposed
7 capital structure is unreasonable because the cost of the increased common
8 equity ratio has not been supported as needed or in any way just and reasonable.
9 MAWC's projected equity ratio of total capital is an unjustified increase to MAWC's
10 cost of service and inflates its claimed revenue deficiency in this proceeding.
11 MAWC's capital structure should be limited to a reasonable amount of common
12 equity.

13 2. I recommend that a ratemaking capital structure containing no more than 50%
14 common equity be used to set rates for MAWC. This capital structure is
15 reasonably consistent with the capital structure used to set rates for MAWC in its
16 last rate case, and it is reasonably consistent with MAWC's actual capital structure
17 mix over the last several years.

18 3. The Company's proposed return on equity is not reasonable. As outlined in my
19 direct testimony, a return on common equity in the range of 8.6% to 9.4% will
20 provide MAWC a fair risk-adjusted return at a just and reasonable cost to its
21 customers. The Company's requested return on equity in this case of 10.8% is
22 based on a severely flawed methodology, and it substantially overestimates a fair
23 and reasonable return on equity for MAWC.

24 The Company's excessive return on equity unjustifiably inflates its claimed
25 revenue deficiency, and produces an increase in rates that is not just and
26 reasonable. Customers should not be burdened by exorbitant increases in rates
27 to support a substantially above market cost of common equity, and therefore, the
28 Company's requested return on equity of 10.8% should be rejected. As
29 demonstrated below, reasonable adjustments and corrections to the Company's
30 market-based measurements of a fair return on equity show that a return on equity
31 for MAWC of 9.0% is just and reasonable, will provide fair compensation, and will
32 maintain MAWC's credit standing and financial integrity.

33 4. Based on my proposed capital structure and return on equity, MAWC's overall rate
34 of return is 7.12%, as shown on my Schedule MPG-R-1.

Michael P. Gorman
Page 2

1 **II. MAWC'S PROPOSED CAPITAL STRUCTURE**

2 Q WHAT IS MAWC'S PROPOSED CAPITAL STRUCTURE?

3 A MAWC's proposed capital structure is shown below in Table 1. This capital structure
4 is sponsored by Mr. Rungren. Mr. Rungren proposes a capital structure for the pro
5 forma period ending May 31, 2019.

<u>Description</u>	<u>Weight</u>
Long-Term Debt	48.92%
Preferred Stock	0.05%
Common Equity	<u>51.03%</u>
Total	100.00%

Source: Rungren Direct, Schedule SWR-1, page 1.

6 Q IS MAWC'S PROPOSED CAPITAL STRUCTURE REASONABLE?

7 A No. The Company's proposed capital structure contains an increased common
8 equity ratio relative to MAWC's actual common equity ratio over the last five years,
9 and its capital structure last used to set rates. As shown on my attached Schedule
10 MPG-R-2, the Company's actual historical capital structure has contained a common
11 equity ratio ranging from 49.8% up to 50.8%. The Company's proposed projected
12 capital structure increases the common equity ratio up to 51% for a 2019 forecasted
13 test year. Further, in MAWC's last rate case, rates were set based on a 50.0%

Michael P. Gorman
Page 3

1 common equity ratio, as shown in a recent investor presentation by MAWC's parent
2 company.¹

3 **Q WHY WOULD A CAPITAL STRUCTURE TOO HEAVILY WEIGHTED WITH**
4 **COMMON EQUITY UNNECESSARILY INCREASE MAWC'S COST OF SERVICE**
5 **IN THIS PROCEEDING?**

6 **A** A capital structure too heavily weighted with common equity unnecessarily increases
7 MAWC's claimed revenue deficiency because common equity is the most expensive
8 form of capital and is subject to income tax expense. For example, if MAWC's
9 authorized return on equity is set at 9.0%, the revenue requirement cost to customers
10 of the equity component of the capital structure would be approximately 14.4%, or
11 9.0% adjusted by a tax revenue conversion factor of approximately 1.6x. In contrast,
12 the cost of debt capital is not subject to an income tax expense. MAWC's current
13 marginal cost of debt is around 5.50%. Common equity is more than twice as
14 expensive on a revenue requirement basis than is debt capital.

15 A reasonable mix of debt and equity is necessary in order to balance MAWC's
16 financial risk, support an investment grade credit rating, and permit MAWC access to
17 capital under reasonable terms and prices. However, a capital structure too heavily
18 weighted with common equity will unnecessarily increase its cost of capital and
19 revenue requirement for ratepayers.

¹American Water Works, Investors Presentation, December 2017 at 34.

1 Q DO YOU RECOMMEND THE COMMISSION USE A COMMON EQUITY RATIO
2 LOWER THAN THAT PROPOSED BY MAWC IN A RATEMAKING CAPITAL
3 STRUCTURE?

4 A Yes. I recommend the Commission require MAWC to use a capital structure mix for
5 ratemaking purposes that is composed of a reasonable debt and equity capital mix,
6 and imposes costs on its customers that are no higher than necessary to maintain its
7 credit standing and financial integrity. In order for the Commission to adopt MAWC's
8 proposed capital structure, MAWC must prove that a larger percentage of common
9 equity is necessary to support its financial integrity and credit standing, and the
10 resulting costs on customers are fair and reasonable. MAWC has not proven that its
11 proposed increase to its common equity ratio is needed or cost justified. Therefore,
12 the Company's forecasted capital structure should be modified to reflect a common
13 equity ratio of no higher than 50% for ratemaking purposes.

14 Q WHAT IS YOUR PROPOSED CAPITAL STRUCTURE TO BE USED FOR
15 RATEMAKING PURPOSES IN THIS CASE?

16 A My proposed capital structure is shown in Table 2 below.

TABLE 2

Gorman's Proposed Capital Structure
(May 31, 2019)

<u>Description</u>	<u>Weight</u>
Long-Term Debt	49.95%
Preferred Stock	0.05%
Common Equity	<u>50.00%</u>
Total	100.00%

Source: Schedule MPG-R-1.

1 Q WILL YOUR PROPOSED ADJUSTMENTS TO THE COMPANY'S RATEMAKING
2 CAPITAL STRUCTURE RESULT IN A DISALLOWANCE TO MAWC?

3 A No. Adjusting the Company's forecasted cost of service for the forecasted test year
4 provides the Company an ample opportunity to modify its actual capital structure to
5 conform to what the Commission finds to be reasonable for setting rates. If the
6 Company responds to this regulatory price signal, it will be provided the opportunity to
7 fully recover its cost of service including the Commission authorized return on
8 common equity.

9 Providing the Company a price signal that requires management to respond to
10 pricing disciplines is consistent with non-regulated companies that must modify their
11 actual cost structure to conform to market pricing in an effort to achieve their profit
12 targets. The Commission's modification of the Company's increased common equity
13 ratio under its forecasted capital structure provides a price signal comparable to that
14 in a competitive marketplace that should guide the Company's management in

1 managing a reasonable capital structure and reasonable costs to customers that
2 maintain its financial integrity and credit standing.

3 **III. FINANCIAL INTEGRITY**

4 **Q WILL YOUR RECOMMENDED OVERALL RATE OF RETURN SUPPORT AN**
5 **INVESTMENT GRADE BOND RATING FOR MAWC?**

6 **A** Yes. I have reached this conclusion by comparing the key credit rating financial
7 ratios for MAWC, at my proposed return on equity of 9.00% and a ratemaking capital
8 structure with a 50% common equity ratio. I use these cost of service parameters to
9 develop MAWC credit metrics that can be compared to Standard & Poor's ("S&P")
10 credit rating benchmark financial ratios.

11 **Q PLEASE DESCRIBE THE MOST RECENT S&P FINANCIAL RATIO CREDIT**
12 **METRIC METHODOLOGY.**

13 **A** S&P publishes a matrix of financial ratios that correspond to its assessment of the
14 business risk of utility companies and related bond ratings. On May 27, 2009, S&P
15 expanded its matrix criteria by including additional business and financial risk
16 categories.²

17 Based on S&P's most recent credit matrix, the business risk profile categories
18 are "Excellent," "Strong," "Satisfactory," "Fair," "Weak," and "Vulnerable." Most
19 utilities have a business risk profile of "Excellent" or "Strong."

20 The financial risk profile categories are "Minimal," "Modest," "Intermediate,"
21 "Significant," "Aggressive," and "Highly Leveraged." Most of the utilities have a

²S&P updated its 2008 credit metric guidelines in 2009, and incorporated utility metric benchmarks with the general corporate rating metrics. *Standard & Poor's RatingsDirect*. "Criteria Methodology: Business Risk/Financial Risk Matrix Expanded," May 27, 2009.

1 financial risk profile of "Aggressive." MAWC has an "Excellent" business risk profile
2 and an "Intermediate" financial risk profile, the least risky of the business risk
3 categories, and above the average of the financial risk categories.

4 **Q PLEASE DESCRIBE S&P'S USE OF THE FINANCIAL BENCHMARK RATIOS IN**
5 **ITS CREDIT RATING REVIEW.**

6 **A** S&P evaluates a utility's credit rating based on an assessment of its financial and
7 business risks. A combination of financial and business risks equates to the overall
8 assessment of MAWC's total credit risk exposure. On November 19, 2013, S&P
9 updated its methodology. In its update, S&P published a matrix of financial ratios that
10 defines the level of financial risk as a function of the level of business risk.

11 S&P publishes ranges for two core financial ratios that it uses as guidance in
12 its credit review for utility companies. The two core financial ratio benchmarks it relies
13 on in its credit rating process include: (1) Debt to Earnings Before Interest, Taxes,
14 Depreciation and Amortization ("EBITDA"); and (2) Funds From Operations ("FFO") to
15 Total Debt.³

16 **Q HOW DID YOU APPLY S&P'S FINANCIAL RATIOS TO TEST THE**
17 **REASONABLENESS OF YOUR RATE OF RETURN RECOMMENDATIONS?**

18 **A** I calculated each of S&P's financial ratios based on MAWC's cost of service for its
19 retail jurisdictional operations. While S&P would normally look at total consolidated
20 MAWC financial ratios in its credit review process, my investigation in this proceeding
21 is not the same as S&P's. I am attempting to judge the reasonableness of my
22 proposed cost of capital for rate-setting in MAWC's retail regulated utility operations.

³Standard & Poor's RatingsDirect: "Criteria: Corporate Methodology," November 19, 2013.

1 Hence, I am attempting to determine whether my proposed rate of return will in turn
2 support cash flow metrics, balance sheet strength, and earnings that will support an
3 investment grade bond rating and MAWC's financial integrity.

4 **Q DID YOU INCLUDE ANY OFF-BALANCE SHEET DEBT EQUIVALENTS?**

5 A I did, however it was an approximation based on the parent company's off-balance
6 sheet debt. S&P's credit rating methodologies for American Water Works ("AWW")
7 show that its balance sheet debt is increased by an approximate ratio of 5.5% to
8 reflect off-balance sheet debt obligations. These debt obligations are largely
9 attributable to pension obligations for AWW's employees. This off-balance sheet debt
10 obligation reflects both regulated and non-regulated operations of AWW, and there is
11 no reasonable methodology of allocating this precisely to MAWC. Therefore, I
12 assumed the impact on AWW's on-balance sheet debt for off-balance sheet
13 obligations would be uniformly spread across all operating affiliates of AWW.

14 Therefore, in approximating an adjusted debt ratio for MAWC in this
15 proceeding, I assumed the off-balance sheet debt obligations would increase its
16 on-balance sheet debt by a factor of approximately 5.5%. Again, this was based on
17 AWW's total off-balance sheet to on-balance sheet debt obligations.

18 Importantly, this is a conservative assumption because in response to OPC
19 Data Request 6007, MAWC stated that it only has minimal operating leases, and did
20 not quantify any off-balance sheet debt.

Michael P. Gorman
Page 9

1 Q PLEASE DESCRIBE THE RESULTS OF THIS CREDIT METRIC ANALYSIS AS IT
2 RELATES TO MAWC.

3 A The S&P financial metric calculations for MAWC at a 9.0% return are developed on
4 Schedule MPG-R-3, page 1. S&P currently rates MAWC's business risk as
5 "Excellent" and financial risk as "Intermediate." The credit metrics produced below,
6 with this financial and business risk outlook by S&P, will be used to assess the
7 strength of the credit metrics based on MAWC's retail operations in Missouri.

8 MAWC's estimated total adjusted debt ratio is approximately 51%. This
9 MAWC adjusted debt ratio is generally lower than the water utility industry average
10 and median adjusted debt ratios of 53.9% and 52.3%, respectively, for water utilities
11 with an S&P bond rating of A, as shown on my Schedule MPG-R-4, page 3. Hence, I
12 concluded this MAWC capital structure reasonably supports an investment grade
13 bond rating.

