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LACLEDE GAS COMPANY
MISSOURI GAS ENERGY

GR-2017-0215
GR-2017-0216

DIRECT TESTIMONY

OF

PAULINE M. AHERN, CRRA

APRIL 2017

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DIRECT TESTIMONY OF PAULINE M. AHERN

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Pauline M. Ahern. I am an Executive Director of ScottMadden, Inc. My business address is 1900 West Park Road, Suite 250, Westborough, MA 01581. My mailing address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

Q. PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE AND EDUCATION BACKGROUND.

A. I have offered expert testimony on behalf of investor-owned utilities before thirty-one state regulatory commissions in the United States and Canada on rate of return issues including, but not limited to, common equity cost rate, fair rate of return, capital structure issues, relative investment risk and credit quality issues. I am a graduate of Clark University, Worcester, MA, where I received a Bachelor of Arts degree with honors in Economics. I have also received a Master of Business Administration with high honors and a concentration in finance from Rutgers University.

On behalf of the American Gas Association ("A.G.A."), I calculate the A.G.A. Gas Index, which serves as the benchmark against which the performance of the American Gas Index Fund ("AGIF") is measured monthly. The A.G.A. Gas Index and AGIF are a market capitalization weighted index and mutual fund, respectively, comprised of the common stocks of the publicly traded corporate members of the A.G.A.

I am a member of the Society of Utility and Regulatory Financial Analysts ("SURFA") and currently serve on its Board of Directors, having previously served two terms as President, from 2006 – 2008 and 2008 – 2010, and as its Secretary/Treasurer from 2004 – 2006. In 1992, I was awarded the professional designation "Certified Rate

of Return Analyst" ("CRRA") by SURFA, which is based upon education, experience and the successful completion of a comprehensive written examination.

I am also an associate member of the National Association of Water Companies, serving on its Finance/Accounting/Taxation and Rates and Regulation Committees; a member of A.G.A.'s State Affairs Committee; a member of the Advisory Council of the Financial Research Institute – University of Missouri – Robert J. Trulaske, Sr. College of Business; a member of the American Finance and Financial Management Associations; and, a member of Edison Electric Institute's Cost of Capital Working Group.

The details of my educational background, expert witness appearances, presentations I have given and articles I have co-authored are contained in Appendix A.

Q. HAVE YOU PREVIOUSLY FILED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I have previously filed testimony before the MOPSC in the following rate cases: Union Electric Company, d/b/a Ameren Missouri: ER-2016-0179, Missouri Gas Energy: GR-2014-0007, Missouri American Water Company: WR -2011-0337 / SR-2001-0338, WR-2010-0131, WR-2008-0311 / SR-2008-0312, WR-2007-0216, WR-2003-0500 / WC-2004-0168, and Arkansas Western – ANG Division (Missouri): GR-97-272.

PURPOSE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose is to provide testimony on behalf of Laclede Gas Company ("Laclede") and its two operating units, Laclede Gas (LAC) and Missouri Gas Energy ("MGE") (collectively "the Companies") relative to the appropriate overall fair rate of return, including the appropriate capital structure ratios, long-term debt cost rate and investor-

required return on common equity, which they should be afforded the opportunity to earn on their respective jurisdictional rate bases.

Q. WHAT IS YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. I recommend that the Missouri Public Service Commission ("MOPSC" or "the Commission") authorize the Companies the opportunity to earn an overall rate of return of 7.700%, including a common equity cost rate of 10.35%, on their jurisdictional rate bases. This recommendation is summarized on Schedule PMA-D1 and in Table 1 below:

Table 1
LAC / MGE

Type of Capital	Ratios	Cost Rate	Weighted Cost Rate
Long-Term Debt	42.80%	4.159%	1.780%
Common Equity	57.20%	10.350%	5.920%
Total	100.00%		7.700%

Q. HAVE YOU PREPARED SCHEDULES THAT SUPPORT YOUR RECOMMENDED COMMON EQUITY COST RATE?

A. Yes. They have been designated as Schedules PMA-D1 through PMA-D9.

SUMMARY

Q. PLEASE SUMMARIZE YOUR COMMON EQUITY COST RATE ANALYSIS.

A. Because the Companies' common stock is not publicly traded, their market-based common equity cost rate cannot be directly observed. Consequently, I have assessed the market-based common equity cost rates of companies of relatively similar, but not necessarily identical risk, *i.e.*, a proxy group, for insight into a recommended common equity cost rate applicable to Laclede, and its operating units.. Using companies of relatively similar risk as proxies is consistent with the principle of a fair rate of return established in the *Hope*[1] and *Bluefield*[2] cases, adding reliability to the informed expert judgment necessary to arrive at a recommended common equity cost rate.

However, no proxy is identical in risk to any single entity. Accordingly, an assessment of relative risk between the Companies and a proxy group of publicly traded natural gas utilities ("Natural Gas Proxy Group"), whose selection is discussed in further detail later in this testimony, must be made to determine whether any adjustments to the Natural Gas Proxy Group's indicated common equity cost rate are necessary.

In determining my recommended common equity cost rate, I first applied several well-recognized cost of common equity models (*i.e.*, the Discounted Cash Flow ("DCF"), the Risk Premium Model ("RPM") and the Capital Asset Pricing Model ("CAPM")) to the market data of the Natural Gas Proxy Group as well as a Non-Price Regulated Proxy Group whose selection will also be discussed below.

The results derived from each are as follows:

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1 *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944).

2 *Bluefield Water Works Improvement Co. v. Public Serv. Comm'n*, 262 U.S. 679 (1922).

Table 2
Summary of Common Equity Cost Rate

Natural Gas Proxy Group	
Discounted Cash Flow Model ("DCF")	8.68%[3]
Risk Premium Model ("RPM")	10.57%
Capital Asset Pricing Model ("CAPM")	9.11%
Non-Price Regulated Proxy Group	
Cost of Equity Models Applied to Comparable Risk, Non-Price Regulated Cos.	10.45%
Common Equity Cost Rate Before Adjustment	10.00%
Flotation Risk Adjustment	0.16%
Business Risk Adjustment	0.20%
Common Equity Cost Rate After Adjustment	10.36%
Recommended Common Equity Cost Rate	10.35%

GENERAL PRINCIPLES

Q. WHAT GENERAL PRINCIPLES HAVE YOU CONSIDERED IN YOUR COMMON EQUITY COST RATE ANALYSES?

A. The cost of capital is defined as that return which investors require to be willing to make an investment in a given firm. From the firm's perspective, that required return, whether it is provided to debt or equity investors, has a cost. Individually, these are known as the "cost of debt" and the "cost of equity" and are collectively referred to as the "cost of capital."

The cost of capital (including the costs of both debt and equity) is based upon the economic principle of "opportunity cost," meaning that investing in any asset / security

[3] As discussed later in this testimony, currently, the application of the DCF model understates the required return on common equity by nearly 490 basis points due to currently significantly high market-to-book ratios. Accordingly, the results of that model should be given only very limited weight in deriving a reasonable return on equity in this proceeding.

implies a forgone opportunity to invest in alternative assets / securities. Because investments with similar risks should offer similar returns, the opportunity cost of an investment should equal the return available on investments of comparable risk.

Although both debt and equity have required costs, they differ fundamentally. The cost of debt is contractually defined and can be directly observed in the market as the interest rate or yield on debt securities.[4] In contrast, the cost of common equity does not have a contractual obligation, nor can it be directly observed in the market. Rather, because common equity investors have a claim on a firm's cash flows only after debt holders[5] are paid, it is the uncertainty (or risk) associated with those residual cash flows that determines the cost of common equity. Because common equity investors bear this "residual risk," they require higher returns than debt holders. In that sense, common equity and debt investors are distinct: they invest in different securities; face different risks; and, require different returns. That is not to say that the risks facing debt and equity investors are separate and distinct as discussed above, with the two having much in common, but only to a point. Nonetheless, commentary from both debt and equity analysts is instructive and helps inform the determination of the required return within a range of analytical results.

The cost of capital, specifically the cost of common equity or the investor required return on common equity, is also an economic and financial concept which refers to the *ex-ante*, or the *expected* return on an investment at the market value of the publicly traded common shares of a corporation. According to the basic financial principle of risk and return, the investor required return on investment is a function of the

[4] Some firms also finance with preferred stock, which, like debt, has a contractual cost, *i.e.*, dividend rate.
[5] And preferred stockholders.

level of investor perceived risk as reflected in the market prices paid by investors. The higher / lower the investor perceived risk, the higher / lower the investor required return. The investor required return is also forward-looking, or expectational, as it is the return which the investor expects to receive in the future for investing capital today and is based upon expected economic and capital market conditions.

In unregulated industries, the competition of the marketplace is the principal determinant of the price of products or services. For regulated public utilities, regulation must act as a substitute for marketplace competition. A sufficient level of earnings is required to assure that the utility can: 1) fulfill its obligation to provide safe and reliable service at all times; 2) maintain the integrity of presently invested capital through future reinvestment; and, 3) attract needed new capital at a reasonable cost and on reasonable terms in competition with other firms of comparable risk. This is consistent with the previously noted fair rate of return standards established by the U.S. Supreme Court in the *Hope* and *Bluefield* cases.

In rate base / rate of return regulation, the authorized (allowed) return on common equity is defined as the investor required market return. In turn, the investor required return is defined as the return required by the investor on the funds invested in the publicly traded common stocks of firms. As stated previously, the cost of common equity is not directly observable in the capital markets since there is no contractual basis or obligation on the part of a firm to provide a return to its common shareholders, unlike the contractual coupon or interest rate on its debt obligations. Therefore, the cost of common equity must be estimated from market (economic and financial) data, using financial models developed for that purpose, such as the CAPM, DCF and RPM.

Therefore, my recommended common equity cost rate is based upon the marketplace data of a proxy group of utilities that are as similar in risk as possible to the Companies based upon selection criteria discussed below.

Because quantitative financial models produce a range of results from which the market, or investor, required return must be estimated, that estimation must be based upon a comprehensive review of relevant data and information, both qualitative and quantitative, and not necessarily left to a strict mathematical estimation. The key consideration in estimating the common equity cost rate is to ensure that the overall analysis reasonably reflects investors' expectations in light of capital markets in general, and the relative investment risk of the subject company (in the context of the proxy companies), in particular.

Because empirical financial models for determining the cost of common equity are subject to limiting assumptions or other constraints, most finance texts recommend using multiple approaches to estimate the cost of common equity. As a practical matter, no individual model is more reliable than all others under all market conditions. The use of multiple common equity cost rate models adds reliability to the estimation of the investor-required return. This fact is well supported in the academic literature with respect to regulatory finance and utility regulation.

For example, Roger A. Morin[6] ("Morin") states:

> Each methodology requires the exercise of considerable judgment on the reasonableness of the assumptions underlying the methodology and on the reasonableness of the proxies used to validate a theory. The inability of the DCF model to account for changes in relative market valuation, discussed below, is a vivid example of the potential shortcomings of the DCF model when applied to a given company. Similarly, the inability of

[6] Roger A. Morin, New Regulatory Finance (Public Utility Reports, Inc., 2006) 428-431.

> the CAPM to account for variables that affect security returns other than beta tarnishes its use.
>
> **No one individual method provides the necessary level of precision for determining a fair return, but each method provides useful evidence to facilitate the exercise of an informed judgment.** Reliance on any single method or preset formula is inappropriate when dealing with investor expectations because of possible measurement difficulties and vagaries in individual companies' market data. (emphasis added)
>
> * * *
>
> The financial literature supports the use of multiple methods. Professor Eugene Brigham, a widely respected scholar and finance academician, asserts (footnote omitted)
>
> > Three methods typically are used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach. These methods are not mutually exclusive – no method dominates the others, and all are subject to error when used in practice. Therefore, when faced with the task of estimating a company's cost of equity, we generally use all three methods and then choose among them on the basis of our confidence in the data used for each in the specific case at hand.

Both the use of the market data of a proxy group of similar risk, as well as the use of multiple common equity cost rate models, adds reliability to the informed expert judgment used in estimating the common equity cost rate. Therefore, it is both prudent and appropriate to use multiple methodologies to mitigate the effects of limiting assumptions and inputs associated with any single approach. As such, I have considered the results of three well-tested market models: the DCF, RPM and CAPM in arriving at my recommended common equity cost rate for the Companies.

INVESTMENT RISK

Business Risk

Q. PLEASE DEFINE BUSINESS RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. The investor-required return on common equity reflects investors' assessment of the total investment risk of the subject firm. Total investment risk is often discussed in the context of business and financial risk.

Business risk reflects the uncertainty associated with owning a company's common stock without the company's use of debt and / or preferred stock financing. One way of considering the distinction between business and financial risk is to view the former as the uncertainty in the expected earned return on common equity assuming the firm is financed with no debt.

Examples of business risks generally faced by utilities include, but are not limited to, the regulatory environment, mandatory environmental compliance requirements, customer mix and concentration of customers, service territory economic growth, market demand, risks and uncertainties of supply, operations, capital intensity, size, the degree of operating leverage, and the like, all of which have a direct bearing on earnings. Although analysts, including rating agencies, may categorize business risks according to individual categories, as a practical matter they are inter-related and are not wholly distinct from one another. Therefore, it is difficult to specifically and numerically quantify the effect of any individual factor on investors' required return, *i.e.*, the cost of capital. For determining an appropriate return on common equity, the relevant issue is where investors see the subject company as falling within a spectrum of risk. To the

extent investors view a company as being exposed to additional risk, the required return will increase, and vice versa.

For regulated utilities, business risks are both long- and near-term in nature. Whereas near-term business risks are reflected in year-to-year variability in earnings and cash flow brought about by economic or regulatory factors, long-term business risks reflect the prospect of an impaired ability of investors to earn a return on and of their capital. Moreover, because utilities accept the obligation to provide safe, adequate and reliable service at all times (in exchange for the opportunity to earn a fair return on their investment), they generally do not have the option to delay, defer, or reject capital investments. Because those investments are capital-intensive, utilities generally do not have the option to avoid raising external funds during periods of capital market distress, if necessary.

Because utilities invest in long-lived assets, long-term business risks are of considerable concern to equity investors. That is, the risk of not recovering the return on and of their investment extends far into the future. But, the timing and nature of events that may lead to losses also are uncertain and consequently, those risks and their implications for the required return on equity tend to be difficult to quantify. That does not mean, however, that the risk is of no consequence to investors. Analysts may apply, for example, simulation-based methods to assess the potential risk, but in the final analysis (like the investors that commit their capital) regulatory commissions must review a variety of quantitative and qualitative data and apply their reasoned judgment to determine how long-term risks weigh in their assessment of the market-required return on common equity.

Q. DOES THE SMALLER SIZE OF THE COMPANIES RELATIVE TO THE NATURAL GAS PROXY GROUP INCREASE THEIR BUSINESS RISK RELATIVE TO THE NATURAL GAS PROXY GROUP?

A. Yes. The Companies' smaller collective size relative to the Natural Gas Proxy Group indicates greater relative business risk for each Company because, all else being equal, size has a material bearing on risk.

Size affects business risk because smaller companies generally are simply less able to cope with significant events that affect sales, revenues and earnings. For example, smaller companies face more risk exposure to business cycles and economic conditions, both nationally and locally. Additionally, the loss of revenues from a few larger customers would have a greater effect on a small company than on a much bigger company with a larger, more diverse, customer base.

Further evidence that smaller firms are riskier is the fact that investors demand greater returns to compensate for the lack of marketability and liquidity of the securities of smaller firms. Duff & Phelps 2016 Valuation Handbook Guide to Cost of Capital – Market Results through 2015 ("D&P – 2016") discusses the nature of the small size phenomenon, providing an indication of the magnitude of the size premium based upon several measures of size. In discussing "Size as a Predictor of Equity Premiums," D&P – 2016 states[7]:

> The size effect is based on the empirical observation that companies of smaller size are associated with greater risk and, therefore, have greater cost of capital [sic]. The "size" of a company is one of the most important risk elements to consider when developing cost of equity capital estimates for use in valuing a business simply because size has been shown to be a *predictor* of equity returns. In other words, there is a significant (negative)

[7] Duff & Phelps 2016 Valuation Handbook Guide to Cost of Capital – Market Results through 2015, Wiley 2016 4-1.

> relationship between size and historical equity returns – as size *decreases*, returns tend to *increase*, and vice versa.(footnote omitted) (emphasis in original)

Furthermore, in "The Capital Asset Pricing Model: Theory and Evidence,"[8] Fama and French note that size is indeed a risk factor which must be reflected when estimating the cost of common equity. On page 14, they note:

> . . . the higher average returns on small stocks and high book-to-market stocks reflect unidentified state variables that produce undiversifiable risks (covariance's) in returns not captured in the market return and are priced separately from market betas.

Based upon this evidence, Fama and French proposed their three-factor model which includes a size variable in recognition of the effect of size on the cost of common equity.

Also, the fact that it is the use of funds invested, and not the source of those funds, which gives rise to the risk of any investment, is a basic financial principle.[9] Brigham[10], a well-known authority, states:

> A number of researchers have observed that portfolios of small-firms have earned consistently higher average returns than those of large-firms stocks; this is called "small-firm effect." On the surface, it would seem to be advantageous to the small firms to provide average returns in a stock market that are higher than those of larger firms. In reality, it is bad news for the small firm; what **the small-firm effect means is that the capital market demands higher returns on stocks of small firms than on otherwise similar stocks of the large firms**. (emphasis added)

Consistent with the financial principle of risk and return discussed above, such increased relative risk due to small size must be considered in the allowed rate of return

[8] Eugene F. Fama and Kenneth R. French, "The Capital Asset Pricing Model: Theory and Evidence," *Journal of Economic Perspectives*, Volume 18, Number 3, Summer 2004 25-43.

[9] Brealey, Richard A. and Myers, Stewart C., Principles of Corporate Finance (McGraw-Hill Book Company, 1996) 204-205, 229.

[10] Brigham, Eugene F., Fundamentals of Financial Management, Fifth Edition (The Dryden Press, 1989) 623.

on common equity. Therefore, the MOPSC's authorization of a cost rate of common equity in this proceeding must appropriately reflect the Companies' respective and relevant unique risks, including the impact of their small size, and is justified and supported by evidence in the financial literature as well as in financial markets as will be discussed subsequently.

Financial Risk

Q. PLEASE DEFINE FINANCIAL RISK AND EXPLAIN WHY IT IS IMPORTANT TO THE DETERMINATION OF A FAIR RATE OF RETURN.

A. Financial risk is created by the introduction of senior capital, *i.e.*, debt and preferred stock, into the capital structure. It is the additional risk that a company may not have sufficient cash flows to meet its financial obligations. The higher the proportion of senior capital in the capital structure, the higher the financial risk which must be factored into the common equity cost rate, consistent with the previously mentioned basic financial principle of risk and return, *i.e.*, investors demand a higher common equity return as compensation for bearing higher investment risk.

Q. CAN THE COMBINED BUSINESS RISKS (*I.E.*, INVESTMENT RISK) OF AN ENTERPRISE BE PROXIED BY BOND AND CREDIT RATINGS?

A. Yes, similar bond / issuer credit ratings reflect and are representative of similar combined business and financial risks, *i.e.*, total risk faced by bond investors. Although specific business or financial risks may differ between companies, the same bond / credit rating indicates that the combined risks are similar, albeit not necessarily equal (as the purpose of the bond / credit rating process is to assess credit quality or credit risk and not common equity risk).

However, one must keep in mind that a long-term issuer credit or bond issue rating is an opinion regarding the particular company's overall financial capacity to pay its financial obligations as they become due and payable. It is not an assessment of the risk faced by equity investors. The claims of equity holders are subordinate to the claims of debt holders and are perpetual in life. As noted above, whereas bondholders can be assured of the probability that a particular company will be able to meet its financial obligations (and thus have higher credit/bond ratings), common equity holders bear the residual risk of insufficient or volatile cash flows in perpetuity. For that fundamental reason, the risks of owning common equity do not directly correspond to the risks of owning bonds. The two have similar considerations, but only up to a point.

NATURAL GAS PROXY GROUP

Q. PLEASE EXPLAIN HOW YOU CHOSE THE NATURAL GAS PROXY GROUP.

A. I chose the Natural Gas Proxy Group by selecting those companies which met the following criteria:

1) They are included in the Natural Gas Utility Group of *Value Line's* Standard Edition (December 2, 2016);

2) They have 50% or greater of 2015 total operating income derived from, and 50% or greater of 2015 total assets devoted to, regulated natural gas operations;

3) They had not publicly announced involvement in any major merger or acquisition activity (*i.e.*, one publicly-traded utility merging with or acquiring another) at the time of the preparation of this testimony;

4) They have not cut or omitted their common dividends during the past five years or through the time of the preparation of this testimony;

5) They have *Value Line* and Bloomberg adjusted betas;

6) They have a positive *Value Line* five-year dividends per share ("DPS") growth rate projection; and,

7) They have *Value Line*, Reuters, Zacks or Yahoo! Finance, consensus five-year earnings per share ("EPS") growth rate projections.

The following seven companies meet these criteria:

- Atmos Energy Corp. (ATO);
- Chesapeake Utilities Corp. (CPK);
- New Jersey Resources Corp. (NJR);
- Northwest Natural Gas Co. (NWN);
- South Jersey Industries, Inc. (SJI);
- Southwest Gas Corp. (SWX);
- Spire, Inc. (SR).

Q. HAVE YOU REVIEWED FINANCIAL DATA FOR THE NATURAL GAS PROXY GROUP?

A. Yes. Page 1 of Schedule PMA-D2 contains comparative capitalization and financial statistics for the Natural Gas Proxy Group for the years 2011 – 2015. As shown on page 1, during the five-year period ending 2015, the historically achieved average earnings rate on book common equity for the group was 10.70%. The average five-year common equity ratio based upon permanent capital (excluding short-term debt) was 55.81%, and the average dividend payout ratio was 57.83%.

In addition, total debt outstanding as a percentage of EBITDA for the years 2011 – 2015 ranged between 3.23 and 4.62 times, averaging 3.98 times, for the five-year period, while funds from operations relative to total debt ranged between 19.53% and 29.74%, average 26.17%.

CAPITAL STRUCTURE RATIOS AND LONG-TERM DEBT COST RATE

Q. WHAT CAPITAL STRUCTURE RATIOS DO YOU RECOMMEND FOR USE IN DETERMINING THE OVERALL COST OF CAPITAL FOR THE COMPANIES AND WHY?

A. I recommend that the pro forma consolidated capital structure ratios and embedded long-term debt cost rate of Laclede at December 31, 2016 be used to establish an allowed overall rate of return for the Companies. These ratios, as well as corresponding cost rates, are shown on Schedule PMA-D1. They consist of 42.80%, long-term debt at an embedded cost rate of 4.159% and 57.20% common equity, at my recommended common equity cost rate of 10.35%.

Q. ARE THE PRO FORMA CONSOLIDATED LACLEDE ACTUAL CAPITAL STRUCTURE RATIOS AT DECEMBER 31, 2016 APPROPRIATE FOR USE IN A COST OF CAPITAL DETERMINATION?

A. Yes. The pro forma consolidated Laclede capital structure ratios at December 31, 2016 are reasonable to use for both the Companies because: 1) they are the "actual" pro forma capital structure ratios of Laclede, in other words, the long-term debt is issued by Laclede based upon the utilities' mortgage of assets and the common equity represents Laclede's common stock and retained earnings; 2) MGE is a division of Laclede; and, 3) the ratios are consistent with the capital structure ratios maintained on average by the Natural Gas Proxy Group upon whose market data I relied in deriving my recommended common equity cost rate.

Q. HOW DOES LACLEDE'S LONG-TERM DEBT RATIO OF 42.80% PRO FORMA AT DECEMBER 31, 2016, COMPARE WITH THE LONG-TERM DEBT

RATIOS MAINTAINED ON AVERAGE BY THE COMPANIES IN THE NATURAL GAS PROXY GROUP?

A. Laclede's long-term debt ratio of 42.80% pro forma at December 31, 2016 is similar, but slightly less than the long-term debt ratio based upon permanent capital (excluding short-term debt) of 44.98%, maintained on average in 2015 by the companies in the Natural Gas Proxy Group. In addition, the long-term debt ratios based upon permanent capital of the Natural Gas Proxy Group companies ranged from 30.68% to 54.06% in 2016, with a midpoint of 42.37%, as shown on page 2 of Schedule PMA-D2.

COMMON EQUITY COST RATE MODELS

Q. ARE THE COST OF COMMON EQUITY MODELS YOU USE MARKET-BASED MODELS?

A. Yes. The DCF model is market-based in that market prices are utilized in developing the dividend yield component of the model. The RPM and CAPM are also market-based in that the bond / issuer ratings and expected bond yields / risk-free rate used in the application of the RPM and CAPM reflect the market's assessment of bond / credit risk. In addition, the use of beta to determine the equity risk premium also reflects the market's assessment of market / systematic risk, as betas are derived from regression analyses of market prices. In addition, market prices are used in the development of the monthly returns and equity risk premiums used in the Predictive Risk Premium Model ("PRPM"). Selection of the companies included in the Non-Price Regulated Proxy Group is market-based in that the selection criteria are based upon statistical regression analyses of market prices.

Discounted Cash Flow Model ("DCF")

Q. WHAT IS THE THEORETICAL BASIS OF THE DCF MODEL?

A. The theory underlying the DCF model is that the present value of an expected future stream of net cash flows during the investment holding period can be determined by discounting those cash flows at the cost of capital, or the investors' capitalization rate. DCF theory assumes that an investor buys a stock for an expected total return rate which is derived from cash flows received in the form of dividends plus appreciation in market price (the expected growth rate). Mathematically, the dividend yield on market price plus a growth rate equals the capitalization rate (*i.e.*, the total common equity return rate expected by investors).

Q. WHICH VERSION OF THE DCF MODEL DO YOU USE?

A. I utilize the single-stage constant growth DCF model. The single-stage DCF model is expressed as:

$$K = (D_1 / P_0) + g$$

Where:
- K = Cost of Equity Capital
- D_1 = Expected Dividend Per Share in one year
- P_0 = Current Market Price
- G = Expected Dividend Per Share Growth

Q. PLEASE DESCRIBE THE DIVIDEND YIELD YOU USED IN YOUR APPLICATION OF THE DCF MODEL.

A. The unadjusted dividend yields are based upon a recent (January 30, 2017) indicated dividend, divided by the average of closing market prices for the 60 days ending January 31, 2017, as shown in Column [1] on page 1 of Schedule PMA-D3.

Q. PLEASE EXPLAIN THE ADJUSTED DIVIDEND YIELD SHOWN ON PAGE 1 OF SCHEDULE PMA-D3 COLUMN [7].

A. Because dividends are paid quarterly, or periodically, as opposed to continuously (daily), an adjustment must be made to the dividend yield. This is often referred to as the discrete, or the Gordon Periodic, version of the DCF model.

