EXHIBIT 407

Exhibit No.:	
Issue:	Revenue Requirement
Witness:	Michael P. Gorman
Type of Exhibit:	Direct Testimony
Sponsoring Parties:	Public Counsel and Missouri Industrial Energy Consumers
Case No.:	GR-2017-0215 & GR-2017-0216
Date Testimony Prepared:	September 8, 2017

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Laclede Gas Company's Request to Increase its Revenues for Gas Service	**Case No. GR-2017-0215** Tariff No. YG-2017-0195
In the Matter of Laclede Gas Company d/b/a Missouri Gas Energy's Request to Increase its Revenues for Gas Service	**Case No. GR-2017-0216** Tariff No. YG-2017-0196

Direct Testimony and Schedules of

Michael P. Gorman

On behalf of

The Office of Public Counsel and
Missouri Industrial Energy Consumers

September 8, 2017

BRUBAKER & ASSOCIATES, INC.

OPC Exhibit No. 407
Date 12-11-17 Reporter AF
File No. GR-2017-0216

Projects 10453 & 10453.1

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Laclede Gas Company's Request to Increase its Revenues for Gas Service	)	**Case No. GR-2017-0215** Tariff No. YG-2017-0195
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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 Office of Public Counsel and the Missouri Industrial Energy Consumers in this proceeding on their behalf.

2. Attached hereto and made a part hereof for all purposes are my direct testimony and schedules which were prepared in written form for introduction into evidence in Missouri Public Service Commission Case No. GR-2017-0215 and GR-2017-0216.

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 7th day of September, 2017.

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

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of Laclede Gas Company's Request to Increase its Revenues for Gas Service	)	Case No. GR-2017-0215 Tariff No. YG-2017-0195
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Direct Testimony of Michael P. Gorman

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

Q WHAT IS YOUR OCCUPATION?

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

Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

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

Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?

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

Q WHAT IS THE SUBJECT MATTER OF YOUR TESTIMONY?

A My testimony will address the overall rate of return including return on equity, and embedded debt cost of Laclede Gas Company ("Laclede") and its two operating units, Laclede Gas ("LAC") and Missouri Gas Energy ("MGE") (collectively "the Companies").

I. SUMMARY

Q PLEASE SUMMARIZE YOUR RECOMMENDATIONS AND CONCLUSIONS ON RATE OF RETURN.

A I recommend the Missouri Public Service Commission ("Commission") award a return on common equity of 9.20%, which is the approximate midpoint of my recommended range of 8.90% to 9.40%. My recommended return on equity will fairly compensate the Companies for their current market cost of common equity, and it will mitigate the Companies' claimed revenue deficiency in this proceeding while providing a return that fairly balances the interests of customers and shareholders.

My recommended return on equity is reasonable when combined with a capital structure that: (1) preserves the Companies' investment grade bond rating; (2) maintains their financial integrity and access to external capital; and (3) does so at reasonable cost to customers. I will provide detail on any concerns I have with the Companies' proposed capital structure in my rebuttal testimony.

II. RATE OF RETURN

Q PLEASE DESCRIBE THIS SECTION OF YOUR TESTIMONY.

A In this section of my testimony, I will explain the analysis I performed to determine the reasonable rate of return in this proceeding and present the results of my analysis. I

begin my estimate of a fair return on equity by reviewing the authorized returns approved by the regulatory commissions in various jurisdictions, the market assessment of the regulated utility industry investment risk, credit standing, and stock price performance. I used this information to get a sense of the market's perception of the risk characteristics of regulated utility investments in general, which is then used to produce a refined estimate of the market's return requirement for assuming investment risk similar to the Companies' utility operations.

As described below, I find the credit rating outlook of the industry to be strong, supportive of the industry's financial integrity and access to capital. Further, regulated utilities' stocks have exhibited strong price performance over the last several years, which is evidence of utility access to capital.

Based on this review of credit outlooks and stock price performance, I conclude that the market continues to embrace the regulated utility industry as a safe-haven investment and views utility equity and debt investments as low-risk securities.

I also assessed the projections of changes in interest rates over the next three- to five-year period, along with the Federal Reserve's monetary policy impacts that could affect cost of capital, interest rates and a fair return on equity in this proceeding. This information is used to assess whether or not current capital market costs are reasonable estimates of the capital market costs that will prevail during the period that rates determined in this proceeding will be in effect.

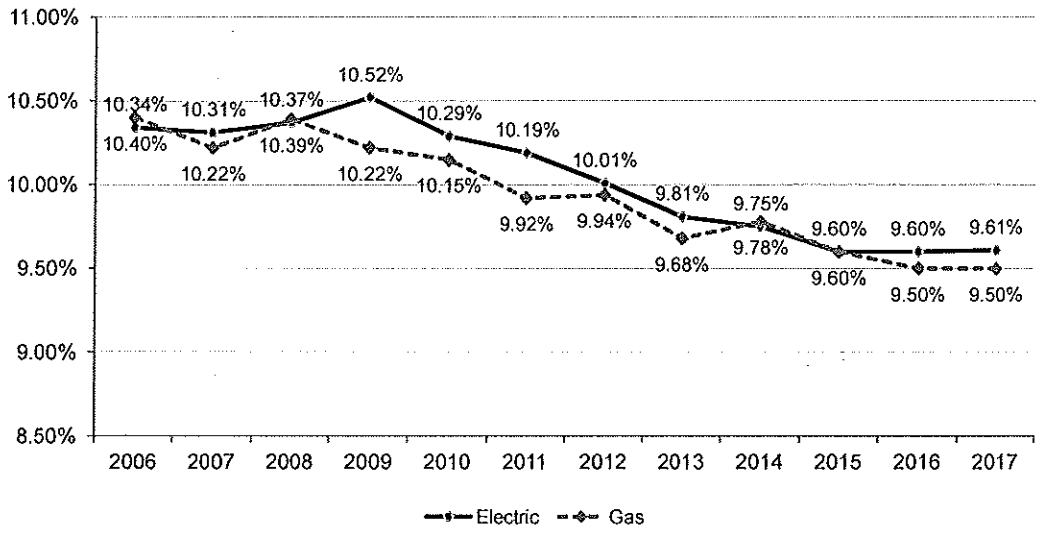
II.A. Industry Authorized Returns on Equity, Access to Capital, And Credit Strength

Q PLEASE DESCRIBE THE OBSERVABLE EVIDENCE ON TRENDS IN AUTHORIZED RETURNS ON EQUITY FOR REGULATED UTILITIES, UTILITIES' CREDIT STANDING, AND UTILITIES' ACCESS TO CAPITAL USED TO FUND INFRASTRUCTURE INVESTMENT.

A Authorized returns on equity for both electric and gas utilities have been steadily declining over the last ten years, as illustrated in Figure 1 below. More recent authorized returns on equity for electric and gas utilities have declined downward to about 9.50%. This trend continued during the first two quarters of 2017.

FIGURE 1

Authorized Returns on Equity
(Excludes Limited Issue Riders)



Source and Note:
S&P Global Market Intelligence, RRA Regulatory Focus, Major Rate Case Decisions -- January - June 2017, July 26, 2017 at pages 5 and 6.

While the declines in authorized returns on equity are public knowledge, and align with declining capital market costs, utilities are maintaining a stable investment grade credit outlook, and have been able to attract large amounts of capital at low cost to fund very large capital programs.

Q PLEASE DESCRIBE THE ACTIVITY OF CREDIT RATING AGENCIES WITH RESPECT TO THE REGULATED UTILITY INDUSTRY DURING THE PERIOD OF DECLINING RETURNS ON EQUITY.

A The credit rating changes for the electric and gas utility industry reflect a significant strengthening of the industry credit outlook.

The natural gas utility industry credit rating changes are shown in Table 1 below. The gas industry changes in credit ratings are similar to the electric utilities. In 2009, 42% of the gas industry had a credit rating in the BBB category, but by the end of 2016, 66% of gas utilities' credit ratings improved to A- or above.

TABLE 1

S&P Ratings by Category
Natural Gas Utilities
(Year End)

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017*
A or higher	57%	57%	50%	50%	38%	33%	33%	44%	56%
A-	0%	0%	0%	0%	38%	33%	33%	22%	11%
BBB+	14%	14%	38%	38%	13%	22%	33%	33%	33%
BBB	14%	14%	0%	0%	0%	0%	0%	0%	0%
BBB-	14%	14%	13%	13%	13%	11%	0%	0%	0%
Below BBB-	0%	0%	0%	0%	0%	0%	0%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

* As of August 30, 2017.
Source: S&P CAPITAL IQ, downloaded 6/20/2017 and 8/30/2017.
Note: Subsidiary rating is used if parent not rated.

As shown in Table 2 below, in 2008, approximately 69% of the electric utility industry was rated from BBB- to BBB+, 18% had a bond rating better than BBB+, and around 13% of the industry was below investment grade. This industry rating

improved steadily over the subsequent eight years. By second quarter 2017, the industry no longer had below investment grade companies, 62% were in the range of BBB- to BBB+, and 37% of the industry had a bond rating above BBB+. Overall, the improvement to the credit rating of the electric utility industry has been very significant.

TABLE 2

S&P Ratings by Category
Electric Utilities
(Year End)

Description	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 Q1
A or higher	8%	7%	9%	8%	6%	3%	3%	3%	6%	6%
A-	10%	15%	14%	14%	17%	20%	21%	22%	28%	31%
BBB+	23%	22%	17%	19%	14%	17%	32%	33%	36%	31%
BBB	23%	27%	31%	35%	36%	49%	37%	33%	22%	20%
BBB-	23%	20%	17%	14%	17%	6%	3%	3%	8%	11%
Below BBB-	13%	10%	11%	11%	11%	6%	5%	6%	0%	0%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: EEI 2017 Q1 Credit Ratings. Tab V. S&P Rating by Comp. Category.

Moody's comments on this improved credit standing of regulated utility companies in its publication, "Regulation Remains a Credit Supportive Ratings Driver Two Years After Sector-Wide Upgrades." Moody's stated as follows:

> **Summary**
>
> In January and February 2014, we upgraded the ratings of 147 US regulated electric and gas utility debt issuers as part of a sector-wide rating action that reflected our more favorable view of the relative credit supportiveness of US utility regulation. Factors supporting this view include better cost-recovery provisions, reduced regulatory lag, and generally fair and open relationships between utilities and their state regulators.[1]

[1]Moody's Investor Service: "U.S. Regulated Utilities: Regulation Remains a Credit Supportive Ratings Driver Two Years After Sector-Wide Upgrades," November 6, 2015, emphasis added.

Q HAVE CREDIT RATING AGENCIES COMMENTED ON DECLINING AUTHORIZED RETURNS ON EQUITY?

A Yes. Credit rating agencies recognize the declining trend in authorized returns and the expectation that regulators will continue lowering the returns for U.S. utilities while maintaining a stable credit profile. Specifically, Moody's states:

> **Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles**
>
> The credit profiles of US regulated utilities will remain intact over the next few years despite our expectation that regulators will continue to trim the sector's profitability by lowering its authorized returns on equity (ROE).[2]

Further, in a recent report, Standard & Poor's ("S&P") states:

> **2. Earned returns will remain in line with authorized returns**
>
> Authorized returns on equity granted by U.S. utility regulators in rate cases this year have been steady at about 9.5%. Utilities have been adept at earning at or very near those authorized returns in today's economic and fiscal environment. A slowly recovering economy, natural gas and electric prices coming down and then stabilizing at fairly low levels, and the same experience with interest rates have led to a perfect "non-storm" for utility ratepayers and regulators, with utilities benefitting alongside those important constituencies. Utilities have largely used this protracted period of favorable circumstances to consolidate and institutionalize the regulatory practices that support earnings and cash flow stability.[3]

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

A Yes. In its March 21, 2017 Capital Expenditure Update report, *RRA Financial Focus*, a division of S&P Global Market Intelligence, made several comments about utility capital investments:

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[2] *Moody's Investors Service*, "US Regulated Utilities: Lower Authorized Equity Returns Will Not Hurt Near-Term Credit Profiles," March 10, 2015.

[3] *Standard & Poor's Ratings Services*: "Corporate Industry Credit Research: Industry Top Trends 2016, Utilities," December 9, 2015, at 23, emphasis added.