14 Based on an equity return of 9.00%, MAWC will be provided an opportunity to
15 produce a debt to an earnings before interest, taxes, depreciation and amortization
16 ("EBITDA") ratio of 3.8x. This is within S&P's "Intermediate" guideline range of 3.0x
17 to 4.0x,⁴ which is consistent with an "Intermediate" business risk ranking. This ratio
18 supports an investment grade credit rating.

19 MAWC's retail operations Funds from Operations ("FFO") to total debt
20 coverage at a 9.0% equity return is 21%, which is within S&P's "Intermediate" metric
21 guideline range of 13% to 23%. This FFO/total debt ratio will support an investment
22 grade bond rating.

23 At my recommended return on equity of 9.0%, and a ratemaking capital
24 structure with a 50% common equity ratio, MAWC's credit metrics will be in line with

⁴*Id.*

1 an investment grade bond rating, and will continue to support its financial integrity,
2 and access to capital under reasonable terms and conditions. This is an indication
3 that MAWC's cost of service at a 9.0% return on equity will be fair to both investors
4 and to customers.

5 **IV. RESPONSE TO MAWC WITNESS MS. BULKLEY**

6 **IV.A. Summary of Rebuttal to Ms. Bulkley**

7 **Q WHAT RETURN ON COMMON EQUITY IS MAWC PROPOSING FOR THIS**
8 **PROCEEDING?**

9 **A** The Company has requested a return on equity of 10.80% based on the
10 recommended range of 10.0% to 10.80% sponsored by its witness, Ms. Ann Bulkley.⁵
11 Her recommended return on equity is based on: (1) a constant growth Discounted
12 Cash Flow ("DCF"), (2) a Constant Growth "projected stock price" DCF analysis, (3)
13 an expected earnings analysis, and (4) a traditional Capital Asset Pricing Model
14 ("CAPM") studies. Ms. Bulkley's general practice is to exclude the operating affiliates
15 of the subject company. However, due to the small number of water utilities followed
16 by *Value Line*, she presents the results both including and excluding AWW.

17 **Q DOES MS. BULKLEY MAKE COMMENTS CONCERNING THE RELIABILITY OF**
18 **MARKET-BASED MODELS TO MEASURE A FAIR RETURN ON EQUITY FOR**
19 **MAWC?**

20 **A** Yes. Ms. Bulkley opines that the traditional DCF model is not producing reasonable
21 results at this time due to anomalous market conditions. (Bulkley Direct at 9). She
22 goes on to state that current market conditions reflect a low interest rate environment,

⁵Bulkley Direct Testimony at 9.

1 which affects security valuation and yields, relative to historical levels. She also
2 opines that the market has an expectation for higher interest rates. She believes
3 these factors affect the reliability of DCF and CAPM return estimates based on
4 current market factors. (*Id.* at 13-15).

5 **Q HAS MS. BULKLEY IDENTIFIED FACTORS THAT ARE DIFFERENT THAN**
6 **THOSE THAT HAVE EXISTED IN OTHER RATE CASES OVER THE LAST FIVE**
7 **TO TEN YEARS?**

8 A No. As detailed later in this testimony, economists have consistently been projecting
9 increases in interest rates relative to current observable interest rates over
10 approximately the last five years. However, those projections for increased interest
11 rates have turned out to be inaccurate. Instead, interest rates have been relatively
12 stable and at low levels for approximately the last five to ten years. Also, I show that
13 projected interest rates over the next five to ten years have been moderated by
14 independent consensus economists. This is clear evidence that the market now is
15 embracing the sustainability of relatively low capital market costs in the current
16 market relative to what independent economists have projected in prior periods.
17 Again, this shows market conditions are not anomalous and DCF and CAPM return
18 estimates are reliable and accurate. I also believe a comparison of the components
19 of the DCF return for utilities generally, and water utilities specifically, to other income
20 return investment options and growth investment options show that the results of DCF
21 models are producing reliable and accurate estimates of the current market cost for
22 utility companies.

1 Q PLEASE EXPLAIN WHY YOU BELIEVE THE DCF MODEL IS NOW PRODUCING
2 RELIABLE RESULTS FOR UTILITY COMPANIES WHEN THE DCF RETURN
3 COMPONENT IS COMPARED TO ALTERNATIVE INVESTMENTS?

4 A The application of a DCF analysis, risk premium, and CAPM produce reasonable and
5 accurate estimates of the current market cost of equity for MAWC and other
6 companies of similar investment risk.

7 The DCF model currently is producing an economically logical estimate of the
8 current market cost of equity. The DCF model reflects the observable dividend yield
9 on utility stocks, and adds to that an estimate of expected growth. Utility dividend
10 yields can be compared to yields on Treasuries and utility bonds. Both of these DCF
11 components can be compared to alternative investments and are shown to be
12 reasonable.

13 The current dividend yield of a water utility stock (2.13%) is lower but
14 comparable to the current yield of Treasury bonds (2.81%) and the yields on "A" rated
15 utility bonds (3.88%) as shown my Schedule MPG-14. It is normal for utility dividend
16 yields generally, and water utility dividend yields specifically, to be lower than the
17 yields of observable utility bond yields, because a stock's dividend and price are
18 expected to grow over time.

19 The income return component of water utility stocks and yields is reasonable
20 in relationship to alternative income investments. Utility stock dividend yields are
21 based directly on utility dividend payments and observable stock prices. For
22 example, as shown on Schedule MPG-R-5, utility bond yields generally on average
23 have had a yield spread to water utility stocks of 2.19%. Currently, the yield spread is
24 1.87%. This indicates the income return on water utility stocks (dividend yield) is
25 logically competitive with the income return available on utility bond investments.

Michael P. Gorman
Page 13

1 This is an indication that the water utility stock yield component of the DCF estimate
2 is robust and logical relative to historical comparisons. There is no depression to the
3 yield component of the DCF return.

4 The growth component of the DCF return relates to earnings and stock growth
5 over time. The growth outlook for utility stocks is not depressed generally, nor is it for
6 water utility stock specifically. Therefore, the DCF return is not understated due to
7 the DCF growth rate component. Specifically, the proxy group's growth in dividends
8 and earnings, based on current analysts' growth rate outlooks is around 6.8% as
9 stated at page 21 of my direct testimony.

10 On Schedule MPG-R-5, page 2, the annual growth in dividends for water
11 utilities over the last 12 years has been approximately 4.9%. A forward growth rate of
12 6.8% is considerably higher than the realized historical growth. Also, water utility
13 earnings growth is expected to be considerably higher than the growth of the U.S.
14 Gross Domestic Product ("GDP"), which generally is regarded as the maximum
15 sustainable growth of the market in general. Long-term sustainable growth going
16 forward for equity investments is around 4.2% as described at pages 21 and 22 of my
17 direct testimony. Based on these factors, the growth rate component of a water utility
18 DCF return is quite robust and produces a highly competitive DCF return estimate.

19 Furthermore, a return on equity is fair if it is adequate to cover the cost of the
20 utility's dividend, and its cost of funding future growth. A 9.0% return on equity
21 accomplishes these objectives. For example, as shown on my Schedule MPG-R-5,
22 page 2, the current cost of water utility dividends as a proportion of book value is
23 5.57% (dividend per share divided by book value per share). This indicates that a
24 9.0% return on equity can produce earnings that can pay the dividend at roughly a
25 60% dividend payout ratio, or 40% earnings retention ratio. Producing earnings that

Michael P. Gorman
Page 14

1 cover dividends and support a 40% earnings retention ratio will accomplish the cost
2 of paying the dividend and funding future growth for the utility.

3 For these reasons, both dividend yield and growth components of a utility DCF
4 study indicate robust and economically logical DCF results compared to alternative
5 market investments.

6 **Q WHAT ARE YOUR COMMENTS CONCERNING THE RELIABILITY OF A CAPM**
7 **RETURN ESTIMATE?**

8 **A** A CAPM return estimate is largely determined by the accuracy of a utility beta, and
9 the measurement of a market risk premium. The risk-free rate is simply based on
10 observable Treasury bond yields or projected Treasury bond yields that will prevail
11 during the period rates will be in effect and the utility will be entitled to fair
12 compensation. In measuring a CAPM return estimate, my proxy group indicated a
13 beta for water utilities of around 0.74, as shown in Schedule MPG-15. This beta is
14 reasonably comparable to the average betas experienced by water utilities (0.72) and
15 gas utilities (0.75) over the last five years. (See my Schedule MPG-R-6.) Further,
16 recognizing the relatively low level of risk-free rates and corresponding high market
17 risk premium, producing a CAPM return estimate reflecting above average market
18 risk premium is consistent with observable market evidence. This was discussed in
19 my direct testimony at pages 37-39. For these reasons, I believe the CAPM return
20 estimate also produces a return estimate that is consistent with observable market
21 evidence, and independent economists' projections of interest rates, and beta
22 coefficients for low-risk utility companies that are reasonably consistent with historical
23 betas and above average market risk premium which is corroborated by observable

1 market evidence. Again, Ms. Bulkley's conclusion that CAPM return estimates using
2 observable market data are unreliable is without merit.

3 I disagree with Ms. Bulkley's proposal to develop DCF and CAPM return
4 estimates based on analysts' projected security valuation and other factors. This
5 methodology does not estimate a fair return for both the investors and ratepayers in
6 this proceeding and should be rejected as unreasonable and biased.

7 **Q ARE MS. BULKLEY'S RETURN ON EQUITY ESTIMATES REASONABLE?**

8 **A** No. Ms. Bulkley's estimated return on equity is overstated and should be rejected.
9 Ms. Bulkley's analyses produce excessive results for various reasons, including the
10 following:

- 11 1. Her constant growth DCF results are based on very high short-term growth rates.
- 12 2. Her projected DCF is based on projections not reflective of the rate-effective
13 period and inflated short-term growth rates.
- 14 3. Her CAPM is based on inflated market risk premiums and an unreasonably high
15 projected risk-free rate.

16 **Q PLEASE SUMMARIZE MS. BULKLEY'S RETURN ON EQUITY ESTIMATES.**

17 **A** Ms. Bulkley's return on equity estimates are summarized in Table 3 below. In
18 Column 2, I show the results with prudent and sound adjustments to correct the flaws
19 referenced above. With such adjustments to her proxy group's DCF, and CAPM
20 return estimates, Ms. Bulkley's own studies show my 9.0% recommended return on
21 equity for MAWC is reasonable.

TABLE 3
Bulkley Return on Equity Estimates

<u>Description</u>	<u>Mean¹</u> (1)	<u>Adjusted</u> (2)
<u>I. DCF</u>		
A. Constant Growth DCF, including AWW		
30-Day Average	8.84%	8.84%
90-Day Average	8.85%	8.85%
180-Day Average	8.88%	8.88%
B. Constant Growth DCF, excluding AWW		
30-Day Average	8.61%	8.61%
90-Day Average	8.62%	8.62%
180-Day Average	8.65%	8.65%
C. Projected Stock Price DCF, including AWW	9.38%	Reject
D. Projected Stock Price DCF, excluding AWW	9.08%	Reject
E. DCF Results	8.9%	8.9%
<u>II. EXPECTED EARNINGS</u>		
A. Expected Earnings, including AWW		
2017	10.88%	Reject
2020-2022	11.94%	Reject
B. Expected Earnings, excluding AWW		
2017	11.00%	Reject
2020-2022	12.14%	Reject
<u>III. CAPM</u>		
CAPM Results (Including AWW)		
Current 30-Yr Treasury (BL – 2.95%)	10.64%	8.69%
Current 30-Yr Treasury (VL – 2.95%)	10.39%	8.51%
Near-Term Projected 30-Yr Treasury (BL – 3.48%)	10.78%	9.22%
Near-Term Projected 30-Yr Treasury (VL – 3.48%)	10.54%	9.04%
Long-Term Projected 30-Yr Treasury (BL – 4.30%)	10.99%	Reject
Long-Term Projected 30-Yr Treasury (VL – 4.30%)	10.78%	Reject
CAPM Results (Excluding AWW)		
Current 30-Yr Treasury (BL – 2.95%)	10.89%	8.89%
Current 30-Yr Treasury (VL – 2.95%)	10.48%	8.57%
Near-Term Projected 30-Yr Treasury (BL – 3.48%)	11.02%	9.42%
Near-Term Projected 30-Yr Treasury (VL – 3.48%)	10.63%	9.10%
Long-Term Projected 30-Yr Treasury (BL – 4.30%)	11.21%	Reject
Long-Term Projected 30-Yr Treasury (VL – 4.30%)	10.86%	Reject
IV. Recommended Return on Equity	10.8%	9.0%

Sources: ¹Bulkley Direct Testimony at 35, 37, 38 and 42.