DCF theory calls for the use of the full expectational growth rate, referred to as D_1, in calculating the dividend yield component of the model. However, since the various companies in the Natural Gas Proxy Group increase their quarterly dividend at various times during the year, a reasonable assumption is to reflect one-half the annual dividend growth rate in the dividend yield component, referred to as $D_{1/2}$. This is a conservative approach because it does not overstate the dividend yield, which should be representative of the next twelve-month period. Therefore, the actual average dividend yields in Column [1], page 1 of Schedule PMA-D3, have been adjusted upward to reflect one-half the average projected growth rate shown in Column [6].

Q. PLEASE EXPLAIN THE BASIS OF THE GROWTH RATES OF THE NATURAL GAS PROXY GROUP WHICH YOU USE IN YOUR APPLICATION OF THE DCF MODEL.

A. Investors with more limited resources than institutional investors are likely to rely upon widely available financial information services, such as *Value Line*, Reuters, Zacks and Yahoo! Finance. Investors recognize that such analysts have significant insight into the dynamics of the industries and individual companies they analyze, as well as an entity's historical and future ability to effectively manage the effects of changing laws and regulations and ever changing economic and market conditions.

Security analysts' earnings expectations have a significant, but not sole, influence on market prices and are therefore reasonable indicators of investor expectations.[11] As noted by Morin[12]:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of g. [g = growth]

Over the long run, there can be no growth in DPS without growth in EPS. Thus, the use of earnings growth rate forecasts in a DCF analysis provides a better matching between investors' market price appreciation expectations and the growth rate component of the DCF. Therefore, I have relied upon security analysts' five-year forecasts of EPS growth in my application of the DCF model.

Q. PLEASE SUMMARIZE THE DCF MODEL RESULTS.

A. As shown on page 1 of Schedule PMA-D3, the average result of the single-stage DCF model is 8.65%, while the median result is 8.70%. I have averaged these two results in arriving at a conclusion of a DCF-indicated common equity cost rate of 8.68% for the Natural Gas Proxy Group. By doing so, I have not only considered the DCF results for each company, but have not given undue weight to outliers on either the high or the low side.

Q. PLEASE COMMENT UPON THE APPLICABILITY OF THE DCF MODEL IN ESTABLISHING A COST OF COMMON EQUITY.

[11] Morin 298-303.
[12] Morin 298.

A. The DCF model has a tendency to mis-specify the investor required common equity return rate when the market value of common stock differs significantly from its book value. Mathematically, because the "simplified" DCF model traditionally used in rate regulation assumes a market-to-book ratio of one, it understates / overstates investors' required return rate when market value exceeds or is less than book value. It does so because, in many instances, market prices reflect investors' assessments of long-range market price growth potentials (consistent with the infinite investment horizon implicit in the standard regulatory version of the DCF model) not fully reflected in analysts' shorter range forecasts of future growth in earnings per share (EPS), an accounting proxy. Thus, the market-based DCF model will result in a total annual dollar return on book common equity equal to the total annual dollar return expected by investors only when market and book values are equal, a rare and unlikely situation. In recent years, the market values of natural gas utilities' common stocks have been well in excess of their book values as shown on page 1 of Schedule PMA-D2 ranging between 149.16% and 190.88% for the five years ending 2015.

Under DCF theory, the rate of return investors require is related to the market price paid for a security. Thus, market prices form the basis of investment decisions and investors' expected rates of return. In contrast, a regulated utility is generally limited to earning on a net book value (depreciated original cost) rate base. Although market prices are significantly influenced by analysts' EPS growth forecasts, market values can diverge from book values for a myriad of macroeconomic reasons including, but not limited to, EPS and DPS expectations, merger or acquisition expectations, interest rates, investor sentiment, unemployment levels, monetary policy, fiscal policy, etc.

Traditional rate base / rate of return regulation, where a market-based common equity cost rate is applied to a book value rate base, presumes that market-to-book ratios are at unity or 1.00. However, there is ample empirical evidence over sustained periods which demonstrate that this is an incorrect presumption. Since market-to-book ratios of unity or 1.00 are rarely the case as discussed above, regulatory allowed returns on common equity, *i.e.*, earnings, have a limited effect on utilities' market/book ratios as the market prices of utility common stocks are also influenced by factors beyond the direct influence of the regulatory process.

As noted by Phillips:[13]

> Many question the assumption that market price should equal book value, believing that 'the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.'

In addition, Bonbright[14] states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place**, whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock market**. In short, market prices are beyond the control, though not beyond the influence of rate regulation. Moreover, even if a commission did possess the power of control, any attempt to exercise it ... would result in harmful, uneconomic shifts in public utility rate levels. (emphasis added)

Q. IS IT REASONABLE TO EXPECT THE MARKET VALUES OF UTILITIES' COMMON STOCKS TO CONTINUE TO SELL WELL ABOVE THEIR BOOK VALUES?

[13] Phillips, Charles F., The Regulation of Public Utilities – Theory and Practice (Public Utility Reports, Inc., 1993) 395.

[14] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates (Public Utilities Reports, Inc., 1988) 334.

A. Yes. Market-to-book ratios of regulated utilities vary from year to year, due to such influences as the effects on the "Great Recession", subsequent economic and capital market turmoil and the ongoing economic recovery and the like. In my opinion, the common stocks of utilities will continue to sell substantially above their book values, on average, because many investors will likely continue to commit a greater percentage of their available capital to common stocks in view of lower interest rate alternative investment opportunities. The recent past and current capital market environment is in stark and historical contrast to the late 1970's and early 1980's when very high (by historical standards) yields on secured debt instruments in public utilities were available. Despite the fact that the market declined significantly during late 2001 through 2003, following the September 11, 2001 tragedy and dipped to a low in March 2009 as the "Great Recession" unfolded and the U.S. is now recovering from the "Great Recession" at a moderate pace, the majority of utility stocks, on average, have continued to sell at market prices well above their book value. In addition, as previously discussed, such sustained high market-to-book ratios have been influenced by factors other than fundamentals such as actual and reported growth in EPS and DPS.

Q. CAN THE UNDER- OR OVERSTATEMENT OF THE INVESTORS' REQUIRED RATE OF RETURN ON THE MARKET BY THE DCF MODEL BE DEMONSTRATED MATHEMATICALLY?

A. Yes. Page 2 of Schedule PMA-D3 demonstrates how a market-based DCF cost rate of 8.65%[15] applied to a book value which is below market value will understate the investor required return on market value. As shown, there is no realistic opportunity to earn the expected market-based rate of return on book value. In Column [1], investors expect an

[15] Average DCF cost rate for the Natural Gas Proxy Group from page 1 of Schedule PMA-D3.

8.65%, the average DCF result for the proxy group, return on a market price of $59.536.[16] Column [2] shows that when the 8.65% return rate on market value is applied to a book value of $25.848[17] which is approximately 43% of market value, the total annual return opportunity is just $2.236 on book value. With an annual dividend of $1.703, there is an opportunity for growth of $0.533 which is just 0.90% in contrast to the 5.79% growth in market price expected by investors.

The converse is also true. When the market-to-book value is below 1, the DCF cost rate will overstate the investor required return on market value.

Hence, the DCF model mis-specifies, that is, it either understates / overstates investors' required cost of common equity capital when market values exceed / are less than their underlying book values. Therefore, as stated above, to add reliability to the estimation of the cost of common equity, multiple cost of common equity models should be relied upon, rather than exclusive reliance upon the DCF model, when estimating investors' expectations.

In view of all the foregoing, at this time the traditional application of the DCF mis-specifies investor required return. Specifically, it understates investor required return because of the confluence of recently rising market prices, the use of accounting measures as proxies for capital appreciation in the DCF, the recent dramatic rise in interest rates in response to recent Federal Reserve comments and the expected continued rise in interest rates and capital costs discussed below. The magnitude of this understatement can be found in the difference between the 5.79% growth in market

[16] Average market price for the Natural Gas Proxy Group at January 30, 2017 from Column [4] on page 2 of Schedule PMA-D10.

[17] Average book value at year end 2015 for the Natural Gas Proxy Group from Column [1] on page 2 of Schedule PMA-D10.

values, *i.e.*, growth in EPS, shown in Column [1] on page 2 of Schedule PMA-D3 and the growth in market value of 0.90%, shown in Column [2], when the 8.65% DCF cost rate is applied to book value, or nearly 490 basis points. Coupled with the added reliability and accuracy that the use of multiple cost of common equity models provides in the estimation of the cost of common equity, it is more imperative than ever to not give exclusive or even primary reliance to the DCF analysis currently. In fact, in my opinion, it would be inappropriate to give any greater weight to the DCF analysis than I already have in deriving my multi-model return on equity recommendation.

The Risk Premium Model ("RPM")

Q. PLEASE DESCRIBE THE THEORETICAL BASIS OF THE RPM.

A. The RPM is based upon the basic financial principle of risk and return, namely, that investors require greater returns for bearing greater risk. The RPM recognizes that common equity capital has greater investment risk than debt capital, as common equity shareholders are last in line in any claim on an entity's assets and earnings, as previously discussed. Therefore, investors require higher returns from investment in common stocks than from investment in bonds to compensate them for bearing the additional risk.

While, as also discussed previously, it is possible to directly observe bond returns and yields, the investor required common equity return cannot be directly determined or observed. According to RPM theory, one can estimate a common equity risk premium over bonds, either historically or prospectively, and then use that premium to derive a cost rate of common equity. In summary, according to the RPM, the cost of common equity equals the expected cost rate for long-term debt capital plus a risk premium over

that cost rate to compensate common shareholders for the added risk of being unsecured and last-in-line for any claim on a corporation's assets and earnings.

Q. PLEASE EXPLAIN HOW YOU DERIVED YOUR INDICATED COST OF COMMON EQUITY BASED UPON THE RPM.

A. I relied upon the results of the application of two risk premium methods, as shown in Schedule PMA-D4. The first method is the Predictive Risk Premium Model (PRPM). The second method is a risk premium model using an adjusted total market approach.

Q. PLEASE EXPLAIN THE PRPM.

A. The PRPM, published in the *Journal of Regulatory Economics (JRE)*[18] and *The Electricity Journal (TEJ)*[19], was developed from the work of Robert F. Engle, who shared the Nobel Prize in Economics in 2003, "for methods of analyzing economic time series with time-varying volatility ("ARCH")"[20] (with "ARCH" standing for autoregressive conditional heteroscedasticity). Engle found that the volatility in market prices, returns, and equity risk premiums clusters over time, making them highly predictable and available to predict future levels of risk and risk premiums.

The PRPM estimates the risk / return relationship directly as the predicted equity risk premium is generated by the predictability of volatility, or risk. Thus, the PRPM is not based upon an estimate of investor behavior, but rather upon the evaluation of the actual results of that behavior, *i.e.*, the variance of historical equity risk premiums.

[18] "A New Approach for Estimating the Equity Risk Premium for Public Utilities", Pauline M. Ahern, Frank J. Hanley and Richard A. Michelfelder, Ph.D. The Journal of Regulatory Economics (December 2011), 40:261-278.

[19] "Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", Pauline M. Ahern, Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, and Frank J. Hanley, The Electricity Journal (May, 2013).

[20] www.nobelprize.org

The inputs to the model are the historical returns on the common shares of each publicly traded utility in the Natural Gas Proxy Group, minus the historical monthly yield on long-term U.S. Treasury securities, through January 2017. Using a generalized form of ARCH, known as GARCH, each natural gas utility's projected equity risk premium was determined using Eviews© statistical software. When the GARCH model is applied to the historical return data, it produces a predicted GARCH variance series[21] and a GARCH coefficient.[22] The forecasted 30-year U.S. Treasury Bond yield of 3.65% is based upon consensus forecasts for the six quarters ending with the second quarter 2018, derived from the February 1, 2017 *Blue Chip Financial Forecasts (Blue Chip)*, averaged with the long-range forecasts for 2018 – 2022 and 2023 – 2027, from the December 1, 2016 *Blue Chip*. The average PRPM indicated common equity cost rate is 11.43%, while the median is 11.81% for the Natural Gas Proxy Group, as shown in Column [7]. Consistent with my use of the average of the average and median DCF results, I rely upon the average of the average and median PRPM results of 11.62%[23] as my conclusion of the PRPM equity cost rate, also shown in Column [7] of Schedule PMA-D4.

Q. PLEASE EXPLAIN THE ADJUSTED TOTAL MARKET APPROACH RPM.

A. The adjusted total market approach RPM adds a prospective public utility bond yield to the average of: 1) an equity risk premium derived from a beta-adjusted total market equity risk premium; 2) an equity risk premium based upon the S&P Utilities Index; and, 3) an equity risk premium based upon the authorized returns for natural gas companies over Moody's A rated public utility bonds.

[21] Illustrated in Columns [1] and [2] on page 2 of Schedule PMA-D4.
[22] Illustrated in Column [4] on page 2 of Schedule PMA-D4.
[23] 11.62% = (11.43% + 11.81%)/2.

Q. PLEASE EXPLAIN THE BASIS OF THE ADJUSTED PROSPECTIVE BOND YIELD OF 4.89% APPLICABLE TO THE NATURAL GAS PROXY GROUP, SHOWN ON LINE NO. 5 ON PAGE 3 OF SCHEDULE PMA-D4.

A. The first step in the adjusted total market approach RPM analysis is to determine the expected bond yield. Because both ratemaking and the cost of capital, including the common equity cost rate, are prospective in nature, a prospective yield on long-term debt, similarly rated to the Natural Gas Proxy Group, is essential. Since *Blue Chip* does not publish consensus yield forecasts for the Moody's A rated public utility bonds, I began with the February 1, 2017 *Blue Chip* consensus forecast of about 50 economists of the expected yield on Aaa rated corporate bonds for the six calendar quarters ending with the second calendar quarter of 2018, averaged with the long-range forecasts for 2018 – 2022, and 2023 – 2026, from the December 1, 2016 *Blue Chip*[24]. As shown on Line No. 1 of page 3, the average expected yield on Moody's Aaa rated corporate bonds is 4.68%. In order to derive a prospective Moody's A rated public utility bond yield, an adjustment of 0.21%, or the average spread between Moody's Aaa rated corporate bond yields and Moody's A rated public utility bond yields for the three months ending January 2017[25] must be made to the average Aaa corporate bond yield, which results in a bond yield of 4.89% applicable to a Moody's A rated public utility bond.[26]

Q. PLEASE EXPLAIN THE METHOD OF ESTIMATING THE EQUITY RISK PREMIUM IN THE ADJUSTED TOTAL MARKET APPROACH.

A. The total beta-derived equity risk premium shown on page 8 of Schedule PMA-D5 is based upon an average of:

[24] See pages 9 and 10 of Schedule PMA-D4.
[25] See page 4 of Schedule PMA-D4.
[26] 4.89% = 4.68% + 0.21%.

1) The arithmetic mean monthly historical equity market equity risk premium of large company common stocks, relative to Moody's Aaa / Aa corporate bonds from 1928 – 2015;

2) The PRPM predicted monthly equity risk premium of large company common stocks relative to Moody's Aaa / Aa corporate bonds from January 1928 – January 2017;

3) The results of a regression analysis of the monthly equity risk premiums of large company common stocks relative to Moody's Aaa / Aa corporate bonds from 1928 – 2015;

4) The 3-5 year median total market price appreciation projections and expected market dividend yield for the thirteen weeks ending February 10, 2016 reported by *Value Line*; and,

5) A forecasted equity risk premium based upon the S&P 500 market-value weighted projected market appreciation and dividend yield.

Q. HOW DID YOU DERIVE THE LONG-TERM HISTORICAL MARKET EQUITY RISK PREMIUM?

A. To derive a historical market equity risk premium, I used the most recent Morningstar data on holding period returns for the large company common stocks from the Morningstar® SBBI® Appendix A Tables ("Morningstar - 2016"),[27] and the average historical yield on Moody's Aaa and Aa rated corporate bonds for the period 1928-2015. The use of holding period returns over a very long period of time is useful because it is

[27] Table A-1. Morningstar® SBBI® Appendix A Tables, Morningstar Stocks, Bonds, Bills, and Inflation | 1926 – 2015, © 2016. Morningstar has decided to stop publishing the Ibbotson Classic Yearbook, but has provided the Appendix A Tables.

consistent with the long-term investment horizon by investing in a going concern, *i.e.*, a company expected to operate in perpetuity.

Morningstar's long-term arithmetic mean monthly total return rate on large company common stocks is 11.68% and the long-term arithmetic mean monthly yield on Moody's Aaa and Aa rated corporate bonds is 6.16%. The resultant long-term historical equity risk premium on the market as a whole is 5.52%, shown on Line No. 1 on page 8 of Schedule PMA-D4.

I used arithmetic mean monthly total return rates for the large company stocks and yields (income returns) for Moody's Aaa / Aa corporate bonds because they are appropriate for cost of capital purposes. The use of arithmetic mean return rates and yields are appropriate because ex-post (historical) total returns and equity risk premiums differ in size and direction over time, providing insight into the variance and standard deviation of returns needed by investors in estimating future risk when making a current investment. Absent such valuable insight into the potential variance of returns, investors cannot meaningfully evaluate prospective risk. If investors alternatively relied upon the geometric mean of ex-post equity risk premiums, they would have no insight into the potential variance of future returns because the geometric mean relates the change over many periods of time to a constant rate of change, thereby obviating the period-to-period fluctuations, or variance, critical to risk analysis.

Q. PLEASE EXPLAIN THE DERIVATION OF A PRPM MARKET EQUITY RISK PREMIUM.

A. I used the same PRPM approach described previously to develop a second market equity risk premium estimate. The inputs to the model are the historical monthly returns on

large company common stocks from Morningstar – 2016, minus the monthly yields on Aaa and Aa rated corporate bonds during the period January 1928 through January 2017. Using the previously discussed GARCH model, the market's projected equity risk premium was determined using Eviews© statistical software. The resulting predicted market equity risk premium based upon the PRPM is 6.38%, shown on Line No. 2 on page 8 of Schedule PMA-D4.

Q. PLEASE EXPLAIN THE DERIVATION OF THE REGRESSION BASED MARKET EQUITY RISK PREMIUM.

A. To derive the regression analysis-derived market equity risk premium of 7.40%, shown on Line No. 3 on page 8 of Schedule PMA-D4, I used monthly annualized total returns on large company common stocks relative to the monthly annualized yields on Moody's Aaa / Aa corporate bonds from 1928 – 2015. The relationship between interest rates and the market equity risk premium was modeled using the observed monthly market equity risk premium as the dependent variable, and the monthly yield on Moody's Aaa / Aa corporate bonds as the independent variable. I used a linear Ordinary Least Squares ("OLS") regression, in which the market equity risk premium is expressed as a function of the Moody's Aaa / Aa corporate bonds yield:

$$RP = \alpha + \beta\ (R_{Aaa/Aa})$$

Q. PLEASE EXPLAIN THE DERIVATION OF A PROJECTED MARKET EQUITY RISK PREMIUM BASED UPON *VALUE LINE* DATA.

A. As noted previously, because both ratemaking and the cost of capital, including the cost rate of common equity, are prospective, a prospective market equity risk premium is essential. Consistent with the development of the dividend yield component of my DCF

analysis, the fourth prospective market equity risk premium of 4.60%, shown on Line No. 4 on page 8 of Schedule PMA-D4, is derived from an average of the 3-5 year estimated median market price appreciation potential provided by *Value Line*, plus an average of the median estimated dividend yield for the common stocks of the approximately 1,700 firms covered in *Value Line*'s Standard Edition, both for the thirteen weeks ending February 10, 2017.

The average median expected price appreciation is 32%, which translates to an 7.19% annual appreciation and, when added to the average (similarly calculated) median dividend yield of 2.09%, equates to a forecasted annual total return rate on the market as a whole of 9.28%. The forecasted Aaa bond yield of 4.68%[28] is deducted from the total market return of 9.28%, resulting in an equity risk premium of 4.60%.

Q. PLEASE EXPLAIN THE DERIVATION OF A MARKET EQUITY RISK PREMIUM BASED UPON THE S&P 500 COMPOSITE INDEX COMPANIES.

A. Using data from Bloomberg Professional Services, a market-value weighted expected total return for the S&P 500 companies can be derived using the expected dividend yields and projected long-term growth in earnings per share as a proxy for capital appreciation. The expected market-value weighted total return for the S&P 500 is 13.08%. Subtracting the prospective yield on Moody's Aaa rated corporate bonds of 4.68% results in an 8.40% projected market equity risk premium, shown on Line No. 5 on page 8 of Schedule PMA-D4.

Q. WHAT IS YOUR CONCLUSION OF THE MARKET EQUITY RISK PREMIUM FOR YOUR TOTAL MARKET APPROACH RPM?

[28] See page 8 of Schedule PMA-D4.

A. It is 6.46% as shown on Line No. 6 on page 8 of Schedule PMA-D4. In arriving at this conclusion, I averaged: 1) the historical market equity risk premium of 5.52%; 2) the PRPM based market equity risk premium of 6.38%; 3) the regression based market equity risk premium of 7.40%; 4) the *Value Line*-based forecasted market equity risk premium of 4.60%; and, 5) the S&P 500 market-value weighted projected market equity risk premium of 8.40% shown on Line Nos. 1 through 5 on page 8 of Schedule PMA-D4.[29]

Q. WHAT IS YOUR CONCLUSION OF A BETA DERIVED EQUITY RISK PREMIUM FOR USE IN YOUR TOTAL MARKET APPROACH RPM ANALYSIS?

A. The conclusion of the market equity risk premium of 6.46% is then adjusted by beta to account for the market risk of the Natural Gas Proxy Group. Beta is a measure of relative risk to the market as a whole and a logical means by which to allocate an entity's/proxy group's share of the total market's equity risk premium relative to corporate bond yields. As shown on page 1 of Schedule PMA-D5, Column [3], the average of the mean and median *Value Line* and Bloomberg betas for the Natural Gas Proxy Group average is 0.69. Multiplying a beta of 0.69 by the market equity risk premium of 6.46%, on Line No. 6 of page 8 of Schedule PMA-D4, results in a beta adjusted equity risk premium of 4.46% for the Natural Gas Proxy Group, as shown on Line No. 8 on page 8 of Schedule PMA-D4.

Q. PLEASE EXPLAIN THE DERIVATION OF AN EQUITY RISK PREMIUM BASED UPON THE S&P UTILITY INDEX.

A. I calculated four estimated equity risk premiums based upon the S&P Utility Index. First, I derived the long-term monthly arithmetic mean equity risk premium between the S&P

[29] 6.46% = ((5.52% + 6.38% + 7.40% + 4.60% + 8.40%) / 5).

Utility Index total returns of 10.49% and monthly Moody's A rated public utility bond yields of 6.64% from 1928 – 2015, to arrive at an equity risk premium of 3.85%.[30] Second, I applied the PRPM using historical monthly equity risk premiums from January 1928 through January 2017, to arrive at the PRPM derived equity risk premium of 4.34% for the S&P Utility Index.[31] Third, I derived a regression based analysis of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A rated public utility bonds from 1928 – 2015, of 5.50%.[32] Fourth, I derived an expected market-value weighted total return on the S&P Utility Index of 8.25% using data from Bloomberg Professional Services, and subtracting the prospective Moody's A rated public utility bond yield of 4.89%, resulting in an equity risk premium of 3.36%, as shown on Line No 6 on page 11 of Schedule PMA-D4.

I rely upon the average of the historical (3.85%); the PRPM (4.34%); the regression based (5.50%); and, S&P Utility Index (3.36%) derived equity risk premiums, which is 4.26%, shown on Line No. 7 on page 11 of Schedule PMA-D4.[33]

Q. HOW DID YOU DERIVE AN EQUITY RISK PREMIUM OF 5.15% BASED ON AUTHORIZED RETURNS ON COMMON EQUITY FOR NATURAL GAS COMPANIES?

A. The equity risk premium of 5.15% shown on Line No. 3, page 7 of Schedule PMA-D4 is the result of a regression analysis based on regulatory awarded returns on common equity related to the yields on A-rated public utility bonds. That analysis is summarized on page 12 of Schedule PMA-D4, which presents the graphical results of a regression analysis of

[30] As shown on Line No. 3, on page 11 of Schedule PMA-D4.
[31] As shown on Line No. 4, on page 11 of Schedule PMA-D4.
[32] As shown on Line No. 5, on page 11 of Schedule PMA-D4.
[33] 4.26% = ((3.85% + 4.34% + 5.50% + 3.36%) / 4).

752 rate cases for natural gas utility companies which were fully litigated during the period from January 1, 1980 through December 31, 2016. The data used were the implicit equity risk premium relative to the yields on A-rated public utility bonds immediately prior to the issuance of each regulatory decision.[34] An inverse relationship between the yield on A-rated public utility bonds and equity risk premium is clearly visible in the chart on page 12. In other words, as interest rates decline, the equity risk premium rises and vice versa, a result consistent with regulatory financial literature on the subject.[35] Given the expected A-rated utility bond yield of 4.89%, it can be interpolated that the indicated equity risk premium applicable to that bond yield is 5.15%, which is shown on Line No. 3, page 5 of Schedule PMA-D4.

Q. WHAT IS YOUR CONCLUSION OF AN EQUITY RISK PREMIUM FOR USE IN YOUR ADJUSTED TOTAL MARKET APPROACH RPM ANALYSIS?

A. The equity risk premium applicable to the Natural Gas Proxy Group is 4.62%,[36] derived by averaging the beta-derived premium of 4.46% (Line No. 8 on page 8 of Schedule PMA-D4), the equity risk premium of 4.26% based upon the holding period returns of public utilities with Moody's A rated bonds (Line No. 7 on page 11 of Schedule PMA-D4) and the 5.15% equity risk premium based upon the regression analysis of authorized returns on common equity for natural gas companies (page 12 of Schedule PMA-D4).

[34] The implied equity risk premium is calculated by subtracting the prevailing yield on Moody's A rated public utility bonds from the authorized return on common equity for each case.

[35] Robert S. Harris and Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management, Summer 1992 63-70; Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management, Spring 1985 33-45; and Farris M. Maddox, Donna T. Pippert, and Rodney N. Sullivan, *An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry*, Financial Management, Autumn 1995 89-95.

[36] 4.62% = (4.46% + 4.26% + 5.15%) / 3).

Q. WHAT IS THE RPM-BASED COMMON EQUITY COST RATE BASED UPON THE ADJUSTED TOTAL MARKET APPROACH?

A. It is 9.51% for the Natural Gas Proxy Group as shown on Line No. 7 on page 3 of Schedule PMA-D4.

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE PRPM AND THE ADJUSTED TOTAL MARKET APPROACH RPM?

A. As shown on page 1 of Schedule PMA-D4, the indicated RPM-derived common equity cost rate is 10.57%[37], derived by averaging the PRPM results with those based upon the adjusted total market approach.

