Exhibit No.:	
Issue:	Cost of Capital
Witness:	Michael P. Gorman
Type of Exhibit:	Rebuttal Testimony
Sponsoring Parties:	Missouri Office of Public Counsel and Missouri Industrial Energy Consumers
Case No.:	WR-2017-0285
Date Testimony Prepared:	January 17, 2018

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

BRUBAKER & ASSOCIATES, INC.

Project 10440.3

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

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

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

Affidavit of Michael P. Gorman

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

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

2. Attached hereto and made a part hereof for all purposes are my 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

Maria E. Decker
Notary Public

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

Page

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Rebuttal Testimony of Michael P. Gorman

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

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

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

Q WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

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

I. SUMMARY

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

A My findings and recommendations are summarized as follows:

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

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

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

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

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

II. MAWC'S PROPOSED CAPITAL STRUCTURE

Q WHAT IS MAWC'S PROPOSED CAPITAL STRUCTURE?

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

TABLE 1

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

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

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

Q IS MAWC'S PROPOSED CAPITAL STRUCTURE REASONABLE?

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

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

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

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

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

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

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

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

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

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

TABLE 2

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

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

Source: Schedule MPG-R-1.

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

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

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

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

III. FINANCIAL INTEGRITY

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

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

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

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

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

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

[2]S&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.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

[4] *Id.*

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

IV. RESPONSE TO MAWC WITNESS MS. BULKLEY

IV.A. Summary of Rebuttal to Ms. Bulkley

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

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

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

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

[5]Bulkley Direct Testimony at 9.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

TABLE 3

Bulkley Return on Equity Estimates

Description	Mean[1] (1)	Adjusted (2)
I. DCF		
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%
II. EXPECTED EARNINGS		
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
III. CAPM		
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: [1]Bulkley Direct Testimony at 35, 37, 38 and 42.

IV.B. Bulkley DCF

IV.B.1. Bulkley Constant Growth DCF

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

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

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

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

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

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

IV.B.2. Bulkley Projected Stock Price DCF

Q DID MS. BULKLEY PERFORM ADDITIONAL DCF ANALYSES?

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

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

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

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

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

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

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

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

IV.C. Bulkley Expected Earnings Analysis

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

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

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

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

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

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

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

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

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

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

IV.D. Bulkley CAPM Studies

Q PLEASE DESCRIBE MS. BULKLEY'S CAPM ANALYSIS.

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

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

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

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

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

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

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

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

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

[6] Gorman Direct, Schedule MPG-14 and Schedule MPG-16.
[7] Schedule AEB-5 and Schedule AEB-6.

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

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

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

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

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

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

[8]Schedule AEB-5, page 1 of 7.
[9]Duff & Phelps, *2017 SBBI Yearbook* at 6-17.
[10]*Id*.

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

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

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

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

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

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

IV.E. Additional Risks

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

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

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

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

[12]Schedule AEB-4.
[13]Schedule MPG-16.
[14]Bulkley Direct Testimony at 42-53.

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

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

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

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

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

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

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

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

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

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

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

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

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

[16]Bulkley Direct Testimony at 13-23.

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

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

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

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

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

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

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

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

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

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

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

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

Q DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A Yes, it does.

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

Missouri-American Water Company

Rate of Return
(May 31, 2019)

Line	Description	Amount (1)	Weight (2)	Cost (3)	Weighted Cost (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	$ 644,923,061	50.00%	**9.00%**	4.50%
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

Line	Description	2012	2013	2014	2015	2016	Average
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	$446,792,742	$474,430,941	$485,321,506	$ 526,454,251	$ 569,593,275	$500,518,543
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	**49.79%**	**50.22%**	**50.80%**	**50.35%**	**50.07%**	**50.25%**
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 Cost of Service Amount (1)	S&P Benchmark (Low Volatility)[1/2] Modest (2)	Intermediate (3)	Significant (4)	Reference (5)
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 Expens	$ -				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)

Line	Description	Amount[1] (1)	Weight[1] (2)	Cost (3)	Weighted Cost (4)	Pre-Tax Weighted Cost (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	$ 644,923,061	50.00%	**9.00%**	4.50%	7.36%
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)

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

Line	Rating	Count	Average	Median	High	Low	% Distribution of 9 Year Average		
							< 50	50 to 55	> 55
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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 - %