1 **IV.B. Bulkley DCF**

2 **IV.B.1. Bulkley Constant Growth DCF**

3 **Q PLEASE DESCRIBE MS. BULKLEY'S CONSTANT GROWTH DCF RETURN**
4 **ESTIMATES.**

5 A Her constant growth DCF returns are developed on Schedule AEB-1. Ms. Bulkley's
6 constant growth DCF models are based on consensus growth rates published by
7 Zacks, Thomson First Call (provided by Yahoo! Finance), and Thomson Reuters, and
8 individual growth rate projections made by *Value Line*.

9 She relied on dividend yield calculations based on average stock prices over
10 three different time periods: 30-day, 90-day, and 180-day, all reflecting one-half year
11 dividend growth adjustments.

12 **Q ARE THE CONSTANT GROWTH DCF RESULTS PRODUCED BY MS. BULKLEY**
13 **REASONABLE?**

14 A Ms. Bulkley's constant growth DCF mean results generally support a return on equity
15 no higher than 8.9%, which is similar to the results of my constant growth DCF study
16 discussed in my direct testimony.

17 Similar to my constant growth DCF result, Ms. Bulkley's constant growth DCF
18 return estimates are based on a proxy group average growth rate of 6.66% (Schedule
19 AEB-1). This growth rate is a very optimistic future growth in comparison to the
20 consensus economists' long-term GDP growth of 4.20% as discussed in my direct
21 testimony. As such, like my constant growth DCF results, Ms. Bulkley's constant
22 growth DCF return estimates should be considered as a high-end estimate of the
23 current market cost of equity.

1 IV.B.2. Bulkley Projected Stock Price DCF

2 Q DID MS. BULKLEY PERFORM ADDITIONAL DCF ANALYSES?

3 A Yes. Ms. Bulkley developed a DCF estimate using *Value Line* projected stock prices
4 and dividends during the 2020-2022 time period. Importantly, these projections do
5 not reflect the market valuation of securities. Rather, they reflect *Value Line*
6 projections of future stock prices and dividend payments.

7 The results of her projected stock price DCF model are presented on her
8 Schedule AEB-2, and show an average DCF return of 9.38% including AWW and
9 9.08% excluding AWW.

10 Q DO YOU HAVE ANY CONCERNS WITH MS. BULKLEY'S PROJECTED DCF
11 MODEL?

12 A Yes. Ms. Bulkley's DCF study based on "projected" stock prices does not reflect
13 current market capital costs, or capital market costs that are established by the
14 market participants in either the current or future markets. Rather, it simply reflects
15 *Value Line's* estimate of future stock market prices, dividend yields, and resulting
16 DCF studies.

17 As such, the DCF returns using this methodology are not reasonable for
18 setting rates because they do not measure fair compensation to investors, and do not
19 ensure that customers' rates are limited to only an increase that is necessary to
20 provide fair compensation to investors.

21 For these reasons, this projected stock price DCF methodology simply is
22 fraught with imbalanced estimates of a fair return and should, therefore, be rejected.

23 Moreover, these projections also contain the same concerns I expressed
24 related to the traditional DCF model based on observable stock market prices. That

1 is, they reflect growth rates that appear to be unsustainably high and do not
2 accurately reflect consensus market outlooks for future growth.

3 **IV.C. Bulkley Expected Earnings Analysis**

4 Q PLEASE DESCRIBE MS. BULKLEY'S EXPECTED EARNINGS ANALYSIS.

5 A Ms. Bulkley's Expected Earnings analysis is based on the projected returns on book
6 equity for the water utility companies followed by *Value Line* and included in her proxy
7 group as developed on her Schedule AEB-3 and presented on Table 4 of her direct
8 testimony. Based on this analysis, Ms. Bulkley concluded that the return on equity for
9 her proxy group is 10.88% for 2017 and 11.94% for the projected period 2020-2022,
10 including AWW. Similarly, the results excluding AWW are 11.00% for 2017 and
11 12.14% for 2020-2022.

12 Q PLEASE DESCRIBE THE PROBLEMS WITH MS. BULKLEY'S EXPECTED
13 EARNINGS ANALYSIS.

14 A Ms. Bulkley's Expected Earnings analysis should be rejected because this approach
15 does not measure the market required return appropriate for the investment risk of
16 MAWC. Rather, it measures the book accounting return. The market required return
17 is not the same as the accounting return, and the two can be – and in this instance
18 are – vastly different.

19 The significant discrepancy between the level and meaning of a market-
20 required return and a book return on equity, can have significant implications to both
21 investors and customers, when used to set a fair return on equity for ratemaking
22 purposes. Simply stated, a market return provides a pure measure of fair
23 compensation to investors, and allows for setting rates that provide no more than fair

1 compensation. Conversely, using the earned return on book equity can cause
2 compensation to be either too high or too low, and rates to be set either too low or too
3 high, depending on the specific circumstances when the book return is measured.

4 For example, if the proxy group's earned return on book equity is lower than
5 the market return, then this could be an indication that the rates for the proxy group
6 are too low and not providing fair compensation. As such, the measured book return
7 on equity would be an indication rates need to be increased. However, if the earned
8 return on book equity was used to estimate a fair return for ratemaking purposes,
9 then this depressed earnings level could result in rates being set below a level that
10 provides fair compensation to investors, and may not support its financial integrity.
11 Conversely, if the earned return on book equity for the proxy companies is above a
12 fair market return on equity, then that could be an indication that the rates for the
13 proxy companies produce more earnings than necessary to fairly compensate
14 investors, and using this inflated return on equity would result in rates which are not
15 just and reasonable for customers. In other words, the market return on equity is an
16 indication of whether or not earnings are fair and reasonable, whereas the book
17 return on equity generally is used to determine whether or not rate revenues for
18 utilities are either too high or too low. They cannot be used interchangeably.

19 The market-required return is a long-standing practice in setting rates for utility
20 companies. This is because the market sets the required rate of return for assuming
21 the risk of an investment. To the extent the utility's earnings are adequate to allow it
22 to attract investors, then it will be able to sell new equity shares to the market to
23 secure capital needed to fund additional rate base investments. If this long-standing
24 practice of setting authorized returns consistent with market returns is rejected, in
25 favor of Ms. Bulkley's proposal to look at book returns on equity, then the balance

1 between estimating a fair return that is fair to both investors and customers will be
2 turned upside down, and the rate-setting practice could be substantially impaired and
3 would not be reliable.

4 The earned return on book equity is simply not an accurate or legitimate basis
5 upon which to determine what a fair and reasonable return on equity for both
6 investors and customers would be in setting rates. A fair return on equity needs to be
7 a return that represents fair compensation to utility investors, but results in rate
8 impacts on customers that are no more than necessary to produce that fair
9 compensation – except to the extent greater earnings are necessary to maintain
10 financial integrity or credit standing. For these reasons, this methodology simply
11 should be rejected.

12 **IV.D. Bulkley CAPM Studies**

13 **Q PLEASE DESCRIBE MS. BULKLEY'S CAPM ANALYSIS.**

14 **A** The CAPM analysis is based upon the theory that the market required rate of return
15 for a security is equal to the risk-free rate, plus a risk premium associated with the
16 specific security. The risk premium associated with the specific security is expressed
17 mathematically as:

18 $B_i \times (R_m - R_f)$ where:

19 B_i = Beta - Measure of the risk for the stock
20 R_m = Expected return for the market portfolio
21 R_f = Risk-free rate

1 Q PLEASE DESCRIBE THE ISSUES YOU HAVE WITH MS. BULKLEY'S CAPM
2 STUDY.

3 A I have primarily two issues with Ms. Bulkley's CAPM study. First, I believe the market
4 risk premiums she used in her CAPM studies are overstated because they do not
5 reflect a reasonable estimate of the expected return on the market. My second
6 material concern with Ms. Bulkley's CAPM study is that she uses projected Treasury
7 bond yields five to ten years out as an estimate of the current market risk-free rate.
8 This is substantially flawed for several reasons. First, the projected Treasury bond
9 yield of 4.3% is considerably higher than current observable yields of 2.8%, and
10 yields estimated over the next two years of 3.6%.⁶ Projections of Treasury bond
11 yields five to ten years out are highly uncertain and do not reasonably reflect capital
12 market costs that exist today, or that will exist during the period rates determined in
13 this proceeding will be in effect.

14 Q PLEASE DESCRIBE MS. BULKLEY'S MARKET RISK PREMIUMS.

15 A Ms. Bulkley derived her market risk premiums by conducting a DCF analysis for the
16 market. Ms. Bulkley estimated a market return of 13.39% for the S&P 500 Index.
17 Hence, she produced market risk premiums of 10.44%, 9.91%, and 9.09% using risk-
18 free rates of 2.95%, 3.48%, and 4.30%, respectively.⁷

19 Q WHAT ISSUES DO YOU HAVE WITH MS. BULKLEY'S DCF-DERIVED MARKET
20 RISK PREMIUM ESTIMATES?

21 A Ms. Bulkley's DCF-derived market risk premiums are based on a market return of
22 13.39%, which consists of a growth rate component of 11.27% and expected dividend

⁶Gorman Direct, Schedule MPG-14 and Schedule MPG-16.

⁷Schedule AEB-5 and Schedule AEB-6.

1 yield of 2.01%.⁸ As discussed in my direct testimony with respect to my own DCF
2 model, the DCF model requires a long-term sustainable growth rate. Ms. Bulkley's
3 sustainable market growth rate of 11.27% is far too high to be a rational outlook for
4 sustainable long-term market growth. This growth rate is more than twice the growth
5 rate of the U.S. GDP long-term growth outlook of 4.20%.

6 As a result of this unreasonable long-term market growth rate estimate, Ms.
7 Bulkley's market DCF return used in her CAPM analysis is inflated and not reliable.
8 Consequently, Ms. Bulkley's 10.44%, 9.91% and 9.09% market risk premiums should
9 be given very minimal weight in estimating the Company's CAPM-based required cost
10 of common equity.

11 **Q DO HISTORICAL ACTUAL RETURNS ON THE MARKET SUPPORT MS.**
12 **BULKLEY'S PROJECTED MARKET RETURNS?**

13 **A** No. The historical data shows just how unreasonable Ms. Bulkley's projected DCF
14 return on the market is going forward. For example, Duff & Phelps estimates the
15 actual capital appreciation for the S&P 500 over the period 1926 through 2016 to
16 have been 5.8% to 7.7%.⁹ This compares to Ms. Bulkley's projected growth of the
17 market of 11.27%.

18 Further, historically the geometric and arithmetic average growth rates of the
19 market of 5.8%¹⁰ and 7.7%, respectively, have tracked growth of GDP over this same
20 time period of approximately 6.4%.

21 This review of historical data establishes two facts very clearly. First,
22 historical actual achieved growth has been substantially less than projected by Ms.

⁸Schedule AEB-5, page 1 of 7.

⁹Duff & Phelps, *2017 SBI Yearbook* at 6-17.

¹⁰*Id.*

1 Bulkley. Second, historical growth of the market has tracked historical growth of the
2 U.S. GDP. Projected growth of the U.S. GDP now is in the 4.0% to 4.5% range. All
3 of this information strongly supports the conclusion that Ms. Bulkley's projected
4 growth on the market of 11.27% is wildly overstated. While I do not endorse the use
5 of an historical growth rate to draw assessments of the market's forward-looking
6 growth rate outlooks, this data can be used to show how the market return estimates
7 produced by Ms. Bulkley are unreasonable and inflated.

8 **Q WHY DO YOU BELIEVE THAT MS. BULKLEY'S LONG-TERM PROJECTED RISK-**
9 **FREE RATE IS NOT RELIABLE?**

10 **A** Ms. Bulkley's use of a long-term projected bond yield of 4.30%¹¹ is not reflective of
11 market participants' outlooks for MAWC's cost of capital during the period rates
12 determined in this proceeding will be in effect. This bond yield is largely based on
13 projections of Treasury bond yields five to 10 years out. Those projections are highly
14 uncertain and in any event do not reflect the cost of capital in the test period or even
15 the period over the next two to three years, the period in which rates determined in
16 this proceeding will largely be in effect. The CAPM methodology should be based on
17 observable bond yields in the market today, or at most reflect bond yield projections
18 over the next two to three years, the rate-effective period in this case. Ms. Bulkley's
19 use of 5-10 year projections is inconsistent with the principles underlying the CAPM,
20 and leads to an inflated estimate of the cost of equity.

¹¹Schedule AEB-6, *Blue Chip Financial Forecasts*, June 1, 2017 at 14.