Capital Asset Pricing Model ("CAPM")

Q. PLEASE EXPLAIN THE THEORETICAL BASIS OF THE CAPM.

A. CAPM theory defines risk as the covariance of a security's returns with the market's returns as measured by beta (β). A beta less than 1.0 indicates lower variability while a beta greater than 1.0 indicates greater variability than the market.

The CAPM assumes that all other risk, *i.e.*, all non-market or unsystematic risk, can be eliminated through diversification. The risk that cannot be eliminated through diversification is called market or systematic risk. In addition, the CAPM presumes that investors require compensation only for these systematic risks that are the result of macroeconomic and other events that affect the returns on all assets. The model is applied by adding a risk-free rate of return to a market risk premium, which is adjusted proportionately to reflect the systematic risk of the individual security relative to the total market, as measured by beta. The traditional CAPM model is expressed as:

[37] 10.57% = ((11.62% + 9.51%) / 2).

$$Rs = Rf + \beta(Rm - Rf)$$

Where:

Rs	=	Return rate on the common stock
Rf	=	Risk-free rate of return
Rm	=	Return rate on the market as a whole
β	=	Adjusted beta (volatility of the security relative to the market as a whole)

Numerous tests of the CAPM have measured the extent to which security returns and betas are related, as predicted by the CAPM, confirming the CAPM's validity. The empirical CAPM ("ECAPM") reflects the reality that, while the results of these tests support the notion that beta is related to security returns, the empirical Security Market Line ("SML") described by the CAPM formula is not as steeply sloped as the predicted SML. Morin[38] states:

> With few exceptions, the empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted.
>
> * * *
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\,\beta(R_M - R_F) + (1-x)\,\beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta(R_M - R_F)$$

[38] Morin 175, 190.

In view of theory and practical research, I have applied both the traditional CAPM and the ECAPM to the companies in the Natural Gas Proxy Group, and averaged the results.

Q. PLEASE DESCRIBE YOUR SELECTION OF BETA FOR YOUR CAPM ANALYSIS?

A. I relied upon an average of the adjusted betas published by the *Value Line* and provided by Bloomberg Professional Services. While both of those services adjust their calculated (or "raw") beta to reflect the tendency of beta to regress toward the market mean of 1.00, *Value Line* calculates its beta over a five-year period, while Bloomberg's calculation is based upon two years of data.

Q. PLEASE DESCRIBE YOUR SELECTION OF A RISK-FREE RATE OF RETURN FOR YOUR CAPM ANALYSIS.

A. As shown in Column [5], of Schedule PMA-D5, the risk-free rate adopted for both applications of the CAPM is 3.65%. The risk-free rate of 3.65% is based upon the average of the consensus forecast for the six quarters ending with the second quarter 2018, from the January 1, 2017 *Blue Chip*, averaged with the long-range forecasts for 2018 – 2022, and 2023 – 2027, from the December 1, 2016, *Blue Chip*,[39] as detailed in Note 2 on page 2 of Schedule PMA-D5.

Q. WHY IS THE YIELD ON LONG-TERM U.S. TREASURY BONDS APPROPRIATE FOR USE AS THE RISK-FREE RATE?

A. The yield on long-term U.S. Treasury Bonds is almost risk-free and its term is consistent with: 1) the long-term cost of capital to public utilities measured by the yields on A rated public utility bonds; 2) the long-term investment horizon inherent in utilities' common

[39] See pages 9 and 10 of Schedule PMA-D4.

stock; and 3) the long-term life of the jurisdictional rate base to which the allowed fair rate of return (*i.e.*, cost of capital) will be applied. In contrast, short-term U.S. Treasury yields are more volatile, and reflect a short-term investment horizon that is not consistent with the long-term investment horizon and life of the rate base to which the allowed rate of return is applied.

Q. PLEASE EXPLAIN THE ESTIMATION OF THE EXPECTED EQUITY RISK PREMIUM FOR THE MARKET.

A. The basis of the market equity risk premium is explained in detail in Note 1 of Schedule PMA-D5. It is derived from an average of:

1) The 3-5 year median total market price appreciation projections and expected market dividend yield for the thirteen weeks ending February 10, 2016 reported by *Value Line;*
2) The arithmetic mean monthly equity risk premium of large company common stocks relative to long-term U.S. Treasury bond income yields from Morningstar - 2016 from 1926 – 2015;
3) The PRPM predicted market equity risk premium, using monthly equity risk premiums for large company common stocks relative to long-term U.S. Treasury securities from January 1926 through January 2017;
4) The results of a regression analysis of the monthly equity risk premiums of large company common stocks relative to long-term U.S. Treasury bond income yields from Morningstar - 2016 from 1926 – 2015; and,
5) The market-value weighted projected total return on the S&P 500 minus the projected risk-free rate.

The *Value Line*-derived forecasted total market equity risk premium is derived by deducting the projected 3.65% risk-free rate, discussed above, from the *Value Line* projected total annual market return of 9.28%, also discussed above, resulting in a forecasted total market equity risk premium of 5.63%, derived in Note 1 on page 2 of Schedule PMA-D5.[40]

The long-term income return on U.S. Government Securities of 5.20% was deducted from the Morningstar – 2016[41] monthly historical total market return of 11.95%, resulting in an historical market equity risk premium of 6.75%[42], derived in Note 1 on page 2 of Schedule PMA-D5.

The PRPM market equity risk premium is 7.20%, derived using the PRPM, discussed above, relative to the yields on long-term U.S. Treasury securities from January 1926 through January 2017, as shown in Note 1 on page 2 of Schedule PMA-D5.

To derive the regression analysis-derived market equity risk premium of 8.66%, shown in Note 1 on page 2 of Schedule PMA-D5, I used monthly annualized historical returns on the S&P 500 relative to historical yields on long-term U.S. Government Securities from Morningstar - 2016. The relationship between interest rates and the market equity risk premium was modeled using the observed monthly market equity risk premium as the dependent variable, and the monthly yield on long-term U.S. Government Securities yield as the independent variable. I used a linear OLS regression, in which the market equity risk premium is expressed as a function of the U.S. Government Securities yield:

[40] 5.63% = 9.28% - 3.65%.
[41] Morningstar – 2016 Appendix A Tables.
[42] 6.75% = 11.95% - 5.20%.

$$RP = \alpha + \beta (R_f)$$

The S&P 500 market-value weighted projected market equity risk premium of 9.43% is derived by subtracting the 3.65% projected risk-free rate, discussed above, from the projected total return of 13.08%, also discussed above, as shown on Schedule PMA-D5.[43]

These five market equity risk premiums result in an average total market equity risk premium of 7.53%, as shown on Schedule PMA-D5.[44]

Q. WHAT ARE THE RESULTS OF YOUR APPLICATION OF THE TRADITIONAL AND EMPIRICAL CAPM TO THE NATURAL GAS PROXY GROUP?

A. As shown in Column [8] on page 1 of Schedule PMA-D5, the average CAPM / ECAPM equity cost rate is 9.14%, while the median CAPM / ECAPM result is 9.07%, averaging 9.11%. Consistent with my reliance upon the average of the average and median results of the DCF discussed above, the Natural Gas Proxy Group's common equity cost rate based upon my CAPM analyses is 9.11%.[45]

DCF, RPM and CAPM Analyses for the Non-Price Regulated Proxy Group

Q. YOU HAVE ALSO INCLUDED AN ANALYSIS OF DATA FOR A NON-PRICE REGULATED PROXY GROUP. PLEASE EXPLAIN.

A. Neither the *Hope* nor *Bluefield* cases specify that comparable risk companies have to be regulated utilities. Since rate regulation is a substitute for the competition of the marketplace, non-price regulated firms operating in the competitive marketplace are an excellent proxy if a group can be selected to be comparable in total risk to the Natural

[43] 9.43% = 13.08% - 3.65%,
[44] 7.53% = ((5.63% + 6.75% + 7.20% + 8.66% + 9.43%) / 5).
[45] 9.11% = ((9.14% + 9.07%)/2).

Gas Proxy Group upon whose market data is used to estimate the cost of common equity for the Companies. As explained below, the selection criteria I utilized are theoretically and empirically sound and produced results for a non-regulated proxy group which is comparable in total risk to the Natural Gas Proxy Group.

Q. PLEASE EXPLAIN HOW YOU SELECTED THE NON-PRICE REGULATED PROXY GROUP.

A. The selection criteria I utilized to select the non-price regulated firms were based upon statistics derived from *Value Line* regression analyses of weekly market prices over the most recent 260 weeks, *i.e.*, five years, from the market prices paid by investors. *Value Line* unadjusted betas were used as a measure of systematic risk, while the standard errors of the regressions giving rise to those beta coefficients are a measure of unsystematic or firm-specific risk reflecting the extent to which events specific to a firm's operations affect its stock price. In essence, companies with similar betas and standard errors of the regression have similar total investment risk. The criteria used to select the Non-Price Regulated Proxy Group were:

1) The unadjusted beta coefficients from the *Value Line* regressions must lie within plus or minus two standard deviations of the average unadjusted beta coefficients of the Natural Gas Proxy Group;
2) The residual standard errors of the *Value Line* regressions which gave rise to the unadjusted beta coefficients must lie within plus or minus two standard deviations of the average residual standard error of the Natural Gas Proxy Group;
3) The non-price regulated firms must be covered by *Value Line* (Standard Edition); and,
4) The firms must be domestic, non-price regulated companies, *i.e.*, non-utilities.

The basis of selection and the comparison group's regression statistics are shown in Schedule PMA-D6. The following sixteen companies met these criteria:

- AmerisourceBergen (ABC);
- AutoZone Inc. (AZO);
- Bard (C.R.) (BCR);
- Campbell Soup (CPB);
- Dr. Pepper Snapple (DPS);
- Erie Indemnity (ERIE);
- Lancaster Colony Corp. (LANC);
- Lilly (Eli) and Co. (LLY);
- Merck & Co. (MRK);
- Reynolds American (RAI);
- Smucker (J.M.) (SJM);
- Stericycle Inc. (SCRL);
- Target Corp. (TGT);
- TJX Companies (TJX);
- Verisk Analytics (VRSK); and
- Waste Connections (WCN).

Q. DID YOU CALCULATE COMMON EQUITY COST RATES USING THE DCF, RPM AND CAPM FOR THE NON-PRICE REGULATED PROXY GROUP?

A. Yes. Because the DCF, RPM and CAPM have been applied in an identical manner as described above relative to the market data of the Natural Gas Proxy Group, I will not repeat the details of the rationale and application of each model shown on page 1 of Schedule PMA-D7. I should note, however, that in the application of the RPM, I did not use public utility-specific equity risk premiums nor apply the PRPM to the individual companies.

Page 2 of Schedule PMA-D7 contains the derivation of the DCF cost rates. As shown, the average of the mean and median DCF-based cost rates for the Non-Price Regulated Proxy Group is 11.86%.

Pages 3 through 5 of Schedule PMA-D7 contain the data and calculations relating to the 10.11% RPM cost rate for the Non-Price Regulated Proxy Group. As shown on Line No. 1 of page 3, the consensus prospective yield on Moody's Baa-rated corporate bonds of 5.51% is based upon the forecasted yields for the six quarters ending with the first quarter of 2018, from the February 1, 2017 *Blue Chip*, averaged with the long-range forecasted yields for 2018 – 2022, and 2023 – 2027, from the December 1, 2016 *Blue Chip*.[46] Because the Non-Price Regulated Proxy Group members have an average Moody's long-term issuer rating of Baa1, as shown on page 4 of Schedule PMA-D7, a downward adjustment of 0.18% to the prospective bond yield is necessary to reflect the difference in ratings[47], which results in a projected Baa1 corporate bond yield of 5.33%, shown in Line No. 4 of page 3 of Schedule PMA-D7. When the beta-adjusted risk premium of 4.97%[48], relative to the Non-Price Regulated Proxy Group, is added to the prospective Baa1 rated corporate bond yield of 5.33%, the RPM-based cost rate is 10.30%, as shown in Line No. 5 on page 3 of Schedule PMA-D7.

Page 6 of Schedule PMA-D8 contains the details of the application of the traditional CAPM and ECAPM to the Non-Price Regulated Proxy Group. As shown, the mean and median traditional CAPM and ECAPM results are 9.67% / 9.57% for the Non-Price Regulated Proxy Group which, when averaged, result in a CAPM-based cost rate of 9.62%.[49]

Q. WHAT IS YOUR CONCLUSION OF THE COST RATE OF COMMON EQUITY BASED UPON THE NON-PRICE REGULATED PROXY GROUP?

[46] See pages 9 and 10 of Schedule PMA-D4.
[47] As shown on Line No. 2 and explained in Note 2 on page 4 of Schedule PMA-D7.
[48] Derived on page 5 of Schedule PMA-D7.
[49] 9.62% = (9.67% + 9.57%) / 2).

A. It is 10.45%, as shown on page 1 of Schedule PMA-D7. The results of the DCF, RPM and CAPM applied to the Non-Price Regulated Group are 11.86%, 10.30% and 9.62%, respectively. Based upon these results, I will rely upon the average of the mean and median results of the three models, which is 10.45% for the Non-Price Regulated Proxy Group.

INDICATED COMMON EQUITY COST RATE

Q. WHAT IS THE INDICATED COMMON EQUITY COST RATE?

A. It is 10.00%, based upon the common equity cost rates resulting from the application of cost of common equity models to the Natural Gas Proxy Group and to a Non-Price Regulated proxy group comparable in total risk to the Natural Gas Proxy Group before any adjustments for flotation costs or the Companies' greater business risk due to their smaller size relative to the Gas Proxy Group.

As discussed above, I employ multiple cost of common equity models as primary tools in arriving at my recommended common equity cost rate because:

1) No single model is so inherently precise that it can be relied upon solely to the exclusion of other theoretically sound models;

2) All of the models are market-based;

3) The use of multiple models adds reliability to the estimation of the common equity cost rate; and,

4) The prudence of using multiple cost of common equity models is supported in both the financial literature and regulatory precedent.

Therefore, multiple models should be relied upon when estimating the investor required rate of return on common equity.

The results of my cost of common equity models applied to the Natural Gas Proxy Group are shown on Schedule PMA-D1 and are summarized in Table 3 below:

Table 3
Indicated Common Equity Cost Rate

Natural Gas Proxy Group	
Discounted Cash Flow Model ("DCF")	8.68%[50]
Risk Premium Model ("RPM")	10.57%
Capital Asset Pricing Model ("CAPM")	9.11%
Non-Price Regulated Proxy Group	
Cost of Common Equity Models Applied to Comparable Risk, Non-Price Regulated Cos.	10.45%
Indicated Common Equity Cost Rate Before Adjustments	10.00%

Based upon these common equity cost rate results, I conclude that a common equity cost rate of 10.00% is indicated for the Natural Gas Proxy Group before applying a flotation cost adjustment and the necessary business risk adjustment to determine the Companies' common equity cost rate of 10.35%, which will be discussed in detail below

ADJUSTMENTS TO THE INDICATED COMMON EQUITY COST RATE TO REFLECT FLOTATION COSTS, AND THE BUSINESS RISK OF THE COMPANIES

Flotation Cost Adjustment

Q. WHAT ARE FLOTATION COSTS?

A. Flotation costs are those costs associated with the sale of new issuances of common stock. They include market pressure and the essential costs of issuance (e.g., underwriting fees and out-of-pocket costs for printing, legal, registration, etc.).

[50] As discussed previously in this testimony, currently, the application of the DCF model understates the required return on common equity by nearly 490 basis points due to currently significantly high market-to-book ratios. Accordingly, the results of that model should be given only very limited weight in deriving a reasonable return on equity in this proceeding.

Q. WHY MUST FLOTATION COSTS BE RECOGNIZED IN THE ALLOWED RETURN ON COMMON EQUITY?

A. Flotation cost must be recognized in the allowed return on common equity because there is no other mechanism in the ratemaking paradigm with which such costs can be recovered. Because these costs are real and legitimate, recovery of these costs should be permitted. As noted by Morin[51]:

> The costs of issuing these securities are just as real as operating and maintenance expenses or costs incurred to build utility plants, and fair regulatory treatment must permit recovery of these costs….
>
> The simple fact of the matter is that common equity capital is not free….[Flotation costs] must be recovered through a rate of return adjustment.

Q. SHOULD FLOTATION COSTS BE RECOGNIZED ONLY WHEN THERE WAS AN ISSUANCE DURING THE TEST YEAR OR THERE IS AN IMMINENT POST-TEST YEAR ISSUANCE OF ADDITIONAL COMMON STOCK?

A. No. As noted above, there is no mechanism through which such costs can be captured in the ratemaking paradigm other than an adjustment to the allowed common equity cost rate. Flotation costs are charged to capital accounts and are not expensed on a utility's income statement. As such, flotation costs are analogous to capital investments, albeit negative, reflected on the balance sheet. Recovery of capital investments relates to the expected useful lives of the investment. Since common equity has a very long and indefinite life (assumed to be infinity in the standard regulatory DCF model), flotation costs should be recovered through an adjustment to common equity cost rate even when

[51] Morin, 321.

there has not been an issuance during the test year nor in the absence of an expected imminent issuance of additional shares of common stock.

Historical flotation costs are a permanent loss of investment to the utility and should be accounted for when setting the allowed return on common equity. When any company, including a utility, issues common stock, flotation costs are incurred for legal, accounting, printing fees and the like. For each dollar of issuing market price, a small percentage is expensed and is permanently unavailable for investment in utility rate base. For example, since these expenses are charged to capital accounts and not expensed on the income statement, the only way to restore the full value of the issuance price is to earn more than the investor required market return on the issuance price, so that the investor receives a full fair return on his / her investment. In other words, if a company issues stock at $1.00 with 5% in flotation costs, it will net $0.95 in investment. Assuming the investor in that stock requires a 10% return on his or her invested $1.00 (*i.e.*, a return of $0.10), the company needs to earn approximately 10.5% on its invested $0.95 to receive a $0.10 return.

Q. DO THE DCF, RPM, AND CAPM ALREADY REFLECT INVESTORS' ANTICIPATION OF FLOTATION COSTS?

A. No. These models assume no transaction costs and therefore flotation costs are not reflected in the results of the application of these models. The literature is quite clear on this point. For example, Brigham and Daves[52] confirm this, providing the methodology utilized to calculate the flotation adjustment. Morin[53] also confirms the need for such an adjustment even when no new equity issuance is imminent. Consequently, it is proper to

[52] Eugene F. Brigham and Phillip R. Daves, Intermediate Financial Management, 9th Edition, Thomson/Southwestern 342.
[53] Morin 327 – 30.

include a flotation cost adjustment when using market-based cost of common equity models to estimate the common equity cost rate.

Q. HOW DID YOU CALCULATE THE FLOTATION COST ALLOWANCE?

A. I modified the DCF calculation to provide a dividend yield that would reimburse investors for issuance costs in accordance with the method cited in literature by Brigham and Daves as well as Morin. The flotation cost adjustment recognizes the costs of issuing equity that were incurred by Spire Inc.[54] since January 2001. Based upon the issuance costs shown on page 1 of Schedule PMA-D8, an adjustment of 0.16% is required to reflect the flotation costs applicable to the Natural Gas Proxy Group.

Business Risk Adjustment

Q. IS THERE A WAY TO QUANTIFY AN ADJUSTMENT DUE TO THE COMPANIES' GREATER BUSINESS RISK DUE TO SIZE RELATIVE TO THE NATURAL GAS PROXY GROUP?

A. Yes, the previously discussed empirical evidence on the effect of small size provides insight into the magnitude of such adjustments to reflect the greater business risk of the Companies' based upon their collective small size relative to the Natural Gas Proxy Group.

As discussed above, increased risk due to small size must be taken into account in the cost of common equity, consistent with the financial principle of risk and return. Because the Companies are collectively smaller in size relative to the Natural Gas Proxy Group, as previously discussed and measured by their estimated market capitalization,

[54] Formerly The Laclede Group Inc.

they have greater business risk than the average company in the Natural Gas Proxy Group. The previously cited Duff & Phelps 2016 which discusses the nature of the small size phenomenon, provides one indication of the magnitude of the size premium based upon estimated market capitalization.

The Companies are collectively smaller than the average company in the Natural Gas Proxy Group, upon whose market data my recommended common equity cost rate is based. Since the Natural Gas Proxy Group's market data reflects its collective risk, including the lower risk of its greater size based upon market capitalization relative to the Companies, an adjustment to the Natural Gas Proxy Group's indicated common equity cost rate of 10.000% must be made to reflect the greater relative risk of the Companies due to their smaller size based on estimated market capitalization as shown in Table 4 below:

Table 4
Estimated Market Capitalization for the Natural Gas Proxy Group and LAC / MGE

	Market Capitalization (1) ($ Millions)	Times Greater than the Company
Natural Gas Proxy Group	$3,220.742	
LAC / MGE	$2,466.000	1.3X

(1) From page 1 of Schedule PMA-D9.

As shown above, the Companies' estimated market capitalization of $2,466.000 million is lower than the average market capitalization of the Natural Gas Proxy Group, $3,220.742 million, or 1.3 times greater than the Companies, as of January 31, 2017.

Consequently, the Companies have greater relative business risk because, all else equal, size has a bearing on risk. Because investors demand a higher return as compensation for assuming greater risk, this greater relative business risk of the Companies must be reflected in the recommended cost of common equity derived from the market data of the less business risky Natural Gas Proxy Group.

The magnitude of such an adjustment to reflect the Companies' greater relative business risk due to the Companies' smaller relative size is based upon the size premiums for decile portfolios of New York Stock Exchange (NYSE), American Stock Exchange (AMEX) and NASDAQ listed companies for the 1926-2015 period and related data from Duff & Phelps -2016. The average size premium for the 4th and 5th deciles (1.24%) between which the market capitalization of the Natural Gas Proxy Group falls has been compared with the average size premium for the 5th and 6th deciles (1.56%) between which the estimated market capitalization of the Companies' falls. As shown on page 1 of Schedule PMA-D10, the size premium spread between the 5th and 6th and the 4th and 5th deciles is 0.32%.[55] In view of the foregoing, I am recommending a business risk adjustment of 0.20% to reflect the greater business risk of the Companies due to their smaller size relative to the Natural Gas Proxy Group.

CONCLUSION OF COMMON EQUITY COST RATE FOR LAC/MGE

Q. WHAT IS YOUR CONCLUSION OF COMMON EQUITY COST RATE FOR LAC AND MGE?

A. In view of the foregoing, it is necessary to add a flotation cost adjustment, as well as a business risk adjustment to the 10.00% indicated common equity cost rate based upon the

[55] 0.32% = 1.56% - 1.24%

market data of the Natural Gas Proxy Group. Table 5 below summarizes these adjustments and the resulting cost of common equity for the Companies.

Table 5
Summary of Common Equity Cost Rate for LAC / MGE

Indicated Proxy Group Common Equity Cost Rate Before Adjustments	10.00%
Flotation Cost Adjustment	0.16%
Business Risk Adjustment	0.20%
Common Equity Cost Rate After Adjustments	10.36%
Recommended Common Equity Cost Rate	10.35%

Adding a flotation cost adjustment of 0.16% and a business risk adjustment of 0.20% to the 10.00% indicated common equity cost rate applicable to the Natural Gas Proxy Group results in a flotation cost and risk-adjusted common equity cost rate of 10.36%, which when rounded to 10.35% is my recommended common equity cost rate applicable to the Companies.

In my opinion, a common equity cost rate of 10.35%, which results in an overall rate of return of 7.700%, is both reasonable and conservative given the Companies' greater business risks relative to the Natural Gas Proxy Group.

In addition, a common equity cost rate of 10.35% is consistent with the *Hope* and *Bluefield* standards of a fair and reasonable return which ensures the integrity of presently invested capital and enables the attraction of needed new capital on reasonable terms. It also ensures that the Companies will be able to continue providing safe, adequate and reliable natural gas service to the benefit of their customers. Thus, it balances the interests of both customers and the Companies.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

Pauline M. Ahern, CRRA
Executive Director
ScottMadden Inc.

Ms. Ahern has served as a consultant for investor-owned and municipal utilities and authorities for nearly 30 years. As a Certified Rate of Return Analyst (CRRA), she has extensive experience in rate of return analyses, including the development of ratemaking capital structure ratios, senior capital cost rates, and the cost rate of common equity for regulated public utilities. She has testified as an expert witness before 31 regulatory commissions in the U.S. and Canada.

She also maintains the benchmark index against which the American Gas Association's (AGA) Mutual Fund performance is measured. Ms. Ahern has also served as President of the Society of Utility Regulatory and Financial Analysts (SURFA) from 2006-2010 and now sits on its Board of Directors. SURFA is a non-profit organization founded to promote the education and understanding of rate of return analysis which represents utility financial analysts in government, the financial community, industry and academia. She also serves on the Finance/Accounting/Taxation Committees of the National Association of Water Companies. Ms. Ahern is also a member of the Advisory Council, Financial Research Institute, University of Missouri - Robert J. Trulaske, Sr. School of Business. She is also a member of Edison Electric Institute's Cost of Capital Working Group.

PROFESSIONAL HISTORY

ScottMadden Inc. (2016 – Present)

Sussex Economic Advisors, LLC (2015 – 2016)
Partner

AUS Consultants (1988 – 2015)
Principal

- Offered testimony as an expert witness on the subjects of fair rate of return, cost of capital and related issues before state public utility commissions.
- Provided assistance and support to clients throughout the entire ratemaking litigation process; supervision of the financial analyst and administrative staff in the preparation of fair rate of return and cost of capital testimonies and exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies as well as the preparation of interrogatory responses, as well as rebuttal exhibits.
- Responsible for the production, publishing, and distribution of the AUS Utility Reports (formerly C. A. Turner Utility Reports), which has provided financial data and related ratios for about 80 public utilities (*i.e.*, electric, combination gas and electric, natural gas distribution, natural gas transmission, telephone, and water utilities, on a monthly, quarterly and annual basis) since 1930. Subscribers include utilities, many state regulatory commissions, federal agencies, individuals, brokerage firms, attorneys, as well as public and academic libraries.
- Responsible for maintaining and calculating the performance of the AGA Index, a market capitalization weighted index of the common stocks of the approximately 70 corporate members of the AGA, which serves as the benchmark for the AGA Gas Utility Index Fund.

Assistant Vice President

- Prepared fair rate of return and cost of capital exhibits which were filed along with expert testimony before various state and federal public utility regulatory bodies; supporting exhibits include the determination of an appropriate ratemaking capital structure and the development of embedded cost rates of senior capital and also support the determination of a recommended

return on common equity through the use of various market models, such as, but not limited to, Discounted Cash Flow analysis, Capital Asset Pricing Model and Risk Premium Methodology, as well as an assessment of the risk characteristics of the client utility.