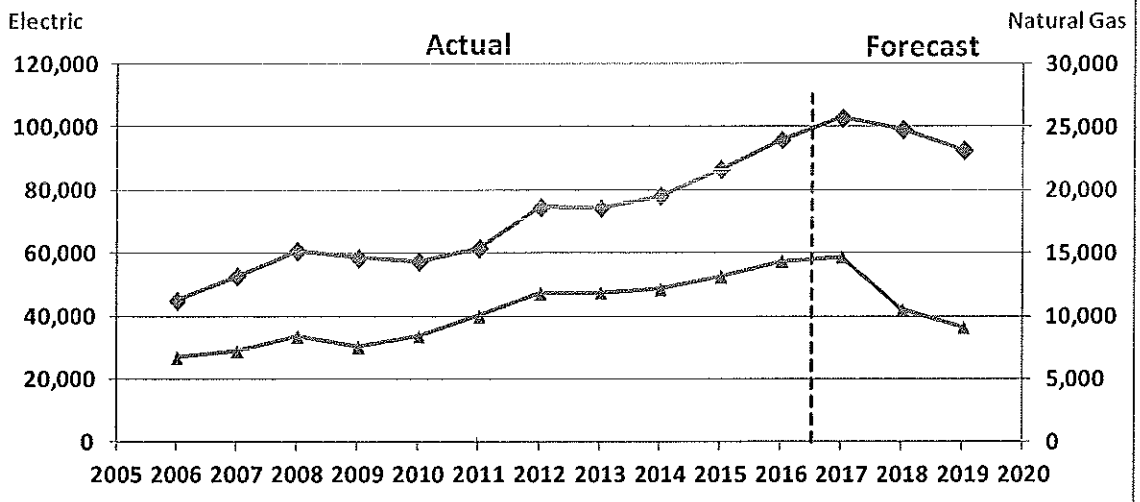
> Capital expenditures throughout the U.S. power and gas sectors in 2017 are projected to reach an all-time high of $117.5 billion. The nation's largest electric and gas utilities are investing in infrastructure to comply with sweeping environmental regulations, implement new technologies, build new natural gas, solar and wind generation and upgrade aging transmission and distribution systems. Moreover, their near-term capital spending forecasts continue to escalate .... Total CapEx in 2016 for the companies in the RRA utility universe was $110.3 billion.
>
> We expect considerable levels of spending to serve as the basis for solid profit expansion for the foreseeable future, although our data indicates that CapEx in the industry may fall modestly in 2018 and 2019.
>
> * * *
>
> From a natural gas perspective, many utilities are participating in the sizable and ongoing expansion of the nation's gas midstream network. In addition, replacement of mature gas distribution infrastructure has gained widespread momentum and is likely to continue at material levels for many years, considering state and federal mandates to address safety.
>
> * * *
>
> For gas utilities, the CapEx-to-operating cash flow ratio has fluctuated far more substantially than for electric utilities. Gas utilities saw large swings in the ratio from 2000 through 2012, with a peak of 1.5x in 2000 and a low of 0.7 in 2009. Since reaching 1.4x in 2012, the ratio appears to have stabilized somewhat, although 2015 was slightly lower at 1.0x before jumping up again to 1.3x in 2016.[4]

Indeed, historical versus projected outlooks for the electric and gas industries' capital investments are shown in Figure 2 below. As shown in this graph, gas industry investment outlooks are expected to be considerably higher in the forecast (2016-2019), relative to the last ten-year historical period. As noted by S&P Global Market Intelligence, this capital investment is exceeding internal sources of funds to the gas utilities, requiring them to seek external capital to fund capital investments.

[4]S&P Global Market Intelligence, RRA Financial Focus: "Capital Expenditure Update: Utilities continue to ramp up CapEx plans," March 21, 2017, at 1 and 5.

FIGURE 2

Utility Capital Expenditures
Dollars (in millions)



Source: *S&P Global Market Intelligence, Financial Focus*, Capital Expenditure Update, March 21, 2017, Page 7

As shown in Figure 2 above, the capital investments for the electric utility industry are significantly higher than the capital investments for the gas industry but they follow the same trend over the historical and forecasted period.

Q IS THERE EVIDENCE OF ROBUST VALUATIONS OF GAS UTILITY SECURITIES?

A Yes. Robust valuations are an indication that utilities can sell securities at high prices, which is a strong indication that they can access equity capital under reasonable terms and conditions, and at relatively low cost. As shown on Schedule MPG-1, the historical valuation of the gas utilities followed by *Value Line*, based on a price-to-earnings ("P/E") ratio, price-to-cash flow ("P/CF") ratio, and market price-to-book value ("M/B") ratio, indicates utility security valuations today are very strong and

robust relative to the last 11 years. These strong valuations of utility stocks indicate that utilities have access to equity capital under reasonable terms and at lower costs.

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

A Market evidence is quite clear that capital market costs are near historically low levels. Authorized returns on equity have fallen to the low to mid 9.0% area; utilities continue to have access to large amounts of external capital to fund large capital programs; and utilities' investment grade credit standings are stable to improving. The Commission should carefully weigh all this important observable market evidence in assessing a fair return on equity for the Companies.

II.B. Regulated Utility Industry Market Outlook

Q PLEASE DESCRIBE THE CREDIT RATING OUTLOOK FOR REGULATED UTILITIES.

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

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

> – **Ratings Outlook**: Rating trends across regulated utilities remain mostly stable supported by stable regulatory oversight, slow but steady demand for utility services, and tempered by aggressive capital spending that will keep credit metrics from improving. Emerging new political trends in historically stable regions like Europe and the U.S. may have far-reaching effect on utilities over time, but S&P Global Ratings sees little immediate influence from those factors in 2017.

Sovereign rating developments can influence utility ratings in some countries and we expect them to vary in different parts of the globe.

* * *

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

* * *

– **Industry Trends:** The utility industry in most regions is stable, consistent with our general ratings outlook and the nature of the essential products and services utilities sell.[5]

Similarly, Fitch states:

Stable Financial Performance: The stable financial performance of Utilities, Power & Gas (UPG) issuers continues to support a sound credit profile for the sector, with 93% of the UPG portfolio carrying investment-grade ratings as of June 30, 2015, including 65% in the 'BBB' rating category. Second-quarter 2015 LTM [Long-Term Maturity] leverage metrics remained relatively unchanged year over year (YOY) while interest coverage metrics modestly improved. Fitch Ratings expects this trend to broadly sustain for the remainder of 2015, driven by positive recurring factors.[6]

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

2017 Outlook - Timely Cost-Recovery Drives Stable Outlook

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

A credit-supportive regulatory environment is the main driver of our stable outlook. Our stable outlook for the US regulated utility industry is based on our expectation that utilities will continue to recover costs in a timely manner and maintain stable cash flows.[7]

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

[6] *Fitch Ratings*: "U.S. Utilities, Power & Gas Data comparator," September 21, 2015, at 1 and 7, emphasis added.

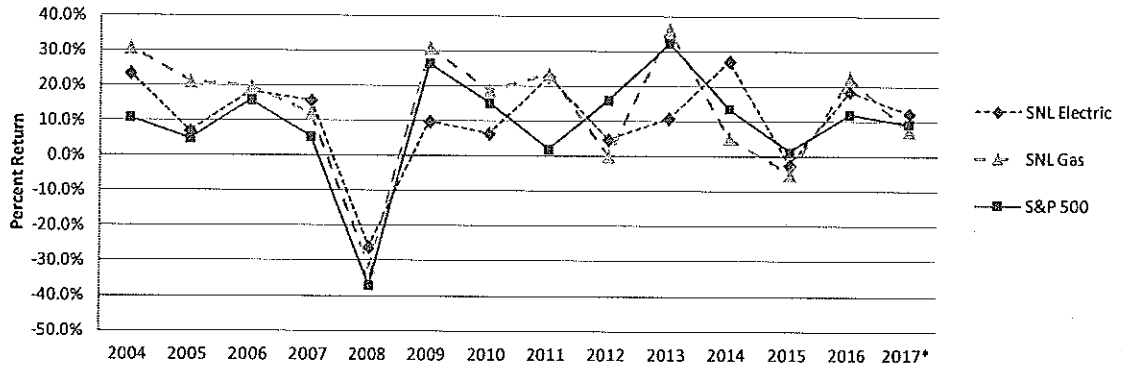
[7] *Moody's Investors Service*: "Regulated Utilities - US: 2017 Outlook – Timely Cost-Recovery Drives Stable Outlook," November 4, 2016, at 1, emphasis added.

Q **PLEASE DESCRIBE UTILITY STOCK PRICE PERFORMANCE OVER THE LAST SEVERAL YEARS.**

A As shown in Figure 3 below, SNL Financial ("SNL") has recorded utility stock price performance compared to the market. The industry's stock performance data from 2004 through the second quarter of 2017 shows that the SNL Electric and Gas Company Indexes have largely outperformed the market through downturns and recoveries. This relatively stable price performance for utilities supports my conclusion that utility stock investments are regarded by market participants as a moderate- to low-risk investment.

FIGURE 3

Index Comparison



Source: SNL Financial.
*Data through June 30, 2017

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

A Yes. The outlook for changes in interest rates has been highly impacted by expectations that the Federal Reserve Bank Open Market Committee ("FOMC") will raise short-term interest rates, and outlooks for inflation and GDP growth after the

recent Presidential election. The consensus economists are expecting continued increases in the Federal Funds Rate as the FOMC continues to normalize interest rates in response to the strengthening of the U.S. economy.

This is evident from a comparison of current and forecasted changes in the Federal Funds Rate, as shown in Table 3 below. However, while the Federal Funds Rate is expected to increase over the next several years, consensus economists are not projecting significant increases in long-term interest rates. This is also illustrated in Table 3 below.

TABLE 3

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

Publication Date	3Q 2016	4Q 2016	1Q 2017	2Q 2017	3Q 2017	4Q 2017	1Q 2018	2Q 2018	3Q 2018	4Q 2018
Federal Funds Rate										
Dec-16	**0.4**	0.5	0.7	0.8	1.0	1.1	1.3			
Jan-17		0.4	0.7	0.8	1.0	1.2	1.3	1.5		
Feb-17		**0.5**	0.7	0.8	1.0	1.1	1.3	1.6		
Mar-17		**0.5**	0.7	0.8	1.0	1.2	1.4	1.6		
Apr-17			0.7	0.9	1.1	1.3	1.5	1.7	1.9	
May-17			**0.7**	1.0	1.2	1.3	1.5	1.7	1.9	
Jun-17			**0.7**	1.0	1.2	1.4	1.5	1.7	1.9	
Jul-17				0.9	1.2	1.3	1.5	1.7	1.9	2.1
Aug-17				**0.9**	1.2	1.3	1.5	1.6	1.8	2.0
T-Bond, 30 yr.										
Dec-16	**2.3**	2.8	3.0	3.1	3.2	3.3	3.4			
Jan-17		2.8	3.1	3.2	3.3	3.5	3.6	3.7		
Feb-17		**2.8**	3.1	3.2	3.4	3.5	3.6	3.7		
Mar-17		**2.8**	3.1	3.2	3.3	3.5	3.6	3.7		
Apr-17			3.1	3.2	3.3	3.5	3.6	3.7	3.8	
May-17			**3.0**	3.1	3.3	3.4	3.5	3.6	3.7	
Jun-17			**3.0**	3.0	3.2	3.4	3.5	3.6	3.7	
Jul-17				2.9	3.0	3.2	3.3	3.5	3.6	3.7
Aug-17				**2.9**	3.0	3.1	3.3	3.4	3.6	3.7
GDP Price Index										
Dec-16	**1.5**	2.1	1.9	2.1	2.1	2.1	2.2			
Jan-17		2.1	2.0	2.1	2.1	2.1	2.2	2.2		
Feb-17		**2.1**	2.0	2.1	2.0	2.1	2.1	2.2		
Mar-17		**2.1**	2.2	2.0	2.1	2.1	2.2	2.2		
Apr-17			2.2	1.9	2.1	2.2	2.3	2.2	2.2	
May-17			**2.3**	1.7	2.1	2.1	2.2	2.2	2.2	
Jun-17			**2.2**	1.5	2.0	2.1	2.2	2.1	2.2	
Jul-17				1.3	1.9	2.0	2.1	2.1	2.1	2.2
Aug-17				**1.0**	1.7	2.0	2.1	2.1	2.1	2.2

Source and Note:
Blue Chip Financial Forecasts, December 2016 through August 2017.
Actual Yields in Bold

I note that the four increases in the Federal Funds Rate experienced over the last few years have not caused comparable changes in outlooks for changes in long-

term interest rates. This is illustrated on my attached Schedule MPG-2. As shown on that schedule, the actions taken by the FOMC to increase the Federal Funds Rate have simply flattened the yield curve, and have not resulted in an increase in long-term interest rates. This is significant because cost of common equity is impacted by long-term interest rates, not short-term interest rates. As a result, the recent increases in the Federal Funds Rate, and the expectation of continued increases in the Federal Funds Rate, have not, and are not expected to, significantly impact long-term interest rates.

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

There has been concern that if the Federal Reserve starts to unwind this balance sheet position, it will cause an increase in long-term interest rates. However, the Federal Reserve announced that if it does unwind its balance sheet position, it will do so in small increments so as to not have a significant impact on long-term interest rates.[8]

For these reasons, the Federal Reserve actions on short-term interest rates have not resulted in increases in long-term interest rates. Further, the Federal Reserve's proposed plan for unwinding its balance sheet position is not expected to have a significant impact on long-term interest rates. All this indicates that the

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

Federal Reserve QE monetary policy changes related to a strengthening economy have not and are not expected to increase long-term interest rates. Further, this outlook is reflected in consensus economists' forecasts of long-term interest rates, which indicate a relatively low capital market cost period for at least the intermediate period.