1 Q CAN MS. BULKLEY'S CAPM ANALYSIS BE REVISED TO REFLECT A MORE
2 REASONABLE MARKET RISK PREMIUM AND RECENT RISK-FREE RATES?

3 A Yes. Using Ms. Bulkley's risk-free rates of 2.95% and 3.48%, the average published
4 Bloomberg and *Value Line* beta estimates of 0.736 (0.761 excluding AWW) and
5 0.713 (0.721, excluding AWW),¹² respectively, and my calculated high-end market
6 risk premium of 7.8%¹³, Ms. Bulkley's CAPM would be no higher than 9.4%.

7 **IV.E. Additional Risks**

8 Q DID MS. BULKLEY CONSIDER ADDITIONAL BUSINESS RISKS TO TRY TO
9 JUSTIFY A RETURN ON EQUITY WITHIN HER RANGE?

10 A Yes. Ms. Bulkley believes that the Company is exposed to several additional risks
11 that should be accounted for: (1) its intense capital investment program; (2) risk
12 associated with environmental and water quality regulation; and (3) risks associated
13 with regulatory lag. Ms. Bulkley believes that these additional risks should be
14 considered in determining where, within a reasonable range the return on equity for
15 MAWC falls.¹⁴

16 Q WHY DO YOU BELIEVE THAT MAWC FACES RISKS THAT ARE COMPARABLE
17 TO THE RISKS FACED BY MS. BULKLEY'S AND YOUR PROXY GROUP
18 COMPANIES?

19 A The business risks identified by Ms. Bulkley are among those considered in the
20 assigning of a credit rating by the various credit rating agencies. As shown on my
21 Schedule MPG-2 to my direct testimony, the average S&P credit rating for my proxy

¹²Schedule AEB-4.

¹³Schedule MPG-16.

¹⁴Bulkley Direct Testimony at 42-53.

1 group of A is identical to MAWC's credit rating from S&P. S&P and other credit rating
2 agencies go through great detail in assessing a utility's business risk and financial
3 risk in order to evaluate their assessment of its total investment risk. This total
4 investment risk assessment of MAWC, in comparison to a proxy group, is fully
5 absorbed into the market's perception of MAWC's risk, and therefore the proxy group
6 fully captures the investment risk of MAWC.

7 **Q HOW DOES S&P ASSIGN CORPORATE CREDIT RATINGS FOR REGULATED**
8 **UTILITIES?**

9 **A** In assigning corporate credit ratings, the credit rating agency considers both business
10 and financial risks. Business risks, among others, include a company's size,
11 competitive position, generation portfolio, and capital expenditure programs, as well
12 as consideration of the regulatory environment, current state of the industry, and the
13 economy as whole. Specifically, S&P states:

14 To determine the assessment for a corporate issuer's business risk
15 profile, the criteria combine our assessments of industry risk, country
16 risk, and competitive position. Cash flow/leverage analysis determines
17 a company's financial risk profile assessment. The analysis then
18 combines the corporate issuer's business risk profile assessment and
19 its financial risk profile assessment to determine its anchor. In general,
20 the analysis weighs the business risk profile more heavily for
21 investment-grade anchors, while the financial risk profile carries more
22 weight for speculative-grade anchors.¹⁵

23 **Q DO YOU BELIEVE THAT MAWC'S CAPITAL EXPENDITURE FORECASTS ARE**
24 **OUT OF LINE WITH THE UTILITY INDUSTRY?**

25 **A** No. As shown on my Schedule MPG-R-7, the industry as a whole is expected to
26 require access to the external capital markets due to producing less cash flow per

¹⁵Standard & Poor's RatingsDirect: "Criteria/Corporates/General: Corporate Methodology,"
November 19, 2013.

1 share than capital spending per share. Importantly, this is expected to change in the
2 three-to-five year period. As can be seen on that schedule, the industry is expected
3 to produce more cash than it is expected to invest in the 2020-2022 time period.
4 Hence, Ms. Bulkley's assertion that the Company will need to access the capital
5 markets in the near term is not unique to MAWC.

6 Therefore, Ms. Bulkley's assertion that MAWC's capital program will place
7 additional pressure on its cash flows is misguided.

8 **Q DID MS. BULKLEY ALSO OFFER AN ASSESSMENT OF CURRENT MARKET**
9 **CONDITIONS IN SUPPORT OF HER RECOMMENDED RETURN ON EQUITY**
10 **RANGE?**

11 **A** Yes. Ms. Bulkley suggests a few factors that gauge investor sentiment, including
12 (1) the impact of the currently low interest rate environment on utility valuations and
13 dividend yields, and (2) the market expectation of higher interest rates.¹⁶ She
14 concludes that the current market conditions are anomalous and support a return on
15 equity in the upper end of her range.

16 **Q DO YOU BELIEVE THAT MS. BULKLEY'S USE OF THESE MARKET**
17 **SENTIMENTS SUPPORTS HER FINDINGS THAT MAWC'S MARKET COST OF**
18 **EQUITY IS CURRENTLY AT THE UPPER END OF HER RANGE OF 10.0% TO**
19 **10.8%?**

20 **A** No. The market sentiment toward utility investments is that the market is placing high
21 value on utility securities, recognizing their low risk and stable characteristics.

¹⁶Bulkley Direct Testimony at 13-23.

1 This is illustrated by current utility bond yield spreads as discussed at length in
2 my direct testimony. The current strong utility bond valuation is an indication of the
3 market's sentiment that utility bonds are of lower risk and are generally regarded as a
4 safe haven by the investment industry.

5 Further, other measures of utility stock valuations also support the conclusion
6 that there is a robust market for utility stocks. As shown on my Schedule MPG-R-8,
7 financial valuation measures – e.g., P/E ratio and market price to cash flow ratio – for
8 the proxy group show that utility stock valuation measures are robust.

9 For all these reasons, direct assessments of valuation measures and market
10 sentiment toward utility securities support the credit rating agencies' findings, as
11 quoted above, and show that the utility industry is largely regarded as a low-risk, safe
12 haven investment. All of this supports my findings that utilities' market cost of equity
13 is very low in today's very low-cost capital market environment.

14 **Q DO YOU HAVE ANY COMMENTS CONCERNING MS. BULKLEY'S CONTENTION**
15 **THAT INTEREST RATES ARE GOING TO INCREASE?**

16 **A** Yes. Ms. Bulkley develops her CAPM studies mainly relying on near-term and long-
17 term projected interest rates, which she believes are expected to increase. (Bulkley
18 Direct Testimony at 21). Ms. Bulkley's proposal to rely mainly on forecasted Treasury
19 bond yields is unreasonable because she is not considering the highly likely outcome
20 that current observable interest rates will prevail during the period in which rates
21 determined in this proceeding will be in effect. This is important because current
22 observable interest rates are actual market data that provide a measure of the current
23 cost of capital, but the accuracy of forecasted interest rates is problematic at best.

1 Q WHY DO YOU BELIEVE THAT THE ACCURACY OF FORECASTED INTEREST
2 RATES IS HIGHLY PROBLEMATIC?

3 A Over the last several years, observable current interest rates have been a more
4 accurate predictor of future interest rates than economists' consensus projections.
5 Schedule MPG-R-9 illustrates this point. On this schedule, under Columns 1 and 2, I
6 show the actual market yield for Treasury bonds at the time a projection is made, and
7 the corresponding projection for Treasury bond yields two years in the future,
8 respectively.

9 As shown in Columns 1 and 2, over the last several years, Treasury yields
10 were projected to increase relative to the actual Treasury yields at the time of the
11 projection. In Column 4, I show what the Treasury yield actually turned out to be two
12 years after the forecast. In Column 5, I show the actual yield change at the time of
13 the projections relative to the projected yield change.

14 As shown in this schedule, economists have consistently been projecting that
15 interest rates will increase over the near term. However, as shown in Column 5,
16 those yield projections have turned out to be overstated in almost every case.
17 Indeed, actual Treasury yields have decreased or remained flat over the last several
18 years rather than increasing as the economists' projections indicated. As such,
19 current observable interest rates are at least as likely to accurately predict future
20 interest rates as are economists' projections.

21 Q DO YOU HAVE ANY FURTHER COMMENTS IN REGARD TO MS. BULKLEY'S
22 INTEREST RATE PROJECTIONS?

23 A Yes. It is simply not known how much, if any, long-term interest rates will increase
24 from current levels or whether they have already fully accounted for the termination of

Michael P. Gorman
Page 30

1 the Federal Reserve's Quantitative Easing program and the increase in the Federal
2 Funds Rate. Nevertheless, I do agree that this Federal Reserve program introduced
3 risk or uncertainty in long-term interest rate markets. Because of this uncertainty,
4 caution should be taken in estimating MAWC's current return on common equity in
5 this case. However, the increase in short-term interest rates had no impact on
6 longer-term yields that "remain at historically low levels and are influenced more by
7 the level of inflation and economic strength than by the Fed's short-term rate policy."¹⁷

8 Q DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

9 A Yes, it does.

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¹⁷EEI Q4 2015 Financial Update: "Stock Performance" at 6.

Missouri-American Water Company

Rate of Return (May 31, 2019)

<u>Line</u>	<u>Description</u>	<u>Amount</u> (1)	<u>Weight</u> (2)	<u>Cost</u> (3)	<u>Weighted</u> <u>Cost</u> (4)
1	Long-Term Debt	\$ 644,325,799	49.95%	5.24%	2.62%
2	Preferred Stock	\$ 597,262	0.05%	9.70%	0.00%
3	Common Equity	<u>\$ 644,923,061</u>	<u>50.00%</u>	<u>9.00%</u>	<u>4.50%</u>
4	Total	\$1,289,846,122	100.00%		7.12%

Source:

Schedule SWR-1, Pages 1 and 3 of 14.

Missouri-American Water Company

Historical Capital Structure

<u>Line</u>	<u>Description</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>Average</u>
1	Long-Term Debt	\$ 448,493,700	\$ 468,449,965	\$ 468,460,654	\$ 517,821,742	\$ 566,963,402	\$ 494,037,893
2	Preferred Equity	\$ 2,000,000	\$ 1,750,000	\$ 1,500,000	\$ 1,250,000	\$ 1,000,000	\$ 1,500,000
3	Common Equity	<u>\$ 446,792,742</u>	<u>\$ 474,430,941</u>	<u>\$ 485,321,506</u>	<u>\$ 526,454,251</u>	<u>\$ 569,593,275</u>	<u>\$ 500,518,543</u>
4	Total	\$ 897,286,442	\$ 944,630,906	\$ 955,282,160	\$ 1,045,525,994	\$ 1,137,556,677	\$ 996,056,436
5	Long-Term Debt	49.98%	49.59%	49.04%	49.53%	49.84%	49.60%
6	Preferred Equity	0.22%	0.19%	0.16%	0.12%	0.09%	0.15%
7	Common Equity	<u>49.79%</u>	<u>50.22%</u>	<u>50.80%</u>	<u>50.35%</u>	<u>50.07%</u>	<u>50.25%</u>
8	Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Source:

Response to OPC Data Request 6008, Attachment 1.

Missouri-American Water Company

Standard & Poor's Credit Metrics

Line	Description	Retail	S&P Benchmark (Low Volatility) ^{1/2}			Reference
		Cost of Service Amount (1)	Modest (2)	Intermediate (3)	Significant (4)	
1	Rate Base	\$ 1,345,267,265				Schedule CAS-1.
2	Weighted Common Return	4.50%				Page 2, Line 3, Col. 4.
3	Pre-Tax Rate of Return	9.98%				Page 2, Line 4, Col. 5.
4	Income to Common	\$ 60,537,027				Line 1 x Line 2.
5	EBIT	\$ 134,272,406				Line 1 x Line 3.
6	Depreciation & Amortization	\$ 49,467,997				Schedule CAS-2.
7	Imputed Amortization	\$ -				N/A
8	Deferred Income Taxes & ITC	\$ 34,304,848				Schedule CAS-10.
9	Funds from Operations (FFO)	\$ 144,309,872				Sum of Line 4 and Lines 6 through 8.
10	Imputed and Capitalized Interest Expense	\$ -				N/A
11	EBITDA	\$ 183,740,403				Sum of Lines 5 through 7 and Line 10.
12	Total Debt Ratio	51%				Page 3, Line 3, Col. 2.
13	Debt to EBITDA	3.8x	2.0x - 3.0x	3.0x - 4.0x	4.0x - 5.0x	(Line 1 x Line 12) / Line 11.
14	FFO to Total Debt	21%	23% - 35%	13% - 23%	9% - 13%	Line 9 / (Line 1 x Line 12).

Sources:

¹ Standard & Poor's RatingsDirect: "Criteria: Corporate Methodology," November 19, 2013.