- Assisted in the preparation of responses to any interrogatories received regarding such testimonies filed on behalf of client utilities. Following the filing of fair rate of return testimonies, assisted in the evaluation of opposition testimony in order to prepare interrogatory questions, areas of cross-examination, and rebuttal testimony and evaluated and assisted in the preparation of briefs and exceptions following the hearing process.
- Submitted testimony before state public utility commissions regarding appropriate capital structure ratios and fixed capital cost rates.

Senior Financial Analyst

- Supervised two analysts and assisted in the preparation of fair rate of return and cost of capital exhibits which are filed along with expert testimony before various state and federal public utility regulatory bodies; the team also assisted in the preparation of interrogatory responses.
- Evaluated the final orders and decisions of various commissions to determine whether further actions were warranted and to gain insight which assisted in the preparation of future rate of return studies.
- Assisted in the preparation of an article authored by Frank J. Hanley and A. Gerald Harris entitled "Does Diversification Increase the Cost of Equity Capital?" published in the July 15, 1991 issue of Public Utilities Fortnightly.

Administrator of Financial Analysis for AUS Utility Reports

- Oversaw the preparation of this monthly publication, as well as the accompanying annual publication, Financial Statistics - Public Utilities.

Financial Analyst

- Assisted in the preparation of fair rate of return studies including capital structure determination, development of senior capital cost rates, determination of an appropriate rate of return on equity, preparation of interrogatory responses, interrogatory questions of the opposition, areas of cross-examination and rebuttal testimony, as well as preparation of the annual publication C. A. Turner Utility Reports - Financial Statistics - Public Utilities.

Research Dept. of the Regional Economics Division of the Federal Reserve Bank of Boston (1973 – 1975)

Research Assistant

- Involved in the development and maintenance of econometric models to simulate regional economic conditions in New England in order to study the effects of, among other things, the energy crisis of the early 1970's and property tax revaluations on the economy of New England. I was also involved in the statistical analysis and preparation of articles for the New England Economic Review. Also, I was Assistant Editor of New England Business Indicators.

Office of the Assistant Secretary for International Affairs, U.S. Treasury Department, Washington, D.C. (1972)

Research Assistant

- Developed and maintained econometric models which simulated the economy of the United States in order to study the results of various alternate foreign trade policies so that national trade policy could be formulated and recommended.

EDUCATION

M.B.A., Rutgers University, High Honors, 1991
B.A., Clark University, Honors, 1973

DESIGNATIONS AND PROFESSIONAL AFFILIATIONS

Advisory Council
Financial Research Institute
University of Missouri's Robert J. Trulaske, Sr. School of Business
Edison Electric Institute
Cost of Capital Working Group
National Association of Water Companies
Member of the Finance/Accounting/Taxation and Rates and Regulation Committees
Society of Utility and Regulatory Financial Analysts
Member, Board of Directors – 2010-2014 President – 2006-2008 and 2008-2010
Secretary/Treasurer – 2004-2006
American Finance Association
Financial Management Association

SPEAKING ENGAGEMENTS

"Leadership in the Financial Services Sector", Guest Professor – Cost of Capital, Business Leader Development Program, Rutgers University School of Business, February 24, 2015, Camden, NJ.

Sponsor / Moderator: Hot Topic Hotline (webinar) of the Financial Research Institute - University of Missouri's Robert J. Trulaske, Sr. School of Business: "The Cost of Capital: Slower and Lower for Longer" presenter: John Lonski, Managing Director & Chief Capital Market Economist, *Capital Markets Research Group*, Moody's Analytics, November 2, 2016.

"Leadership in the Financial Services Sector", Guest Professor – Cost of Capital, Business Leader Development Program, Rutgers University School of Business, February 20, 2015, Camden, NJ.

"ROE: Trends & Analysis", American Gas Association, AGA Mini-Forum for the Financial Analysts Community & Finance Committee Meeting, September 11, 2014, The Princeton Club, New York, NY.

Guest Professor, "Measuring Risk", Asset Supervision and Administration Commission of the State Council of the Peoples' Republic of China, Rutgers School of Business, July 21, 2014, New Brunswick, NJ.

Instructor, "Cost of Capital 101", EPCOR Water America, Inc., Regulatory Management Team, June 9, 2014, Phoenix, AZ.

Moderator: Society of Utility Financial Analysts: 46th Financial Forum – "The Rating Agencies' Perspectives: Regulatory Mechanisms and the Regulatory Compact", April 22-25, 2014, Indianapolis, IN.

"The Return on Equity Debate: Its Impact on Budgeting and Investment and Wall Street's View of Risk", National Association of Water Companies – 2014 Indiana Chapter Water Summit, March 13, 2014, Indianapolis, IN.

"Regulatory Training in Financing, Planning, Strategies and Accounting Issues for Publicly- and Privately-Owned Water and Wastewater Utilities", New Mexico State University Center for Public Utilities, October 13-18, 2013, Instructor (Cost of Capital).

"Regulated Utilities – Access to Capital", (panelist) - Innovation: Changing the Future of Energy, 2013 Deloitte Energy Conference, Deloitte Center for Energy Solutions, May 22, 2013, Washington, DC.

"Comparative Evaluation of the Predictive Risk Premium Model, the Discounted Cash Flow Model and the Capital Asset Pricing Model for Estimating the Cost of Common Equity", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Advanced Workshop in Regulation and Competition, 32nd Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 17, 2013, Rutgers University, Shawnee on the Delaware, PA.

"Decoupling: Impact on the Risk and Cost of Common Equity of Public Utility Stocks", before the Society of Utility and Regulatory Financial Analysts: 45th Financial Forum, April 17-18, 2013, Indianapolis, IN.

"Issues Surrounding the Determination of the Allowed Rate of Return", before the Staff Subcommittee on Electricity of the National Association of Regulatory Utility Commissioners, Winter 2013 Committee Meetings, February 3, 2013, Washington, DC.

"Leadership in the Financial Services Sector", Guest Professor – Cost of Capital, Business Leader Development Program, Rutgers University School of Business, February 1, 2013, Camden, NJ.

"Analyst Training in the Power and Gas Sectors", SNL Center for Financial Education, Downtown Conference Center at Pace University, New York City, December 12, 2012, Instructor (Financial Statement Analysis).

"Regulatory Training in Financing Planning, Strategies and Accounting Issues for Publicly and Privately Owned Water and Wastewater Utilities", New Mexico State University Center for Public Utilities, October 14-19, 2012, Instructor (Cost of Financial Capital).

"Application of a New Risk Premium Model for Estimating the Cost of Common Equity", Co-Presenter with Dylan W. D'Ascendis, CRRA, AUS Consultants, Edison Electric Institute Cost of Capital Working Group, October 3, 2012, Webinar.

"Application of a New Risk Premium Model for Estimating the Cost of Common Equity", Co-Presenter with Dylan W. D'Ascendis, CRRA, AUS Consultants, Staff Subcommittee on Accounting and Finance of the National Association of Regulatory Commissioners, September 10, 2012, St. Paul, MN.

"Analyst Training in the Power and Gas Sectors", SNL Center for Financial Education, Downtown Conference Center at Pace University, New York City, August 7, 2012, Instructor (Financial Statement Analysis).

"Advanced Regulatory Training in Financing Planning, Strategies and Accounting Issues for Publicly and Privately Owned Water and Wastewater Utilities", New Mexico State University Center for Public Utilities, May 13-17, 2012, Instructor (Cost of Financial Capital).

"A New Approach for Estimating the Equity Risk Premium Applied to Public Utilities", before the Finance and Regulatory Committees of the National Association of Water Companies, March 29, 2012, Telephonic Conference.

"A New Approach for Estimating the Equity Risk Premium Applied to Public Utilities", (co-presenter with Frank J. Hanley, Principal and Director, AUS Consultants) before the Water Committee of the National Association of Regulatory Utility Commissioners' Winter Committee Meetings, February 7, 2012, Washington, DC.

"A New Approach for Estimating the Equity Risk Premium Applied to Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University and Frank J. Hanley, Principal and Director, AUS Consultants) before the Wall Street Utility Group, December 19, 2011, New York City, NY.

"Advanced Cost and Finance Issues for Water", (co-presenter with Gary D. Shambaugh, Principal & Director, AUS Consultants), 2011 Advanced Regulatory Studies Program – Ratemaking, Accounting and Economics, September 29, 2011, Kellogg Center at Michigan State University – Institute for Public Utilities, East Lansing, MI.

"Public Utility Betas and the Cost of Capital", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Advanced Workshop in Regulation and Competition, 30th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 20, 2011, Rutgers University, Skytop, PA.

Moderator: Society of Utility and Regulatory Financial Analysts: 43rd Financial Forum – "Impact of Cost Recovery Mechanisms on the Perception of Public Utility Risk", April 14-15, 2011, Washington, DC.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Hot Topic Hotline Webinar, December 3, 2010, Financial Research Institute of the University of Missouri.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) before the Indiana Utility Regulatory Commission Cost of Capital Task Force, September 28, 2010, Indianapolis, IN.

Tomorrow's Cost of Capital: Cost of Capital Issues 2010, Deloitte Center for Energy Solutions, 2010 Deloitte Energy Conference, "Changing the Great Game: Climate, Customers and Capital", June 7-8, 2010, Washington, DC.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Advanced Workshop in Regulation and Competition, 29th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 20, 2010, Rutgers University, Skytop, PA.

Moderator: Society of Utility and Regulatory Financial Analysts: 42nd Financial Forum – "The Changing Economic and Capital Market Environment and the Utility Industry", April 29-30, 2010, Washington, DC.

"A New Model for Estimating the Equity Risk Premium for Public Utilities" (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) – Spring 2010 Meeting of the Staff Subcommittee on Accounting and Finance of the National Association of Regulatory Utility Commissioners, March 17, 2010, Charleston, SC.

"New Approach to Estimating the Cost of Common Equity Capital for Public Utilities" (co-presenter with Richard A. Michelfelder, Ph.D., Rutgers University) - Advanced Workshop in Regulation and Competition, 28th Annual Eastern Conference of the Center for Research in Regulated Industries (CRRI), May 14, 2009, Rutgers University, Skytop, PA.

Moderator: Society of Utility and Regulatory Financial Analysts: 41st Financial Forum – "Estimating the Cost of Capital in Today's Economic and Capital Market Environment", April 16-17, 2009, Washington, DC.

"Water Utility Financing: Where Does All That Cash Come From?", AWWA Pre-Conference Workshop: Water Utility Ratemaking, March 25, 2008, Atlantic City, NJ.

PAPERS

"Comparative Evaluation of the Predictive Risk Premium Model™, the Discounted Cash Flow Model and the Capital Asset Pricing Model", co-authored with Richard A. Michelfelder, Ph.D., Rutgers University, Dylan W. D'Ascendis, and Frank J. Hanley, The Electricity Journal, May, 2013.

"A New Approach for Estimating the Equity Risk Premium for Public Utilities", co-authored with Frank J. Hanley and Richard A. Michelfelder, Ph.D., Rutgers University, The Journal of Regulatory Economics (December 2011), 40:261-278.

"Comparable Earnings: New Life for Old Precept" co-authored with Frank J. Hanley, Financial Quarterly Review, (American Gas Association), Summer 1994.

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
City Council of the City of Edmonton, CA				
EPCOR Water Services, Inc.	5/16	EPCOR Water Services, Inc.		Rate of Return
Arizona Corporation Commission				
Arizona Water Company	12/16	Arizona Water Company	W-01445A-16-0443	Return on Equity
Arizona Water Company	08/15	Arizona Water Company	W-01445A-15-0277	Return on Equity
EPCOR Water Arizona, Inc.	04/16	EPCOR Water Arizona, Inc.	WS-01303A-16-0145	Return on Equity
EPCOR Water Arizona, Inc.	03/14	EPCOR Water Arizona, Inc.	WS-01303A-14-0010	Return on Equity
Arizona Water Company	04/12	Arizona Water Company - Eastern Group	W-01445A-11-0310	DSIC Mechanism - Credit Quality; Return on Equity
Chaparral City Water Company	04/13	Chaparral City Water Company	W-02113A-13-118	Return on Equity
Arizona Water Company	08/12	Arizona Water Company - Northern Group	W-01445A-12-0348	Return on Equity
Bermuda Water Co.	09/11	Bermuda Water Co.	W-01812A-10-0521	Return on Equity
Arkansas Public Service Commission				
United Water Arkansas, Inc.	03/10	United Water Arkansas, Inc.	09-130-U	Fair Rate of Return
United Water Arkansas, Inc.	12/06	United Water Arkansas, Inc.	06-160-U	Fair Rate of Return
United Water Arkansas, Inc.	09/03	United Water Arkansas, Inc.	03-161-U	Return on Equity
Arkansas Western Gas Company d/b/a Associated Natural Gas Company	02/97	Associated Natural Gas Company	97-019-U	Capital Structure
Arkansas Western Gas Company	02/97	ANG Division – Arkansas	97-019-I	Capital Structure
Arkansas Western Gas Company	02/96	ANG Division – Arkansas	GR-97-272	Return on Equity
Arkansas Eastern Gas Company	02/96	Arkansas Western Gas Company	96-030-U	Capital Structure
British Columbia Utilities Commission				
Corix Utilities, Inc.	07/13	Corix Utilities, Inc.	Generic Cost of Capital Proceeding- Phase II	Return on Equity
Corix Utilities, Inc.	08/12	Corix Utilities, Inc.	Generic Cost of Capital Proceeding – Phase I	Return on Equity
California Public Utilities Commission				
San Gabriel Valley Water Company	05/12	San Gabriel Valley Water Company	12-05-002	Return on Equity
San Jose Water Company	05/09	San Jose Water Company	U-168-W	Return on Equity
San Jose Water Company	05/11	San Jose Water Company	U-168-W	Return on Equity
Thames RWE re: California-American Water Co.	05/02	Thames RWE re: California-American Water Co.	02-01-036	Return on Equity

Connecticut Department of Public Utility Control				
Aquarion Water Co. of Connecticut	03/13	Aquarion Water Co. of Connecticut	13-02-30	Return on Equity
Connecticut Water Company	01/10	Connecticut Water Company	09-12-11	Return on Equity
Aquarion Water Company	03/10	Aquarion Water Company	10-02-13	Return on Equity
United Water Connecticut	09/10	United Water Connecticut	10-09-08	Fair Rate of Return
United Water Connecticut	05/07	United Water Connecticut	07-05-44	Fair Rate of Return
Delaware Public Service Commission				
SUEZ Water Delaware Inc.	02/16	SUEZ Water Delaware Inc.		Fair Rate of Return
Artesian Water Company	04/14	Artesian Water Company	14-132	Fair Rate of Return
Tidewater Utilities, Inc.	11/13	Tidewater Utilities, Inc.	13-466	Return on Equity
Tidewater Utilities, Inc.	09/11	Tidewater Utilities, Inc.	11-397	Fair Rate of Return
Artesian Water Company	04/11	Artesian Water Company	11-207	Fair Rate of Return
United Water Delaware, Inc.	12/10	United Water Delaware, Inc.	10-421	Fair Rate of Return
United Water Delaware, Inc.	02/09	United Water Delaware, Inc.	09-60	Fair Rate of Return
Tidewater Utilities, Inc.	01/09	Tidewater Utilities, Inc.	09-29	Fair Rate of Return
Artesian Water Company	04/08	Artesian Water Company	14-132	Fair Rate of Return
Sussex Shores Water Company	10/07	Sussex Shores Water Company	07-278	Fair Rate of Return
United Water Delaware, Inc.	05/06	United Water Delaware, Inc.	06-174	Fair Rate of Return
Tidewater Utilities, Inc.	04/06	Tidewater Utilities, Inc.	06-145	Fair Rate of Return
Tidewater Utilities, Inc.	04/04	Tidewater Utilities, Inc.	04-152	Fair Rate of Return
Tidewater Utilities, Inc.	01/02	Tidewater Utilities, Inc.	02-28	Fair Rate of Return
Sussex Shores Water Company	11/99	Sussex Shores Water Company	99-576	Fair Rate of Return
Tidewater Utilities, Inc.	9/99	Tidewater Utilities, Inc.	99-446	Fair Rate of Return
Long Neck Water Company	01/99	Long Neck Water Company	99-31	Overall Rate of Return
United Water Delaware, Inc.	03/98	United Water Delaware	98-98	Return on Equity
United Water Delaware, Inc.	08/96	United Water Delaware, Inc.	96-164	Capital Structure and Fixed Capital Cost Rates
Florida Public Service Commission				
Utilities Inc.	08/08	Utilities Inc.	080006-WS	Fair Rate of Return
Utilities, Inc. of Florida	06/03	Utilities, Inc. of Florida	020071-WS	Fair Rate of Return
Hawaiian Public Utilities Commission				
Laie Water Company, Inc.	9/16	Laie Water Company, Inc.	2016-0229	Fair Rate of Return
GTE Hawaiian Telephone	10/96	GTE Hawaiian Telephone	95-0054	Common Equity Cost, Capital Structure and Storm Damage Cost Recovery

GTE Hawaiian Telephone	06/96	GTE Hawaiian Telephone	95-0051/94-0298	Self-Insurance Property Damage Reserve-Ratepayer Responsibility
Idaho Public Utility Commission				
United Water Idaho, Inc.	05/15	United Water Idaho, Inc.	UWI-W-15-01	State Property Tax Study
United Water Idaho, Inc.	08/11	United Water Idaho, Inc.	UWI-W-11-02	Fair Rate of Return
United Water Idaho, Inc.	11/04	United Water Idaho, Inc.	UWI-W-04-04	Fair Rate of Return
Illinois Commerce Commission				
Illinois-American Water Company	10/11	Illinois-American Water Company	11-0767	Return on Equity
Apple Canyon Utility Co. / Lake Wildwood Utilities Corp.	04/10	Apple Canyon Utility Co. / Lake Wildwood Utilities Corp.	09-0548/0549	Fair Rate of Return
Illinois American Water Company	05/09	Illinois American Water Company	09-0319	Return on Equity
Illinois-American Water Company	08/07	Illinois-American Water Company	07-0507	Return on Equity
Aqua Illinois, Inc.	02/06	Aqua Illinois, Inc. - Kankakee Water Division	06-0285	Return on Equity
Aqua Illinois	12/04	Aqua Illinois - Woodhaven Water & Sewer Divisions	05-0071	Return on Equity
Aqua Illinois	12/04	Aqua Illinois - Oak Run Water & Sewer Divisions	05-0072	Return on Equity
Aqua Illinois	05/04	Aqua Illinois - Vermillion Water Division	04-0442	Return on Equity
Aqua Illinois (formerly Consumers Ill. Water Co.)	05/03	Aqua Illinois (formerly Consumers Ill. Water Co.)	03-0403	Fair Rate of Return
Aqua Illinois (formerly Consumers Ill. Water Co.)	04/00	Aqua Illinois (formerly Consumers Ill. Water Co.)	00-0337, 00-0338, 00-0339	Return on Equity
Indiana Utility Regulatory Commission				
Indiana-American Water Company	01/14	Indiana-American Water Company	44450	Return on Equity
Pioneer Water LLC	10/13	Pioneer Water LLC	4434	Return on Equity
Utility Center, Inc.	03/10	Utility Center, Inc.	43874	Fair Rate of Return
Twin Lakes Utilities, Inc.	11/06	Twin Lakes Utilities, Inc.	43128	Fair Rate of Return
Utility Center, Inc.	08/07	Utility Center, Inc.	43331	Fair Rate of Return
Twin Lakes Utilities, Inc.	09/03	Twin Lakes Utilities, Inc.	42488	Fair Rate of Return
United Water West Lafayette, Inc.	01/97	United Water West Lafayette, Inc.	41046	Return on Equity
United Water Indiana, Inc.	01/97	United Water Indiana, Inc.	41047	Return on Equity
Iowa Utilities Board				
Iowa-American Water Company	04/11	Iowa-American Water Company	RPU-2011-0001	Return on Equity
Iowa-American Water Company	04/09	Iowa-American Water Company	RPU-2009-0004	Return on Equity

Iowa-American Water Company	08/07	Iowa-American Water Company	RPU-2007-0003	Return on Equity
Kentucky Public Service Commission				
Water Service Corp. of Kentucky	01/09	Water Service Corp. of Kentucky	2008-00563	Fair Rate of Return
Water Service Corp. of Kentucky	08/05	Water Service Corp. of Kentucky	2005-00325	Fair Rate of Return
Louisiana Public Service Commission				
Louisiana Water Service, Inc.	03/08	Louisiana Water Service, Inc.	U-30553	Fair Rate of Return
Maine Public Service Commission				
Maine Water Company	12/13	Maine Water Company – Camden & Rockland Division	2013-00362	Return on Equity
Consumers Maine Water Company	05/00	Consumers Maine Water Company	2000-96 & 2000-175	Return on Equity
Maryland Public Service Commission				
Greenridge Utilities, Inc.	05/03	Greenridge Utilities, Inc.	8962	Fair Rate of Return
Michigan Public Service Commission				
Alpena Power Company	05/09	Alpena Power Company	U-15935	Fair Rate of Return
Alpena Power Company	04/07	Alpena Power Company	U-15250	Fair Rate of Return
Alpena Power Company	07/99	Alpena Power Company	U-12000	Return on Equity
Missouri Public Service Commission				
Union Elec. Co., D/B/A Ameren Missouri	01/17	Union Elec. Co., D/B/A Ameren Missouri	ER-2016-0179	Capital Structure
Missouri Gas Energy	09/13	Missouri Gas Energy	GR-2014-0007	Return on Equity
Missouri-American Water Company	06/11	Missouri-American Water Company	WR-2011-0337 / SR-2011-0338	Fair Rate of Return
Missouri-American Water Company	10/09	Missouri-American Water Company	WR-2010-0131	Return on Equity
Missouri American Water Company	03/08	Missouri American Water Company	WR-2008-0311 / SR-2008-0312	Return on Equity
Missouri American Water Company	12/06	Missouri American Water Company	WR-2007-0216 / WR-2007-0217	Return on Equity
Missouri-American Water Company	05/03	Missouri-American Water Company	WR-2003-0500 & WC-2004-0168	Fair Rate of Return
Arkansas Western Gas Company	02/97	ANG Division – Missouri	GR-97-272	Capital Structure
New Hampshire Public Utilities Commission				
Aquarion Water Co. of New Hampshire, Inc.	03/13	Aquarion Water Co. of New Hampshire, Inc.	DW 12-085	Return on Equity
New Jersey Board of Public Utilities				
SUEZ Water Arlington Hills, Inc.	2/17	SUEZ Water Arlington Hills, Inc.	WR-16060510	Return on Equity
Atlantic City Sewerage Company	10/16	Atlantic City Sewerage Company	WR-16100951	Return on Equity

Jersey Central Power & Light Co.	4/16	Jersey Central Power & Light Co.	ER-16040383	Return on Equity
Aqua New Jersey, Inc.	01/16	Aqua New Jersey, Inc.	WR-16010089	Return on Equity
United Water New Jersey, Inc.	10/15	United Water New Jersey, Inc.	WR-15101177	Return on Equity
United Water Toms River, Inc.	02/15	United Water Toms River, Inc.	W-01303A-14-0010	Return on Equity
Atlantic City Sewerage Company	10/14	Atlantic City Sewerage Company	WR-14101263	Return on Equity
Aqua New Jersey, Inc.	01/14	Aqua New Jersey, Inc.	WR-14010019	Fair Rate of Return
Middlesex Water Company	11/13	Middlesex Water Company	WR-13111059	Return on Equity
United Water New Jersey, Inc.	03/13	United Water New Jersey, Inc.	WR-13030210	Fair Rate of Return
Jersey Central Power & Light Company	11/12	Jersey Central Power & Light Company	ER-12111052	Return on Equity
United Water Toms River, Inc.	09/12	United Water Toms River, Inc.	WR-12090830	Fair Rate of Return
Pinelands Water Company	08/12	Pinelands Water Company	WR-12080735	Return on Equity
Pinelands Wastewater Company	08/12	Pinelands Wastewater Company	WR-12080734	Return on Equity
Middlesex Water Company	01/12	Middlesex Water Company	WR-12010027 / PUC 1653-2012	Fair Rate of Return
Aqua New Jersey, Inc.	12/11	Aqua New Jersey, Inc.	WR 11120859	Fair Rate of Return
The New Jersey Utilities Association	10/11	The New Jersey Utilities Association	PUC 07146-09 (OAL) / WO-090148 (BPU)	Return on Equity
United Water New Jersey, Inc.	07/11	United Water New Jersey, Inc.	WR-11070428	Fair Rate of Return
The Atlantic City Sewerage Company	04/11	The Atlantic City Sewerage Company	WR-11040247	Fair Rate of Return
United Water Great Gorge, Inc./United Water Vernon Sewerage, Inc.	10/10	United Water Great Gorge, Inc./United Water Vernon Sewerage, Inc.	WR-10100785	Fair Rate of Return
United Water New Jersey, Inc.	12/09	United Water New Jersey, Inc.	WR-09120987	Fair Rate of Return
Aqua New Jersey, Inc.	12/09	Aqua New Jersey, Inc.	WR-09121005	Fair Rate of Return
The Atlantic City Sewerage Company	11/09	The Atlantic City Sewerage Company	WR-09110940	Fair Rate of Return
United Water Toms River, Inc.	11/09	United Water Toms River, Inc.	WR-09110934	Fair Rate of Return
Middlesex Water Company	08/09	Middlesex Water Company	WR-0908066	Fair Rate of Return
United Water New Jersey, Inc.	09/08	United Water New Jersey, Inc.	WR-08090710	Fair Rate of Return
United Water West Milford, Inc.	09/08	United Water West Milford, Inc.	WR-08100928	Fair Rate of Return
United Water Arlington Hills, Inc.	09/08	United Water Arlington Hills, Inc.	WR-08100929	Fair Rate of Return
Applied Wastewater Management	08/08	Applied Wastewater Management	WR-08080550	Fair Rate of Return
Middlesex Water Company	04/08	Pinelands Water Company	WR-08040282	Return on Equity
United Water Toms River, Inc.	03/08	United Water Toms River, Inc.	R-WR-08030139	Fair Rate of Return