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

A Yes. This is shown below in Table 4. There, I show the prevailing quarterly average Treasury bond yield, and the projections of Treasury bond yields two years out, and five to ten years out. Significantly, current Treasury bond yields in 2017 have been relatively moderate and comparable to those in 2015 and 2016; however, projections of future Treasury bond yields are now much lower five to ten years out than they were over the last three years. Indeed, in 2014 Treasury bond yields five to ten years out were projected to increase to 5.6% from 3.26% to 3.79% prevailing yields. These five to ten-year projections have been steadily declining through 2015 and 2016. Most recently, long-term projected Treasury bond yields are now expected to remain relatively low in the 4.2% to 4.5% area.

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

TABLE 4

30-Year Treasury Bond Yield Actual Vs. Projection

Description	Quarterly Average	2-Year Projected	5- to 10-Year Projected
2014			
Q1	3.79%	4.4%	5.0% - 5.5%
Q2	3.69%	4.5%	
Q3	3.44%	4.4%	5.3% - 5.6%
Q4	3.26%	4.3%	
2015			
Q1	2.97%	4.0%	4.9% - 5.1%
Q2	2.55%	3.7%	
Q3	2.83%	4.0%	4.8% - 5.0%
Q4	2.84%	3.9%	
2016			
Q1	2.96%	3.8%	4.5% - 4.8%
Q2	2.72%	3.6%	
Q3	2.64%	3.4%	4.3% - 4.6%
Q4	2.30%	3.1%	
2017			
Q1	2.82%	3.7%	4.2% - 4.5%
Q2	3.05%	3.8%	

Sources: *Blue Chip Financial Forecasts*, December 2013 through June 1, 2017.

II.C. The Companies' Investment Risk

Q PLEASE DESCRIBE THE MARKET'S ASSESSMENT OF THE INVESTMENT RISK OF THE COMPANIES.

A The market's assessment of the Companies' investment risk is described by credit rating analysts' reports. The Companies' current corporate bond ratings from S&P

and Moody's are A- and A1, respectively.[9] The Companies' outlook from both S&P and Moody's is "Stable." S&P assesses the Companies' credit rating as part of Spire's corporate umbrella.

Specifically, S&P states:

> **Outlook: Stable**
>
> The outlook on Laclede Gas Co. reflects the outlook of its parent Spire Inc. (Spire). The stable outlook on Spire Inc. is based on S&P Global Ratings' assessment of the company's excellent business and intermediate financial risk profiles. Under our base-case scenario, we expect that funds from operations (FFO) to debt will range from 16%-18% over the next few years, with debt to EBITDA that remains around 4.5x-5x. Fundamental to our forecast is our expectation that Spire will continue to both generate the majority of its cash flow from its regulated natural gas utility business and effectively manage regulatory risk, enabling the utility to earn its allowed return on equity.
>
> * * *
>
> **Business Risk: Excellent**
>
> Laclede Gas Co.'s business risk assessment is based on the cash flow stability at its two regulated gas distribution operating divisions, Laclede Gas and Missouri Gas Energy (MGE). Both operating divisions are located within the state of Missouri, a regulatory environment which has enabled the company to consistently earn at or close to its authorized returns. Laclede Gas Co. benefits from the infrastructure system replacement surcharge (ISRS), a mechanism designed to facilitate recovery of eligible capital expenditures (e.g., spending on aging infrastructure) with limited regulatory lag. We expect that the company will continue to focus on ISRS-eligible investments over the next several years, leading to distribution rate base growth and supporting the company's strong track record of operational performance.
>
> **Financial Risk: Intermediate**
>
> Under our base-case scenario, we project that Laclede Gas Co.'s core credit ratios will remain at the upper end of the intermediate category, with FFO to debt ranging from 20%-22% and debt to EBITDA remaining around 3.75x. Importantly, we

[9] SNL Financial.

> expect negative discretionary cash flows for the forecasted period as a result of consistent dividends and elevated capital spending. As a result, we expect the company to require external funding to supplement regulatory recovery to maintain cash flow coverage measures. We assess Laclede Gas' financial risk profile by using our most relaxed financial benchmarks, accounting for the company's lower operating risk business model and our view of the company's effective management of regulatory risk. Our assessments of Laclede Gas Co.'s excellent business risk and intermediate financial risk profiles results in a split score of 'a+/a'. We choose the lower anchor of 'a' based on the limited scale, scope, and diversification of Laclede compared with similarly rated peers.[10]

II.D. Embedded Cost of Debt

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

A The Companies are proposing an embedded cost of long-term debt of 4.159% as developed on Ms. Ahern's Schedule PMA-D1. I have used the Companies' proposed cost of long-term debt in my calculation of an overall weighted cost of capital.

II.E. Return on Equity

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

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

[10] *Standard & Poor's RatingsDirect*: "Summary: Laclede Gas Co.," July 17, 2017, at 3-4.

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

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

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

Q **PLEASE DESCRIBE THE METHODS YOU HAVE USED TO ESTIMATE LACLEDE/MGE'S COST OF COMMON EQUITY.**

A I have used several models based on financial theory to estimate the Companies' cost of common equity. These models are: (1) a constant growth Discounted Cash Flow ("DCF") model using consensus analysts' growth rate projections; (2) a constant growth DCF using sustainable growth rate estimates; (3) a multi-stage growth DCF model; and (4) a Capital Asset Pricing Model ("CAPM"). I have applied these models to a group of publicly traded utilities with investment risk similar to the Companies.

II.F. Risk Proxy Group

Q PLEASE DESCRIBE HOW YOU IDENTIFIED A PROXY UTILITY GROUP TO ESTIMATE LACLEDE/MGE'S CURRENT MARKET COST OF EQUITY.

A My gas utility proxy group is the same as the proxy group relied on by the Companies' witness, Ms. Ahern, with one exception. I excluded Chesapeake Utilities Corp. because it is not rated by S&P or Moody's.

Q WHY DID YOU EXCLUDE CHESAPEAKE UTILITIES FOR NOT HAVING A BOND RATING FROM S&P OR MOODY'S?

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

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

Q PLEASE DESCRIBE WHY YOU BELIEVE YOUR PROXY GROUP IS REASONABLY COMPARABLE IN INVESTMENT RISK TO LACLEDE/MGE.

A The proxy group is shown in Schedule MPG-3. The proxy group has an average corporate credit rating from S&P of A-, which is identical to the Companies' credit rating. The proxy group has an average corporate credit rating from Moody's of A2, which is a notch lower than the Companies' credit ratings of "A1". Based on this information, I believe my proxy group is reasonably comparable in investment risk to the Companies.

The proxy group has an average common equity ratio of 49.0% (including short-term debt) from SNL and 55.3% (excluding short-term debt) from *The Value Line Investment Survey* ("*Value Line*") in 2016.

II.G. Discounted Cash Flow Model

Q PLEASE DESCRIBE THE DCF MODEL.

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

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

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

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

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

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

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

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

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

Q WILL YOU INCLUDE A QUARTERLY COMPOUNDING ADJUSTMENT TO YOUR DCF RETURN ESTIMATE?

A Yes. It is the Commission's standard practice to include this quarterly compounding return in DCF estimates. However, I must state my concern that including quarterly compounding in the DCF return estimate to replicate reinvestment of quarterly dividends over a year can overstate a fair return on equity for setting rates. This occurs because the return available to investors from reinvesting dividends is not a cost to the utility. Therefore, it should not be reflected as a cost of capital in setting utility rates. By including the quarterly compounding adjustment in the authorized returns used to set rates, investors are provided an opportunity to earn that quarterly compounding return twice: first, by setting rates to increase the allowed return on equity to include a dividend reinvestment return despite the absence of actual reinvestment of the dividend in the utility; and second, investors are able to earn the reinvestment dividend return again when investors receive dividends from the utilities and actually reinvest in alternative investments.

As such, including the quarterly compounding return in the DCF return estimates overstates a fair return on equity for setting rates, because it overstates the utility's cost of capital.

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

A I relied on the average of the weekly high and low stock prices of the utilities in the proxy group over a 13-week period ending on August 11, 2017. An average stock price is less susceptible to market price variations than a price at a single point in time. Therefore, an average stock price is less susceptible to aberrant market price movements, which may not reflect the stock's long-term value.

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

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

A I used the most recently paid quarterly dividend as reported in *Value Line*.[11] This dividend was annualized (multiplied by 4) and adjusted for next year's growth to produce the D_1 factor for use in Equation 2 above.

[11] *The Value Line Investment Survey*, June 2, 2017.

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

A There are several methods that can be used to estimate the expected growth in dividends. However, regardless of the method, for purposes of determining the market-required return on common equity, one must attempt to estimate investors' consensus about what the dividend, or earnings growth rate, will be and not what an individual investor or analyst may use to make individual investment decisions.

As predictors of future returns, security analysts' growth estimates have been shown to be more accurate than growth rates derived from historical data.[12] That is, assuming the market generally makes rational investment decisions, analysts' growth projections are more likely to influence investors' decisions, which are captured in observable stock prices more so than growth rates derived only from historical data.

For my constant growth DCF analysis, I have relied on a consensus, or mean, of professional security analysts' earnings growth estimates as a proxy for investor consensus dividend growth rate expectations. I used the average of analysts' growth rate estimates from three sources: Zacks, SNL, and Reuters. All such projections were available on August 11, 2017, as reported online.

Each consensus growth rate projection is based on a survey of security analysts. There is no clear evidence whether a particular analyst is most influential on general market investors. Therefore, a single analyst's projection does not as reliably predict consensus investor outlooks as does a consensus of market analysts' projections. The consensus estimate is a simple arithmetic average, or mean, of surveyed analysts' earnings growth forecasts. A simple average of the growth forecasts gives equal weight to all surveyed analysts' projections. Therefore, a

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

simple average, or arithmetic mean, of analyst forecasts is a good proxy for market consensus expectations.

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

A The growth rates I used in my DCF analysis are shown in Schedule MPG-4. The average growth rate for my proxy group is 6.05%.

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

A As shown in Schedule MPG-5, the average and median constant growth DCF returns for my proxy group for the 13-week analysis are 8.93% and 8.14%, respectively.

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

A Yes. The constant growth DCF analysis for my proxy group is based on a group average long-term sustainable growth rate of 6.05%. The three- to five-year growth rates are higher than my estimate of a maximum long-term sustainable growth rate of 4.20%, which I discuss later in this testimony. I believe the constant growth DCF analysis produces a reasonable high-end return estimate from my DCF studies.

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

A A long-term sustainable growth rate for a utility stock cannot exceed the growth rate of the economy in which it sells its goods and services. Hence, the long-term maximum sustainable growth rate for a utility investment is best proxied by the

projected long-term Gross Domestic Product ("GDP"). *Blue Chip Financial Forecasts* projects that over the next five and ten years, the U.S. nominal GDP will grow approximately 4.20%. These GDP growth projections reflect a real growth outlook of 2.1% and an inflation outlook of 2.1% going forward. As such, the average growth rate over the next ten years is approximately 4.20%, which is a reasonable proxy of long-term sustainable growth.[13]

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

II.H. Sustainable Growth DCF

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

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

The internal growth methodology is tied to the percentage of earnings retained in the company and not paid out as dividends. The earnings retention ratio is 1 minus the dividend payout ratio. As the payout ratio declines, the earnings retention ratio

[13] *Blue Chip Financial Forecasts,* June 1, 2017, at 14.

increases. An increased earnings retention ratio will fuel stronger growth because the business funds more investments with retained earnings.

The payout ratios of the proxy group are shown in my Schedule MPG-6. These dividend payout ratios and earnings retention ratios can be used to develop a sustainable long-term earnings retention growth rate. A sustainable long-term earnings retention ratio will help gauge whether analysts' current three- to five-year growth rate projections can be sustained over an indefinite period of time.

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

As shown in Schedule MPG-7, the average sustainable growth rate for the proxy group using this internal growth rate model is 6.18%.

Q DO YOU HAVE ANY COMMENTS CONCERNING YOUR SUSTAINABLE GROWTH RATE?

A Yes. As shown on my Schedule MPG-7, page 1, the internal growth by reinvesting retained earnings is about 4.32%. This growth rate is reasonably consistent with a long-term sustainable growth. However, after reflecting sales of additional shares, the sustainable growth rate is increased from 4.32% up to 6.18%. While this growth rate may be achieved over the relatively short run, this significant impact on the internal growth caused by sales of additional shares is not sustainable. Therefore, I conclude that the three- to five-year projection of growth does not produce a reasonable estimate of sustainable growth.

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

A A DCF estimate based on these sustainable growth rates is developed in Schedule MPG-8. As shown there, a sustainable growth DCF analysis produces proxy group average and median DCF results for the 13-week period of 9.05% and 8.76%, respectively.

II.I. Multi-Stage Growth DCF Model

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

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

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

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

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

Q PLEASE DESCRIBE YOUR MULTI-STAGE GROWTH DCF MODEL.

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

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

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

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

The U.S. Department of Energy, Energy Information Administration ("EIA") has observed utility sales growth tracks the U.S. GDP growth, albeit at a lower level, as shown in Schedule MPG-9. Utility sales growth has lagged behind GDP growth for more than a decade. Therefore, the U.S. GDP nominal growth rate is a conservative (i.e., generous to the utility) proxy for the highest sustainable long-term growth rate of a utility.