² Standard & Poor's RatingsDirect: "American Water Works Co. Inc.," October 25, 2017.

Note:

Based on the October 2017 S&P report, AWW has an "Excellent" business risk profile and an "Intermediate" financial risk profile, and falls under the "Low Volatility" matrix.

Missouri-American Water Company

Standard & Poor's Credit Metrics (Pre-Tax Rate of Return)

<u>Line</u>	<u>Description</u>	<u>Amount</u> ¹ (1)	<u>Weight</u> ¹ (2)	<u>Cost</u> (3)	<u>Weighted Cost</u> (4)	<u>Pre-Tax Weighted Cost</u> (5)
1	Long-Term Debt	\$ 644,325,799	49.95%	5.24%	2.62%	2.62%
2	Preferred Stock	\$ 597,262	0.05%	9.70%	0.00%	0.00%
3	Common Equity	<u>\$ 644,923,061</u>	<u>50.00%</u>	9.00%	<u>4.50%</u>	<u>7.36%</u>
4	Total	\$ 1,289,846,122	100.00%		7.12%	9.98%
5	Tax Conversion Factor*					1.6353

Sources:

¹ Schedule MPG-R-1.

* Schedule CAS-1.

Missouri-American Water Company

Standard & Poor's Credit Metrics (Financial Capital Structure)

<u>Line</u>	<u>Description</u>	<u>Amount</u> (1)	<u>Weight</u> (2)
1	Long-Term Debt	\$ 644,325,799	48.62%
2	Preferred Stock	\$ 597,262	0.05%
3	Off-Balance Sheet Debt	<u>\$ 35,437,919</u>	<u>2.67%</u>
4	Total Debt	\$ 680,360,980	51.34%
5	Common Equity	<u>644,923,061</u>	<u>48.66%</u>
6	Total	\$1,325,284,041	100.00%

Sources:

Page 2.

* The off-balance Sheet debt is 5.5% x Long-term Debt.

Missouri-American Water Company

S&P Adjusted Debt Ratio (Operating Subsidiaries of Value Line Electric Utilities)

9 Year Average - %							% Distribution of 9 Year Average		
<u>Line</u>	<u>Rating</u>	<u>Count</u> (1)	<u>Average</u> (2)	<u>Median</u> (3)	<u>High</u> (4)	<u>Low</u> (5)	<u>< 50</u> (6)	<u>50 to 55</u> (7)	<u>> 55</u> (8)
1	AA-	1	45.2	45.2	45.2	45.2	100%	0%	0%
2	A+	0	-	-	-	-			
3	A	8	51.6	52.6	56.0	43.1	25%	50%	25%
4	A-	47	51.9	53.3	63.1	35.1	34%	34%	32%
5	BBB+	21	53.2	52.9	60.3	43.3	10%	57%	33%
6	BBB	10	52.0	53.5	57.8	39.7	30%	30%	40%
7	BBB-	10	55.9	56.9	62.1	44.6	10%	30%	60%

Annual Results - 2008FY through 2016FY - %							% Distribution of Fiscal Year Results		
<u>Line</u>	<u>Rating</u>	<u>Count</u> (1)	<u>Average</u> (2)	<u>Median</u> (3)	<u>High</u> (4)	<u>Low</u> (5)	<u>< 50</u> (6)	<u>50 to 55</u> (7)	<u>> 55</u> (8)
8	AA-	9	45.2	45.0	49.5	41.8	100%	0%	0%
9	A+	0	-	-	-	-			
10	A	64	52.7	52.3	67.6	43.1	25%	52%	23%
11	A-	417	52.0	52.9	67.1	28.3	33%	34%	33%
12	BBB+	187	53.2	53.7	64.7	37.9	23%	41%	36%
13	BBB	88	52.0	53.5	59.8	36.8	30%	34%	36%
14	BBB-	81	55.8	56.1	70.7	33.3	15%	30%	56%

Source:

S&P Capital IQ, downloaded November 30, 2017.

Missouri-American Water Company

S&P Adjusted Debt Ratio (Operating Subsidiaries of Value Line Gas Utilities)

9 Year Average - %							% Distribution of 9 Year Average		
<u>Line</u>	<u>Rating</u>	<u>Count</u> (1)	<u>Average</u> (2)	<u>Median</u> (3)	<u>High</u> (4)	<u>Low</u> (5)	<u>< 50</u> (6)	<u>50 to 55</u> (7)	<u>> 55</u> (8)
1	AA-	0	-	-	-	-			
2	A+	1	55.2	55.2	55.2	55.2	0%	0%	100%
3	A	4	47.5	47.1	51.5	44.5	75%	25%	0%
4	A-	2	47.8	47.8	54.6	41.0	50%	50%	0%
5	BBB+	3	52.5	51.8	54.1	51.7	0%	100%	0%

Annual Results - 2008FY through 2016FY - %							% Distribution of Fiscal Year Results		
<u>Line</u>	<u>Rating</u>	<u>Count</u> (1)	<u>Average</u> (2)	<u>Median</u> (3)	<u>High</u> (4)	<u>Low</u> (5)	<u>< 50</u> (6)	<u>50 to 55</u> (7)	<u>> 55</u> (8)
6	AA-	0	-	-	-	-			
7	A+	9	55.2	55.8	57.3	50.5	0%	33%	67%
8	A	33	47.6	47.5	53.8	40.6	70%	30%	0%
9	A-	18	47.8	50.5	61.1	26.2	44%	39%	17%
10	BBB+	26	52.6	52.6	57.3	48.8	19%	69%	12%

Source:
S&P Capital IQ, downloaded November 30, 2017.

Missouri-American Water Company

S&P Adjusted Debt Ratio (Operating Subsidiaries of Value Line Water Utilities)

9 Year Average - %							% Distribution of 9 Year Average		
<u>Line</u>	<u>Rating</u>	<u>Count</u> (1)	<u>Average</u> (2)	<u>Median</u> (3)	<u>High</u> (4)	<u>Low</u> (5)	<u>< 50</u> (6)	<u>50 to 55</u> (7)	<u>> 55</u> (8)
1	AA-	0	-	-	-	-			
2	A+	2	52.2	52.2	55.9	48.4	50%	0%	50%
3	A	3	53.9	52.3	58.7	50.6	0%	67%	33%
4	A-	1	48.3	48.3	48.3	48.3	100%	0%	0%

Annual Results - 2008FY through 2016FY - %							% Distribution of Fiscal Year Results		
<u>Line</u>	<u>Rating</u>	<u>Count</u> (1)	<u>Average</u> (2)	<u>Median</u> (3)	<u>High</u> (4)	<u>Low</u> (5)	<u>< 50</u> (6)	<u>50 to 55</u> (7)	<u>> 55</u> (8)
5	AA-	0	-	-	-	-			
6	A+	18	52.2	51.9	60.5	43.4	28%	44%	28%
7	A	27	53.9	56.4	60.4	44.7	26%	22%	52%
8	A-	9	48.3	47.7	58.5	43.4	78%	11%	11%

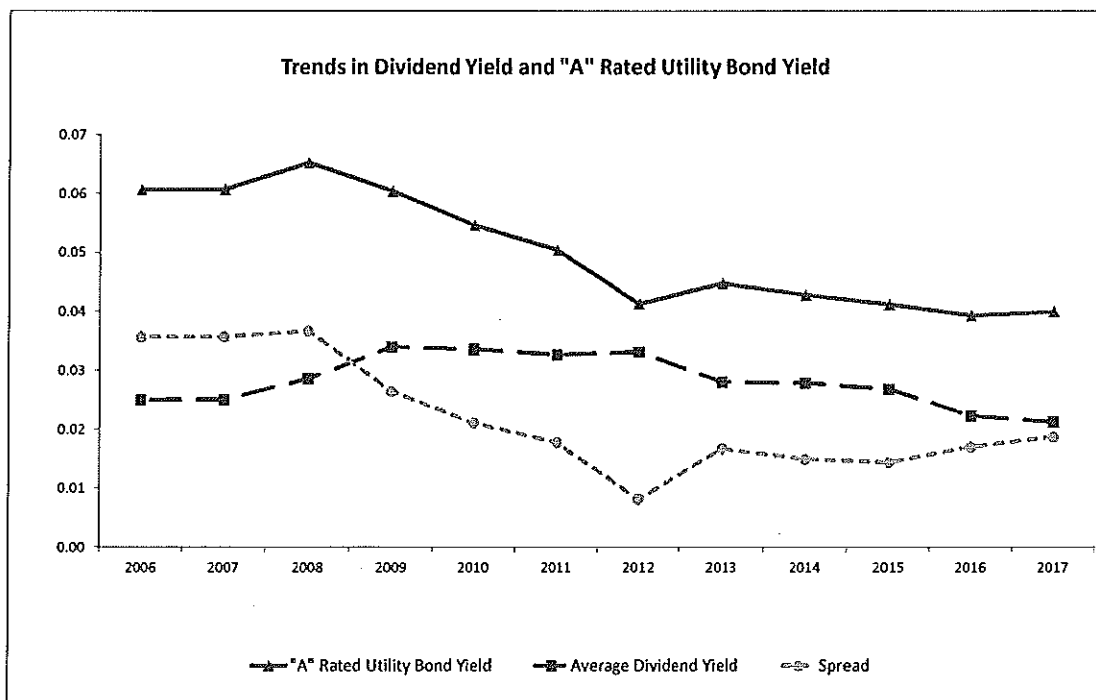
Source:

S&P Capital IQ, downloaded November 30, 2017.

Missouri-American Water Company

Water Utilities (Valuation Metrics)

Line	Company	Dividend Yield												
		12-Year												
		Average (1)	2017 ^{2a} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Amer. States Water	2.66%	2.11%	2.20%	2.21%	2.63%	2.75%	3.15%	3.20%	2.98%	2.94%	2.86%	2.46%	2.47%
2	Amer. Water Works	2.77%	2.12%	2.02%	2.46%	2.53%	2.05%	3.43%	3.11%	3.85%	4.20%	1.92%	N/A	N/A
3	Aqua America	2.57%	2.50%	2.35%	2.57%	2.53%	2.36%	2.80%	2.85%	3.11%	3.09%	2.80%	2.11%	1.81%
4	California Water	2.93%	1.99%	2.30%	2.88%	2.77%	3.12%	3.45%	3.36%	3.24%	3.07%	3.12%	2.97%	2.94%
5	Conn. Water Services	3.27%	2.09%	2.31%	2.93%	3.00%	3.21%	3.24%	3.62%	3.94%	4.11%	3.58%	3.60%	3.64%
6	Consolidated Water	2.30%	2.55%	2.48%	2.59%	2.53%	2.58%	3.78%	3.19%	2.60%	1.99%	1.72%	0.70%	0.94%
7	Middlesex Water	3.62%	2.24%	2.28%	3.33%	3.65%	3.71%	3.96%	4.02%	4.23%	4.71%	3.99%	3.69%	3.67%
8	SJW Corp.	2.42%	1.69%	2.01%	2.63%	2.64%	2.68%	2.95%	2.94%	2.78%	2.84%	2.27%	1.74%	2.02%
9	York Water Co. (The)	2.85%	1.84%	2.09%	2.63%	2.79%	2.80%	3.06%	3.10%	3.50%	3.62%	3.49%	2.75%	2.50%
10	Average	2.82%	2.13%	2.23%	2.68%	2.79%	2.81%	3.31%	3.27%	3.36%	3.40%	2.86%	2.50%	2.50%
11	Median	2.76%	2.11%	2.28%	2.59%	2.64%	2.75%	3.24%	3.19%	3.24%	3.09%	2.86%	2.61%	2.49%
12	"A" Rated Utility Bond Yield ¹	5.01%	4.00%	3.93%	4.12%	4.28%	4.48%	4.13%	5.04%	5.46%	6.04%	6.53%	6.07%	6.07%
13	Spread	2.19%	1.87%	1.70%	1.43%	1.49%	1.67%	0.82%	1.78%	2.11%	2.64%	3.67%	3.57%	3.57%



Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, October 13, 2017.

³ www.moodys.com, Bond Yields and Key Indicators, through December 28, 2017.

Notes:

^a Based on the average of the high and low price for 2017 and the projected 2017 Dividends Declared per share, published in The Value Line Investment Survey, October 13, 2017.