Aqua New Jersey, Inc.	12/07	Aqua New Jersey, Inc.	WR-07120955	Fair Rate of Return
The Atlantic City Sewerage Company	11/07	The Atlantic City Sewerage Company	WR-0007110866	Fair Rate of Return
Middlesex Water Company	04/07	Middlesex Water Company	PUCRL 05663-2007N	Fair Rate of Return
United Water New Jersey, Inc.	02/07	United Water New Jersey, Inc.	WR-07020135	Fair Rate of Return
Aqua New Jersey, Inc.	12/05	Aqua New Jersey, Inc.	WR-05121022	Fair Rate of Return
Pinelands Water Company	08/05	Pinelands Water Company	WR-05080681	Return on Equity
Pinelands Wastewater Company	08/05	Pinelands Wastewater Company	WR-05080680	Return on Equity
Middlesex Water Company	05/05	Middlesex Water Company	WR-05050451	Fair Rate of Return
Pinelands Wastewater Company	12/03	Pinelands Wastewater Company	WR-031201017	Return on Equity
Pinelands Water Company	12/03	Pinelands Water Company	WR-031201016	Return on Equity
Aqua New Jersey, Inc. (formerly Consumers New Jersey Water Co.)	12/03	Aqua New Jersey, Inc. (formerly Consumers New Jersey Water Co.)	WR-03120974	Return on Equity
Middlesex Water Company	11/03	Middlesex Water Company	WR-03110900	Fair Rate of Return
Mount Holly Water Company	07/03	Mount Holly Water Company	WR-03070509 & OAL PUCRL 07280-2003N	Fair Rate of Return
Elizabethtown Water Company	07/03	Elizabethtown Water Company	WR-03070510 & OAL PUCRL 07281-2003N	Return on Equity
New Jersey-American Water Company	04/03	New Jersey-American Water Company	WR-03070511 & OAL PUCRL 07279-2003N	Fair Rate of Return
Thames RWE re: New Jersey-American Water Co.	08/02	Thames RWE re: New Jersey-American Water Co.	WM-01120833	Return on Equity
Aqua New Jersey, Inc. (formerly Consumers New Jersey Water Co.)	03/02	Aqua New Jersey, Inc. (formerly Consumers New Jersey Water Co.)	WR-02030133	Return on Equity
Elizabethtown Water Company	04/01	Elizabethtown Water Company	WR-01040205	Overall Fair Rate of Return
Middlesex Water Company	06/00	Middlesex Water Company	WR-00060362	Fair Rate of Return
Aqua New Jersey, Inc. (formerly Consumers New Jersey Water Co.)	03/00	Aqua New Jersey, Inc. (formerly Consumers New Jersey Water Co.)	WR-00030174 & OAL PUCRS04524-00S	Return on Equity
Middlesex Water Company	09/98	Middlesex Water Company	98-090795	Fair Rate of Return
Middlesex Water Company	11/96	Middlesex Water Company	96-110818	Return on Equity
New York State Public Service Commission				
SUEZ New York Inc.	2/16	SUEZ New York Inc.	16-W-0130	Fair Rate of Return
United Water New Rochelle, Inc. / United Water West Chester, Inc.	11/13	United Water New Rochelle, Inc. / United Water West Chester, Inc.	13-W-0539/13-W-564	Return on Equity
United Water New York, Inc.	07/13	United Water New York, Inc.	13-W-0295	Fair Rate of Return
Long Island American Water Company d/b/a Long Island	05/11	Long Island American Water Company	11-W-0200	Return on Equity

American Water for Water Service				
United Water Owego-Nichols, Inc.	02/11	United Water Owego-Nichols, Inc.	11-W-0082	Fair Rate of Return
United Water Westchester, Inc.	11/09	United Water Westchester, Inc.	09-W-0828	Fair Rate of Return
United Water New Rochelle Inc.	11/09	United Water New Rochelle Inc.	09-W-0824	Fair Rate of Return
United Water New York, Inc.	09/09	United Water New York, Inc.	09-W-0731	Fair Rate of Return
United Water Owego/Nichols, Inc.	05/07	United Water Owego/Nichols, Inc.	07-W-0639 / 07-W0872	Fair Rate of Return
United Water New York, Inc. / South County	01/06	United Water New York, Inc.	Cases 06-W-0131 and 06-W-0244	Fair Rate of Return
United Water New Rochelle, Inc.	09/04	United Water New Rochelle, Inc.	04-W-1221	Fair Rate of Return
North Carolina Utility Commission				
Carolina Water Service of North Carolina	08/15	Carolina Water Company of North Carolina	W-354, Sub 344	Return on Equity
Aqua North Carolina, Inc.	12/13	Aqua North Carolina, Inc.	W-218, Sub 363	Fair Rate of Return
Carolina Water Service, Inc. of NC.	10/13	Carolina Water Service, Inc. of NC.	W-354 Sub 336	Fair Rate of Return
Pluris, LLC	08/12	Pluris, LLC	W-1282, Sub 8	Return on Equity
Aqua North Carolina, Inc.	05/11	Aqua North Carolina, Inc.	W-218, Sub 319	Fair Rate of Return
Carolina Water Service, Inc. of NC	10/10	Carolina Water Service, Inc. of NC	W-354. Sub 324	Fair Rate of Return
Carolina Water Service, Inc. of NC	10/10	Carolina Water Service, Inc. of NC - Ops. in Currituck Co.	W-354. Sub 327	Fair Rate of Return
Transylvania Utilities, Inc.	05/06	Transylvania Utilities, Inc.	W-1012, Sub 7	Fair Rate of Return
Carolina Pines Utilities, Inc.	04/04	Carolina Pines Utilities, Inc.	W-1151	Return on Equity
Transylvania Utilities, Inc.	04/04	Transylvania Utilities, Inc.	W-1012, Sub 5	Return on Equity
Nero Utilities, Inc.	04/04	Nero Utilities, Inc.	W-1152	Return on Equity
Pennsylvania Public Utility Commission				
Metropolitan Edison Co.	04/16	Metropolitan Edison Co.	R-2016-2537349	Return on Equity
Pennsylvania Electric Co.	04/16	Pennsylvania Electric Co.	R-2016-2537352	Return on Equity
Pennsylvania Power Co.	04/16	Pennsylvania Power Co.	R-2016-2537355	Return on Equity
West Penn Power Co.	04/16	West Penn Power Co.	R-2016-2537359	Return on Equity
United Water Pennsylvania Inc.	01/15	United Water Pennsylvania Inc.	R-2015-2462523	Return on Equity
Penn Estates Utilities, Inc.	12/11	Penn Estates Utilities, Inc.	R-2011-2255159	Return on Equity
United Water Pennsylvania, Inc.	05/11	United Water Pennsylvania, Inc.	R-2011-2232985	Fair Rate of Return
United Water Pennsylvania, Inc.	09/09	United Water Pennsylvania, Inc.	R-2009-2122887	Fair Rate of Return
Penn Estates Utilities, Inc. (Water) / (Sewer)	09/09	Penn Estates Utilities, Inc. (Water) / (Sewer)	R-2009-2117532 / R-2009-2117400	Fair Rate of Return
Utilities, Inc. - Westgate	09/09	Utilities, Inc. - Westgate	R-2009-2117389	Fair Rate of Return
Utilities, Inc. of Pennsylvania	09/09	Utilities, Inc. of Pennsylvania	R-2009-2117402	Fair Rate of Return

Trigen-Philadelphia Energy Corp.	06/09	Trigen-Philadelphia Energy Corp.	R-2009-2111011	Fair Rate of Return
The Columbia Water Company	12/08	The Columbia Water Company	R-2008-2045157	Return on Equity
The Newtown Artesian Water Company	11/08	The Newtown Artesian Water Company	R-2008-2042293	Fair Rate of Return
NRG Energy Center Harrisburg	03/08	NRG Energy Center Harrisburg	R-2008-2028395	Fair Rate of Return
Total Environmental Solutions, Inc. - Treasure Lake Water Division	02/08	Total Environmental Solutions, Inc. - Treasure Lake Water Division	R-00072493	Fair Rate of Return
Total Environmental Solutions, Inc. - Treasure Lake Sewer Division	02/08	Total Environmental Solutions, Inc. - Treasure Lake Sewer Division	R-00072495	Fair Rate of Return
Emporium Water Company	06/06	Emporium Water Company	R-00061297	Fair Rate of Return
NRG Energy Center Pittsburgh	06/06	NRG Energy Center Pittsburgh	R-00061435	Fair Rate of Return
City of DuBois, PA	04/06	City of DuBois, PA	R-00050671	Fair Rate of Return
United Water Pennsylvania, Inc.	01/06	United Water Pennsylvania, Inc.	R-00051186	Fair Rate of Return
Valley Energy, Inc.	10/04	Valley Energy, Inc.	R-00049345	Fair Rate of Return
Borough of Hanover	08/02	Borough of Hanover	R-00027522	Fair Rate of Return
Audubon Water Company	04/02	Audubon Water Company	R-00027104	Fair Rate of Return
Wellsboro Electric Company	10/01	Wellsboro Electric Company	R-00016356	Fair Rate of Return
Emporium Water Company	09/00	Emporium Water Company	R-00005050	Fair Rate of Return
Penn Estates Utilities, Inc.	01/00	Penn Estates Utilities, Inc.	R-00005031 & R-00005032	Fair Rate of Return
Pittsburgh Thermal, L.P.	11/99	Pittsburgh Thermal, L.P.	R-00994641	Fair Rate of Return
PG Energy	03/98	PG Energy	R-009880	Capital Structure and Embedded Fixed Capital Cost Rates
Western Utilities, Inc.	08/97	Western Utilities, Inc.	R-00963856	Fair Rate of Return
PG Energy	05/96	PG Energy	R-0096312	Capital Structure and Embedded Fixed Capital Cost Rates
Public Service Commission of Nevada				
Utilities Inc. of Central Nevada	06/15	Utilities Inc. of Central Nevada	15-06063	Fair Rate of Return
Utilities Inc. of Central Nevada	12/09	Utilities Inc. of Central Nevada	09-12017	Fair Rate of Return
Utilities Inc., of Nevada	06/09	Utilities Inc., of Nevada	09-06037	Fair Rate of Return
Spring Creek Utilities, Inc.	06/08	Spring Creek Utilities, Inc.	08-06036	Fair Rate of Return
Utilities, Inc. of Central Nevada	12/06	Utilities, Inc. of Central Nevada	06-12023	Fair Rate of Return
Spring Creek Utilities, Inc.	04/06	Spring Creek Utilities, Inc.	06-01002	Fair Rate of Return
Public Service Commission of South Carolina				

United Utility Companies, Inc.	09/13	United Utility Companies, Inc.	2013-199-WS	Capital Structure
Utilities Services of South Carolina	09/13	Utilities Services of South Carolina	2013-201-WS	Capital Structure
Tega Cay Water Services Inc.	12/12	Tega Cay Water Services Inc.	2012-177-WS	Fair Rate of Return
Carolina Water Service, Inc.	08/11	Carolina Water Service, Inc.	2011-47-WS	Fair Rate of Return
Tega Cay Water Service, Inc.	04/10	Tega Cay Water Service, Inc.	2009-473-WS	Fair Rate of Return
United Utility Companies, Inc.	02/10	United Utility Companies, Inc.	2009-479-W/S	Fair Rate of Return
Utilities Services of South Carolina	11/07	Utilities Services of South Carolina	2007-286-WS	Fair Rate of Return
Southland Utilities, Inc.	09/07	Southland Utilities, Inc.	2007-244-W	Fair Rate of Return
Tega Cay Water Service, Inc.	07/06	Tega Cay Water Service, Inc.	2006-97-WS	Return on Equity
United Utility Companies, Inc.	07/06	United Utility Companies, Inc.	2006-107-W/S	Fair Rate of Return
Carolina Water Service, Inc.	06/06	Carolina Water Service, Inc.	2006-92-W/S	Fair Rate of Return
Utilities Services of South Carolina	11/05	Utilities Services of South Carolina	2005-217-WS	Fair Rate of Return
Carolina Water Service of South Carolina	04/05	Carolina Water Service of South Carolina	2004-357-W/S	Fair Rate of Return
United Utility Companies	01/02	United Utility Companies	2000-0210-W/S	Fair Rate of Return
Carolina Water Service of South Carolina	06/01	Carolina Water Service of South Carolina	2000-0207-W/S	Fair Rate of Return
Public Utility Commission of Ohio				
Aqua Ohio, Inc.	12/13	Aqua Ohio, Inc.	13-2124-WW-AIR	Return on Equity
Ohio American Water Company	8/12	Ohio American Water Company	11-4161-WS-AIR	Fair Rate of Return
Ohio American Water Company	6/09	Ohio American Water Company	09-391-WS-AIR	Fair Rate of Return
Ohio American Water Company	10/06	Ohio American Water Company	06-433-WS-AIR	Fair Rate of Return
Ohio-American Water Company	11/04	Ohio-American Water Company	03-2390-WS-AIR	Return on Equity
Regulatory Commission of Alaska				
Fairbanks Natural Gas, LLC	6/14	Fairbanks Natural Gas, LLC	U-14-102	Fair Rate of Return
Rhode Island Public Utilities Commission				
United Water Rhode Island, Inc.	8/13	United Water Rhode Island, Inc.	4434	Fair Rate of Return
United Water Rhode Island, Inc.	6/11	United Water Rhode Island, Inc.	4255	Fair Rate of Return
Virginia State Corporation Commission				
Aqua Virginia, Inc.	8/14	Aqua Virginia, Inc.	PUE-2014-00045	Return on Equity
Massanutten Public Service Corporation	9/09	Massanutten Public Service Corporation	PUE-2009-00041	Return on Equity
Land'Or Utility Company	12/06	Land'Or Utility Company	PUE-2006-00128	Return on Equity
Massanutten Public Service Corporation	12/06	Massanutten Public Service Corporation	PUE-2006-00126	Return on Equity
Reston Lake Anne Air Conditioning	5/12	Reston Lake Anne Air Conditioning	PUE-2011-00130	Return on Equity

Corp.		Corp.		
Aqua Virginia, Inc.	10/11	Aqua Virginia, Inc. (Monticello)	PUE-2005-00080	Return on Equity
Aqua Virginia, Inc.	10/11	Aqua Virginia, Inc. - Sydnor Hydrodynamics, Inc.	PUE-2011-00099	Return on Equity
United Water Virginia, Inc.	10/97	United Water Virginia, Inc.	PUE-2097-0544	Fair Rate of Return
Washington Utilities & Transportation Commission				
Washington Natural Gas Company	03/95	Washington Natural Gas Company	UG-950278	Capital Structure Ratios - Fixed Capital Cost Rates

LAC / MGE
Table of Contents
to the Financial Supporting Schedules
of Pauline M. Ahern, CRRA

LAC / MGE
Summary of Cost of Capital and Fair Rate of Return
Based Upon a Test Tear Ended December 31, 2016 (Pro Forma)

LAC / MGE

Type Of Capital	Ratios (1)	Cost Rate	Weighted Cost Rate
Long-Term Debt	42.80%	4.159% (1)	1.780%
Common Equity	57.20%	10.350% (2)	5.920%
Total	100.00%		7.700%

Notes:

(1) From Schedule GWB-1.
(2) From page 2 of this Schedule.

LAC / MGE
Brief Summary of Common Equity Cost Rate

Line No.	Principal Methods		
	Natural Gas Proxy Group		
1.	Discounted Cash Flow Model (DCF) (1)	8.68	%
2.	Risk Premium Model (RPM) (2)	10.57	
3.	Capital Asset Pricing Model (CAPM) (3)	9.11	
	Non-Price Regulated Proxy Group		
4.	Market Models Applied to Comparable Risk, Non-Price Regulated Companies (4)	10.45	
5.	Indicated Common Equity Cost Rate before Adjustments	10.00	%
6.	Flotation Cost Adjustment (5)	0.16	
7.	Business Risk Adjustment (6)	0.20	
8.	Indicated Common Equity Cost Rate	10.36	%
9.	Recommended Common Equity Cost Rate	10.35	%

Notes:
(1) From Schedule PMA-D3.
(2) From page 1 of Schedule PMA-D4.
(3) From page 1 of Schedule PMA-D5.
(4) From page 1 of Schedule PMA-D7.
(5) From page 1 of Schedule PMA-D8.
(6) Business risk adjustment to reflect LAC / MGE's greater business risk due to their respective unique risks as well as their respective collective small size relative to the proxy group as detailed in the accompanying direct testimony.

Proxy Group of Seven Natural Gas Companies
CAPITALIZATION AND FINANCIAL STATISTICS (1)
2011 - 2015, Inclusive

	2015	2014	2013	2012	2011	
			(MILLIONS OF DOLLARS)			
CAPITALIZATION STATISTICS						
AMOUNT OF CAPITAL EMPLOYED						
TOTAL PERMANENT CAPITAL	$2,596.690	$2,498.119	$2,100.394	$1,773.274	$1,671.742	
SHORT-TERM DEBT	$250.773	$194.061	$207.907	$211.597	$136.179	
TOTAL CAPITAL EMPLOYED	$2,847.463	$2,692.180	$2,308.301	$1,984.871	$1,807.921	
INDICATED AVERAGE CAPITAL COST RATES (2)						
TOTAL DEBT	3.65 %	3.77 %	3.89 %	4.69 %	5.09 %	
PREFERRED STOCK						
CAPITAL STRUCTURE RATIOS						5 YEAR AVERAGE
BASED ON TOTAL PERMANENT CAPITAL:						
LONG-TERM DEBT	44.98 %	46.53 %	44.53 %	42.47 %	42.37 %	44.18 %
PREFERRED STOCK	0.01	0.01	0.01	0.01	0.01	0.01
COMMON EQUITY	55.01	53.46	55.46	57.52	57.62	55.81
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
BASED ON TOTAL CAPITAL:						
TOTAL DEBT, INCLUDING SHORT-TERM	51.52 %	52.00 %	51.29 %	49.1 %	47.97 %	50.37 %
PREFERRED STOCK	0.01	0.01	0.01	0.01	0.01	0.01
COMMON EQUITY	48.47	47.99	48.70	50.93	52.02	49.62
TOTAL	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
FINANCIAL STATISTICS						
FINANCIAL RATIOS - MARKET BASED						
EARNINGS / PRICE RATIO	7.76 %	6.08 %	6.19 %	6.70 %	7.64 %	6.87 %
MARKET / AVERAGE BOOK RATIO	149.16	190.88	183.89	164.80	153.14	168.37
DIVIDEND YIELD	2.92	2.80	3.07	3.30	3.75	3.17
DIVIDEND PAYOUT RATIO	57.38	58.57	60.67	57.39	55.14	57.83
RATE OF RETURN ON AVERAGE BOOK COMMON EQUITY	10.78 %	10.44 %	10.18 %	10.88 %	11.22 %	10.70 %
TOTAL DEBT / EBITDA (3)	3.87 X	4.41 X	4.62 X	3.76 X	3.23 X	3.98 X
FUNDS FROM OPERATIONS / TOTAL DEBT (4)	26.70 %	26.26 %	19.53 %	28.64 %	29.74 %	26.17 %
TOTAL DEBT / TOTAL CAPITAL	51.52 %	52.00 %	51.29 %	49.06 %	47.97 %	50.37 %

Notes:

(1) All capitalization and financial statistics for the group are the arithmetic average of the achieved results for each individual company in the group, and are based upon financial statements as originally reported in each year.

(2) Computed by relating actual total debt interest or preferred stock dividends booked to average of beginning and ending total debt or preferred stock reported to be outstanding.

(3) Total debt relative to EBITDA (Earnings before Interest, Income Taxes, Depreciation and Amortization).

(4) Funds from operations (sum of net income, depreciation, amortization, net deferred income tax and investment tax credits, less total AFUDC) plus interest charges as a percentage of total debt.

Source of Information: Company Annual Forms 10-K

Capital Structure Based upon Total Permanent Capital for the
Proxy Group of Seven Natural Gas Companies
2011 - 2015, Inclusive

	2015	2014	2013	2012	2011	5 YEAR AVERAGE
Atmos Energy						
Long-Term Debt	43.46 %	44.31 %	48.76 %	45.33 %	49.48 %	46.27 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.54	55.69	51.24	54.67	50.52	53.73
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Chesapeake Utilities						
Long-Term Debt	30.68 %	35.82 %	31.63 %	30.03 %	32.98 %	32.23 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	69.32	64.18	68.37	69.97	67.02	67.77
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
New Jersey Resources Corp.						
Long-Term Debt	43.57 %	39.57 %	39.59 %	39.57 %	35.88 %	39.64 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.43	60.43	60.41	60.43	64.12	60.36
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Northwest Nat. Gas						
Long-Term Debt	43.52 %	46.30 %	49.66 %	48.55 %	45.29 %	46.66 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.48	53.70	50.34	51.45	54.71	53.34
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
South Jersey Industries, Inc.						
Long-Term Debt	49.96 %	51.98 %	45.89 %	45.97 %	40.59 %	46.88 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	50.04	48.02	54.10	54.03	59.41	53.13
Total Capital	100.00 %	100.00 %	99.99 %	100.00 %	100.00 %	100.01 %
Southwest Gas Holdings Inc						
Long-Term Debt	49.59 %	52.64 %	49.57 %	50.13 %	53.53 %	51.09 %
Preferred Stock	0.07	0.07	0.08	0.06	0.04	0.06
Common Equity	50.34	47.29	50.36	49.81	46.43	48.85
Total Capital	100.00 %	100.00 %	100.01 %	100.00 %	100.00 %	100.00 %
Spire Inc.						
Long-Term Debt	54.06 %	55.10 %	46.59 %	37.72 %	38.86 %	46.47 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	45.94	44.90	53.41	62.28	61.14	53.53
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Seven Natural Gas Companies						
Long-Term Debt	44.98 %	46.53 %	44.53 %	42.47 %	42.37 %	44.18 %
Preferred Stock	0.01	0.01	0.01	0.01	0.01	0.01
Common Equity	55.01	53.46	55.46	57.52	57.62	55.81
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information
Annual Forms 10-K

LAC / MGE

Indicated Common Equity Cost Rate Using the Discounted Cash Flow Model for the

Proxy Group of Seven Natural Gas Companies

Proxy Group of Seven Natural Gas Companies	[1] Average Dividend Yield (1)	[2] Value Line Projected Five Year Growth in EPS (2)	[3] Reuters Mean Consensus Projected Five Year Growth Rate in EPS	[4] Zack's Five Year Projected Growth Rate in EPS	[5] Yahoo! Finance Projected Five Year Growth in EPS	[6] Average Projected Five Year Growth in EPS (3)	[7] Adjusted Dividend Yield (4)	[8] Indicated Common Equity Cost Rate (5)
Atmos Energy	2.46 %	6.50 %	7.30 %	7.00 %	7.30 %	7.03 %	2.55 %	9.58 %
Chesapeake Utilities	1.87	8.50	NA	6.00	5.80	6.77	1.93	8.70
New Jersey Resources Corp.	2.90	3.00	6.00	6.50	6.00	5.38	2.98	8.36
Northwest Nat. Gas	3.21	7.00	4.00	4.00	4.00	4.75	3.29	8.04
South Jersey Industries, Inc.	3.34	3.00	NA	10.00	6.00	6.33	3.45	9.78
Southwest Gas Holdings Inc	2.38	7.00	4.00	4.50	4.00	4.88	2.44	7.32
Spire Inc.	3.27	9.00	4.23	4.40	4.18	5.45	3.36	8.81
							Average	8.65 %
							Median	8.70 %
							Average of Mean and Median	8.68 %

NA= Not Available

Notes:

(1) Indicated dividend at 01/31/2017 divided by the average closing price of the last 60 trading days ending 01/31/2017 for each company.

(2) From pages 3 through 10 of this Schedule.

(3) Average of columns 2 through 5 excluding negative growth rates.

(4) This reflects a growth rate component equal to one-half the conclusion of growth rate (from column 6) x column 1 to reflect the periodic payment of dividends (Gordon Model) as opposed to the continuous payment. Thus, for Atmos Energy, 2.46% x (1+(1/2 x 7.03%)) = 2.55%.

(5) Column 6 + column 7.

Source of Information:

Value Line Investment Survey
www.reuters.com Downloaded on 01/31/2017
www.zacks.com Downloaded on 01/31/2017
www.yahoo.com Downloaded on 01/31/2017

LAC / MGE
Demonstration of the Inadequacy of
Proxy Group of Seven Natural Gas Companies
When Market Value is Greater than Book Value

Line No.		Based on the Proxy Group of Seven Natural Gas Companies	
		Column A	Column B
		Market Value	Book Value
1.	Per Share	$ 59.536 (1)	$ 25.848 (2)
2.	DCF Cost Rate (3)	8.65%	8.65%
3.	Return in Dollars (4)	$ 5.150	$ 2.236
4.	Dividends (5)	$ 1.703	$ 1.703
5.	Growth in Dollars (6)	$ 3.447	$ 0.533
6.	Return on Market Value (7)	8.65%	3.76%
7.	Rate of Growth on Market Value (8)	5.79%	0.90%

Notes:

(1) Average price of the proxy group as shown on page 2 of Schedule PMA-D9.

(2) Average book value of the proxy group as shown on page 2 of Schedule PMA-D9.

(3) Average DCF cost rate derived from Column [7] on page 1 of this Schedule.

(4) Line 1 x Line 2.

(5) Dividends are based on a 2.86% adjusted dividend yield which is the

(6) Line 3 - Line 4.

(7) Line 3 / Line 1.

(8) Line 7 / Line 1.

ATMOS ENERGY CORP. NYSE-ATO

RECENT PRICE **72.84** | P/E RATIO **20.8** (Trailing: 21.4 Median: 15.0) | RELATIVE P/E RATIO **1.09** | DIV'D YLD **2.5%** | VALUE LINE

TIMELINESS 3 Lowered 9/16/16
SAFETY 1 Raised 6/6/14
TECHNICAL 3 Lowered 9/30/16
BETA .70 (1.00 = Market)

2019-21 PROJECTIONS

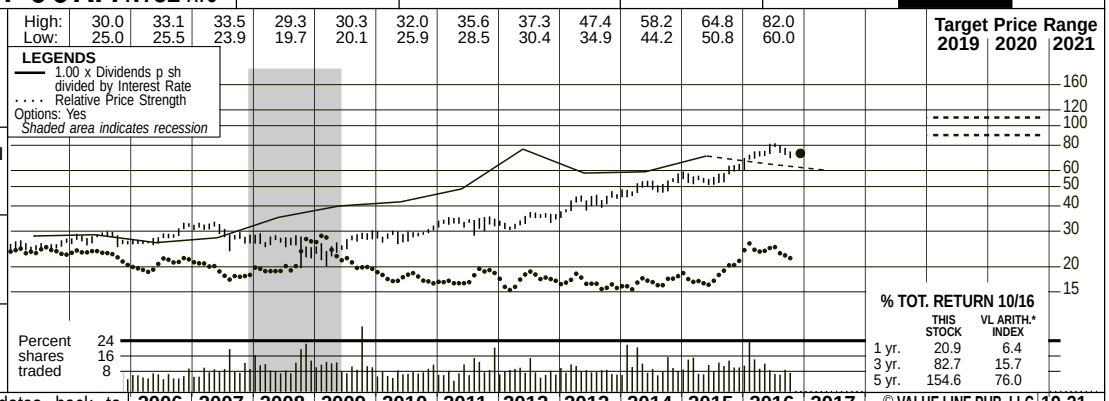
	Price	Gain	Ann'l Total Return
High	110	(+50%)	*13%*
Low	90	(+25%)	*8%*

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	2	0	0	2	6	0	2	0	0
to Sell	0	0	0	0	1	0	0	2	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	159	212	188
to Sell	133	142	148
Hld's(000)	70628	71888	73716



Atmos Energy's history dates back to 1906 in the Texas Panhandle. Over the years, through various mergers, it became part of Pioneer Corporation, and, in 1981, Pioneer named its gas distribution division Energas. In 1983, Pioneer organized Energas as a separate subsidiary and distributed the outstanding shares of Energas to Pioneer shareholders. Energas changed its name to Atmos in 1988. Atmos acquired Trans Louisiana Gas in 1986, Western Kentucky Gas Utility in 1987, Greeley Gas in 1993, United Cities Gas in 1997, and others.