Line	Rating	Count	Average	Median	High	Low	% Distribution of Fiscal Year Results		
							< 50	50 to 55	> 55
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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 - %

Line	Rating	Count	Average	Median	High	Low	% Distribution of 9 Year Average		
							< 50	50 to 55	> 55
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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 - %

Line	Rating	Count	Average	Median	High	Low	% Distribution of Fiscal Year Results		
							< 50	50 to 55	> 55
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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 - %

Line	Rating	Count	Average	Median	High	Low	% Distribution of 9 Year Average		
							< 50	50 to 55	> 55
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(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 - %

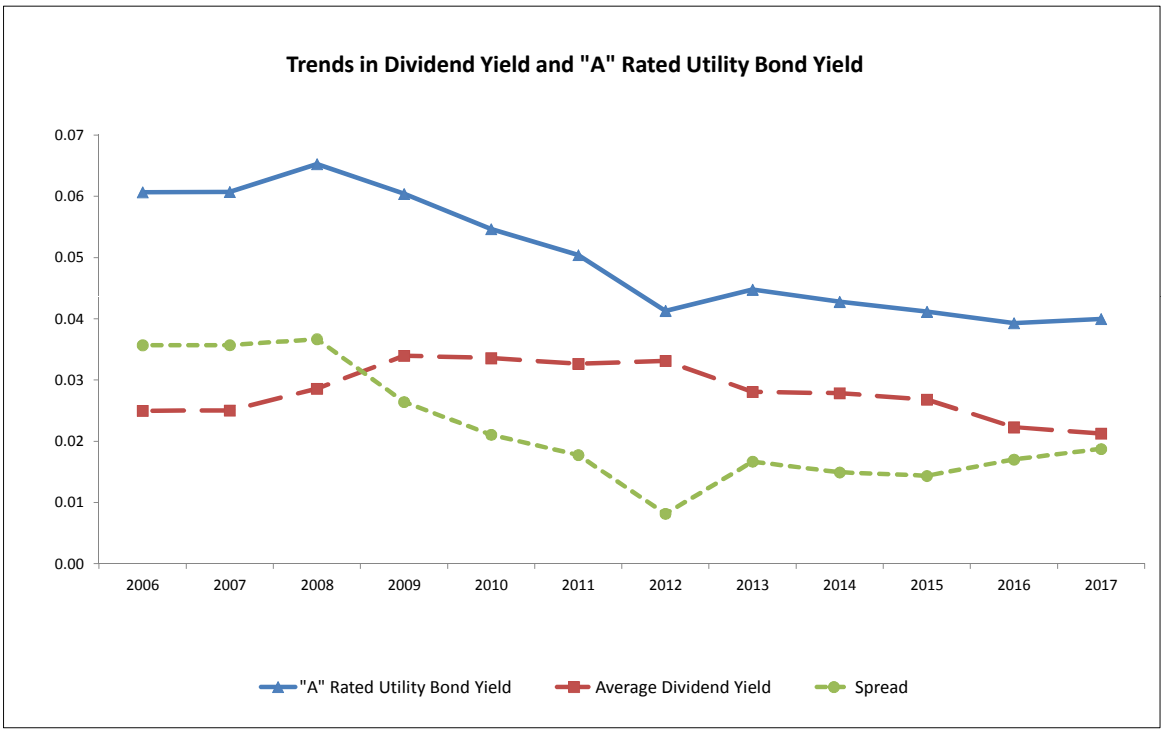
Line	Rating	Count	Average	Median	High	Low	% Distribution of Fiscal Year Results		
							< 50	50 to 55	> 55
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
5	AA-	0	-	-	-	-			
6	A+	18	52.2	51.9	60.5	43.4	28%	44%	28%
7	A	27	53.9	56.4	60.4	44.7	26%	22%	52%
8	A-	9	48.3	47.7	58.5	43.4	78%	11%	11%

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 [2/a] (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%	2.53%	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[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%**
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[a]**	**4.92%**												

Percent Dividends to Book Value [1]

Line	Company	12-Year Average (1)	2017 [2/b] (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%	3.18%	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)	7.29%	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:

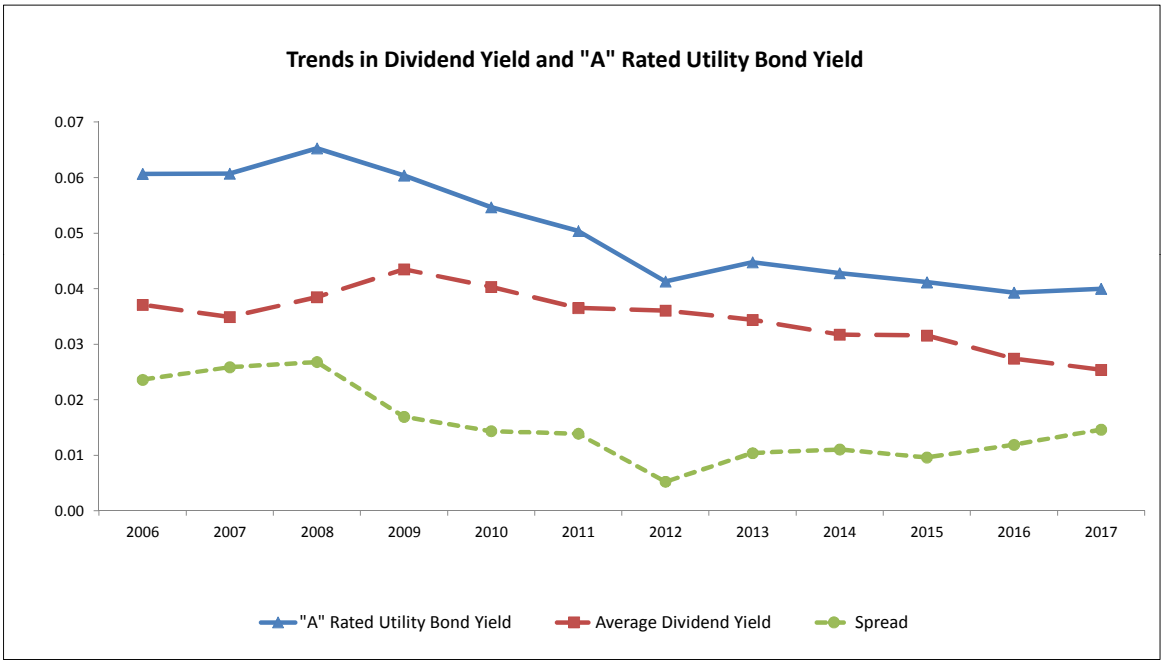
[a] CAGR = Compound Annual Growth Rate

[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 (1)	2017 [2/a] (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	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:
[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, December 1, 2017.

Missouri-American Water Company

Natural Gas 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	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	NiSource 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[a]**	**4.45%**												

Percent Dividends to Book Value [1]

Line	Company	12-Year Average (1)	2017 [2/b] (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	NiSource 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:

[a] 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

Line	Company	5-Year Average (1)	Dec 17 (2)	Dec 16 (3)	Dec 15 (4)	Dec 14 (5)	Dec 13 (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

		5-Year Average (1)	Jan 18 (2)	Jan 17 (3)	Jan 16 (4)	Jan 15 (5)	Jan 14 (6)
	Value Line Water Utilities:						
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)

Line	Company	Cash Flow / Capital Spending 2017 (1)	2018 (2)	3 - 5 yr Projection (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)

Line	Company	Cash Flow / Capital Spending 2017 (1)	2018 (2)	3 - 5 yr Projection (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	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	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	2017 [2/a]	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(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	2017 [2/b]	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(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)

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	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

Market Price to Cash Flow (MP/CF) Ratio [1]

Line	Company	12-Year Average (1)	2017 [2/a] (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	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

Market Price to Book Value (MP/BV) Ratio [1]

Line	Company	12-Year Average (1)	2017 [2/b] (2)	2016 (3)	2015 (4)	2014 (5)	2013 (6)	2012 (7)	2011 (8)	2010 (9)	2009 (10)	2008 (11)	2007 (12)	2006 (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: Prior Quarter Actual Yield (1)	Publication Data: Projected Yield (2)	Publication Data: Projected Quarter (3)	Actual Yield in Projected Quarter (4)	Projected Yield Higher (Lower) Than Actual Yield* (5)
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%	5.8%	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%	0.8%
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%	3.8%	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.