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

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

> The constant growth model is most appropriate for mature companies with a stable history of growth and stable future expectations. Expected growth rates vary somewhat among companies, but dividends for mature firms are often expected to grow in the future at

about the same rate as nominal gross domestic product (real GDP plus inflation).[14]

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

> **Estimating Growth Rates**
>
> One of the advantages of a three-stage discounted cash flow model is that it fits with life cycle theories in regards to company growth. In these theories, companies are assumed to have a life cycle with varying growth characteristics. Typically, the potential for extraordinary growth in the near term eases over time and eventually growth slows to a more stable level.
>
> * * *
>
> Another approach to estimating long-term growth rates is to focus on estimating the overall economic growth rate. Again, this is the approach used in the *Ibbotson Cost of Capital Yearbook*. To obtain the economic growth rate, a forecast is made of the growth rate's component parts. Expected growth can be broken into two main parts: expected inflation and expected real growth. By analyzing these components separately, it is easier to see the factors that drive growth.[15]

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

A Yes. This is evidenced by a comparison of the compound annual growth of the U.S. GDP compared to the geometric growth of the U.S. stock market. Morningstar measures the historical geometric growth of the U.S. stock market over the period

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

[15] *Morningstar, Inc., Ibbotson SBBI 2013 Valuation Yearbook* at 51 and 52.

1926-2016 to be approximately 5.8%.[16] During this same time period, the U.S. nominal compound annual growth of the U.S. GDP was approximately 6.4%.[17]

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

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

A I relied on the consensus analysts' projections of long-term GDP growth. *Blue Chip Financial Forecasts* publishes consensus economists' GDP growth projections twice a year. These consensus analysts' GDP growth outlooks are the best available measure of the market's assessment of long-term GDP growth. These analyst projections reflect all current outlooks for GDP and are likely the most influential on investors' expectations of future growth outlooks. The consensus economists' published GDP growth rate outlook is 4.20% over the next five to ten years.[18]

Therefore, I propose to use the consensus economists' projected five- and ten-year average GDP consensus growth rates of 4.20%, as published by *Blue Chip Financial Forecasts*, as an estimate of long-term sustainable growth. *Blue Chip Financial Forecasts* projections provide real GDP growth projections of 2.1% and GDP inflation of 2.1%[19] over the five-year and ten-year projection periods. These consensus GDP growth forecasts represent the most likely views of market participants because they are based on published consensus economist projections.

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[16] *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.
[17] U.S. Bureau of Economic Analysis, February 28, 2017.
[18] *Blue Chip Financial Forecasts*, June 1, 2017, at 14.
[19] *Id.*

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

A Yes, and these sources corroborate my consensus analysts' projections, as shown below in Table 5.

TABLE 5

GDP Forecasts

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

The EIA, in its *Annual Energy Outlook,* projects real GDP out until 2050. In its 2017 Annual Report, the EIA projects real GDP through 2050 to be 2.0% and a long-term GDP price inflation projection of 2.1%. The EIA data supports a long-term nominal GDP growth outlook of 4.2%.[20]

Also, the Congressional Budget Office ("CBO") makes long-term economic projections. The CBO is projecting real GDP growth to be 1.9% during the next 6 years with a GDP price inflation outlook of 2.0%. The CBO 6-year outlook for nominal GDP based on this projection is 4.0%.[21]

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

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

Moody's Analytics also makes long-term economic projections. In its recent 25-year outlook, Moody's Analytics is projecting real GDP growth of 2.0% with GDP inflation of 2.0%. Based on these projections, Moody's is projecting nominal GDP growth of 4.0% over the next 25 years.[22]

The Social Security Administration ("SSA") makes long-term economic projections out to 2090. The SSA's nominal GDP projection, under its intermediate cost scenario of 49 years, is 4.4%.[23]

The Economist Intelligence Unit, a division of *The Economist* and a third-party data provider to SNL, makes a long-term economic projection out to 2050. The Economist Intelligence Unit is projecting real GDP growth of 1.7% with an inflation rate of 1.9% out to 2050. The real GDP growth projection is in line with the consensus economists. The long-term nominal GDP projection based on these outlooks is approximately 3.6%.[24]

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

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

A I relied on the same 13-week average stock prices and the most recent quarterly dividend payment data discussed above. For stage one growth, I used the consensus analysts' growth rate projections discussed above in my constant growth

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

DCF model. The first stage growth covers the first five years, consistent with the term of the analyst growth rate projections. The second stage, or transition stage, begins in year 6 and extends through year 10. The second stage growth transitions the growth rate from the first stage to the third stage using a linear trend. For the third stage, or long-term sustainable growth stage, starting in year 11, I used a 4.20% long-term sustainable growth rate based on the consensus economists' long-term projected nominal GDP growth rate.

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

A As shown in Schedule MPG-10, the average and median DCF returns on equity for my proxy group using the 13-week average stock price are 7.39% and 7.15%, respectively.

Q PLEASE SUMMARIZE THE RESULTS FROM YOUR DCF ANALYSES.

A The results from my DCF analyses are summarized in Table 6 below:

TABLE 6

Summary of DCF Results

Description	Proxy Group Average	Proxy Group Median
Constant Growth DCF Model (Analysts' Growth)	8.93%	8.14%
Constant Growth DCF Model (Sustainable Growth)	9.05%	8.76%
Multi-Stage Growth DCF Model	7.39%	7.15%

I conclude that my DCF studies support a return on equity of 8.90%. I consider the results of all my studies, along with my assessment of the inputs and results as described above. Based on this assessment, I find a return on equity of

around 8.90% generally reflects results of my proxy group DCF studies, and a sustainable DCF return estimate for the proxy group, but should be regarded as a conservative high-end DCF return for the reasons outlined above.

II.J. Risk Premium Model

Q PLEASE DESCRIBE YOUR BOND YIELD PLUS RISK PREMIUM MODEL.

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

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

The second equity risk premium estimate is based on the difference between regulatory commission-authorized returns on common equity and contemporary "A" rated utility bond yields by Moody's. I selected the period January 1986 through

second quarter 2017 because public utility stocks consistently traded at a premium to book value during that period. This is illustrated in Schedule MPG-11, which shows the market-to-book ratio since 1986 for the utility industry was consistently above a multiple of 1.0x. Over this period, regulatory authorized returns were sufficient to support market prices that at least exceeded book value. This is an indication that regulatory authorized returns on common equity supported a utility's ability to issue additional common stock without diluting existing shares. It further demonstrates that utilities were able to access equity markets without a detrimental impact on current shareholders.

Based on this analysis, as shown in Schedule MPG-12, the average indicated equity risk premium over U.S. Treasury bond yields has been 5.40%. Since the risk premium can vary depending upon market conditions and changing investor risk perceptions, I believe using an estimated range of risk premiums provides the best method to measure the current return on common equity for a risk premium methodology.

I incorporated five-year and ten-year rolling average risk premiums over the study period to gauge the variability over time of risk premiums. These rolling average risk premiums mitigate the impact of anomalous market conditions and skewed risk premiums over an entire business cycle. As shown on my Schedule MPG-12, the five-year rolling average risk premium over Treasury bonds ranged from 4.17% to 6.67%, while the ten-year rolling average risk premium ranged from 4.30% to 6.41%.

As shown on my Schedule MPG-13, the average indicated equity risk premium over contemporary Moody's utility bond yields was 4.03%. The five-year

and ten-year rolling average risk premiums ranged from 2.80% to 5.51% and 3.11% to 5.06%, respectively.

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

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

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

Alternatively, some studies, such as Duff & Phelps referred to later in this testimony, have recommended that use of "actual achieved investment return data" in a risk premium study should be based on long historical time periods. The studies find that achieved returns over short time periods may not reflect investors' expected returns due to unexpected and abnormal stock price performance. Short-term, abnormal actual returns would be smoothed over time and the achieved actual investment returns over long time periods would approximate investors' expected returns. Therefore, it is reasonable to assume that averages of annual achieved

returns over long time periods will generally converge on the investors' expected returns.

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

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

A The equity risk premium should reflect the relative market perception of risk in the utility industry today. I have gauged investor perceptions in utility risk today in Schedule MPG-14, where I show the yield spread between utility bonds and Treasury bonds over the last 38 years. As shown in this schedule, the average utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utility bonds for this historical period are 1.51% and 1.95%, respectively. The utility bond yield spreads over Treasury bonds for "A" and "Baa" rated utilities for 2017 are 1.15% and 1.55%, respectively. The current average "A" rated utility bond yield spread over Treasury bond yields is now lower than the 38-year average spread. The current "Baa" rated utility bond yield spread over Treasury bond yields is lower than the 38-year average spread.

The current 13-week average "A" rated utility bond yield is 3.97% and compares to the current Treasury bond yield of 2.84%, as shown in Schedule MPG-15. This current utility bond yield spread of 1.13% is lower than the 38-year average spread for "A" rated utility bonds of 1.51%. The current spread for the "Baa" rated utility bond yield of 1.50% is also lower than the 38-year average spread of 1.95%.

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

Q HOW DID YOU DETERMINE WHAT A REASONABLE RISK PREMIUM IS IN THE CURRENT MARKET?

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

This market evidence is summarized below in Table 7, which shows the utility bond yield spreads over Treasury bond yields on average for the period 1980 through June 2017, and the corporate bond yield spreads for Aaa corporates and Baa corporates.

TABLE 7

Comparison of Yield Spreads Over Treasury Bonds

Description	Utility		Corporate	
	A	Baa	Aaa	Baa
Average Historical Spread	1.51%	1.95%	0.84%	1.94%
2016 Spread	1.33%	2.08%	1.07%	2.12%
June 2017 Spread	1.15%	1.55%	0.91%	1.61%

Source:
Schedule MPG-14.

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

Only recently have Baa-rated utility bond yield spreads gone below the 38-year average of 1.95%. For example, in 2016, the Baa-rated yield spread averaged 2.08%, which is approximately 13 basis points above the long-term average of 1.95%, shown in Schedule MPG-14. While the higher risk Baa utility and corporate bond yields currently have a below-average yield spread of 40 basis points (1.55% vs. 1.95%), there appears to be more volatility in the spread. The higher risk Baa utility bond yields do not have the same premium valuations as their lower risk A-rated utility bond yields, and thus the yield spread for greater risk investments is wider than lower risk investments.

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

Q **WHAT IS YOUR RECOMMENDED RETURN FOR THE COMPANIES BASED ON YOUR RISK PREMIUM STUDY?**

A To be conservative, I am recommending more weight to the high-end risk premium estimates than the low-end. I state this because of the relatively low level of interest rates now but relative upward movements of utility yields more recently. Hence, I propose to provide 65% weight to my high-end risk premium estimates and 35% to the low-end. Applying these weights, the risk premium for Treasury bond yields would be approximately 5.8%,[25] which is considerably higher than the 31-year average risk premium of 5.40% and reasonably reflective of the 3.7% projected Treasury bond yield. A Treasury bond risk premium of 5.8% and projected Treasury bond yield of 3.7% produce a risk premium estimate of 9.5%.

Similarly, applying these weights to the utility risk premium indicates a risk premium of 4.6%.[26] This risk premium is above the 31-year historical average risk premium of 4.03%. This risk premium in connection with the current observable Baa utility bond yield of 4.34% produces an estimated return on equity of approximately 8.94%.

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

II.K. Capital Asset Pricing Model ("CAPM")

Q **PLEASE DESCRIBE THE CAPM.**

A The CAPM method of analysis is based upon the theory that the market-required rate of return for a security is equal to the risk-free rate, plus a risk premium associated

[25](4.17% * 35%) + (6.67% * 65%) = 5.80%.
[26](2.80% * 35%) + (5.51% * 65%) = 4.56%, rounded to 4.60%.

with the specific security. This relationship between risk and return can be expressed mathematically as follows:

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

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

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

The risks that cannot be eliminated when held in a diversified portfolio are non-diversifiable risks. Non-diversifiable risks are related to the market in general and are referred to as systematic risks. Risks that can be eliminated by diversification are non-systematic risks. In a broad sense, systematic risks are market risks and non-systematic risks are business risks. The CAPM theory suggests the market will not compensate investors for assuming risks that can be diversified away. Therefore, the only risk investors will be compensated for are systematic or non-diversifiable risks. The beta is a measure of the systematic or non-diversifiable risks.

Q PLEASE DESCRIBE THE INPUTS TO YOUR CAPM.

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

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

A Currently, as published in the *Blue Chip Financial Forecasts*, the consensus economists have projected the 30-year Treasury bond yield to be 3.70%.[27] I used *Blue Chip Financial Forecasts*' projected 30-year Treasury bond yield of 3.70% for my CAPM analysis.

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

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

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

[27] *Blue Chip Financial Forecasts*, August 1, 2017, at 2.

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

A As shown in Schedule MPG-16, the proxy group average *Value Line* beta estimate is 0.73.

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

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

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

Duff & Phelps' *2017 SBBI Yearbook* estimates the historical arithmetic average inflation-adjusted market return over the period 1926 to 2016 as 8.9%.[28] A current consensus analysts' inflation projection, as measured by the Consumer Price Index, is 2.4%.[29] Using these estimates, the expected market return is approximately 11.50%.[30] The market risk premium then is the difference between the 11.50% expected market return and my 3.70% risk-free rate estimate, or approximately 7.80%.