CAPITAL STRUCTURE as of 6/30/16
Total Debt $3126.1 mill. **Due in 5 Yrs** $1157.9 mill.
LT Debt $2205.6 mill. **LT Interest** $135.0 mill.
(LT interest earned: 5.4x; total interest coverage: 5.4x)
Leases, Uncapitalized Annual rentals $16.5 mill.
Pfd Stock None
Pension Assets-9/15 $450.9 mill.
Oblig. $508.6 mill.
Common Stock 103,847,858 shs.
as of 7/29/16
MARKET CAP: $7.6 billion (Large Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	42.3	28.7	66.2
Other	733.5	602.3	582.7
Current Assets	775.8	631.0	648.9
Accts Payable	311.6	238.9	198.9
Debt Due	196.7	457.9	920.5
Other	402.4	458.0	410.4
Current Liab.	910.7	1154.8	1529.8
Fix. Chg. Cov.	637%	743%	750%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-2.0%	-6.5%	.5%
"Cash Flow"	5.0%	4.5%	*5.0%*
Earnings	5.5%	7.0%	*6.5%*
Dividends	2.0%	2.5%	*6.5%*
Book Value	5.0%	5.0%	*3.5%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) A Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1034.2	1309.0	857.9	685.2	3886.3
2014	1255.1	1964.3	942.7	778.8	4940.9
2015	1258.8	1540.1	686.4	656.8	4142.1
2016	906.2	1132.3	632.9	678.5	3349.9
2017	*930*	*1250*	*720*	*700*	*3600*

Fiscal Year Ends	EARNINGS PER SHARE A B E Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.85	1.23	.36	.08	2.50
2014	.95	1.38	.45	.23	2.96
2015	.96	1.35	.55	.23	3.09
2016	1.00	1.38	.69	.33	3.38
2017	*1.05*	*1.41*	*.72*	*.37*	*3.55*

Cal-endar	QUARTERLY DIVIDENDS PAID C■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.345	.345	.345	.35	1.39
2013	.35	.35	.35	.37	1.42
2014	.37	.37	.37	.39	1.50
2015	.39	.39	.39	.42	1.59
2016	.42	.42	.42	.45	

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
	75.27	66.03	79.52	53.69	53.12	48.15	38.10	42.88	49.22	40.82	***32.20***	***33.65***	Revenues per sh A	***45.85***
	4.26	4.14	4.19	4.29	4.64	4.72	4.76	5.14	5.42	5.81	***6.20***	***6.50***	"Cash Flow" per sh	***7.25***
	2.00	1.94	2.00	1.97	2.16	2.26	2.10	2.50	2.96	3.09	3.38	***3.55***	Earnings per sh A B	***4.20***
	1.26	1.28	1.30	1.32	1.34	1.36	1.38	1.40	1.48	1.56	1.68	***1.80***	Div'ds Decl'd per sh C■	***2.15***
	5.20	4.39	5.20	5.51	6.02	6.90	8.12	9.32	8.32	9.61	***10.45***	***11.00***	Cap'l Spending per sh	***10.60***
	20.16	22.01	22.60	23.52	24.16	24.98	26.14	28.47	30.74	31.48	***33.30***	***31.25***	Book Value per sh	***36.65***
	81.74	89.33	90.81	92.55	90.16	90.30	90.24	90.64	100.39	101.48	***104.00***	***107.00***	Common Shs Outst'g D	***120.00***
	13.5	15.9	13.6	12.5	13.2	14.4	15.9	15.9	16.1	17.5	20.8		Avg Ann'l P/E Ratio	***24.0***
	.73	.84	.82	.83	.84	.90	1.01	.89	.85	.89	1.11		Relative P/E Ratio	***1.50***
	4.7%	4.2%	4.8%	5.3%	4.7%	4.2%	4.1%	3.5%	3.1%	2.9%	2.4%		Avg Ann'l Div'd Yield	***2.1%***
	6152.4	5898.4	7221.3	4969.1	4789.7	4347.6	3438.5	3886.3	4940.9	4142.1	3349.9	***3600***	Revenues ($mill) A	***5500***
	162.3	170.5	180.3	179.7	201.2	199.3	192.2	230.7	289.8	315.1	350.1	***380***	Net Profit ($mill)	***500***
	37.6%	35.8%	38.4%	34.4%	38.5%	36.4%	33.8%	38.2%	39.2%	38.3%	36.4%	***37.0%***	Income Tax Rate	***40.0%***
	2.6%	2.9%	2.5%	3.6%	4.2%	4.6%	5.6%	5.9%	5.9%	7.6%	10.5%	***10.6%***	Net Profit Margin	***9.1%***
	57.0%	52.0%	50.8%	49.9%	45.4%	49.4%	45.3%	48.8%	44.3%	43.5%	***39.0%***	***42.0%***	Long-Term Debt Ratio	***45.0%***
	43.0%	48.0%	49.2%	50.1%	54.6%	50.6%	54.7%	51.2%	55.7%	56.5%	***61.0%***	***58.0%***	Common Equity Ratio	***55.0%***
	3828.5	4092.1	4172.3	4346.2	3987.9	4461.5	4315.5	5036.1	5542.2	5650.2	***5655***	***5765***	Total Capital ($mill)	***8000***
	3629.2	3836.8	4136.9	4439.1	4793.1	5147.9	5475.6	6030.7	6725.9	7430.6	***8280***	***9060***	Net Plant ($mill)	***11500***
	6.1%	5.9%	5.9%	5.9%	6.9%	6.1%	6.1%	5.9%	6.4%	6.6%	***7.5%***	***8.0%***	Return on Total Cap'l	***7.5%***
	9.8%	8.7%	8.8%	8.3%	9.2%	8.8%	8.1%	8.9%	9.4%	9.9%	***10.0%***	***11.5%***	Return on Shr. Equity	***11.5%***
	9.8%	8.7%	8.8%	8.3%	9.2%	8.8%	8.1%	8.9%	9.4%	9.9%	***10.0%***	***11.5%***	Return on Com Equity	***11.5%***
	3.6%	3.0%	3.1%	2.7%	3.5%	3.3%	2.8%	4.0%	4.7%	4.9%	***5.0%***	***5.5%***	Retained to Com Eq	***5.5%***
	63%	65%	65%	68%	62%	62%	65%	56%	50%	51%	***50%***	***51%***	All Div'ds to Net Prof	***52%***

BUSINESS: Atmos Energy Corporation is engaged primarily in the distribution and sale of natural gas to roughly three million customers through six regulated natural gas utility operations: Louisiana Division, West Texas Division, Mid-Tex Division, Mississippi Division, Colorado-Kansas Division, and Kentucky/Mid-States Division. Gas sales breakdown for fiscal 2015: 66%, residential; 29%, commercial; 3%, industrial; and 2% other. The company has around 4,760 employees. Officers and directors own approximately 1.5% of common stock (12/15 Proxy). President and Chief Executive Officer: Kim R. Cocklin. Incorporated: Texas. Address: Three Lincoln Centre, Suite 1800, 5430 LBJ Freeway, Dallas, Texas 75240. Telephone: 972-934-9227. Internet: www.atmosenergy.com.

Atmos Energy may well post respectable results in fiscal 2017 (started October 1st). The natural gas distribution division, accounting for the largest portion of revenues, stands to benefit from a rise in throughput, assuming that both the weather and economic environment are generally favorable (leading to a boost in consumption levels). Also, we look for reasonably decent performances from the other segments, including the regulated pipeline unit. At this juncture, full-year profits might advance around 5%, to $3.55 a share, versus the fiscal 2016 tally of $3.38. Concerning fiscal 2018, we believe the bottom line can grow at a similar percentage rate, to $3.75 a share, if operating margins expand.

There are plans to sell Atmos Energy Marketing (AEM) to a subsidiary of CenterPoint Energy. The transaction involves the transfer of 800 delivered gas customers and AEM's related asset optimization business at an all-cash price of $40 million plus working capital at the closing date (anticipated during the first calendar quarter of 2017). Proceeds are to be utilized for infrastructure investment in the core regulated units. Note that we estimate the pending divestiture's impact on earnings per share would be minimal.

The fiscal 2017 capital expenditures budget is expected to lie between $1.1 billion and $1.25 billion. That would be some 8% higher than the previous year's figure, assuming the midpoint of that range is used. Similar to fiscal 2016, a meaningful portion of the resources will be deployed to enhance the safety and reliability of Atmos' natural gas distribution and transmission systems.

The quarterly common stock dividend was raised a few cents, to $0.45 a share. Moreover, our 2019-2021 projections indicate that additional, steady increases in the distribution will take place. The payout ratio over that period ought to be roughly 50%, which should not place a substantial financial burden on the energy company.

These top-quality shares hold decent, risk-adjusted long-term total return potential. That reflects the healthy dividend and worthwhile capital gains possibilities here.

Frederick L. Harris, III December 2, 2016

(A) Fiscal year ends Sept. 30th. **(B)** Diluted shrs. Excl. nonrec. items: '06, d18¢; '07, d2¢; '09, 12¢; '10, 5¢; '11, (1¢). Excludes discontinued operations: '11, 10¢; '12, 27¢; '13, 14¢. Next egs. rpt. due early Feb. **(C)** Dividends historically paid in early March, June, Sept., and Dec. ■ Div. reinvestment plan. Direct stock purchase plan avail. **(D)** In millions. **(E)** Qtrs may not add due to change in shrs outstanding.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	80
Earnings Predictability	90

CHESAPEAKE UTIL. NYSE-CPK

RECENT PRICE	P/E RATIO	RELATIVE P/E RATIO	DIV'D YLD	VALUE LINE
65.90	23.9 (Trailing: 24.4 Median: 15.0)	1.25	1.9%	

TIMELINESS 4 Lowered 10/21/16
SAFETY 2 New 6/5/15
TECHNICAL 4 Lowered 11/18/16
BETA .65 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	90	(+35%)	*10%*
Low	70	(+5%)	*4%*

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	0	5	0	0	9	0	0	0	0
to Sell	0	0	1	0	0	1	0	0	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	62	86	83
to Sell	72	66	72
Hld's(000)	8284	8673	8755

	2014	2015	2016	2017
High:	23.9	23.8	24.8	23.2
Low:	15.7	18.6	18.7	14.6
High:	23.3	28.1	29.7	32.6
Low:	14.7	18.7	24.0	26.6
High:	40.8	52.7	61.1	67.9
Low:	30.6	37.5	44.4	52.3

LEGENDS
1.00 x Dividends p sh divided by Interest Rate
Relative Price Strength
3-for-2 split 9/14
Options: Yes
Shaded area indicates recession

3-for-2

Percent shares traded 15 10 5

Target Price Range 2019 2020 2021
128 96 80 64 48 40 32 24 16 12

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	25.2	6.4
3 yr.	89.0	15.7
5 yr.	158.3	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
42.21	40.82	17.12	19.11	20.70	26.02	23.05	25.41	28.46	19.07	29.93	29.13	27.26	30.73	34.19	30.07	***28.80***	***30.30***	Revenues per sh	***37.50***
1.95	1.95	1.93	2.42	2.26	2.35	2.18	2.52	2.50	2.15	3.50	3.69	3.95	4.35	4.73	5.05	***4.95***	***5.40***	"Cash Flow" per sh	***7.00***
.93	.83	.69	1.17	1.09	1.18	1.15	1.29	1.39	1.43	1.82	1.91	1.99	2.26	2.47	2.68	***2.75***	***2.95***	Earnings per sh [A]	***4.00***
.71	.73	.73	.73	.75	.76	.77	.78	.81	.83	.87	.91	.96	1.01	1.07	1.12	***1.19***	***1.26***	Div'ds Decl'd per sh [B]■	***1.50***
2.75	3.61	1.77	1.39	2.07	3.74	4.87	3.08	3.00	1.89	3.18	3.28	5.00	6.72	6.66	9.47	***9.70***	***10.00***	Cap'l Spending per sh	***11.60***
8.05	8.26	8.03	8.59	9.07	9.60	11.08	11.76	12.02	14.89	15.84	16.78	17.82	19.28	20.59	23.45	***27.50***	***27.40***	Book Value per sh	***30.45***
7.95	8.09	8.31	8.49	8.60	8.82	10.03	10.17	10.24	14.09	14.29	14.35	14.40	14.46	14.59	15.27	***16.50***	***17.00***	Common Shs Outst'g [C]	***20.00***
12.6	15.0	18.6	12.7	15.0	16.8	17.9	16.7	14.2	14.2	12.2	14.2	14.8	15.6	17.7	19.1	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	***20.0***
.82	.77	1.02	.72	.79	.89	.97	.89	.85	.95	.78	.89	.94	.88	.93	.96			Relative P/E Ratio	***1.25***
6.1%	5.8%	5.7%	4.9%	4.6%	3.8%	3.8%	3.6%	4.1%	4.1%	3.9%	3.4%	3.3%	2.9%	2.4%	2.2%			Avg Ann'l Div'd Yield	***1.9%***
231.2	258.3	291.4	268.8	427.5	418.0	392.5	444.3	498.8	459.2	***475***	***515***	Revenues ($mill)	***750***
10.5	13.2	14.4	15.9	26.1	27.6	28.9	32.8	36.1	40.2	***43.0***	***48.0***	Net Profit ($mill)	***80.0***
39.4%	39.4%	39.1%	41.8%	39.7%	39.4%	40.1%	40.2%	39.9%	39.5%	***40.0%***	***40.0%***	Income Tax Rate	***41.0%***
4.5%	5.1%	4.9%	5.9%	6.1%	6.6%	7.4%	7.4%	7.2%	8.8%	***9.1%***	***9.3%***	Net Profit Margin	***10.7%***
39.0%	34.6%	41.3%	32.0%	28.4%	31.4%	28.4%	29.7%	34.5%	29.4%	***25.0%***	***30.0%***	Long-Term Debt Ratio	***30.0%***
61.0%	65.4%	58.7%	68.0%	71.6%	68.6%	71.6%	70.3%	65.5%	70.6%	***75.0%***	***70.0%***	Common Equity Ratio	***70.0%***
182.2	182.8	209.5	308.6	315.9	351.1	358.5	396.4	458.8	507.5	***605***	***665***	Total Capital ($mill)	***870***
240.8	260.4	280.7	436.4	462.8	487.7	541.8	631.2	689.8	855.0	***960***	***1060***	Net Plant ($mill)	***1430***
7.1%	8.4%	7.9%	6.1%	9.1%	8.9%	8.8%	8.8%	8.5%	8.9%	***8.0%***	***11.5%***	Return on Total Cap'l	***10.0%***
9.5%	11.1%	11.7%	7.6%	11.5%	11.5%	11.2%	11.8%	12.0%	11.2%	***9.5%***	***10.5%***	Return on Shr. Equity	***13.0%***
9.5%	11.1%	11.7%	7.6%	11.5%	11.5%	11.2%	11.8%	12.0%	11.2%	***9.5%***	***10.5%***	Return on Com Equity	***13.0%***
4.1%	5.2%	5.2%	3.8%	6.6%	6.6%	6.4%	7.1%	7.4%	6.8%	***5.0%***	***5.5%***	Retained to Com Eq	***8.0%***
57%	53%	55%	50%	42%	42%	43%	40%	38%	40%	***46%***	***45%***	All Div'ds to Net Prof	***38%***

CAPITAL STRUCTURE as of 9/30/16
Total Debt $310.1 mill. **Due in 5 Yrs** $230.0 mill.
LT Debt $143.5 mill. **LT Interest** $9.0 mill.
(LT interest earned: 7.7x; total interest coverage: 7.7x) (25% of Cap'l)
Leases, Uncapitalized Annual rentals $1.3 mill.
Pfd Stock None
Pension Assets-12/15 $51.0 mill.
Oblig. $75.9 mill.
Common Stock 16,301,161 shs.
as of 10/31/16

MARKET CAP: $1.1 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	4.6	2.9	1.5
Other	117.8	109.6	100.7
Current Assets	122.4	112.5	102.2
Accts Payable	44.6	39.3	41.3
Debt Due	97.3	182.5	166.6
Other	52.3	57.8	55.2
Current Liab.	194.2	279.6	263.1
Fix. Chg. Cov.	865%	898%	885%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	3.5%	4.0%	*3.0%*
"Cash Flow"	7.0%	11.5%	*7.0%*
Earnings	8.0%	10.0%	*8.5%*
Dividends	3.5%	5.0%	*6.0%*
Book Value	9.0%	8.0%	*6.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	140.7	94.1	86.6	122.9	444.3
2014	186.3	100.5	91.6	120.4	498.8
2015	170.1	92.7	91.9	104.5	459.2
2016	146.3	102.3	108.3	***118.1***	***475***
2017	***170***	***110***	***110***	***125***	***515***

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.02	.30	.27	.67	2.26
2014	1.21	.35	.22	.69	2.47
2015	1.44	.35	.33	.56	2.68
2016	1.33	.52	.29	***.61***	***2.75***
2017	***1.41***	***.45***	***.42***	***.67***	***2.95***

Calendar	QUARTERLY DIVIDENDS PAID [B]■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.23	.23	.243	.243	.95
2013	.243	.243	.257	.257	1.00
2014	.257	.257	.27	.27	1.05
2015	.27	.27	.288	.288	1.12
2016	.288	.288	.305	.305	

BUSINESS: Chesapeake Utilities Corporation consists of two units: Regulated Energy and Unregulated Energy. The Regulated Energy segment (65% of 2015 revenues) distributes natural gas in Delaware, Maryland, and Florida; distributes electricity in Florida; and transmits natural gas on the Delmarva Peninsula and in Florida. The Unregulated Energy operation (35% of 2015 revenues) wholesales and distributes propane; markets natural gas; and provides other unregulated energy services, including midstream services in Ohio. Officers and directors own 5.4% of common stock; T. Rowe Price, 8.3; BlackRock, 5.8% (3/16 Proxy). CEO: Michael P. McMasters. Inc.: Delaware. Address: 909 Silver Lake Boulevard, Dover, DE 19904. Tel.: (302) 734-6799. Internet: www.chpk.com.

Chesapeake Utilities appears headed for an unspectacular 2016. That's partly because first-quarter share net (versus the year-ago period's) suffered from the unfavorable impact of substantially warmer temperatures on the natural gas and propane distribution operations. This event occurred during a time when customer consumption levels are normally high. To make matters worse, the company's September-interim performance was squeezed partly by fixed pipeline and storage costs associated with natural gas supply contracts where a significant portion of sales will occur during the winter months, plus lower retail propane margins per gallon on the Delmarva Peninsula. Even though results for the second quarter were extra strong and we believe 2016 will end on a positive note, full-year profits may advance only about 2.5%, to $2.75 a share.

Brighter things might be in store for 2017, nonetheless. That ought to reflect growing benefits from the April, 2015 purchase of Aspire Energy. New projects (see below) are another positive. Generally favorable weather patterns would obviously help, as well. Consequently, Chesapeake's bottom line stands to increase around 7%, to $2.95 a share.

The 2016 capital spending budget is expected to fall between $150 million and $170 million. (That would be 10.6% higher than last year's level, using the midpoint of that range.) Projects have included Eight Flags' CHP plant; new facilities to serve an electric power generator in Kent County, Delaware; Eastern Shore's system reliability project; continued natural gas infrastructure improvement initiatives; and additional expansions of the company's natural gas distribution and transmission systems. Management states that in order to fund these expenditures it might further increase the level of borrowings to supplement cash provided by operating activities.

The dividend yield now rests below the average of all equities in *Value Line's* Natural Gas Utility group. But the payout is well covered by corporate earnings, and future, steady hikes are a good possibility. Meanwhile, the stock is ranked 4 (Below Average) for Timeliness.

Frederick L. Harris, III December 2, 2016

(A) Diluted shrs. Excludes nonrecurring items: '02, d23¢; '08, d7¢; '15, 6¢. Excludes discontinued operations: '03, d9¢; '04, d1¢. Next earnings report due early Feb.

(B) Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan. Direct stock purchase plan available.

(C) In millions, adjusted for split.

Company's Financial Strength	B++
Stock's Price Stability	80
Price Growth Persistence	90
Earnings Predictability	95

NEW JERSEY RES. NYSE-NJR

RECENT PRICE **33.50** | P/E RATIO **19.7** (Trailing: 20.9 Median: 16.0) | RELATIVE P/E RATIO **1.03** | DIV'D YLD **3.0%** | **VALUE LINE**

TIMELINESS 3 Lowered 10/28/16
SAFETY 1 Raised 9/15/06
TECHNICAL 3 Lowered 10/28/16
BETA .80 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	30	(-10%)	*Nil*
Low	25	(-25%)	*-4%*

Insider Decisions

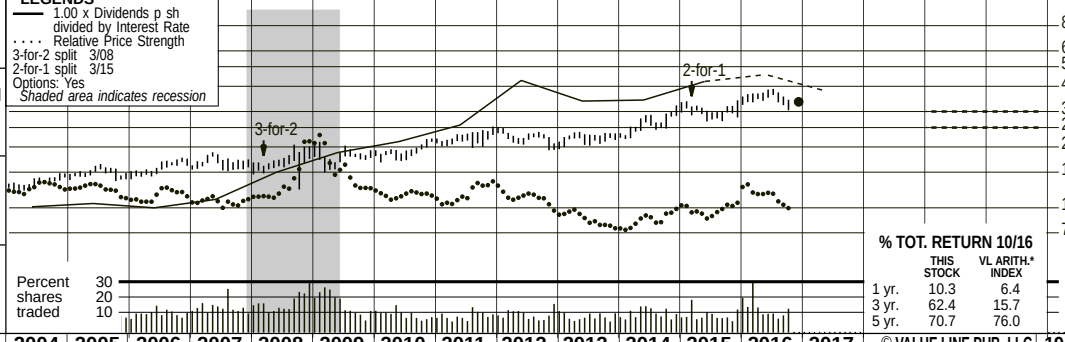
	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	6	0	0	0	0	0	0	0	0
to Sell	0	0	4	0	1	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	117	114	103
to Sell	94	114	107
Hld's(000)	49713	51216	52551

	16.4	17.7	18.8	20.6	21.2	22.0	25.2	25.1	23.8	32.1	34.1	38.9
High:	13.6	13.8	15.2	12.3	15.0	16.7	19.8	19.3	19.5	21.9	26.8	30.5

LEGENDS
1.00 x Dividends p sh divided by Interest Rate
Relative Price Strength
3-for-2 split 3/08
2-for-1 split 3/15
Options: Yes
Shaded area indicates recession



Target Price Range 2019 | 2020 | 2021

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.3	6.4
3 yr.	62.4	15.7
5 yr.	70.7	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
14.71	25.61	22.06	31.14	30.44	38.10	39.81	36.31	45.37	31.17	32.05	36.30	27.08	38.38	44.40	32.09	21.90	*27.35*	Revenues per sh [A]	*29.85*
1.00	1.06	1.07	1.19	1.25	1.31	1.37	1.22	1.81	1.58	1.63	1.70	1.86	1.93	2.73	2.52	*2.45*	*2.50*	"Cash Flow" per sh	*2.85*
.60	.65	.70	.79	.85	.88	.93	.78	1.35	1.20	1.23	1.29	1.36	1.37	2.08	1.78	1.61	*1.75*	Earnings per sh [B]	*2.10*
.38	.39	.40	.41	.43	.45	.48	.51	.56	.62	.68	.72	.77	.81	.86	.93	.98	*1.02*	Div'ds Decl'd per sh [C]■	*1.05*
.62	.55	.51	.57	.72	.64	.64	.73	.86	.90	1.05	1.13	1.26	1.33	1.52	3.76	*1.70*	*1.75*	Cap'l Spending per sh	*1.80*
4.14	4.40	4.35	5.13	5.62	5.30	7.50	7.75	8.64	8.29	8.81	9.36	9.80	10.65	11.48	12.99	*13.80*	*14.55*	Book Value per sh [D]	*17.40*
79.17	79.99	83.00	81.70	83.22	82.64	82.88	83.22	84.12	83.17	82.35	82.89	83.05	83.32	84.20	85.19	85.88	*86.00*	Common Shs Outst'g [E]	*86.00*
14.7	14.2	14.7	14.0	15.3	16.8	16.1	21.6	12.3	14.9	15.0	16.8	16.8	16.0	11.7	16.6	21.3		Avg Ann'l P/E Ratio	*14.0*
.96	.73	.80	.80	.81	.89	.87	1.15	.74	.99	.95	1.05	1.07	.90	.62	.84	1.17		Relative P/E Ratio	*.90*
4.4%	4.2%	3.9%	3.7%	3.3%	3.1%	3.2%	3.0%	3.3%	3.5%	3.7%	3.3%	3.4%	3.7%	3.5%	3.1%	2.9%		Avg Ann'l Div'd Yield	*3.6%*
3299.6	3021.8	3816.2	2592.5	2639.3	3009.2	2248.9	3198.1	3738.1	2734.0	1880.9	*2350*	Revenues ($mill) [A]	*2565*
78.5	65.3	113.9	101.0	101.8	106.5	112.4	113.7	176.9	153.7	138.1	*150*	Net Profit ($mill)	*180*
38.9%	38.8%	37.8%	27.1%	41.4%	30.2%	7.1%	25.4%	30.2%	26.3%	*32.0%*	*32.0%*	Income Tax Rate	*32.0%*
2.4%	2.2%	3.0%	3.9%	3.9%	3.5%	5.0%	3.6%	4.7%	5.6%	7.3%	*6.4%*	Net Profit Margin	*7.0%*
34.8%	37.3%	38.5%	39.8%	37.2%	35.5%	39.2%	36.6%	38.2%	43.2%	*43.0%*	*43.0%*	Long-Term Debt Ratio	*40.5%*
65.2%	62.7%	61.5%	60.2%	62.8%	64.5%	60.8%	63.4%	61.8%	56.8%	*57.0%*	*57.0%*	Common Equity Ratio	*59.5%*
954.0	1028.0	1182.1	1144.8	1154.4	1203.1	1339.0	1400.3	1564.4	1950.6	*2085*	*2200*	Total Capital ($mill)	*2495*
934.9	970.9	1017.3	1064.4	1135.7	1295.9	1484.9	1643.1	1884.1	2128.3	*2170*	*2215*	Net Plant ($mill)	*2350*
9.6%	7.7%	10.7%	9.7%	9.7%	9.7%	9.2%	9.0%	12.1%	8.6%	*7.5%*	*8.0%*	Return on Total Cap'l	*8.0%*
12.6%	10.1%	15.7%	14.6%	14.0%	13.7%	13.8%	12.8%	18.3%	13.9%	11.6%	*12.0%*	Return on Shr. Equity	*12.0%*
12.6%	10.1%	15.7%	14.6%	14.0%	13.7%	13.8%	12.8%	18.3%	13.9%	11.6%	*12.0%*	Return on Com Equity	*12.0%*
6.3%	3.6%	9.5%	7.2%	6.7%	6.2%	6.2%	5.2%	11.0%	6.8%	4.6%	*5.0%*	Retained to Com Eq	*6.0%*
50%	64%	40%	50%	52%	55%	55%	59%	40%	50%	61%	*58%*	All Div'ds to Net Prof	*50%*