Missouri-American Water Company

Water Utilities (Valuation Metrics)

		Dividend per Share ¹												
Line	Company	12-Year												
		Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Amer. States Water	0.67	0.98	0.91	0.87	0.83	0.76	0.64	0.55	0.52	0.51	0.50	0.48	0.46
2	Amer. Water Works	1.07	1.62	1.47	1.33	1.21	0.84	1.21	0.90	0.86	0.82	0.40	N/A	N/A
3	Aqua America	0.54	0.80	0.74	0.69	0.63	0.58	0.54	0.50	0.47	0.44	0.41	0.38	0.35
4	California Water	0.63	0.72	0.69	0.67	0.65	0.64	0.63	0.62	0.60	0.59	0.59	0.58	0.58
5	Conn. Water Services	0.97	1.18	1.12	1.05	1.01	0.98	0.96	0.94	0.92	0.90	0.88	0.87	0.86
6	Consolidated Water	0.29	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.28	0.33	0.20	0.24
7	Middlesex Water	0.74	0.84	0.81	0.78	0.76	0.75	0.74	0.73	0.72	0.71	0.70	0.69	0.68
8	SJW Corp.	0.71	0.87	0.81	0.78	0.75	0.73	0.71	0.69	0.68	0.66	0.65	0.61	0.57
9	York Water Co. (The)	0.54	0.66	0.63	0.60	0.57	0.55	0.54	0.53	0.52	0.51	0.49	0.48	0.45
10	Average	0.67	0.89	0.83	0.79	0.75	0.68	0.70	0.64	0.62	0.60	0.55	0.54	0.52
11	Industry CAGR ³	4.92%												

		Percent Dividends to Book Value ¹												
Line	Company	12-Year												
		Average (1)	2017 ^{2b} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
12	Amer. States Water	5.84%	6.90%	6.76%	6.85%	6.28%	5.98%	5.38%	5.07%	5.13%	5.21%	5.57%	5.45%	5.47%
13	Amer. Water Works	3.32%	5.24%	5.03%	4.71%	4.42%	3.17%	4.82%	3.73%	3.65%	3.58%	1.56%	0.00%	0.00%
14	Aqua America	6.81%	7.21%	7.10%	7.06%	6.80%	6.72%	6.79%	6.99%	6.93%	6.77%	6.52%	6.56%	6.32%
15	California Water	5.55%	5.07%	5.02%	5.00%	4.96%	5.10%	5.58%	5.72%	5.69%	5.83%	6.02%	6.27%	6.34%
16	Conn. Water Services	6.20%	5.44%	5.34%	5.25%	5.36%	5.47%	4.58%	6.96%	7.05%	7.10%	7.19%	7.28%	7.37%
17	Consolidated Water	3.18%	2.90%	3.06%	3.06%	3.13%	3.16%	3.26%	3.40%	3.45%	3.28%	3.89%	2.37%	3.21%
18	Middlesex Water	6.52%	6.02%	6.03%	6.09%	6.24%	6.37%	6.47%	6.50%	6.49%	6.90%	7.01%	6.89%	7.17%
19	SJW Corp.	4.52%	4.10%	3.93%	4.14%	4.22%	4.58%	4.83%	4.86%	4.95%	4.83%	4.61%	4.69%	4.53%
20	York Water Co. (The)	7.28%	7.21%	7.10%	7.05%	7.02%	6.92%	6.98%	7.08%	7.16%	7.31%	7.97%	7.95%	7.78%
21	Average	5.47%	5.57%	5.48%	5.47%	5.38%	5.28%	5.41%	5.59%	5.61%	5.65%	5.59%	5.27%	5.35%
22	Median	5.67%	5.44%	5.34%	5.25%	5.36%	5.47%	5.38%	5.72%	5.69%	5.83%	6.02%	6.27%	6.32%

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, October 13, 2017.

Notes:

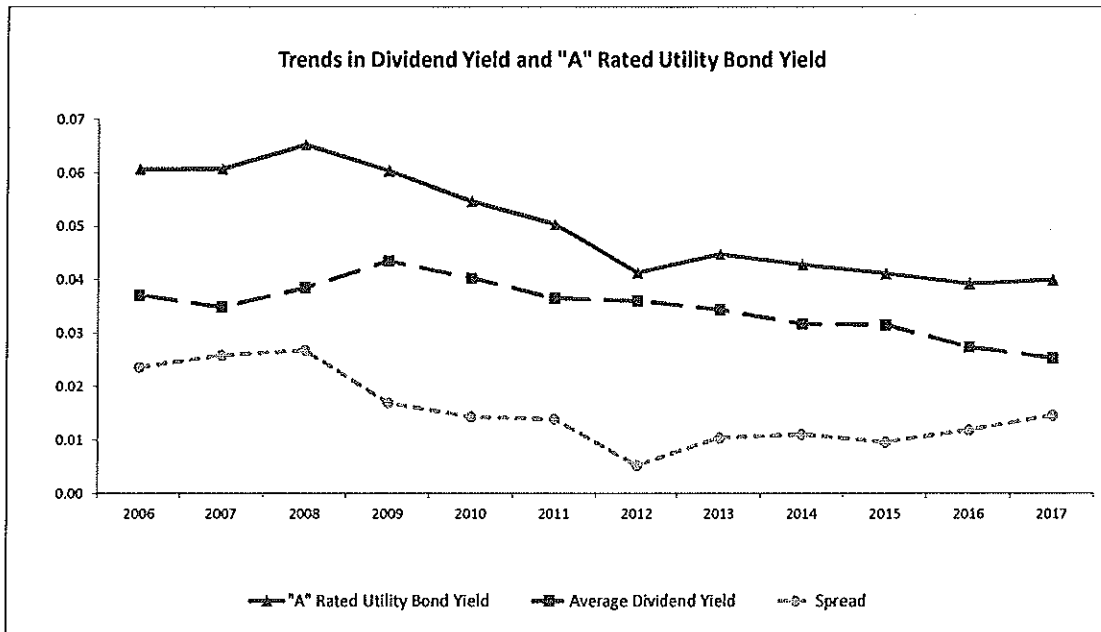
³ CAGR = Compound Annual Growth Rate

^b Based on the projected 2017 Dividends Declared per share and Book Value per share, published in The Value Line Investment Survey, October 13, 2017.

Missouri-American Water Company

Natural Gas Utilities (Valuation Metrics)

Line	Company	Dividend Yield ¹												
		12-Year												
		Average	2017 ^{2*}	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Atmos Energy	3.84%	2.20%	2.39%	2.88%	3.11%	3.53%	4.13%	4.19%	4.70%	5.34%	4.78%	4.16%	4.66%
2	Chesapeake Utilities	3.10%	1.74%	1.91%	2.18%	2.44%	2.87%	3.25%	3.36%	3.91%	4.09%	4.10%	3.62%	3.76%
3	New Jersey Resources	3.27%	2.63%	2.86%	3.14%	3.50%	3.71%	3.38%	3.33%	3.69%	3.46%	3.35%	3.02%	3.19%
4	NiSource Inc.	4.25%	2.83%	2.76%	3.53%	2.69%	3.30%	3.84%	4.53%	5.66%	7.64%	5.69%	4.29%	4.21%
5	Northwest Nat. Gas	3.65%	3.01%	3.28%	4.01%	4.14%	4.22%	3.83%	3.85%	3.63%	3.73%	3.27%	3.12%	3.73%
6	ONE Gas Inc.	2.43%	2.41%	2.32%	2.71%	2.28%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	3.23%	3.15%	3.64%	3.95%	3.40%	3.14%	3.22%	2.81%	3.00%	3.43%	3.08%	2.81%	3.15%
8	Southwest Gas	2.87%	2.49%	2.62%	2.87%	2.72%	2.69%	2.75%	2.78%	3.15%	4.01%	3.19%	2.56%	2.60%
9	Spire Inc.	3.92%	2.96%	3.08%	3.53%	3.78%	3.96%	4.11%	4.31%	4.70%	3.91%	3.94%	4.43%	4.34%
10	UGI Corp.	2.89%	1.98%	2.35%	2.50%	2.61%	3.01%	3.68%	3.30%	3.48%	3.23%	2.85%	2.69%	2.96%
11	WGL Holdings Inc.	3.91%	2.52%	2.94%	3.41%	4.24%	3.94%	3.89%	4.06%	4.37%	4.62%	4.22%	4.19%	4.48%
12	Average	3.48%	2.54%	2.74%	3.16%	3.17%	3.44%	3.61%	3.65%	4.03%	4.35%	3.85%	3.49%	3.71%
13	Median	3.40%	2.52%	2.76%	3.14%	3.11%	3.42%	3.75%	3.60%	3.80%	3.96%	3.65%	3.37%	3.75%
14	"A" Rated Utility Bond Yield ³	5.01%	4.00%	3.93%	4.12%	4.28%	4.48%	4.13%	5.04%	5.46%	6.04%	6.53%	6.07%	6.07%
15	Spread	1.53%	1.46%	1.19%	0.96%	1.11%	1.04%	0.52%	1.39%	1.43%	1.69%	2.68%	2.59%	2.36%



Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, December 1, 2017.

³ www.moodys.com, Bond Yields and Key Indicators, through December 28, 2017.

Notes:

* Based on the average of the high and low price for 2017 and the projected 2017 Dividends Declared per share, published in The Value Line Investment Survey, December 1, 2017.

Missouri-American Water Company

Natural Gas Utilities (Valuation Metrics)

Line	Company	Dividend per Share ¹												
		12-Year												
		Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Atmos Energy	1.43	1.80	1.68	1.56	1.48	1.40	1.38	1.36	1.34	1.32	1.30	1.28	1.26
2	Chesapeake Utilities	0.97	1.26	1.19	1.12	1.07	1.01	0.96	0.91	0.87	0.83	0.81	0.78	0.77
3	New Jersey Resources	0.75	1.04	0.98	0.93	0.86	0.81	0.77	0.72	0.68	0.62	0.56	0.51	0.48
4	NSource Inc.	0.89	0.70	0.64	0.83	1.02	0.98	0.94	0.92	0.92	0.92	0.92	0.92	0.92
5	Northwest Nat. Gas	1.71	1.88	1.87	1.86	1.85	1.83	1.79	1.75	1.68	1.60	1.52	1.44	1.39
6	ONE Gas Inc.	1.28	1.68	1.40	1.20	0.84	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	0.79	1.10	1.06	1.02	0.96	0.90	0.83	0.75	0.68	0.61	0.56	0.51	0.46
8	Southwest Gas	1.25	1.98	1.80	1.62	1.46	1.32	1.18	1.06	1.00	0.95	0.90	0.86	0.82
9	Spire Inc.	1.67	2.10	1.96	1.84	1.76	1.70	1.66	1.61	1.57	1.53	1.49	1.45	1.40
10	UGI Corp.	0.69	0.96	0.93	0.89	0.79	0.74	0.71	0.68	0.60	0.52	0.50	0.48	0.46
11	WGL Holdings Inc.	1.62	2.02	1.93	1.83	1.72	1.66	1.59	1.55	1.50	1.47	1.41	1.37	1.35
12	Average	1.17	1.50	1.40	1.34	1.25	1.24	1.18	1.13	1.08	1.04	1.00	0.96	0.93
13	Industry CAGR ³	4.45%												

Line	Company	Percent Dividends to Book Value ¹												
		12-Year												
		Average (1)	2017 ^{2b} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
14	Atmos Energy	5.36%	4.89%	5.04%	4.96%	4.81%	4.92%	5.28%	5.44%	5.55%	5.61%	5.75%	5.82%	6.25%
15	Chesapeake Utilities	5.51%	4.40%	4.35%	4.78%	5.18%	5.25%	5.39%	5.42%	5.49%	5.60%	6.71%	6.66%	6.95%
16	New Jersey Resources	7.23%	7.22%	7.21%	7.16%	7.45%	7.60%	7.86%	7.69%	7.72%	7.48%	6.42%	6.54%	6.40%
17	NSource Inc.	5.37%	5.79%	5.08%	6.89%	5.22%	5.22%	5.25%	5.19%	5.22%	5.25%	5.34%	4.97%	5.02%
18	Northwest Nat. Gas	6.45%	6.28%	6.30%	6.53%	6.58%	6.59%	6.57%	6.55%	6.44%	6.43%	6.41%	6.39%	6.32%
19	ONE Gas Inc.	3.56%	4.52%	3.88%	3.41%	2.44%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	South Jersey Inds.	6.79%	6.90%	6.53%	6.98%	7.04%	7.12%	7.09%	7.26%	7.13%	6.69%	6.40%	6.22%	6.09%
21	Southwest Gas	4.29%	5.31%	5.14%	4.82%	4.57%	4.33%	4.16%	3.98%	3.90%	3.89%	3.83%	3.74%	3.80%
22	Spire Inc.	6.06%	5.09%	5.06%	5.07%	5.04%	5.31%	6.22%	6.30%	6.53%	6.56%	6.74%	7.33%	7.43%
23	UGI Corp.	5.58%	5.36%	5.65%	5.72%	5.14%	5.07%	5.35%	5.77%	5.41%	5.35%	5.72%	5.82%	6.54%
24	WGL Holdings Inc.	6.86%	6.88%	7.21%	7.33%	7.14%	6.73%	6.45%	6.60%	6.57%	6.72%	6.71%	6.88%	7.13%
25	Average	5.88%	5.69%	5.59%	5.78%	5.51%	5.82%	5.96%	6.02%	6.00%	5.96%	6.00%	6.04%	6.19%
26	Median	5.80%	5.36%	5.14%	5.72%	5.18%	5.28%	5.80%	6.03%	5.99%	6.02%	6.41%	6.30%	6.36%

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, December 1, 2017.