My historical estimate of the market risk premium was also calculated by using data provided by Duff & Phelps in its *2017 SBBI Yearbook*. Over the period 1926 through 2016, the Duff & Phelps study estimated that the arithmetic average of the

[28] *Duff & Phelps, 2017 SBBI Yearbook* at 6-18.
[29] *Blue Chip Financial Forecasts*, August 1, 2017 at 2.
[30] { [(1 + 0.089) * (1 + 0.024)] – 1 } * 100.

achieved total return on the S&P 500 was 12.0%[31] and the total return on long-term Treasury bonds was 6.0%.[32] The indicated market risk premium is 6.0% (12.0% - 6.0% = 6.0%).

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

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

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

A Duff & Phelps makes several estimates of a forward-looking market risk premium based on actual achieved data from the historical period of 1926 through 2016 as well as normalized data. Using this data, Duff & Phelps estimates a market risk premium derived from the total return on large company stocks (S&P 500), less the income return on Treasury bonds. The total return includes capital appreciation, dividend or coupon reinvestment returns, and annual yields received from coupons and/or dividend payments. The income return, in contrast, only reflects the income return received from dividend payments or coupon yields. Duff & Phelps claims the income return is the only true risk-free rate associated with Treasury bonds and is the best approximation of a truly risk-free rate.[33] I disagree with this assessment from Duff & Phelps because it does not reflect a true investment option available to the

[31] *Duff & Phelps, 2017 SBBI Yearbook* at 6-17.
[32] *Id.*
[33] *Duff & Phelps, 2017 Valuation Handbook* at 3-32.

marketplace and therefore does not produce a legitimate estimate of the expected premium of investing in the stock market versus that of Treasury bonds. Nevertheless, I will use Duff & Phelps' conclusion to show the reasonableness of my market risk premium estimates.

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

Second, Duff & Phelps updated the Ibbotson & Chen supply-side model, which found that the 6.9% market risk premium based on the S&P 500 was influenced by an abnormal expansion of price-to-earnings ("P/E") ratios relative to earnings and dividend growth during the period, primarily over the last 30 years. Duff & Phelps believes this abnormal P/E expansion is not sustainable.[34] Therefore, Duff & Phelps adjusted this market risk premium estimate to normalize the growth in the P/E ratio to be more in line with the growth in dividends and earnings. Based on this alternative methodology, Duff & Phelps published a long-horizon supply-side market risk premium of 5.97%.[35]

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

[34] *Id.* at 3-36.
[35] *Id.*

concludes the current expected, or forward-looking, market risk premium is 5.5%, implying an expected return on the market of 9.0%.[36]

Q WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?

A As shown in Schedule MPG-17 using the CAPM equation above, based on my prospective market risk premium of 7.8% and my low market risk premium of 6.0%, a risk-free rate of 3.7%, and a beta of 0.73, my CAPM analysis produces return estimates of 9.42% and 8.10%, respectively. Based on my assessment of risk premiums in the market, as discussed above, I will place primary reliance on my high-end CAPM return estimate rounded to 9.40%.

II.L. Return on Equity Summary

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

A Based on my analyses, I estimate the Companies' current market cost of equity to be 9.20%.

TABLE 8

Return on Common Equity Summary

Description	Results
DCF	8.90%
Risk Premium	9.20%
CAPM	9.40%

[36] *Id.* at 3-48.

My recommended return on common equity of 9.20% is at the approximate midpoint of my estimated range of 8.90% to 9.40%. As shown in Table 8 above, the high-end of my estimated range is based on my CAPM result. The low-end is based on my DCF return.

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

Q IS YOUR RECOMMENDED RETURN ON EQUITY AND RANGE BASED PREDOMINANTLY ON THE DCF ANALYSIS?

A No. It is based on my complete analyses relying on DCF, risk premium and CAPM studies. I have been advised by Counsel that the Missouri Commission frequently gives preference to the results of a DCF study. If they choose to do that in this proceeding, then a fair return on equity for Laclede/MGE would be 8.9%, and generally would fall within the range of what I believe to be a reasonable DCF return of 8.15% up to 8.9%.

Q DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A Yes, it does.

Appendix A

Qualifications of Michael P. Gorman

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

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

Q PLEASE STATE YOUR OCCUPATION.

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

Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

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

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

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

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

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

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

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

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

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

Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?

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

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

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

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Laclede Gas Company / Missouri Gas Energy

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	15.96	22.20	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	17.17	27.70	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	16.85	23.10	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.	20.08	21.90	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	20.07	27.30	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.	20.99	23.60	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.	18.08	28.30	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	17.36	23.40	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.	16.17	20.20	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.	15.30	20.40	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.	16.57	23.70	20.05	16.99	15.15	18.25	15.27	16.97	15.11	12.58	13.66	15.60	15.46
12	Average	17.37	23.80	21.73	20.23	17.58	17.53	16.46	16.29	14.32	13.46	14.76	16.91	15.33
13	Median	17.07	23.40	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)
1	Atmos Energy	7.93	11.85	11.36	9.30	8.79	7.72	7.02	6.87	6.15	5.76	6.48	7.44	6.36
2	Chesapeake Utilities	9.11	13.26	12.06	10.16	9.25	8.12	7.46	7.35	6.36	9.48	7.88	8.58	9.40
3	New Jersey Resources	11.87	14.98	13.94	11.71	8.95	11.29	12.29	12.71	11.32	11.34	9.15	13.76	11.01
4	NiSource Inc.	7.37	7.97	8.56	10.38	10.56	8.71	7.81	6.81	5.09	4.06	4.87	6.69	6.87
5	Northwest Nat. Gas	9.22	11.26	11.57	9.46	8.84	8.61	9.48	9.08	8.94	8.26	8.75	8.54	7.83
6	ONE Gas Inc.	9.91	11.19	11.10	9.19	8.16	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	10.93	14.24	10.88	10.70	10.57	11.57	10.95	11.98	10.78	9.57	10.38	11.23	8.32
8	Southwest Gas	5.85	8.45	7.41	6.56	6.35	5.94	5.55	5.60	4.91	3.84	4.89	5.42	5.28
9	Spire Inc.	9.56	10.73	10.32	8.47	12.03	13.76	8.80	8.08	8.12	8.58	8.95	8.46	8.46
10	UGI Corp.	7.45	9.86	9.02	8.47	7.49	6.55	6.30	7.51	6.02	5.74	7.11	7.92	7.48
11	WGL Holdings Inc.	9.22	13.47	11.36	9.59	8.46	9.83	9.03	9.52	8.34	7.17	7.68	8.39	7.81
12	Average	8.84	11.57	10.69	9.45	9.04	9.21	8.47	8.55	7.60	7.38	7.62	8.64	7.88
13	Median	8.70	11.26	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)
1	Atmos Energy	1.47	2.09	2.11	1.72	1.55	1.39	1.28	1.30	1.18	1.05	1.20	1.40	1.34
2	Chesapeake Utilities	1.83	2.22	2.28	2.19	2.12	1.83	1.66	1.61	1.40	1.37	1.64	1.84	1.85
3	New Jersey Resources	2.22	2.66	2.52	2.28	2.13	2.05	2.33	2.31	2.09	2.16	1.92	2.17	2.01
4	NiSource Inc.	1.38	1.85	1.84	1.95	1.94	1.58	1.37	1.15	0.92	0.69	0.94	1.16	1.19
5	Northwest Nat. Gas	1.78	1.98	1.92	1.63	1.59	1.56	1.72	1.70	1.78	1.73	1.96	2.05	1.69
6	ONE Gas Inc.	1.44	1.75	1.67	1.26	1.07	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	South Jersey Inds.	2.10	1.96	1.79	1.77	2.07	2.27	2.21	2.59	2.38	1.95	2.08	2.21	1.93
8	Southwest Gas	1.53	2.10	1.96	1.68	1.68	1.61	1.51	1.43	1.24	0.97	1.20	1.46	1.46
9	Spire Inc.	1.55	1.68	1.64	1.44	1.33	1.34	1.51	1.46	1.39	1.68	1.71	1.66	1.71
10	UGI Corp.	1.99	2.74	2.41	2.29	1.97	1.69	1.45	1.75	1.55	1.66	2.01	2.16	2.21
11	WGL Holdings Inc.	1.81	2.72	2.45	2.15	1.69	1.71	1.66	1.63	1.50	1.45	1.59	1.64	1.59
12	Average	1.75	2.16	2.05	1.85	1.74	1.70	1.67	1.69	1.54	1.47	1.62	1.78	1.70
13	Median	1.71	2.09	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, June 2, 2017.

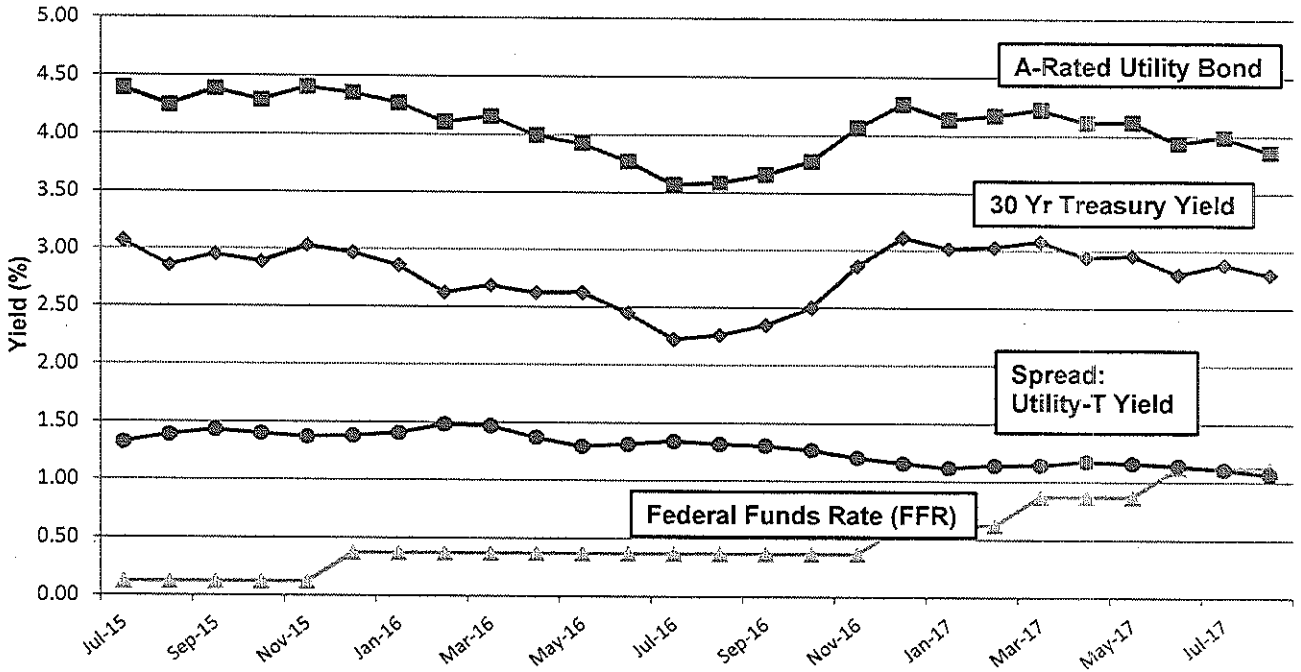
Notes:

[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, June 2, 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, June 2, 2017.

Laclede Gas Company / Missouri Gas Energy

Timeline of Federal Funds Rate Increases



Fed FFR Actions:

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

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

Laclede Gas Company / Missouri Gas Energy

Proxy Group

Line	Company	Credit Ratings[1] S&P (1)	Credit Ratings[1] Moody's (2)	Common Equity Ratios SNL[1] (3)	Common Equity Ratios Value Line[2] (4)
1	Atmos Energy Corporation	A	A2	51.4%	61.3%
2	New Jersey Resources Corporation	A	Aa2	48.5%	52.3%
3	Northwest Natural Gas Company	A+	A3	52.4%	55.6%
4	South Jersey Industries, Inc.	BBB+	A2	49.1%	61.5%
5	Southwest Gas Holdings, Inc.	BBB+	Baa1	50.7%	51.8%
6	Spire Inc.	A-	Baa2	41.7%	49.1%
7	**Average**	**A-**	**A2**	**49.0%**	**55.3%**
8	**Laclede Gas Company**	**A-**	**A1**	**57.2%[3]**	

Note and Sources:

If credit rating unavailable for utility, subsidiary rating used.

[1] SNL Financial, Downloaded on August 11, 2017.

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

[3] Ahern direct at 3.