CAPITAL STRUCTURE as of 6/30/16
Total Debt $1223.8 mill. **Due in 5 Yrs** $321.9 mill.
LT Debt $967.8 mill. **LT Interest** $25.4 mill.
Incl. $53.2 mill. capitalized leases.
(LT interest earned: 7.5x; total interest coverage: 7.5x)
Pension Assets-9/15 $256.4 mill.
Oblig. $394.4 mill.
Pfd Stock None

Common Stock 86,150,280 shs.
as of 8/1/16
MARKET CAP: $2.9 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	6/30/16
Cash Assets	2.2	4.9	94.8
Other	680.5	539.6	509.9
Current Assets	682.7	544.5	604.7
Accts Payable	330.3	273.2	216.0
Debt Due	335.5	77.5	256.0
Other	125.3	85.4	129.5
Current Liab.	791.1	436.1	601.5
Fix. Chg. Cov.	1007%	750%	750%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	1.0%	*-4.0%*
"Cash Flow"	6.5%	7.5%	*3.0%*
Earnings	7.5%	6.5%	*3.0%*
Dividends	7.0%	7.0%	*3.5%*
Book Value	8.0%	6.5%	*7.0%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.) [A] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	736.0	960.9	767.5	733.7	3198.1
2014	878.4	1579.6	688.3	591.9	3738.1
2015	824.1	1013.1	458.5	438.3	2734.0
2016	444.3	574.2	393.2	469.2	1880.9
2017	*560*	*690*	*510*	*590*	*2350*

Fiscal Year Ends	EARNINGS PER SHARE [A B] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	.43	.82	.12	d.01	1.37
2014	.47	1.79	.05	d.23	2.08
2015	.65	1.16	.03	d.06	1.78
2016	.58	.91	.13	d.02	1.61
2017	*.60*	*.95*	*.17*	*.03*	*1.75*

Calendar	QUARTERLY DIVIDENDS PAID [C]■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.19	.19	.19	.40	.97
2013	- -	.20	.20	.20	.60
2014	.21	.21	.21	.23	.86
2015	.23	.23	.23	.24	.93
2016	.24	.24	.24	.255	

BUSINESS: New Jersey Resources Corp. is a holding company providing retail/wholesale energy svcs. to customers in New Jersey, and in states from the Gulf Coast to New England, and Canada. New Jersey Natural Gas had about 512,300 customers at 9/30/15 in Monmouth and Ocean counties, and other N.J. counties. Fiscal 2015 volume: 341 bill. cu. ft. (14% interruptible, 21% residential and commercial and electric utility, 65% incentive programs). N.J. Natural Energy subsidiary provides unregulated retail/wholesale natural gas and related energy svcs. 2015 dep. rate: 2.5%. Has 991 empls. Off./dir. own about 1.4% of common (12/15 Proxy). Chrmn., CEO & Pres.: Laurence M. Downes. Inc.: NJ Addr.: 1415 Wyckoff Road, Wall, NJ 07719. Tel.: 732-938-1480. Web: www.njresources.com.

New Jersey Resources faced a difficult operating environment in fiscal 2016 (ended September 30th). Indeed, the company posted a downturn in both revenues and earnings this past year. What's more, since our September review, the stock has registered a modest 5% pullback, likely as a reflection of the slowdown in the retail/wholesale energy business. Revenues declined more than 30% on a year-over-year basis, to $1.88 billion. This largely stemmed from the warmer-than-normal weather patterns that existed across NJR's service territory. This trend was further exacerbated by the falloff of natural gas and commodity prices when compared to 2015's levels. Despite these challenges, the New Jersey Natural Gas (NJNG), regulated utility business added 8,170 new customer accounts in 2016. A bit more than 55% of those came from new construction. Still, on the profitability front, the sharp downturn in volumes weighed on both fixed- and variable-cost absorption. In fact, operating expenses ticked 20 basis points higher, when viewed as a percentage of the top line. Combined, these factors equated to an earnings reduction of almost 10%, to $1.61 per share. This was in line with our expectation.

That said, we have adjusted our outlook for this year. The company appears poised to log a rebound in revenues of about 25%, to $2.35 billion, due primarily to new NJNG customer accounts. Management estimates roughly 24,000-27,000 accounts will be added between fiscal 2017 and 2019. Elsewhere, the regulated utility division received approval of a rate reduction as well as a bill credit, that will have a net impact on the typical residential heating customer lowering a bill about 2% annually. This helps to put rates more in line with the current natural gas pricing environment. Finally, we have trimmed a nickel off our 2017 share-net estimate, to $1.75, placing it near the top end of management's recently issued guidance range of $1.65-$1.75. This would represent an annual increase of almost 9%.

We think most investors' funds could be better utilized elsewhere. Neutrally ranked NJR is lacking upside potential based on our projections. And the dividend yield is a bit light for a utility.

Bryan J. Fong *December 2, 2016*

(A) Fiscal year ends Sept. 30th.
(B) Diluted earnings. Qtly egs may not sum to total due to change in shares outstanding. Next earnings report due late Jan.
(C) Dividends historically paid in early Jan., April, July, and October. 1Q '13 div'd paid in 4Q '12. ■ Dividend reinvestment plan available.
(D) Includes regulatory assets in 2015: $410.2 million, $4.82/share.
(E) In millions, adjusted for splits.

Company's Financial Strength	A+
Stock's Price Stability	85
Price Growth Persistence	55
Earnings Predictability	55

N.W. NAT'L GAS NYSE-NWN

RECENT PRICE **57.95** | P/E RATIO **26.3** (Trailing: 26.5 Median: 18.0) | RELATIVE P/E RATIO **1.38** | DIV'D YLD **3.2%** | **VALUE LINE**

TIMELINESS 3 Lowered 8/12/16
SAFETY 1 Raised 3/18/05
TECHNICAL 2 Raised 12/2/16
BETA .65 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	60	(+5%)	*4%*
Low	50	(-15%)	*Nil*

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	4	12	3	0	4	6	1	0	0
to Sell	0	0	4	0	2	7	1	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	81	98	118
to Sell	65	65	80
Hld's(000)	16813	15946	16937

	2014	2015	2016	2017
High:	39.6	43.7	52.8	55.2	46.5	50.9	49.0	50.8	46.6	52.6	52.3	66.2
Low:	32.4	32.8	39.8	37.7	37.7	41.1	39.6	41.0	40.0	40.1	42.0	48.9

LEGENDS
1.10 x Dividends p sh divided by Interest Rate
Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2019 | 2020 | 2021

Percent shares traded: 15, 10, 5

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	27.3	6.4
3 yr.	51.8	15.7
5 yr.	51.2	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
21.09	25.78	25.07	23.57	25.69	33.01	37.20	39.13	39.16	38.17	30.56	31.72	27.14	28.02	27.64	26.39	*23.45*	*25.15*	Revenues per sh	*28.90*
3.68	3.86	3.65	3.85	3.92	4.34	4.76	5.41	5.31	5.20	5.18	5.00	4.94	5.04	5.05	4.91	*4.50*	*4.85*	"Cash Flow" per sh	*6.05*
1.79	1.88	1.62	1.76	1.86	2.11	2.35	2.76	2.57	2.83	2.73	2.39	2.22	2.24	2.16	1.96	*2.15*	*2.35*	Earnings per sh [A]	*3.15*
1.24	1.25	1.26	1.27	1.30	1.32	1.39	1.44	1.52	1.60	1.68	1.75	1.79	1.83	1.85	1.86	*1.87*	*1.88*	Div'ds Decl'd per sh [B]■	*2.05*
3.46	3.23	3.11	4.90	5.52	3.48	3.56	4.48	3.92	5.09	9.35	3.76	4.91	5.13	4.40	4.37	*4.50*	*6.20*	Cap'l Spending per sh	*6.35*
17.93	18.56	18.88	19.52	20.64	21.28	22.01	22.52	23.71	24.88	26.08	26.70	27.23	27.77	28.12	28.47	*27.40*	*28.40*	Book Value per sh [D]	*30.55*
25.23	25.23	25.59	25.94	27.55	27.58	27.24	26.41	26.50	26.53	26.58	26.76	26.92	27.08	27.28	27.43	*29.00*	*29.00*	Common Shs Outst'g [C]	*28.00*
12.4	12.9	17.2	15.8	16.7	17.0	15.9	16.7	18.1	15.2	17.0	19.0	21.1	19.4	20.7	23.7	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*17.0*
.81	.66	.94	.90	.88	.91	.86	.89	1.09	1.01	1.08	1.19	1.34	1.09	1.09	1.19			Relative P/E Ratio	*1.05*
5.6%	5.1%	4.5%	4.6%	4.2%	3.7%	3.7%	3.1%	3.3%	3.7%	3.6%	3.9%	3.8%	4.2%	4.1%	4.0%			Avg Ann'l Div'd Yield	*3.7%*
1013.2	1033.2	1037.9	1012.7	812.1	848.8	730.6	758.5	754.0	723.8	*680*	*730*	Revenues ($mill)	*865*
65.2	74.5	68.5	75.1	72.7	63.9	59.9	60.5	58.7	53.7	*62.0*	*68.0*	Net Profit ($mill)	*86.0*
36.3%	37.2%	36.9%	38.3%	40.5%	40.4%	42.4%	40.8%	41.5%	40.0%	*35.0%*	*35.0%*	Income Tax Rate	*35.0%*
6.4%	7.2%	6.6%	7.4%	8.9%	7.5%	8.2%	8.0%	7.8%	7.4%	*9.2%*	*9.3%*	Net Profit Margin	*10.9%*
46.3%	46.3%	44.9%	47.7%	46.1%	47.3%	48.5%	47.6%	44.8%	42.5%	*43.0%*	*43.0%*	Long-Term Debt Ratio	*43.0%*
53.7%	53.7%	55.1%	52.3%	53.9%	52.7%	51.5%	52.4%	55.2%	57.5%	*57.0%*	*57.0%*	Common Equity Ratio	*57.0%*
1116.5	1106.8	1140.4	1261.8	1284.8	1356.2	1424.7	1433.6	1389.0	1357.7	*1390*	*1445*	Total Capital ($mill)	*1605*
1425.1	1495.9	1549.1	1670.1	1854.2	1893.9	1973.6	2062.9	2121.6	2182.7	*2270*	*2360*	Net Plant ($mill)	*2655*
7.1%	8.5%	7.7%	7.3%	7.0%	6.2%	5.7%	5.8%	5.8%	5.5%	*5.5%*	*6.0%*	Return on Total Cap'l	*7.5%*
10.9%	12.5%	10.9%	11.4%	10.5%	8.9%	8.2%	8.1%	7.6%	6.9%	*8.0%*	*8.0%*	Return on Shr. Equity	*10.5%*
10.9%	12.5%	10.9%	11.4%	10.5%	8.9%	8.2%	8.1%	7.6%	6.9%	*8.0%*	*8.0%*	Return on Com Equity	*10.5%*
4.5%	6.0%	4.5%	5.0%	4.0%	2.4%	1.6%	1.5%	1.1%	.6%	*1.0%*	*1.5%*	Retained to Com Eq	*3.5%*
59%	52%	59%	56%	61%	73%	80%	81%	85%	92%	*87%*	*80%*	All Div'ds to Net Prof	*65%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $790.1 mill. **Due in 5 Yrs** $360.0 mill.
LT Debt $530.2 mill. **LT Interest** $45.0 mill.

(Total interest coverage: 3.5x)

Pension Assets-12/15 $249.4 mill.
Oblig. $445.6 mill.

Pfd Stock None

Common Stock 27,557,756 shares
as of 10/21/16

MARKET CAP $1.6 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	9.5	4.2	6.2
Other	353.1	327.9	204.4
Current Assets	362.6	332.1	210.6
Accts Payable	91.4	73.2	55.9
Debt Due	274.7	295.0	259.9
Other	103.3	109.5	86.9
Current Liab.	469.4	477.7	402.7
Fix. Chg. Cov.	321%	300%	350%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	- -	-5.5%	*1.0%*
"Cash Flow"	2.0%	-1.0%	*3.0%*
Earnings	1.0%	-5.0%	*7.0%*
Dividends	3.5%	3.0%	*2.0%*
Book Value	3.0%	2.5%	*1.5%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	277.9	131.7	88.2	260.7	758.5
2014	293.4	133.1	87.2	240.3	754.0
2015	261.7	138.3	93.1	230.7	723.8
2016	255.5	99.2	87.7	*237.6*	*680*
2017	*255*	*130*	*95.0*	*250*	*730*

Calendar	EARNINGS PER SHARE [A] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.40	.08	d.31	1.07	2.24
2014	1.40	.04	d.32	1.04	2.16
2015	1.04	.08	d.24	1.08	1.96
2016	1.33	.07	d.29	*1.04*	*2.15*
2017	*1.35*	*.10*	*d.25*	*1.15*	*2.35*

Calendar	QUARTERLY DIVIDENDS PAID [B] ■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.445	.445	.445	.455	1.79
2013	.455	.455	.455	.460	1.83
2014	.460	.460	.460	.465	1.85
2015	.465	.465	.465	.4675	1.86
2016	.4675	.4675	.4675	.470	

BUSINESS: Northwest Natural Gas Co. distributes natural gas to 90 communities, 704,000 customers, in Oregon (89% of customers) and in southwest Washington state. Principal cities served: Portland and Eugene, OR; Vancouver, WA. Service area population: 2.5 mill. (77% in OR). Company buys gas supply from Canadian and U.S. producers; has transportation rights on Northwest Pipeline system. Owns local underground storage. Rev. breakdown: residential, 35%; commercial, 22%; industrial, gas transportation, and other, 43%. Employs 1,092. BlackRock Inc. owns 10.0% of shares; officers and directors, 2.1% (4/16 proxy). CEO: Gregg S. Kantor. Inc.: Oregon. Address: 220 NW 2nd Ave., Portland, OR 97209. Telephone: 503-226-4211. Internet: www.nwnatural.com.

Northwest Natural Gas reported lackluster third-quarter results. Revenues fell 6% year over year, hurt by lower commodity prices. Still, the company had better gross profits, aided by stronger gas storage results. Operating expenses increased during the quarter, while bottom-line results were hurt by a $1.2 million environmental remediation charge. This caused losses to expand to $0.29 a share. Still, cooler weather is expected in the fourth quarter, which should help drive revenues higher. We have lowered our 2016 full-year estimate by a nickel to $2.15 a share.

Near-term results should benefit from improvements in the Portland market. Unemployment there has continued to drop, and construction in the area continues to be strong, as building permits were up 20% year over year. Too, the company should continue to benefit from decent conversion efforts, which ought to drive usage growth. These efforts will likely allow for better earnings in 2017.

Meanwhile, the Mist expansion plant has received its notice to proceed from Portland General Electric. This project will provide up to 120 million cubic feet of gas per day through a 13-mile pipeline, and will cost around $128 million. The company has already started to raise the funds required through equity sales, as it will sell up to 1.01 million shares, largely paying for the early buildout of the system. The facility is on track to be in service by the winter of 2018-2019, and will allow for a sizable bump in earnings.

The company raised its quarterly dividend to $0.47 a share (up 1%). This marks the 61st annual increase for the dividend aristocrat. The yield remains average for a utility, and will likely grow at modest rates until the Mist facility comes on line. Too, higher market interest rates are expected, which should decrease the appeal of the slow-growing dividend.

Shares of Northwest Natural Gas do not hold much appeal at the recent quotation. They are trading within our long-term Target Price Range, and the yield does not stand out among utilities. Long-term accounts would be best served waiting for a dip in price.

John E. Seibert III *December 2, 2016*

(A) Diluted earnings per share. Excludes nonrecurring items: '00, $0.11; '06, ($0.06); '08, ($0.03); '09, 6¢; May not sum due to rounding. Next earnings report due in early February.
(B) Dividends historically paid in mid-February, May, August, and November.
■ Dividend reinvestment plan available.
(C) In millions.
(D) Includes intangibles. In 2015: $370.7 million, $13.52/share.

Company's Financial Strength	A
Stock's Price Stability	95
Price Growth Persistence	25
Earnings Predictability	85

SOUTH JERSEY INDS. NYSE-SJI

RECENT PRICE **32.95** | P/E RATIO **22.4** (Trailing: 20.7 Median: 17.0) | RELATIVE P/E RATIO **1.17** | DIV'D YLD **3.3%** | **VALUE LINE**

TIMELINESS 2 Lowered 10/28/16
SAFETY 2 Lowered 1/4/91
TECHNICAL 3 Lowered 11/18/16
BETA .80 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	35	(+5%)	5%
Low	25	(-25%)	-2%

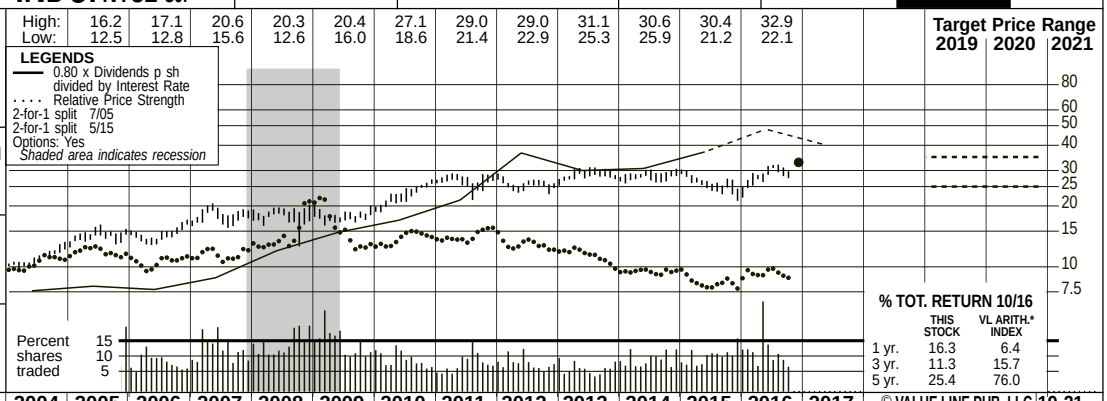
Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	9	0	9	0	0	1	0	0	0
to Sell	0	0	1	1	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	105	109	129
to Sell	72	77	61
Hld's(000)	43333	46585	56193

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
High:	16.2	17.1	20.6	20.3	20.4	27.1	29.0	29.0	31.1	30.6	30.4	32.9						
Low:	12.5	12.8	15.6	12.6	16.0	18.6	21.4	22.9	25.3	25.9	21.2	22.1						



Target Price Range 2019 | 2020 | 2021

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	16.3	6.4
3 yr.	11.3	15.7
5 yr.	25.4	76.0

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11.22	17.65	10.35	13.17	14.75	15.89	15.88	16.15	16.18	14.19	15.48	13.71	11.16	11.18	12.98	13.52	*12.40*	*12.80*	Revenues per sh	*15.10*
.97	.95	1.06	1.12	1.22	1.25	1.75	1.60	1.74	1.86	2.10	2.23	2.34	2.48	2.67	2.42	*2.45*	*2.55*	"Cash Flow" per sh	*2.95*
.54	.57	.61	.68	.79	.86	1.23	1.05	1.14	1.19	1.35	1.45	1.52	1.52	1.57	1.44	*1.45*	*1.50*	Earnings per sh A	*1.80*
.37	.37	.38	.39	.41	.43	.46	.51	.56	.61	.68	.75	.83	.90	.96	1.02	*1.06*	*1.10*	Div'ds Decl'd per sh B ■	*1.30*
1.11	1.41	1.74	1.18	1.34	1.60	1.26	.94	1.04	1.83	2.79	3.20	4.01	4.84	5.01	4.87	*3.25*	*3.90*	Cap'l Spending per sh	*5.10*
3.62	3.91	4.84	5.63	6.20	6.75	7.55	8.12	8.67	9.12	9.54	10.33	11.63	12.64	13.65	14.62	*16.90*	*18.30*	Book Value per sh C	*21.50*
46.00	47.44	48.83	52.92	55.52	57.96	58.65	59.22	59.46	59.59	59.75	60.43	63.31	65.43	68.33	70.97	*80.00*	*82.00*	Common Shs Outst'g D	*86.00*
13.0	13.6	13.5	13.3	14.1	16.6	11.9	17.2	15.9	15.0	16.8	18.4	16.9	18.9	18.0	17.9	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*16.0*
.85	.70	.74	.76	.74	.88	.64	.91	.96	1.00	1.07	1.15	1.08	1.06	.95	.90			Relative P/E Ratio	*1.00*
5.2%	4.7%	4.6%	4.3%	3.7%	3.0%	3.2%	2.8%	3.1%	3.4%	3.0%	2.8%	3.2%	3.1%	3.4%	3.9%			Avg Ann'l Div'd Yield	*4.5%*
931.4	956.4	962.0	845.4	925.1	828.6	706.3	731.4	887.0	959.6	*990*	*1050*	Revenues ($mill)	*1300*
72.0	61.8	67.7	71.3	81.0	87.0	93.3	97.1	104.0	99.0	*110*	*120*	Net Profit ($mill)	*150*
41.3%	41.9%	47.7%	23.0%	15.2%	22.4%	10.8%	--	10.8%	5.9%	*25.0%*	*25.0%*	Income Tax Rate	*25.0%*
7.7%	6.5%	7.0%	8.4%	8.8%	10.5%	13.2%	13.3%	11.7%	10.3%	*11.1%*	*11.4%*	Net Profit Margin	*11.5%*
44.7%	42.7%	39.2%	36.5%	37.4%	40.5%	45.0%	45.1%	48.0%	49.2%	*41.5%*	*42.5%*	Long-Term Debt Ratio	*45.0%*
55.3%	57.3%	60.8%	63.5%	62.6%	59.5%	55.0%	54.9%	52.0%	50.8%	*58.5%*	*57.5%*	Common Equity Ratio	*55.0%*
801.1	839.0	848.0	856.4	910.1	1048.3	1337.6	1507.4	1791.9	2043.9	*2300*	*2600*	Total Capital ($mill)	*3350*
920.0	948.9	982.6	1073.1	1193.3	1352.4	1578.0	1859.1	2134.1	2448.1	*2580*	*2700*	Net Plant ($mill)	*3000*
10.1%	8.6%	8.9%	9.0%	9.5%	8.9%	7.4%	6.8%	6.4%	5.4%	*5.5%*	*5.0%*	Return on Total Cap'l	*5.0%*
16.3%	12.8%	13.1%	13.1%	14.2%	13.9%	12.7%	11.7%	11.2%	9.5%	*8.0%*	*8.0%*	Return on Shr. Equity	*8.0%*
16.3%	12.8%	13.1%	13.1%	14.2%	13.9%	12.7%	11.7%	11.2%	9.5%	*8.0%*	*8.0%*	Return on Com Equity	*8.0%*
10.2%	6.7%	6.7%	6.4%	7.1%	6.7%	5.8%	4.8%	4.3%	2.8%	*2.0%*	*2.0%*	Retained to Com Eq	*2.0%*
37%	48%	49%	51%	50%	52%	55%	59%	61%	71%	*77%*	*75%*	All Div'ds to Net Prof	*75%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $1270.8 mill. **Due in 5 Yrs** $1140 mill.
LT Debt $808.7 mill. **LT Interest** $25.0 mill.
(Total interest coverage: 6.1x)

Leases, Uncapitalized Annual rentals $.8 mill.
Pension Assets-12/15 $184.8 mill.
Oblig. $254.2 mill.
Pfd Stock None

Common Stock 79,477,822 shs.
as of 11/1/16

MARKET CAP: $2.6 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	4.2	3.9	6.9
Other	562.5	427.4	350.9
Current Assets	566.7	431.3	357.8
Accts Payable	273.0	186.4	141.1
Debt Due	395.6	461.2	462.1
Other	181.6	184.9	209.2
Current Liab.	850.2	832.5	812.4
Fix. Chg. Cov.	432%	496%	572%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	-1.5%	-4.0%	*3.0%*
"Cash Flow"	7.5%	6.0%	*2.5%*
Earnings	7.0%	4.0%	*3.0%*
Dividends	9.0%	9.5%	*6.5%*
Book Value	8.0%	8.5%	*8.0%*

Calendar	QUARTERLY REVENUES ($ mill.) Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	255.6	122.6	128.8	224.4	731.4
2014	350.2	133.3	122.4	281.1	887.0
2015	383.0	177.7	141.1	257.8	959.6
2016	333.0	154.4	219.1	***283.5***	***990***
2017	***350***	***175***	***200***	***325***	***1050***

Calendar	EARNINGS PER SHARE A Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.76	.16	d.02	.62	1.52
2014	1.01	.15	d.05	.47	1.57
2015	.86	.03	d.07	.62	1.44
2016	.80	.12	.05	***.48***	***1.45***
2017	***.82***	***.12***	***Nil***	***.56***	***1.50***

Calendar	QUARTERLY DIVIDENDS PAID B■ Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	--	.202	.202	.423	.83
2013	--	.222	.222	.458	.90
2014	--	.237	.237	.488	.96
2015	--	.251	.251	.515	1.02
2016	--	.264	.264	.536	

BUSINESS: South Jersey Industries, Inc. is a holding company. Its subsidiary, South Jersey Gas Co., distributes natural gas to 373,100 customers in New Jersey's southern counties. Gas revenue mix '15: residential, 45%; commercial, 22%; cogeneration and electric generation, 12%; industrial, 21%. Non-utility operations include: South Jersey Energy, South Jersey Resources Group, South Jersey Exploration, Marina Energy, South Jersey Energy Service Plus, and SJI Midstream. Has about 720 employees. Off./dir. own less than 1% of common shares; BlackRock, Inc., 10.5%; The Vanguard Group, Inc., 7.7% (3/16 proxy). Pres. & CEO: Michael J. Renna. Inc.: NJ. Address: 1 South Jersey Plaza, Folsom, NJ 08037. Tel.: 609-561-9000. Internet: www.sjindustries.com.