Notes:

³ CAGR = Compound Annual Growth Rate

^b Based on the projected 2017 Dividends Declared per share and Book Value per share, published in The Value Line Investment Survey, December 1, 2017.

Missouri-American Water Company

Historical Betas of Gas and Water Utilities

<u>Line</u>	<u>Company</u>	<u>5-Year Average</u>	<u>Dec 17</u>	<u>Dec 16</u>	<u>Dec 15</u>	<u>Dec 14</u>	<u>Dec 13</u>
		(1)	(2)	(3)	(4)	(5)	(6)
Value Line Gas Utilities:							
1	Atmos Energy Corporation	0.76	0.70	0.70	0.80	0.80	0.80
2	Chesapeake Utilities Corporation	0.67	0.70	0.65	0.65	0.65	0.70
3	New Jersey Resources Corporation	0.78	0.80	0.80	0.80	0.80	0.70
4	NiSource Inc.	0.77	0.60	NMF	NMF	0.85	0.85
5	Northwest Natural Gas Company	0.67	0.70	0.65	0.65	0.70	0.65
6	ONE Gas, Inc.	0.70	0.70				
7	South Jersey Industries, Inc.	0.79	0.85	0.80	0.80	0.80	0.70
8	Southwest Gas Holdings, Inc.	0.80	0.80	0.75	0.80	0.85	0.80
9	Spire Inc. (Laclede Gas)	0.69	0.70	0.70	0.70	0.70	0.65
10	UGI Corporation	0.87	0.90	0.90	0.95	0.85	0.75
11	WGL Holdings, Inc.	0.74	0.80	0.75	0.75	0.75	0.65
12	Average	0.75	0.75	0.74	0.77	0.78	0.73
Value Line Water Utilities:							
		<u>5-Year Average</u>	<u>Jan 18</u>	<u>Jan 17</u>	<u>Jan 16</u>	<u>Jan 15</u>	<u>Jan 14</u>
		(1)	(2)	(3)	(4)	(5)	(6)
13	American States Water Company	0.72	0.80	0.75	0.70	0.70	0.65
14	American Water Works Company, Inc.	0.67	0.65	0.65	0.70	0.70	0.65
15	Aqua America, Inc.	0.70	0.75	0.70	0.75	0.70	0.60
16	California Water Service Group	0.72	0.80	0.75	0.75	0.70	0.60
17	Connecticut Water Service, Inc.	0.67	0.65	0.65	0.65	0.65	0.75
18	Middlesex Water Company	0.74	0.80	0.75	0.70	0.70	0.75
19	SJW Group	0.78	0.70	0.75	0.75	0.85	0.85
20	York Water Company (The)	0.73	0.80	0.75	0.75	0.65	0.70
21	Average	0.72	0.74	0.72	0.72	0.71	0.69

Source:

Value Line Investment Survey, multiple dates.

Missouri-American Water Company

Water Utilities (Valuation Metrics)

<u>Line</u>	<u>Company</u>	<u>Cash Flow / Capital Spending</u>		
		<u>2017</u> (1)	<u>2018</u> (2)	<u>3 - 5 yr</u> <u>Projection</u> (3)
1	Amer. States Water	0.90x	0.97x	1.07x
2	Amer. Water Works	0.83x	0.92x	1.16x
3	Aqua America	1.05x	1.00x	1.22x
4	California Water	0.69x	0.77x	0.86x
5	Conn. Water Services	0.76x	0.80x	1.15x
6	Consolidated Water	4.20x	4.00x	4.63x
7	Middlesex Water	1.31x	1.32x	1.51x
8	SJW Corp.	0.77x	0.85x	1.03x
9	York Water Co. (The)	1.07x	1.32x	2.41x
10	Average	1.29x	1.33x	1.67x
11	Median	0.90x	0.97x	1.16x

Sources:

The Value Line Investment Survey Investment Analyzer Software,
downloaded on November 7, 2017.

Notes:

Based on the projected Cash Flow per share and
Capital Spending per share.

Missouri-American Water Company

Natural Gas Utilities (Valuation Metrics)

<u>Line</u>	<u>Company</u>	<u>Cash Flow / Capital Spending</u>		
		<u>2017</u>	<u>2018</u>	<u>3 - 5 yr</u> <u>Projection</u>
		(1)	(2)	(3)
1	Atmos Energy	0.59x	0.59x	0.59x
2	Chesapeake Utilities	0.46x	0.50x	0.64x
3	New Jersey Resources	1.19x	1.23x	1.27x
4	NiSource Inc.	0.54x	0.60x	0.62x
5	Northwest Nat. Gas	0.87x	0.80x	0.96x
6	ONE Gas Inc.	0.89x	0.93x	1.12x
7	South Jersey Inds.	0.71x	0.71x	0.63x
8	Southwest Gas	0.84x	0.89x	0.96x
9	Spire Inc.	0.92x	1.00x	1.15x
10	UGI Corp.	1.45x	1.54x	1.66x
11	WGL Holdings Inc.	0.54x	0.57x	0.56x
12	Average	0.82x	0.85x	0.92x
13	Median	0.84x	0.80x	0.96x

Sources:

The Value Line Investment Survey Investment Analyzer Software,
downloaded on November 7, 2017.

Notes:

Based on the projected Cash Flow per share and
Capital Spending per share.

Missouri-American Water Company

Water Utilities (Valuation Metrics)

		Price to Earnings (P/E) Ratio ¹												
Line	Company	12-Year												
		Average (1)	2017 ² (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
1	Amer. States Water	21.28	26.90	25.59	24.73	20.10	17.17	14.30	15.36	15.73	21.20	22.59	24.00	27.73
2	Amer. Water Works	19.85	27.70	27.71	20.51	20.02	19.90	16.71	16.80	14.61	15.64	18.92	N/A	N/A
3	Aqua America	24.38	24.30	23.86	23.51	20.76	21.18	21.94	21.26	21.08	23.09	24.93	31.97	34.70
4	California Water	23.06	28.30	29.65	24.77	19.69	20.13	17.88	21.28	20.30	19.69	19.77	26.06	29.24
5	Conn. Water Services	21.68	27.80	23.29	17.58	17.52	18.37	19.39	23.04	20.67	18.41	22.17	23.00	28.98
6	Consolidated Water	27.90	22.00	44.81	22.69	28.29	20.02	12.41	22.39	26.87	19.03	37.79	35.39	43.05
7	Middlesex Water	21.23	26.30	25.65	19.11	18.49	19.70	20.83	21.73	17.81	21.02	19.80	21.59	22.72
8	SJW Corp.	22.75	22.70	15.68	16.64	11.19	24.34	20.37	21.17	29.12	28.67	26.24	33.43	23.51
9	York Water Co. (The)	26.42	34.40	32.77	23.52	23.07	26.26	24.44	23.91	20.72	21.87	24.58	30.26	31.25
10	Average	23.35	26.71	27.67	21.45	19.90	20.79	18.70	20.77	20.77	20.96	24.09	28.21	30.15
11	Median	23.12	26.90	25.65	22.69	20.02	20.02	19.39	21.28	20.67	21.02	22.59	28.16	29.11

		Market Price to Cash Flow (MP/CF) Ratio ¹												
Line	Company	12-Year												
		Average (1)	2017 ^{2a} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
12	Amer. States Water	11.45	16.30	15.34	14.09	11.82	10.41	8.13	8.07	8.26	10.09	10.38	11.76	12.74
13	Amer. Water Works	9.38	13.67	13.80	10.55	10.07	9.41	8.26	7.74	6.29	6.77	7.26	N/A	N/A
14	Aqua America	13.86	14.91	15.22	14.32	13.20	13.48	12.67	12.21	10.68	11.07	12.82	16.54	19.24
15	California Water	10.74	13.62	12.79	10.49	9.50	9.28	7.87	8.85	9.51	9.92	10.09	12.51	14.44
16	Conn. Water Services	12.72	16.62	14.62	11.28	11.32	11.60	11.22	12.34	11.45	11.33	12.64	12.72	15.46
17	Consolidated Water	14.97	11.19	12.68	12.99	14.85	12.13	6.81	11.32	13.37	11.93	19.91	23.26	29.19
18	Middlesex Water	12.64	15.96	16.29	11.85	11.33	11.81	12.06	12.47	11.05	10.78	11.51	12.58	13.98
19	SJW Corp.	9.95	11.22	8.45	7.98	6.43	9.40	8.10	8.39	10.29	10.53	11.68	15.13	11.75
20	York Water Co. (The)	17.53	22.38	21.22	15.68	15.13	16.61	15.71	15.51	13.81	14.75	15.85	20.15	23.57
21	Average	12.71	15.10	14.49	12.14	11.52	11.57	10.09	10.77	10.52	10.80	12.46	15.58	17.55
22	Median	12.16	14.91	14.62	11.85	11.33	11.60	8.26	11.32	10.68	10.78	11.68	13.93	14.95

		Market Price to Book Value (MP/BV) Ratio ¹												
Line	Company	12-Year												
		Average (1)	2017 ^{2b} (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (13)
23	Amer. States Water	2.26	3.27	3.07	3.10	2.38	2.17	1.71	1.59	1.72	1.77	1.95	2.22	2.22
24	Amer. Water Works	1.54	2.48	2.48	1.92	1.75	1.55	1.40	1.20	0.95	0.85	0.81	N/A	N/A
25	Aqua America	2.70	2.89	3.02	2.74	2.69	2.85	2.42	2.45	2.23	2.19	2.33	3.10	3.49
26	California Water	1.92	2.54	2.18	1.74	1.79	1.64	1.62	1.70	1.76	1.90	1.93	2.11	2.16
27	Conn. Water Services	1.93	2.60	2.31	1.79	1.79	1.70	1.42	1.93	1.79	1.73	2.01	2.02	2.02
28	Consolidated Water	1.67	1.14	1.24	1.18	1.24	1.23	0.86	1.06	1.33	1.65	2.26	3.40	3.39
29	Middlesex Water	1.87	2.69	2.64	1.83	1.71	1.72	1.63	1.62	1.54	1.47	1.76	1.87	1.96
30	SJW Corp.	1.92	2.43	1.95	1.64	1.60	1.71	1.63	1.66	1.78	1.70	2.03	2.69	2.24
31	York Water Co. (The)	2.66	3.91	3.40	2.68	2.52	2.47	2.28	2.28	2.05	2.02	2.28	2.89	3.11
32	Average	2.07	2.66	2.48	2.07	1.94	1.89	1.66	1.72	1.68	1.70	1.93	2.54	2.57
33	Median	1.99	2.60	2.48	1.83	1.79	1.71	1.63	1.66	1.76	1.73	2.01	2.46	2.23

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, October 13, 2017.

Notes:

^a Based on the average of the high and low price for 2017 and the projected 2017 Cash Flow per share, published in The Value Line Investment Survey, October 13, 2017.

^b Based on the average of the high and low price for 2017 and the projected 2017 Book Value per share, published in The Value Line Investment Survey, October 13, 2017.