Laclede Gas Company / Missouri Gas Energy

Consensus Analysts' Growth Rates

Line	Company	Zacks		SNL		Reuters		Average of Growth Rates
		Estimated Growth %[1]	Number of Estimates	Estimated Growth %[2]	Number of Estimates	Estimated Growth %[3]	Number of Estimates	
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Atmos Energy Corporation	7.00%	N/A	7.00%	2	7.30%	2	7.10%
2	New Jersey Resources Corporation	6.00%	N/A	6.50%	2	6.00%	1	6.17%
3	Northwest Natural Gas Company	4.30%	N/A	4.67%	3	4.00%	1	4.32%
4	South Jersey Industries, Inc.	10.00%	N/A	10.00%	2	N/A	N/A	10.00%
5	Southwest Gas Holdings, Inc.	5.00%	N/A	5.35%	2	4.00%	1	4.78%
6	Spire Inc.	4.40%	N/A	3.70%	2	3.74%	2	3.95%
7	**Average**	**6.12%**	**N/A**	**6.20%**	**2**	**5.01%**	**1**	**6.05%**

Sources:

[1] Zacks Elite, http://www.zackselite.com/, downloaded on August 11, 2017.

[2] SNL Interactive, http://www.snl.com/, downloaded on August 11, 2017.

[3] Reuters, http://www.reuters.com/, downloaded on August 11, 2017.

Laclede Gas Company / Missouri Gas Energy

Constant Growth DCF Model
(Consensus Analysts' Growth Rates)

Line	Company	13-Week AVG Stock Price[1] (1)	Analysts' Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	Atmos Energy Corporation	$84.22	7.10%	$1.80	2.29%	9.39%
2	New Jersey Resources Corporation	$41.56	6.17%	$1.02	2.61%	8.77%
3	Northwest Natural Gas Company	$61.63	4.32%	$1.88	3.18%	7.51%
4	South Jersey Industries, Inc.	$34.96	10.00%	$1.09	3.44%	13.44%
5	Southwest Gas Holdings, Inc.	$78.00	4.78%	$1.98	2.66%	7.44%
6	Spire Inc.	$71.21	3.95%	$2.10	3.07%	7.01%
7	**Average**	**$61.93**	**6.05%**	**$1.65**	**2.87%**	**8.93%**
8	**Median**					**8.14%**

Sources:
[1] SNL Financial, Downloaded on August 13, 2017.
[2] Schedule MPG-4.
[3] *The Value Line Investment Survey*, June 2, 2017.

Laclede Gas Company / Missouri Gas Energy

Payout Ratios

Line	Company	Dividends Per Share 2016 (1)	Dividends Per Share Projected (2)	Earnings Per Share 2016 (3)	Earnings Per Share Projected (4)	Payout Ratio 2016 (5)	Payout Ratio Projected (6)
1	Atmos Energy Corporation	$1.68	$2.30	$3.38	$4.50	49.70%	51.11%
2	New Jersey Resources Corporation	$0.98	$1.12	$1.61	$2.15	60.87%	52.09%
3	Northwest Natural Gas Company	$1.87	$2.00	$2.12	$3.15	88.21%	63.49%
4	South Jersey Industries, Inc.	$1.06	$1.30	$1.34	$1.80	79.10%	72.22%
5	Southwest Gas Holdings, Inc.	$1.80	$2.50	$3.18	$4.75	56.60%	52.63%
6	Spire Inc.	$1.96	$2.50	$3.24	$4.65	60.49%	53.76%
7	**Average**	**$1.56**	**$1.95**	**$2.48**	**$3.50**	**65.83%**	**57.55%**

Source:
The Value Line Investment Survey, June 2, 2017.

Laclede Gas Company / Missouri Gas Energy

Sustainable Growth Rate

Line	Company	3 to 5 Year Projections										Sustainable Growth Rate
		Dividends Per Share (1)	Earnings Per Share (2)	Book Value Per Share (3)	Book Value Growth (4)	ROE (5)	Adjustment Factor (6)	Adjusted ROE (7)	Payout Ratio (8)	Retention Rate (9)	Internal Growth Rate (10)	(11)
1	Atmos Energy Corporation	$2.30	$4.50	$38.50	2.93%	11.69%	1.01	11.86%	51.11%	48.89%	5.80%	10.25%
2	New Jersey Resources Corporation	$1.12	$2.15	$18.25	6.09%	11.78%	1.03	12.13%	52.09%	47.91%	5.81%	5.87%
3	Northwest Natural Gas Company	$2.00	$3.15	$32.25	1.65%	9.77%	1.01	9.85%	63.49%	36.51%	3.60%	4.60%
4	South Jersey Industries, Inc.	$1.30	$1.80	$25.00	9.04%	7.20%	1.04	7.51%	72.22%	27.78%	2.09%	3.92%
5	Southwest Gas Holdings, Inc.	$2.50	$4.75	$57.70	10.50%	8.23%	1.05	8.64%	52.63%	47.37%	4.09%	6.35%
6	Spire Inc.	$2.50	$4.65	$48.30	4.52%	9.63%	1.02	9.84%	53.76%	46.24%	4.55%	6.09%
7	**Average**	**$1.95**	**$3.50**	**$36.67**	**5.79%**	**9.72%**	**1.03**	**9.97%**	**57.55%**	**42.45%**	**4.32%**	**6.18%**

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

Laclede Gas Company / Missouri Gas Energy

Sustainable Growth Rate

Line	Company	13-Week Average Stock Price[1] (1)	2016 Book Value Per Share[2] (2)	Market to Book Ratio (3)	Common Shares Outstanding (in Millions)[2] 2016 (4)	Common Shares Outstanding (in Millions)[2] 3-5 Years (5)	Growth (6)	S Factor[3] (7)	V Factor[4] (8)	S * V (9)
1	Atmos Energy Corporation	$84.22	$33.32	2.53	103.93	120.00	2.92%	7.37%	60.44%	4.46%
2	New Jersey Resources Corporation	$41.56	$13.58	3.06	85.88	86.00	0.03%	0.09%	67.32%	0.06%
3	Northwest Natural Gas Company	$61.63	$29.71	2.07	28.63	30.00	0.94%	1.95%	51.80%	1.01%
4	South Jersey Industries, Inc.	$34.96	$16.22	2.16	79.48	86.00	1.59%	3.43%	53.61%	1.84%
5	Southwest Gas Holdings, Inc.	$78.00	$35.03	2.23	47.48	52.00	1.84%	4.09%	55.09%	2.25%
6	Spire Inc.	$71.21	$38.73	1.84	45.65	50.00	1.84%	3.38%	45.61%	1.54%
7	**Average**	**$61.93**	**$27.77**	**2.31**	**65.18**	**70.67**	**1.52%**	**3.38%**	**55.65%**	**1.86%**

Sources and Notes:

[1] SNL Financial, Downloaded on August 13, 2017.

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

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

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

Laclede Gas Company / Missouri Gas Energy

Constant Growth DCF Model
(Sustainable Growth Rate)

Line	Company	13-Week AVG Stock Price[1] (1)	Sustainable Growth[2] (2)	Annualized Dividend[3] (3)	Adjusted Yield (4)	Constant Growth DCF (5)
1	Atmos Energy Corporation	$84.22	10.25%	$1.80	2.36%	12.61%
2	New Jersey Resources Corporation	$41.56	5.87%	$1.02	2.60%	8.47%
3	Northwest Natural Gas Company	$61.63	4.60%	$1.88	3.19%	7.80%
4	South Jersey Industries, Inc.	$34.96	3.92%	$1.09	3.25%	7.17%
5	Southwest Gas Holdings, Inc.	$78.00	6.35%	$1.98	2.70%	9.04%
6	Spire Inc.	$71.21	6.09%	$2.10	3.13%	9.22%
7	**Average**	**$61.93**	**6.18%**	**$1.65**	**2.87%**	**9.05%**
8	**Median**					**8.76%**

Sources:

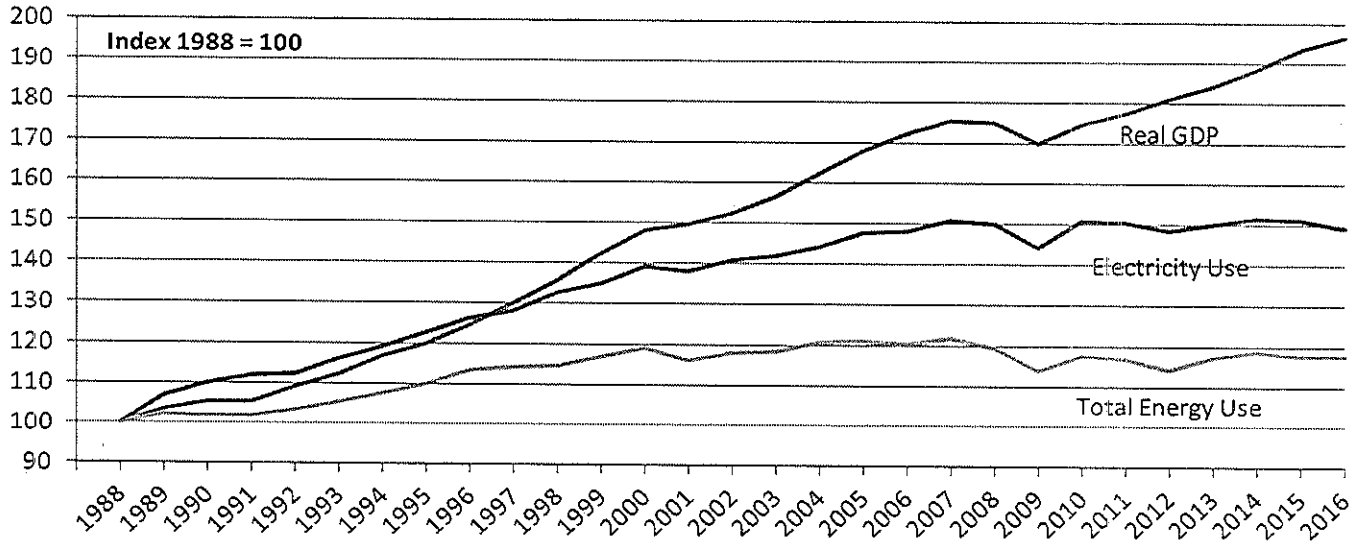
[1] SNL Financial, Downloaded on August 13, 2017.

[2] Schedule MPG-7, page 1.

[3] *The Value Line Investment Survey*, June 2, 2017.

Laclede Gas Company / Missouri Gas Energy

Electricity Sales Are Linked to U.S. Economic Growth



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

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

Laclede Gas Company / Missouri Gas Energy

Multi-Stage Growth DCF Model

Line	Company	13-Week AVG Stock Price[1] (1)	Annualized Dividend[2] (2)	First Stage Growth[3] (3)	Second Stage Growth Year 6 (4)	Year 7 (5)	Year 8 (6)	Year 9 (7)	Year 10 (8)	Third Stage Growth[4] (9)	Multi-Stage Growth DCF (10)
1	Atmos Energy Corporation	$84.22	$1.80	7.10%	6.62%	6.13%	5.65%	5.17%	4.68%	4.20%	6.88%
2	New Jersey Resources Corporation	$41.56	$1.02	6.17%	5.84%	5.51%	5.18%	4.86%	4.53%	4.20%	7.10%
3	Northwest Natural Gas Company	$61.63	$1.88	4.32%	4.30%	4.28%	4.26%	4.24%	4.22%	4.20%	7.40%
4	South Jersey Industries, Inc.	$34.96	$1.09	10.00%	9.03%	8.07%	7.10%	6.13%	5.17%	4.20%	8.85%
5	Southwest Gas Holdings, Inc.	$78.00	$1.98	4.78%	4.69%	4.59%	4.49%	4.39%	4.30%	4.20%	6.93%
6	Spire Inc.	$71.21	$2.10	3.95%	3.99%	4.03%	4.07%	4.12%	4.16%	4.20%	7.21%
7	**Average**	**$61.93**	**$1.65**	**6.05%**	**5.74%**	**5.44%**	**5.13%**	**4.82%**	**4.51%**	**4.20%**	**7.39%**
8	**Median**										**7.15%**

Sources:

[1] SNL Financial, Downloaded on August 13, 2017.

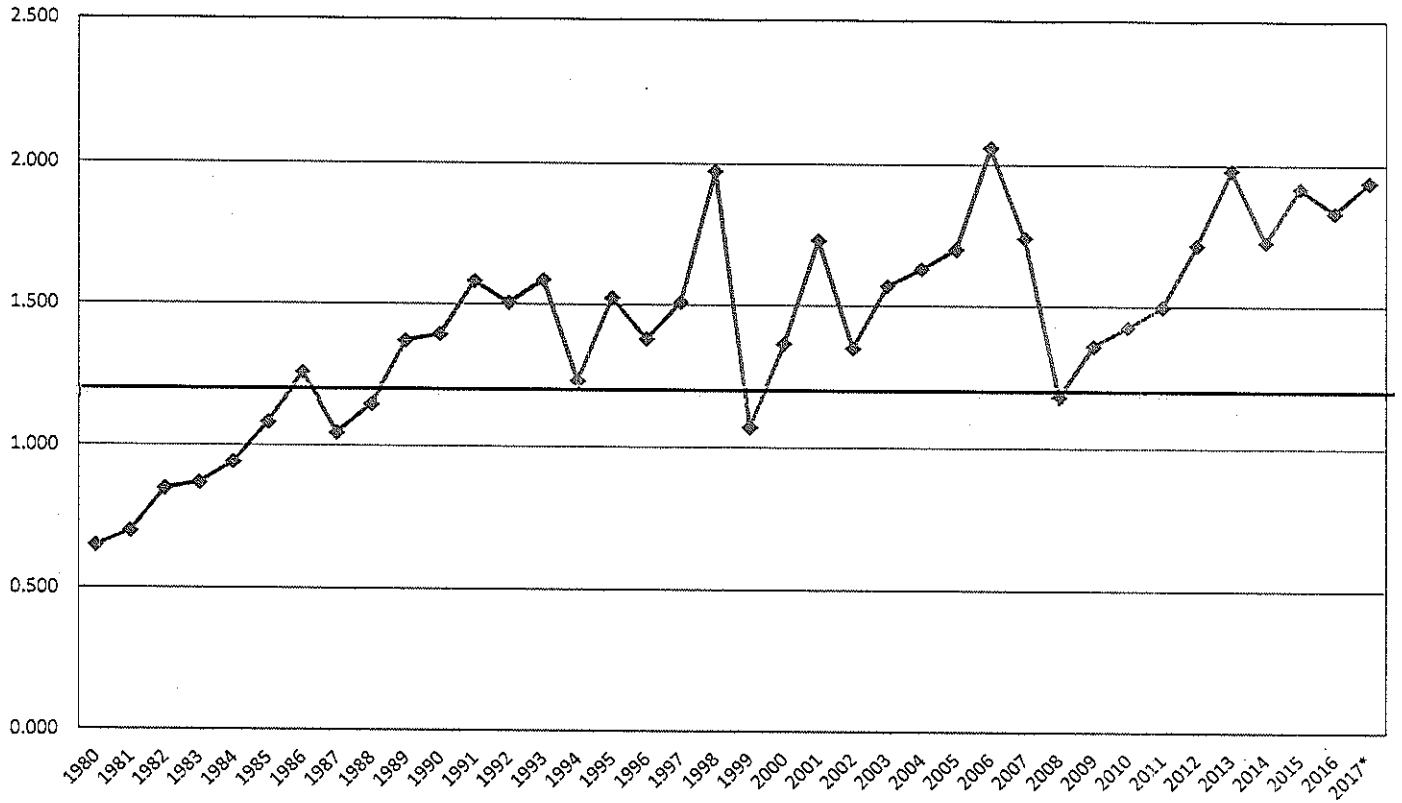
[2] *The Value Line Investment Survey*, June 2, 2017.

[3] Schedule MPG-4.

[4] *Blue Chip Financial Forecasts*, June 1, 2017 at 14.

Laclede Gas Company / Missouri Gas Energy

Common Stock Market/Book Ratio



Source:
1980 - 2000: Mergent Public Utility Manual.
2001 - 2015: AUS Utility Reports, multiple dates.
2016 - 2017: Value Line Investment Survey, multiple dates.
* Value Line Investment Survey Reports, May 19, June 2, June 16, and July 28, 2017.

Laclede Gas Company / Missouri Gas Energy

Equity Risk Premium - Treasury Bond

Line	Year	Authorized Gas Returns[1] (1)	30 yr. Treasury Bond Yield[2] (2)	Indicated Risk Premium (3)	Rolling 5 - Year Average (4)	Rolling 10 - Year Average (5)
1	1986	13.46%	7.80%	5.66%		
2	1987	12.74%	8.58%	4.16%		
3	1988	12.85%	8.96%	3.89%		
4	1989	12.88%	8.45%	4.43%		
5	1990	12.67%	8.61%	4.06%	4.44%	
6	1991	12.46%	8.14%	4.32%	4.17%	
7	1992	12.01%	7.67%	4.34%	4.21%	
8	1993	11.35%	6.60%	4.75%	4.38%	
9	1994	11.35%	7.37%	3.98%	4.29%	
10	1995	11.43%	6.88%	4.55%	4.39%	4.42%
11	1996	11.19%	6.70%	4.49%	4.42%	4.30%
12	1997	11.29%	6.61%	4.68%	4.49%	4.35%
13	1998	11.51%	5.58%	5.93%	4.73%	4.55%
14	1999	10.66%	5.87%	4.79%	4.89%	4.59%
15	2000	11.39%	5.94%	5.45%	5.07%	4.73%
16	2001	10.95%	5.49%	5.46%	5.26%	4.84%
17	2002	11.03%	5.43%	5.60%	5.45%	4.97%
18	2003	10.99%	4.96%	6.03%	5.47%	5.10%
19	2004	10.59%	5.05%	5.54%	5.62%	5.25%
20	2005	10.46%	4.65%	5.81%	5.69%	5.38%
21	2006	10.40%	4.90%	5.50%	5.70%	5.48%
22	2007	10.22%	4.83%	5.39%	5.66%	5.55%
23	2008	10.39%	4.28%	6.11%	5.67%	5.57%
24	2009	10.22%	4.07%	6.15%	5.79%	5.70%
25	2010	10.15%	4.25%	5.90%	5.81%	5.75%
26	2011	9.92%	3.91%	6.01%	5.91%	5.80%
27	2012	9.94%	2.92%	7.02%	6.24%	5.95%
28	2013	9.68%	3.45%	6.23%	6.26%	5.97%
29	2014	9.78%	3.34%	6.44%	6.32%	6.06%
30	2015	9.60%	2.84%	6.76%	6.49%	6.15%
31	2016	9.50%	2.60%	6.90%	6.67%	6.29%
32	2017[3]	9.50%	2.97%	6.53%	6.57%	6.41%
33	**Average**	**11.02%**	**5.61%**	**5.40%**	**5.36%**	**5.35%**
34	**Minimum**				**4.17%**	**4.30%**
35	**Maximum**				**6.67%**	**6.41%**

Sources:

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

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

[3] Data includes January - June 2017.

Laclede Gas Company / Missouri Gas Energy

Equity Risk Premium - Utility Bond

Line	Year	Authorized Gas Returns[1] (1)	Average "A" Rated Utility Bond Yield[2] (2)	Indicated Risk Premium (3)	Rolling 5 - Year Average (4)	Rolling 10 - Year Average (5)
1	1986	13.46%	9.58%	3.88%		
2	1987	12.74%	10.10%	2.64%		
3	1988	12.85%	10.49%	2.36%		
4	1989	12.88%	9.77%	3.11%		
5	1990	12.67%	9.86%	2.81%	2.96%	
6	1991	12.46%	9.36%	3.10%	2.80%	
7	1992	12.01%	8.69%	3.32%	2.94%	
8	1993	11.35%	7.59%	3.76%	3.22%	
9	1994	11.35%	8.31%	3.04%	3.21%	
10	1995	11.43%	7.89%	3.54%	3.35%	3.16%
11	1996	11.19%	7.75%	3.44%	3.42%	3.11%
12	1997	11.29%	7.60%	3.69%	3.49%	3.22%
13	1998	11.51%	7.04%	4.47%	3.64%	3.43%
14	1999	10.66%	7.62%	3.04%	3.64%	3.42%
15	2000	11.39%	8.24%	3.15%	3.56%	3.45%
16	2001	10.95%	7.76%	3.19%	3.51%	3.46%
17	2002	11.03%	7.37%	3.66%	3.50%	3.50%
18	2003	10.99%	6.58%	4.41%	3.49%	3.56%
19	2004	10.59%	6.16%	4.43%	3.77%	3.70%
20	2005	10.46%	5.65%	4.81%	4.10%	3.83%
21	2006	10.40%	6.07%	4.33%	4.33%	3.92%
22	2007	10.22%	6.07%	4.15%	4.43%	3.96%
23	2008	10.39%	6.53%	3.86%	4.32%	3.90%
24	2009	10.22%	6.04%	4.18%	4.27%	4.02%
25	2010	10.15%	5.46%	4.69%	4.24%	4.17%
26	2011	9.92%	5.04%	4.88%	4.35%	4.34%
27	2012	9.94%	4.13%	5.81%	4.68%	4.55%
28	2013	9.68%	4.48%	5.20%	4.95%	4.63%
29	2014	9.78%	4.28%	5.50%	5.22%	4.74%
30	2015	9.60%	4.12%	5.48%	5.38%	4.81%
31	2016	9.50%	3.93%	5.57%	5.51%	4.93%
32	2017 [3]	9.50%	4.12%	5.38%	5.43%	5.06%
33	**Average**	**11.02%**	**6.99%**	**4.03%**	**3.99%**	**3.95%**
34	**Minimum**				**2.80%**	**3.11%**
35	**Maximum**				**5.51%**	**5.06%**

Sources:

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

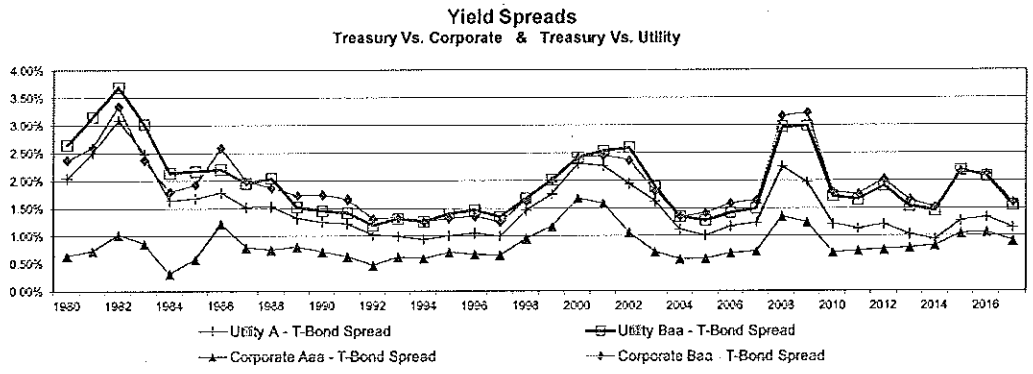
[2] Mergent Public Utility Manual, Mergent Weekly News Reports, 2003.
The utility yieldsfor the period 2001-2009 were obtained from the Mergent Bond Record.
The utility yields from 2010-2017 were obtained from http://creditrends.moodys.com/.

[3] Data includes January - June 2017.