Missouri-American Water Company

Natural Gas Utilities (Valuation Metrics)

Line	Company	Price to Earnings (P/E) Ratio ¹												
		12-Year												
		Average	2017 ²	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
1	Atmos Energy	16.09	23.80	20.80	17.50	16.09	15.87	15.93	14.36	13.21	12.54	13.59	15.87	13.52
2	Chesapeake Utilities	17.20	28.00	21.77	19.15	17.70	15.62	14.81	14.16	12.21	14.20	14.15	16.72	17.85
3	New Jersey Resources	16.91	23.80	21.25	16.61	11.73	15.98	16.83	16.76	14.98	14.93	12.27	21.61	16.13
4	NiSource Inc.	20.33	24.90	23.18	37.34	22.74	18.89	17.87	19.36	15.33	14.34	12.07	18.82	19.16
5	Northwest Nat. Gas	20.20	28.80	26.92	23.69	20.69	19.38	21.08	19.02	16.97	15.17	18.08	16.74	15.85
6	ONE Gas Inc.	21.26	24.70	22.74	19.79	17.83	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	17.88	25.90	21.71	17.95	18.03	18.90	16.94	18.48	16.81	14.96	15.90	17.18	11.86
8	Southwest Gas	17.29	22.50	21.64	19.35	17.86	15.76	15.00	15.69	13.97	12.20	20.27	17.26	15.94
9	Spire Inc.	16.22	20.70	19.61	16.49	19.80	21.25	14.46	13.05	13.74	13.39	14.31	14.19	13.60
10	UGI Corp.	15.20	19.20	19.33	17.71	15.81	15.44	16.38	15.03	10.86	10.30	13.30	15.14	13.97
11	WGL Holdings Inc.	16.64	24.60	20.05	16.99	15.15	18.25	15.27	16.97	15.11	12.58	13.66	15.60	15.46
12	Average	17.41	24.26	21.73	20.23	17.58	17.53	16.46	16.29	14.32	13.46	14.76	16.91	15.33
13	Median	17.17	24.60	21.64	17.95	17.83	17.11	16.15	16.22	14.48	13.80	13.91	16.73	15.66

Line	Company	Market Price to Cash Flow (MP/CF) Ratio ¹												
		12-Year												
		Average	2017 ^{2a}	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
14	Atmos Energy	7.97	12.39	11.36	9.30	8.79	7.72	7.02	6.87	6.15	5.76	6.48	7.44	6.36
15	Chesapeake Utilities	9.25	14.97	12.06	10.16	9.25	8.12	7.46	7.35	6.36	9.48	7.88	8.58	9.40
16	New Jersey Resources	11.85	14.76	13.94	11.71	8.95	11.29	12.29	12.71	11.32	11.34	9.15	13.76	11.01
17	NiSource Inc.	7.54	10.10	8.56	10.38	10.56	8.71	7.81	6.81	5.09	4.06	4.87	6.69	6.87
18	Northwest Nat. Gas	9.25	11.58	11.57	9.46	8.84	8.61	9.48	9.08	8.94	8.26	8.75	8.54	7.83
19	ONE Gas Inc.	10.07	11.84	11.10	9.19	8.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20	South Jersey Inds.	10.95	14.54	10.88	10.70	10.57	11.57	10.95	11.98	10.78	9.57	10.38	11.23	8.32
21	Southwest Gas	5.88	8.78	7.41	6.56	6.35	5.94	5.55	5.60	4.91	3.84	4.89	5.42	5.28
22	Spire Inc.	9.57	10.85	10.32	8.47	12.03	13.76	8.80	8.08	8.12	8.58	8.95	8.46	8.46
23	UGI Corp.	7.50	10.39	9.02	8.47	7.49	6.55	6.30	7.51	6.02	5.74	7.11	7.92	7.48
24	WGL Holdings Inc.	9.19	13.15	11.36	9.59	8.46	9.83	9.03	9.52	8.34	7.17	7.68	8.39	7.81
25	Average	8.89	12.12	10.69	9.45	9.04	9.21	8.47	8.55	7.60	7.38	7.62	8.64	7.88
26	Median	8.75	11.84	11.10	9.46	8.84	8.66	8.31	7.80	7.24	7.71	7.78	8.42	7.82

Line	Company	Market Price to Book Value (MP/BV) Ratio ¹												
		12-Year												
		Average	2017 ^{2b}	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	
27	Atmos Energy	1.48	2.22	2.11	1.72	1.55	1.39	1.28	1.30	1.18	1.05	1.20	1.40	1.34
28	Chesapeake Utilities	1.86	2.53	2.28	2.19	2.12	1.83	1.66	1.61	1.40	1.37	1.64	1.84	1.85
29	New Jersey Resources	2.22	2.75	2.52	2.28	2.13	2.05	2.33	2.31	2.09	2.16	1.92	2.17	2.01
30	NiSource Inc.	1.40	2.05	1.84	1.95	1.94	1.58	1.37	1.15	0.92	0.69	0.94	1.16	1.19
31	Northwest Nat. Gas	1.78	2.09	1.92	1.63	1.59	1.56	1.72	1.70	1.78	1.73	1.96	2.05	1.69
32	ONE Gas Inc.	1.47	1.88	1.67	1.26	1.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
33	South Jersey Inds.	2.12	2.19	1.79	1.77	2.07	2.27	2.21	2.59	2.38	1.95	2.08	2.21	1.93
34	Southwest Gas	1.53	2.13	1.96	1.68	1.68	1.61	1.51	1.43	1.24	0.97	1.20	1.46	1.46
35	Spire Inc.	1.55	1.72	1.64	1.44	1.33	1.34	1.51	1.46	1.39	1.68	1.71	1.66	1.71
36	UGI Corp.	1.99	2.71	2.41	2.29	1.97	1.69	1.45	1.75	1.55	1.66	2.01	2.16	2.21
37	WGL Holdings Inc.	1.82	2.73	2.45	2.15	1.69	1.71	1.66	1.63	1.50	1.45	1.59	1.64	1.59
38	Average	1.76	2.27	2.05	1.85	1.74	1.70	1.67	1.69	1.54	1.47	1.62	1.78	1.70
39	Median	1.72	2.19	1.96	1.77	1.69	1.65	1.58	1.62	1.45	1.56	1.67	1.75	1.70

Sources:

¹ The Value Line Investment Survey Investment Analyzer Software, downloaded on June 21, 2017.

² The Value Line Investment Survey, December 1, 2017.

Notes:

^a Based on the average of the high and low price for 2017 and the projected 2017 Cash Flow per share, published in The Value Line Investment Survey, December 1, 2017.

^b Based on the average of the high and low price for 2017 and the projected 2017 Book Value per share, published in The Value Line Investment Survey, December 1, 2017.

Missouri-American Water Company

Accuracy of Interest Rate Forecasts (Long-Term Treasury Bond Yields - Projected Vs. Actual)

Line	Date	Publication Data			Actual Yield in Projected Quarter (4)	Projected Yield Higher (Lower) Than Actual Yield* (5)
		Prior Quarter Actual Yield (1)	Projected Yield (2)	Projected Quarter (3)		
1	Dec-00	5.8%	5.8%	1Q, 02	5.6%	0.2%
2	Mar-01	5.7%	5.6%	2Q, 02	5.8%	-0.2%
3	Jun-01	5.4%	5.8%	3Q, 02	5.2%	0.6%
4	Sep-01	5.7%	5.9%	4Q, 02	5.1%	0.8%
5	Dec-01	5.5%	5.7%	1Q, 03	5.0%	0.7%
6	Mar-02	5.3%	5.9%	2Q, 03	4.7%	1.2%
7	Jun-02	5.6%	6.2%	3Q, 03	5.2%	1.0%
8	Sep-02	5.8%	5.9%	4Q, 03	5.2%	0.7%
9	Dec-02	5.2%	5.7%	1Q, 04	4.9%	0.8%
10	Mar-03	5.1%	5.7%	2Q, 04	5.4%	0.3%
11	Jun-03	5.0%	5.4%	3Q, 04	5.1%	0.3%
12	Sep-03	4.7%	5.6%	4Q, 04	4.9%	0.9%
13	Dec-03	5.2%	5.9%	1Q, 05	4.8%	1.1%
14	Mar-04	5.2%	5.9%	2Q, 05	4.6%	1.4%
15	Jun-04	4.9%	6.2%	3Q, 05	4.5%	1.7%
16	Sep-04	5.4%	6.0%	4Q, 05	4.8%	1.2%
17	Dec-04	5.1%	5.8%	1Q, 06	4.6%	1.2%
18	Mar-05	4.9%	5.6%	2Q, 06	5.1%	0.5%
19	Jun-05	4.8%	5.5%	3Q, 06	5.0%	0.5%
20	Sep-05	4.6%	5.2%	4Q, 06	4.7%	0.5%
21	Dec-05	4.5%	5.3%	1Q, 07	4.8%	0.5%
22	Mar-06	4.8%	5.1%	2Q, 07	5.0%	0.1%
23	Jun-06	4.6%	5.3%	3Q, 07	4.9%	0.4%
24	Sep-06	5.1%	5.2%	4Q, 07	4.6%	0.6%
25	Dec-06	5.0%	5.0%	1Q, 08	4.4%	0.6%
26	Mar-07	4.7%	5.1%	2Q, 08	4.6%	0.5%
27	Jun-07	4.8%	5.1%	3Q, 08	4.5%	0.7%
28	Sep-07	5.0%	5.2%	4Q, 08	3.7%	1.5%
29	Dec-07	4.9%	4.8%	1Q, 09	3.5%	1.4%
30	Mar-08	4.6%	4.8%	2Q, 09	4.0%	0.8%
31	Jun-08	4.4%	4.9%	3Q, 09	4.3%	0.6%
32	Sep-08	4.6%	5.1%	4Q, 09	4.3%	0.8%
33	Dec-08	4.5%	4.6%	1Q, 10	4.6%	0.0%
34	Mar-09	3.7%	4.1%	2Q, 10	4.4%	-0.3%
35	Jun-09	3.5%	4.6%	3Q, 10	3.9%	0.8%
36	Sep-09	4.0%	5.0%	4Q, 10	4.2%	0.6%
37	Dec-09	4.3%	5.0%	1Q, 11	4.6%	0.4%
38	Mar-10	4.3%	5.2%	2Q, 11	4.3%	0.9%
39	Jun-10	4.6%	5.2%	3Q, 11	3.7%	1.5%
40	Sep-10	4.4%	4.7%	4Q, 11	3.0%	1.7%
41	Dec-10	3.9%	4.6%	1Q, 12	3.1%	1.5%
42	Mar-11	4.2%	5.1%	2Q, 12	2.9%	2.2%
43	Jun-11	4.6%	5.2%	3Q, 12	2.8%	2.5%
44	Sep-11	4.3%	4.2%	4Q, 12	2.9%	1.3%
45	Dec-11	3.7%	3.8%	1Q, 13	3.1%	0.7%
46	Mar-12	3.0%	3.8%	2Q, 13	3.2%	0.7%
47	Jun-12	3.1%	3.7%	3Q, 13	3.7%	0.0%
48	Sep-12	2.9%	3.4%	4Q, 13	3.8%	-0.4%
49	Dec-12	2.8%	3.4%	1Q, 14	3.7%	-0.3%
50	Mar-13	2.9%	3.6%	2Q, 14	3.4%	0.2%
51	Jun-13	3.1%	3.7%	3Q, 14	3.3%	0.4%
52	Sep-13	3.2%	4.2%	4Q, 14	3.0%	1.2%
53	Dec-13	3.7%	4.2%	1Q, 15	2.6%	1.7%
54	Mar-14	3.8%	4.4%	2Q, 15	2.9%	1.5%
55	Jun-14	3.7%	4.3%	3Q, 15	2.8%	1.5%
56	Sep-14	3.4%	4.3%	4Q, 15	3.0%	1.3%
57	Dec-14	3.3%	4.0%	1Q, 16	2.7%	1.3%
58	Mar-15	3.0%	3.7%	2Q, 16	2.6%	1.1%
59	Jun-15	2.6%	3.7%	3Q, 16	2.3%	1.4%
60	Sep-15	2.9%	3.8%	4Q, 16	2.8%	1.0%
61	Dec-15	2.8%	3.7%	1Q, 17	3.0%	0.7%
62	Mar-16	3.0%	3.5%	2Q, 17	2.9%	0.6%
63	Jun-16	2.7%	3.4%	3Q, 17	2.8%	0.6%
64	Jul-16	2.7%	3.4%	4Q, 17		
65	Aug-16	2.6%	3.1%	4Q, 17		
66	Sep-16	2.6%	3.1%	4Q, 17		
67	Oct-16	2.3%	3.1%	1Q, 18		
68	Nov-16	2.3%	3.1%	1Q, 18		
69	Dec-16	2.3%	3.4%	1Q, 18		
70	Jan-17	2.8%	3.7%	2Q, 18		
71	Feb-17	2.8%	3.7%	2Q, 18		
72	Mar-17	2.8%	3.7%	2Q, 18		
73	Apr-17	3.1%	3.6%	3Q, 18		
74	May-17	3.0%	3.7%	3Q, 18		
75	Jun-17	3.0%	3.7%	3Q, 18		
76	Jul-17	2.9%	3.7%	4Q, 18		
77	Aug-17	2.9%	3.7%	4Q, 18		
78	Sep-17	2.9%	3.6%	4Q, 18		
79	Oct-17	2.8%	3.6%	1Q, 19		
80	Nov-17	2.8%	3.6%	1Q, 19		
81	Dec-17	2.8%	3.6%	1Q, 19		
82	Jan-18	2.8%	3.6%	2Q, 19		

Source:
Blue Chip Financial Forecasts, Various Dates.
* Col. 2 - Col. 4.