Laclede Gas Company / Missouri Gas Energy

Bond Yield Spreads

Line	Year	T-Bond Yield[1] (1)	Public Utility Bond A[2] (2)	Public Utility Bond Baa[2] (3)	Public Utility Bond A-T-Bond Spread (4)	Public Utility Bond Baa-T-Bond Spread (5)	Corporate Bond Aaa[3] (6)	Corporate Bond Baa[3] (7)	Corporate Bond Aaa-T-Bond Spread (8)	Corporate Bond Baa-T-Bond Spread (9)	Utility to Corporate Baa Spread (10)	Utility to Corporate A-Aaa Spread (11)
1	1980	11.30%	13.34%	13.95%	2.04%	2.65%	11.94%	13.67%	0.64%	2.37%	0.28%	1.40%
2	1981	13.44%	15.95%	16.60%	2.51%	3.16%	14.17%	16.04%	0.73%	2.60%	0.56%	1.78%
3	1982	12.76%	15.86%	16.45%	3.10%	3.69%	13.79%	16.11%	1.03%	3.35%	0.34%	2.07%
4	1983	11.18%	13.66%	14.20%	2.48%	3.02%	12.04%	13.55%	0.86%	2.38%	0.65%	1.62%
5	1984	12.39%	14.03%	14.53%	1.64%	2.14%	12.71%	14.19%	0.32%	1.80%	0.34%	1.32%
6	1985	10.79%	12.47%	12.96%	1.68%	2.17%	11.37%	12.72%	0.58%	1.93%	0.24%	1.10%
7	1986	7.80%	9.58%	10.00%	1.78%	2.20%	9.02%	10.39%	1.22%	2.59%	-0.39%	0.56%
8	1987	8.58%	10.10%	10.53%	1.52%	1.95%	9.38%	10.58%	0.80%	2.00%	-0.05%	0.72%
9	1988	8.96%	10.49%	11.00%	1.53%	2.04%	9.71%	10.83%	0.75%	1.87%	0.17%	0.78%
10	1989	8.45%	9.77%	9.97%	1.32%	1.52%	9.26%	10.18%	0.81%	1.73%	-0.21%	0.51%
11	1990	8.61%	9.86%	10.06%	1.25%	1.45%	9.32%	10.36%	0.71%	1.75%	-0.30%	0.54%
12	1991	8.14%	9.36%	9.55%	1.22%	1.41%	8.77%	9.80%	0.63%	1.67%	-0.25%	0.59%
13	1992	7.67%	8.69%	8.86%	1.02%	1.19%	8.14%	8.98%	0.47%	1.31%	-0.12%	0.55%
14	1993	6.60%	7.59%	7.91%	0.99%	1.31%	7.22%	7.93%	0.62%	1.33%	-0.02%	0.37%
15	1994	7.37%	8.31%	8.63%	0.94%	1.26%	7.96%	8.62%	0.59%	1.25%	0.01%	0.35%
16	1995	6.88%	7.89%	8.29%	1.01%	1.41%	7.59%	8.20%	0.71%	1.32%	0.09%	0.30%
17	1996	6.70%	7.75%	8.17%	1.05%	1.47%	7.37%	8.05%	0.67%	1.35%	0.12%	0.38%
18	1997	6.61%	7.60%	7.95%	0.99%	1.34%	7.26%	7.86%	0.66%	1.26%	0.09%	0.34%
19	1998	5.58%	7.04%	7.26%	1.46%	1.68%	6.53%	7.22%	0.95%	1.64%	0.04%	0.51%
20	1999	5.87%	7.62%	7.88%	1.75%	2.01%	7.04%	7.87%	1.18%	2.01%	0.01%	0.58%
21	2000	5.94%	8.24%	8.36%	2.30%	2.42%	7.62%	8.36%	1.68%	2.42%	-0.01%	0.62%
22	2001	5.49%	7.76%	8.03%	2.27%	2.54%	7.08%	7.95%	1.59%	2.45%	0.08%	0.68%
23	2002	5.43%	7.37%	8.02%	1.94%	2.59%	6.49%	7.80%	1.06%	2.37%	0.22%	0.88%
24	2003	4.96%	6.58%	6.84%	1.62%	1.89%	5.67%	6.77%	0.71%	1.81%	0.08%	0.91%
25	2004	5.05%	6.16%	6.40%	1.11%	1.35%	5.63%	6.39%	0.58%	1.35%	0.00%	0.53%
26	2005	4.65%	5.65%	5.93%	1.00%	1.28%	5.24%	6.06%	0.59%	1.42%	-0.14%	0.41%
27	2006	4.90%	6.07%	6.32%	1.17%	1.42%	5.59%	6.48%	0.69%	1.58%	-0.16%	0.48%
28	2007	4.83%	6.07%	6.33%	1.24%	1.50%	5.56%	6.48%	0.72%	1.65%	-0.15%	0.52%
29	2008	4.28%	6.53%	7.25%	2.25%	2.97%	5.63%	7.45%	1.35%	3.17%	-0.20%	0.90%
30	2009	4.07%	6.04%	7.06%	1.97%	2.99%	5.31%	7.30%	1.24%	3.23%	-0.24%	0.73%
31	2010	4.25%	5.46%	5.96%	1.21%	1.71%	4.95%	6.04%	0.70%	1.79%	-0.08%	0.52%
32	2011	3.91%	5.04%	5.56%	1.13%	1.65%	4.64%	5.67%	0.73%	1.76%	-0.10%	0.40%
33	2012	2.92%	4.13%	4.83%	1.21%	1.90%	3.67%	4.94%	0.75%	2.02%	-0.11%	0.46%
34	2013	3.45%	4.48%	4.98%	1.03%	1.53%	4.24%	5.10%	0.79%	1.65%	-0.12%	0.24%
35	2014	3.34%	4.28%	4.80%	0.94%	1.46%	4.16%	4.86%	0.82%	1.52%	-0.06%	0.12%
36	2015	2.84%	4.12%	5.03%	1.27%	2.19%	3.89%	5.00%	1.05%	2.16%	0.03%	0.23%
37	2016	2.60%	3.93%	4.67%	1.33%	2.08%	3.66%	4.71%	1.07%	2.12%	-0.04%	0.27%
38	2017 [4]	2.97%	4.12%	4.52%	1.15%	1.55%	3.88%	4.58%	0.91%	1.61%	-0.05%	0.24%
39	Average	6.62%	8.13%	8.57%	1.51%	1.95%	7.46%	8.55%	0.84%	1.94%	0.01%	0.67%



Sources:

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

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

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

[4] Data includes January - June 2017.

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Treasury and Utility Bond Yields

Line	Date	Treasury Bond Yield[1] (1)	"A" Rated Utility Bond Yield[2] (2)	"Baa" Rated Utility Bond Yield[2] (3)
1	08/11/17	2.79%	3.86%	4.22%
2	08/04/17	2.84%	3.90%	4.27%
3	07/28/17	2.89%	3.97%	4.32%
4	07/21/17	2.81%	3.91%	4.27%
5	07/14/17	2.91%	4.02%	4.40%
6	07/07/17	2.93%	4.06%	4.44%
7	06/30/17	2.84%	3.98%	4.36%
8	06/23/17	2.71%	3.86%	4.26%
9	06/16/17	2.78%	3.93%	4.31%
10	06/09/17	2.86%	4.00%	4.37%
11	06/02/17	2.80%	3.97%	4.34%
12	05/26/17	2.92%	4.07%	4.43%
13	05/19/17	2.90%	4.06%	4.44%
14	**Average**	**2.84%**	**3.97%**	**4.34%**
15	**Spread To Treasury**		**1.13%**	**1.50%**

Sources:

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

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

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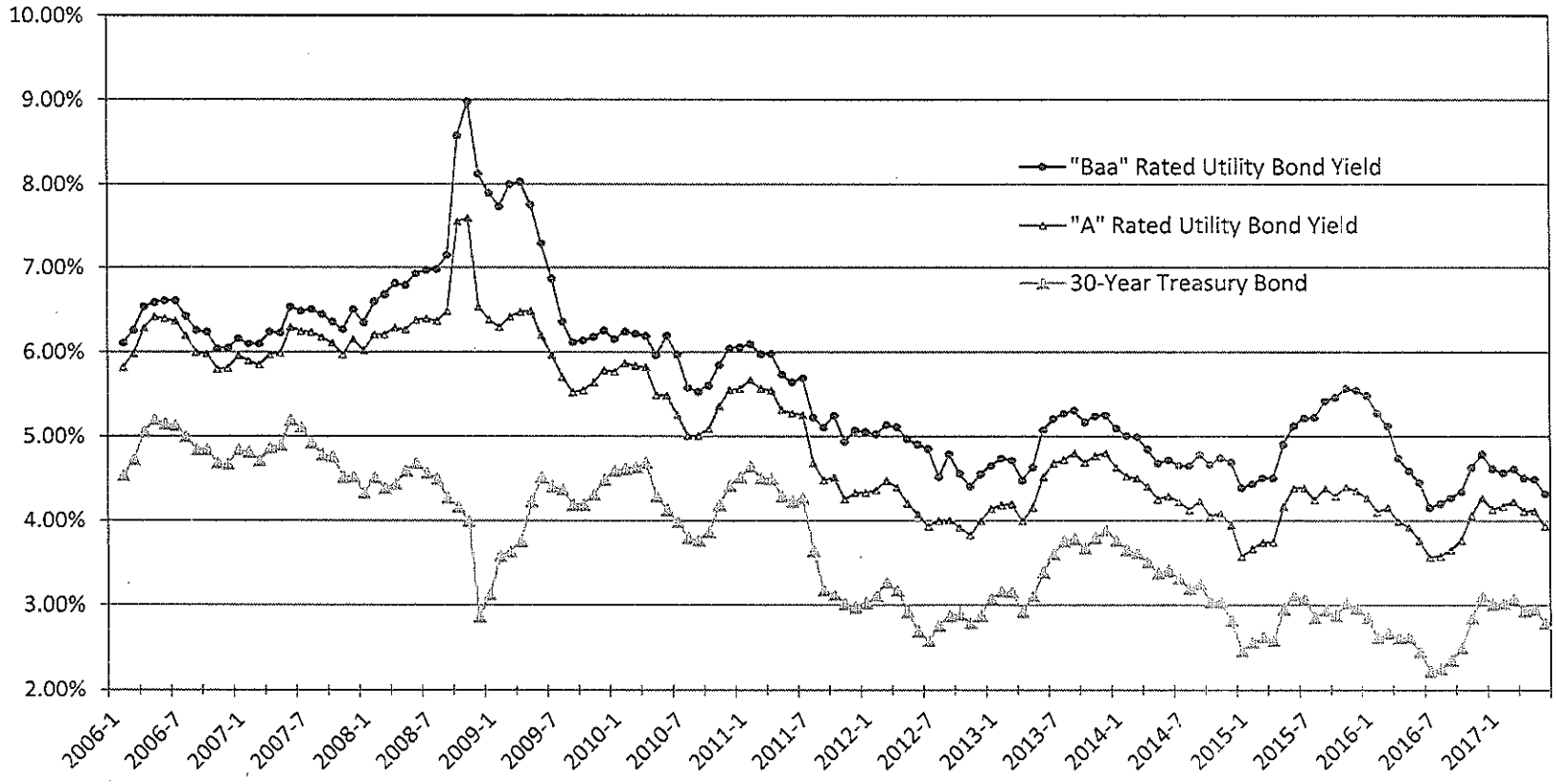
Trends in Bond Yields



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

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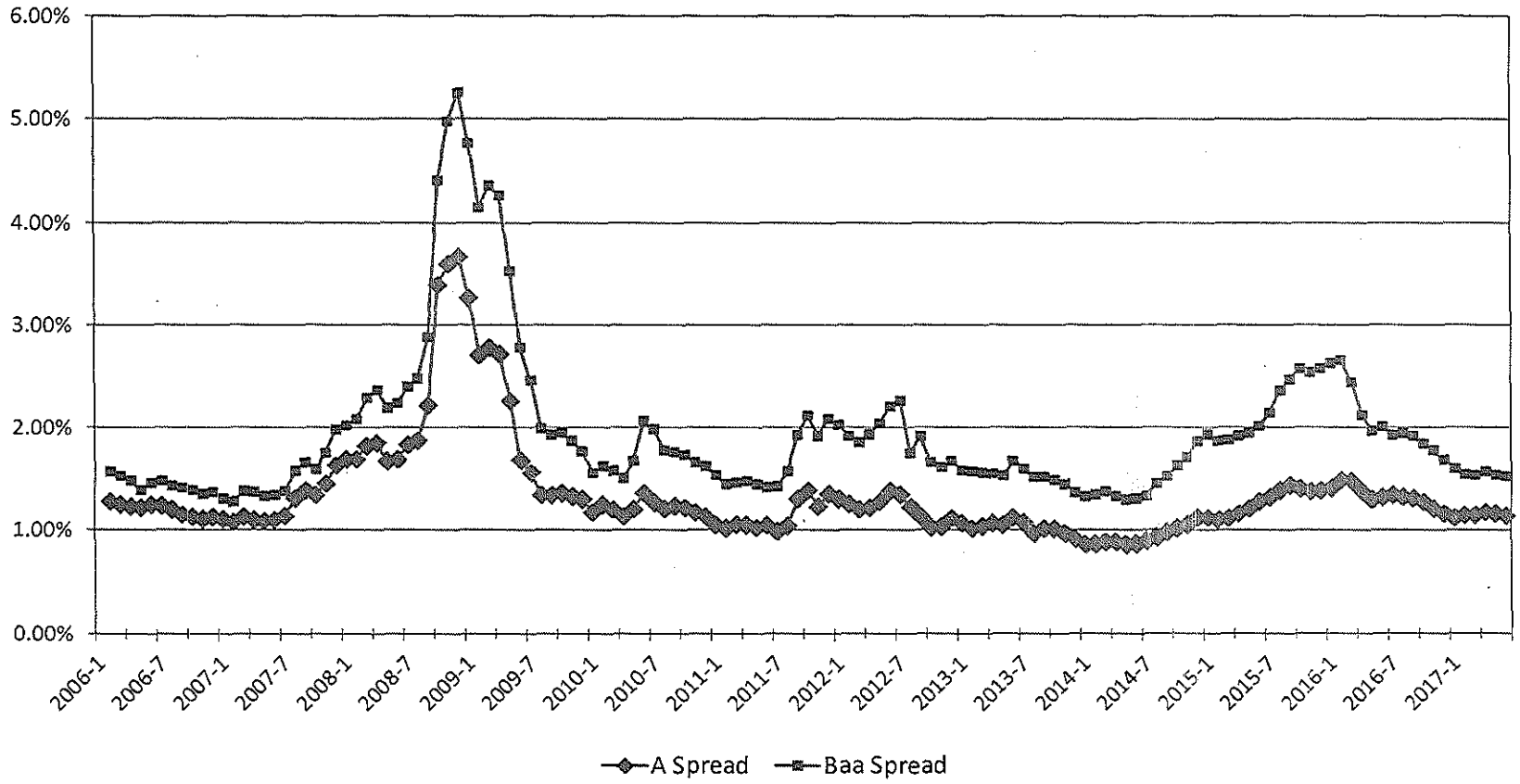
Yield Spread Between Utility Bonds and 30-Year Treasury Bonds



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

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Value Line Beta

Line	Company	Beta
1	Atmos Energy Corporation	0.70
2	New Jersey Resources Corporation	0.80
3	Northwest Natural Gas Company	0.65
4	South Jersey Industries, Inc.	0.80
5	Southwest Gas Holdings, Inc.	0.75
6	Spire Inc.	0.70
7	**Average**	**0.73**

Source:
The Value Line Investment Survey,
June 2, 2017.

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CAPM Return

Line	Description	High Market Risk Premium (1)	Low Market Risk Premium (2)
1	Risk-Free Rate[1]	3.70%	3.70%
2	Risk Premium[2]	7.80%	6.00%
3	Beta[3]	0.73	0.73
4	**CAPM**	**9.42%**	**8.10%**

Sources:

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

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

[3] Schedule MPG-16.