Shares of South Jersey Industries are trading near an all-time high price. The company posted impressive results for the September interim. This was largely due to performance at SJ Energy Services. This line benefited from strong production from its solar fleet and improved SREC (Solar Renewable Energy Credit) prices. A recovery related to the writedown of an energy facility and investment tax credits associated with solar project development also boosted results here. Both SJ Energy Group and utility South Jersey Gas reported lower operating losses for the period. The third quarter is traditionally weak for the utility.

South Jersey Gas has received regulatory approval to continue its Accelerated Infrastructure Replacement Program and to adjust rates to reflect prior investments. This allows the utility to invest up to $302.5 million over the next five years to continue the accelerated replacement of aging bare steel and cast iron mains with plastic pipe, which is more durable. It will recover these investments though annual rate adjustments, the first of which will occur next October. South Jersey Gas is also to recover $74.5 million in safety and reliability investments not previously reflected in rates through a base rate adjustment. In addition, the utility will issue customers a $10 million credit, mainly due to lower-than-expected wholesale gas costs.

We expect healthy operating improvement to late decade. The utility should further benefit from infrastructure investment and customer additions. Natural gas remains the fuel of choice within its service territory, and this business should continue to gain from customer conversions. Meanwhile, growth in the number of fuel management contracts augurs well for volumes and margins at SJ Energy Group. Elsewhere, SJ Energy Services should benefit from the healthy performance of its energy production assets.

This timely stock offers a good dividend yield. Moreover, South Jersey earns favorable marks for Safety, Financial Strength, Price Stability, and Earnings Predictability. But capital gains potential is underwhelming at this juncture, following a run-up in the share price.

Michael Napoli, CFA *December 2, 2016*

(A) Based on GAAP egs. through 2006, economic egs. thereafter. GAAP EPS: '07, $1.05; '08, $1.29; '09, $0.97; '10, $1.11; '11, $1.49; '12, $1.49; '13, $1.28; '14, $1.46; '15, $1.52. Excl. nonrecur. gain (loss): '01, $0.07; '08, $0.16; '09, ($0.22); '10, ($0.24); '11, $0.04; '12, ($0.03); '13, ($0.24); '14, ($0.11); '15, $0.08. Egs. may not sum due to rounding. Next egs. report due late February. **(B)** Div'ds paid early April, July, Oct., and late Dec. ■ Div. reinvest. plan avail. **(C)** Incl. reg. assets. In 2015: $521.0 mill., $7.34 per shr. **(D)** In mill., adj. for split.

Company's Financial Strength	A
Stock's Price Stability	90
Price Growth Persistence	40
Earnings Predictability	80

SOUTHWEST GAS NYSE-SWX

RECENT PRICE **74.45** | P/E RATIO **22.4** (Trailing: 23.3 Median: 16.0) | RELATIVE P/E RATIO **1.17** | DIV'D YLD **2.5%** | **VALUE LINE**

TIMELINESS 3 Lowered 9/30/16
SAFETY 3 Lowered 1/4/91
TECHNICAL 4 Lowered 11/18/16
BETA .75 (1.00 = Market)

2019-21 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	80	(+5%)	5%
Low	55	(-25%)	-3%

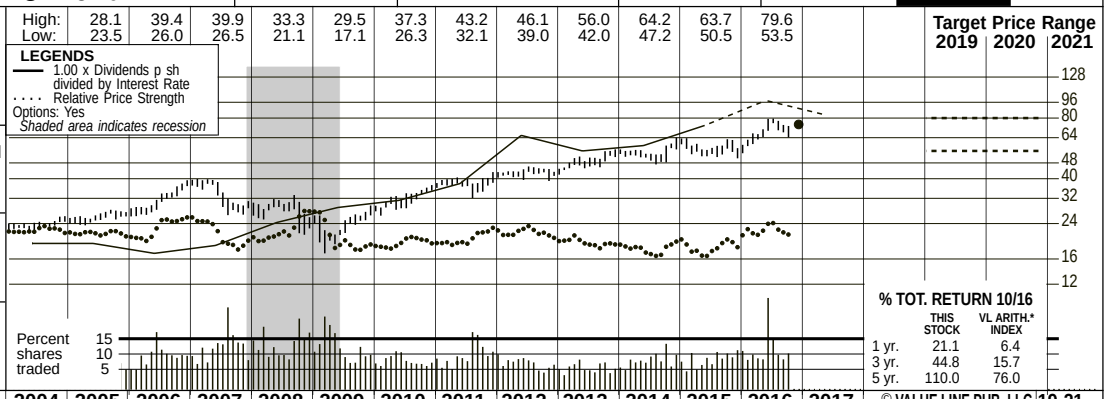
Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	8	20	10	0	1	1	0	1	1
to Sell	0	0	9	0	3	5	0	1	1

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	99	108	111
to Sell	87	85	102
Hld's(000)	37256	37942	37855

High:	28.1	39.4	39.9	33.3	29.5	37.3	43.2	46.1	56.0	64.2	63.7	79.6						
Low:	23.5	26.0	26.5	21.1	17.1	26.3	32.1	39.0	42.0	47.2	50.5	53.5						



Target Price Range

2019	2020	2021

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	21.1	6.4
3 yr.	44.8	15.7
5 yr.	110.0	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
32.61	42.98	39.68	35.96	40.14	43.59	48.47	50.28	48.53	42.00	40.18	41.07	41.77	42.08	45.61	52.00	*52.60*	*53.55*	Revenues per sh	*61.55*
4.57	4.79	5.07	5.11	5.57	5.20	5.97	6.21	5.76	6.16	6.46	6.81	7.73	8.24	8.47	8.62	*9.25*	*10.10*	"Cash Flow" per sh	*12.30*
1.21	1.15	1.16	1.13	1.66	1.25	1.98	1.95	1.39	1.94	2.27	2.43	2.86	3.11	3.01	2.92	*3.20*	*3.50*	Earnings per sh A	*4.50*
.82	.82	.82	.82	.82	.82	.82	.86	.90	.95	1.00	1.06	1.18	1.32	1.46	1.62	*1.76*	*1.90*	Div'ds Decl'd per sh B■†	*2.40*
7.04	8.17	8.50	7.03	8.23	7.49	8.27	7.96	6.79	4.81	4.73	8.29	8.57	7.86	8.53	10.30	*11.25*	*11.75*	Cap'l Spending per sh	*13.10*
16.82	17.27	17.91	18.42	19.18	19.10	21.58	22.98	23.49	24.44	25.62	26.66	28.35	30.47	31.95	33.61	*34.90*	*36.20*	Book Value per sh	*40.40*
31.71	32.49	33.29	34.23	36.79	39.33	41.77	42.81	44.19	45.09	45.56	45.96	46.15	46.36	46.52	47.38	*48.00*	*49.00*	Common Shs Outst'g C	*52.00*
16.0	19.0	19.9	19.2	14.3	20.6	15.9	17.3	20.3	12.2	14.0	15.7	15.0	15.8	17.9	19.4	*Bold figures are Value Line estimates*		Avg Ann'l P/E Ratio	*15.0*
1.04	.97	1.09	1.09	.76	1.10	.86	.92	1.22	.81	.89	.98	.95	.89	.94	.98			Relative P/E Ratio	*.95*
4.2%	3.8%	3.6%	3.8%	3.5%	3.2%	2.6%	2.6%	3.2%	4.0%	3.2%	2.8%	2.8%	2.7%	2.7%	2.9%			Avg Ann'l Div'd Yield	*3.6%*
2024.7	2152.1	2144.7	1893.8	1830.4	1887.2	1927.8	1950.8	2121.7	2463.6	*2525*	*2625*	Revenues ($mill)	*3200*
80.5	83.2	61.0	87.5	103.9	112.3	133.3	145.3	141.1	138.3	*155*	*175*	Net Profit ($mill)	*240*
37.3%	36.5%	40.1%	34.0%	34.7%	36.2%	36.2%	35.0%	35.7%	36.4%	*35.0%*	*35.0%*	Income Tax Rate	*35.0%*
4.0%	3.9%	2.8%	4.6%	5.7%	6.0%	6.9%	7.4%	6.7%	5.6%	*6.1%*	*6.7%*	Net Profit Margin	*7.5%*
60.6%	58.1%	55.3%	53.5%	49.1%	43.2%	49.2%	49.4%	52.4%	49.3%	*49.0%*	*49.0%*	Long-Term Debt Ratio	*49.0%*
39.4%	41.9%	44.7%	46.5%	50.9%	56.8%	50.8%	50.6%	47.6%	50.7%	*51.0%*	*51.0%*	Common Equity Ratio	*51.0%*
2287.8	2349.7	2323.3	2371.4	2291.7	2155.9	2576.9	2793.7	3123.9	3143.5	*3275*	*3475*	Total Capital ($mill)	*4100*
2668.1	2845.3	2983.3	3034.5	3072.4	3218.9	3343.8	3486.1	3658.4	3891.1	*4080*	*4275*	Net Plant ($mill)	*4850*
5.5%	5.5%	4.5%	5.4%	6.1%	6.4%	6.4%	6.3%	5.7%	5.5%	*6.0%*	*6.0%*	Return on Total Cap'l	*7.0%*
8.9%	8.5%	5.9%	7.9%	8.9%	9.2%	10.2%	10.3%	9.5%	8.7%	*9.5%*	*10.0%*	Return on Shr. Equity	*11.5%*
8.9%	8.5%	5.9%	7.9%	8.9%	9.2%	10.2%	10.3%	9.5%	8.7%	*9.5%*	*10.0%*	Return on Com Equity	*11.5%*
5.2%	4.8%	2.1%	4.1%	5.1%	5.3%	6.1%	6.1%	5.0%	4.0%	*4.0%*	*4.5%*	Retained to Com Eq	*5.5%*
42%	44%	63%	48%	43%	43%	40%	41%	47%	54%	*55%*	*53%*	All Div'ds to Net Prof	*52%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $1642.4 mill. **Due in 5 Yrs** $525.0 mill.
LT Debt $1592.9 mill. **LT Interest** $72.0 mill.
(Total interest coverage: 4.3x) (49% of Cap'l)
Leases, Uncapitalized Annual rentals $7.0 mill.
Pension Assets-12/15 $780.5 mill.
Oblig. $1117.4 mill.
Pfd Stock None

Common Stock 47,482,068 shs.
as of 10/28/16

MARKET CAP: $3.5 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	39.6	36.0	85.2
Other	567.2	522.2	459.1
Current Assets	606.8	558.2	544.3
Accts Payable	168.0	164.9	138.8
Debt Due	24.2	37.5	49.5
Other	277.9	332.6	424.7
Current Liab.	470.1	535.0	613.0
Fix. Chg. Cov.	395%	401%	411%

ANNUAL RATES of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '13-'15 to '19-'21
Revenues	1.5%	1.5%	*5.0%*
"Cash Flow"	5.0%	6.5%	*6.5%*
Earnings	8.5%	10.0%	*7.0%*
Dividends	6.0%	9.0%	*8.5%*
Book Value	5.5%	5.5%	*4.0%*

Calendar	QUARTERLY REVENUES ($ mill.) D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	613.5	411.6	387.3	538.4	1950.8
2014	608.4	453.2	432.5	627.7	2121.7
2015	734.2	538.6	505.4	685.4	2463.6
2016	731.2	547.7	540.0	*706.1*	*2525*
2017	*765*	*575*	*560*	*725*	*2625*

Calendar	EARNINGS PER SHARE A D Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	1.73	.22	d.06	1.22	3.11
2014	1.51	.21	.04	1.25	3.01
2015	1.53	.10	d.10	1.38	2.92
2016	1.58	.19	.05	*1.38*	*3.20*
2017	*1.68*	*.22*	*.10*	*1.50*	*3.50*

Calendar	QUARTERLY DIVIDENDS PAID B■† Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2012	.265	.295	.295	.295	1.15
2013	.295	.330	.330	.330	1.29
2014	.330	.365	.365	.365	1.43
2015	.365	.405	.405	.405	1.58
2016	.405	.450	.450	.450	

BUSINESS: Southwest Gas Corporation is a regulated gas distributor serving approximately 2.0 million customers in sections of Arizona, Nevada, and California. Comprised of two business segments: natural gas operations and construction services. 2015 margin mix: residential and small commercial, 85%; large commercial and industrial, 4%; transportation, 11%. Total throughput: 2.1 billion therms. Has 5,876 employees. Officers & directors own 1.3% of common stock; BlackRock Inc., 9.6%; The Vanguard Group, Inc., 7.4%; GAMCO Investors, Inc., 6.4% (3/16 Proxy). Chairman: Michael J. Melarkey. Pres. & CEO: John Hester. Inc.: CA. Address: 5241 Spring Mountain Road, Las Vegas, Nevada 89193. Tel.: 702-876-7237. Internet: www.swgas.com.

Shares of Southwest Gas have come off a high-water mark in recent months. The company reported favorable comparisons for the September quarter. The construction services segment, Centuri, benefited from additional pipe replacement work with existing customers, incremental work from awarded bid contracts, and growth in the customer base. Earnings of $14.9 million here more than offset a net loss of $12.4 million at the natural gas operation due to seasonal factors. Nevertheless, the utility reported a lower deficit, thanks to positive returns on company-owned life insurance policies. Performance here was also supported by rate relief and customer additions. Looking forward, we expect that earnings per share will match the prior-year figure for the December quarter. For the full year, we look for healthy bottom-line improvement for Southwest Gas, on modest top-line gains.

Prospects appear favorable for the long term. The company's natural gas business ought to further benefit from customer growth, infrastructure tracker mechanisms, and expansion projects. Elsewhere, Centuri should continue to report solid performance. This business operates in 20 major markets in the United States and two major markets in Canada. Fundamentals appear solid here, considering the need to replace aging infrastructure. Centuri has a strong base of large utility clients to sustain and grow its operation. Many of these are multiyear pipe replacement programs.

The stock does not stand out at this time. The equity is ranked to perform in line with the broader market for the coming six to 12 months. Moreover, appreciation potential is subpar, as the shares are trading well within our Target Price Range. Though we anticipate healthy growth for the company in the coming years, the issue is currently trading at a premium valuation. The dividend yield is nothing special for a utility, either. However, it's worth mentioning that Southwest Gas earns favorable marks for Price Stability, Growth Persistence, and Earnings Predictability. A pullback in the share price may present conservative investors with a better entry point.

Michael Napoli, CFA *December 2, 2016*

(A) Diluted earnings. Excl. nonrec. gains (losses): '02, (10¢); '05, (11¢); '06, 7¢. Next egs. report due late February. **(B)** Dividends historically paid early March, June, September, and December. ■† Div'd reinvestment and stock purchase plan avail. **(C)** In millions. **(D)** Totals may not sum due to rounding.

Company's Financial Strength	B++
Stock's Price Stability	90
Price Growth Persistence	90
Earnings Predictability	85

SPIRE INC. NYSE-SR

RECENT PRICE **65.60** | P/E RATIO **18.8** (Trailing: 19.8 Median: 15.0) | RELATIVE P/E RATIO **0.98** | DIV'D YLD **3.2%** | **VALUE LINE**

TIMELINESS 3 Lowered 8/12/16
SAFETY 2 Raised 6/20/03
TECHNICAL 3 Lowered 10/7/16
BETA .70 (1.00 = Market)

2019-21 PROJECTIONS

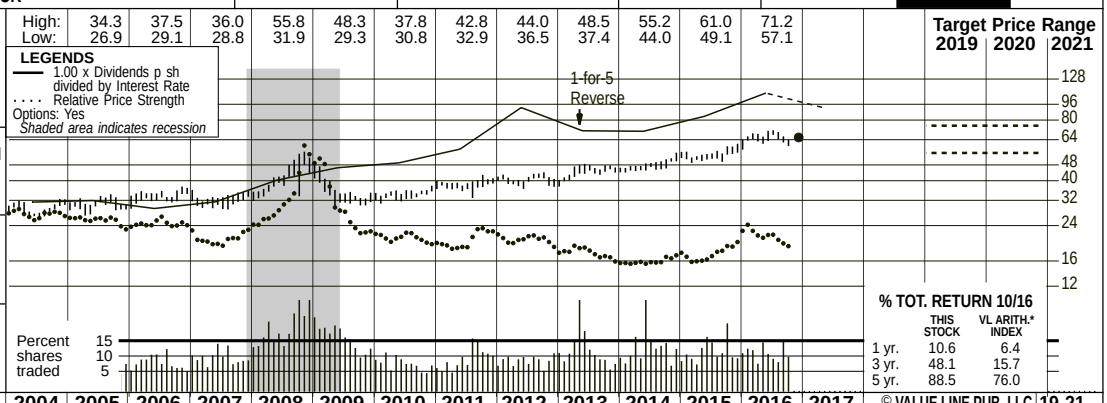
	Price	Gain	Ann'l Total Return
High	75	(+15%)	6%
Low	55	(-15%)	-1%

Insider Decisions

	J	F	M	A	M	J	J	A	S
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	4Q2015	1Q2016	2Q2016
to Buy	114	109	142
to Sell	86	104	83
Hld's(000)	34753	35632	36826



Target Price Range 2019 | 2020 | 2021

% TOT. RETURN 10/16

	THIS STOCK	VL ARITH.* INDEX
1 yr.	10.6	6.4
3 yr.	48.1	15.7
5 yr.	88.5	76.0

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	© VALUE LINE PUB. LLC	19-21
29.99	53.08	39.84	54.95	59.59	75.43	93.51	93.40	100.44	85.49	77.83	71.48	49.90	31.10	37.68	45.59	33.68	*40.45*	Revenues per sh [A]	*53.00*
2.68	3.00	2.56	3.15	2.79	2.98	3.81	3.87	4.22	4.56	4.11	4.62	4.58	3.12	3.87	6.15	6.16	*6.55*	"Cash Flow" per sh	*7.40*
1.37	1.61	1.18	1.82	1.82	1.90	2.37	2.31	2.64	2.92	2.43	2.86	2.79	2.02	2.35	3.16	3.24	*3.50*	Earnings per sh [A B]	*4.20*
1.34	1.34	1.34	1.34	1.35	1.37	1.40	1.45	1.49	1.53	1.57	1.61	1.66	1.70	1.76	1.84	1.96	*2.10*	Div'ds Decl'd per sh [C ■]	*2.30*
2.77	2.51	2.80	2.67	2.45	2.84	2.97	2.72	2.57	2.36	2.56	3.02	4.83	4.00	3.96	6.68	6.42	*6.90*	Cap'l Spending per sh	*7.10*
14.99	15.26	15.07	15.65	16.96	17.31	18.85	19.79	22.12	23.32	24.02	25.56	26.67	32.00	34.93	36.30	38.73	*40.65*	Book Value per sh [D]	*45.55*
18.88	18.88	18.96	19.11	20.98	21.17	21.36	21.65	21.99	22.17	22.29	22.43	22.55	32.70	43.18	43.36	45.65	*47.00*	Common Shs Outst'g [E]	*50.00*
14.9	14.5	20.0	13.6	15.7	16.2	13.6	14.2	14.3	13.4	13.7	13.0	14.5	21.3	19.8	16.5	19.6		Avg Ann'l P/E Ratio	*15.5*
.97	.74	1.09	.78	.83	.86	.73	.75	.86	.89	.87	.82	.92	1.20	1.04	.83	1.05		Relative P/E Ratio	*.95*
6.6%	5.7%	5.7%	5.4%	4.7%	4.4%	4.3%	4.4%	3.9%	3.9%	4.7%	4.3%	4.1%	4.0%	3.8%	3.5%	3.1%		Avg Ann'l Div'd Yield	*3.5%*
1997.6	2021.6	2209.0	1895.2	1735.0	1603.3	1125.5	1017.0	1627.2	1976.4	1537.3	*1900*	Revenues ($mill) [A]	*2650*
50.5	49.8	57.6	64.3	54.0	63.8	62.6	52.8	84.6	136.9	144.2	*165*	Net Profit ($mill)	*210*
32.5%	33.4%	31.3%	33.6%	33.4%	31.4%	29.6%	25.0%	27.6%	31.2%	32.5%	*28.0%*	Income Tax Rate	*30.0%*
2.5%	2.5%	2.6%	3.4%	3.1%	4.0%	5.6%	5.2%	5.2%	6.9%	9.4%	*8.7%*	Net Profit Margin	*7.9%*
49.5%	45.3%	44.4%	42.9%	40.5%	38.9%	36.1%	46.6%	55.1%	53.0%	50.9%	*50.0%*	Long-Term Debt Ratio	*50.0%*
50.4%	54.6%	55.5%	57.1%	59.5%	61.1%	63.9%	53.4%	44.9%	47.0%	49.1%	*50.0%*	Common Equity Ratio	*50.0%*
798.9	784.5	876.1	906.3	899.9	937.7	941.0	1959.0	3359.4	3345.1	3601.9	*3835*	Total Capital ($mill)	*4505*
763.8	793.8	823.2	855.9	884.1	928.7	1019.3	1776.6	2759.7	2941.2	3300.9	*3465*	Net Plant ($mill)	*4010*
8.4%	8.5%	8.1%	8.7%	7.4%	8.1%	7.9%	3.3%	3.1%	5.1%	4.9%	*5.0%*	Return on Total Cap'l	*5.5%*
12.5%	11.6%	11.8%	12.4%	10.1%	11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	*8.5%*	Return on Shr. Equity	*9.0%*
12.5%	11.6%	11.8%	12.4%	10.1%	11.1%	10.4%	5.0%	5.6%	8.7%	8.2%	*8.5%*	Return on Com Equity	*9.0%*
5.1%	4.3%	5.2%	5.9%	3.6%	4.9%	4.3%	1.0%	1.5%	3.7%	3.3%	*3.5%*	Retained to Com Eq	*4.0%*
59%	63%	56%	53%	64%	56%	59%	81%	73%	58%	59%	*60%*	All Div'ds to Net Prof	*55%*

CAPITAL STRUCTURE as of 9/30/16
Total Debt $2482.4 mill. **Due in 5 Yrs** $400.0 mill.
LT Debt $1833.7 mill. **LT Interest** $70.0 mill.
(Total interest coverage: 3.7x)

Leases, Uncapitalized Annual rentals $11.0 mill.
Pension Assets-9/16 $540.5 mill.
Oblig. $724.5 mill.

Pfd Stock None
Common Stock 45,656,218 shs.
as of 11/11/16

MARKET CAP: $3.0 billion (Mid Cap)

CURRENT POSITION ($MILL.)	2014	2015	9/30/16
Cash Assets	16.1	13.8	5.2
Other	588.8	516.3	564.4
Current Assets	604.9	530.1	569.6
Accts Payable	176.7	146.5	210.9
Debt Due	287.1	418.0	648.7
Other	319.0	289.3	301.7
Current Liab.	782.8	853.8	1161.3
Fix. Chg. Cov.	360%	365%	366%

ANNUAL RATES (of change (per sh))	Past 10 Yrs.	Past 5 Yrs.	Est'd '14-'16 to '19-'21
Revenues	-6.5%	-13.0%	*6.5%*
"Cash Flow"	5.5%	4.0%	*9.5%*
Earnings	3.5%	1.5%	*9.0%*
Dividends	3.0%	3.5%	*3.5%*
Book Value	7.5%	8.5%	*4.5%*

Fiscal Year Ends	QUARTERLY REVENUES ($ mill.)[A] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	307.0	397.6	165.3	147.1	1017.0
2014	468.6	694.5	241.8	222.3	1627.2
2015	619.6	877.4	275.2	204.2	1976.4
2016	399.4	609.3	249.3	279.3	1537.3
2017	*475*	*775*	*250*	*400*	*1900*

Fiscal Year Ends	EARNINGS PER SHARE [A B F] Dec.31	Mar.31	Jun.30	Sep.30	Full Fiscal Year
2013	1.14	1.34	.25	d.30	2.02
2014	1.09	1.59	.33	d.35	2.35
2015	1.09	2.18	.32	d.43	3.16
2016	1.08	2.31	.24	d.31	3.24
2017	*1.20*	*2.30*	*.30*	*d.30*	*3.50*

Cal-endar	QUARTERLY DIVIDENDS PAID [C ■] Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2013	.425	.425	.425	.425	1.70
2014	.44	.44	.44	.44	1.76
2015	.46	.46	.46	.46	1.84
2016	.49	.49	.49	.49	
2017	.525				

BUSINESS: Spire Inc., formerly known as the Laclede Group, Inc., is a holding company for natural gas utilities, which distributes natural gas across Missouri, including the cities of St. Louis and Kansas City. Has roughly 1.6 million customers. Acquired Missouri Gas 9/13, Alabama Gas Co 9/14. Utility therms sold and transported in fiscal 2016: 2.6 bill. Revenue mix for regulated operations: residential, 67%; commercial and industrial, 23%; transportation, 2%; other, 8%. Has around 3,078 employees. Officers and directors own 3.2% of common shares (1/16 proxy). Chairman: Edward Glotzbach; CEO: Suzanne Sitherwood. Inc.: Missouri. Address: 700 Market Street, St. Louis, Missouri 63101. Telephone: 314-342-0500. Internet: www.thelacledegroup.com.

Spire Inc. reported mixed fiscal fourth-quarter results (ended September 30th). Revenues were kept in check by lower commodity prices, and 20% warmer-than-usual weather during the period. But the total was supported by better gas marketing revenues and additional contributions from the MobileGas and Willmut Gas acquisitions. Overall, the company had better operational performance across the board, including strong results in its gas marketing division, which allowed for losses of $0.31 a share.

Near-term results will be driven by regulatory outcomes. Spire has filed for infrastructure replacement surcharges on its Laclede and Missouri Gas subsidiaries, which would boost results if approved. Too, changes in the utility regulatory environment in Missouri may change rate-making mechanisms. The company will file its next general rates cases in April, which could allow for better profitability. Those outcomes are uncertain, but we think the company will earn $3.50 a share in fiscal 2017.

The integrations of Willmut Gas and MobileGas are occurring. Completion of the purchases boosted utility incomes in Alabama and Mississippi. This deal could be earnings accretive sooner than fiscal 2018 thanks to the early accord completion, and cost synergies are expected to emerge shortly.

The build out of the STL pipeline remains on track. An environmental assessment and route refinements are being nailed down in anticipation of the January filing with FERC. This project should cost between $190 million and $210 million, and be put into service during fiscal 2019. As pipelines generally have higher allowable returns, we expect this would provide an ample boost to long-term results.

The company has raised the dividend 7% to $0.525 quarterly. This represents a decent bump in the payout, and should appeal to investors. This marks the 14th year in a row of dividend increases.

Shares of Spire Inc. do not stand out for Timeliness. Though they offer a decent yield and steady dividend growth, the shares offer little total return potential. Most investors would be best served waiting for a price dip.

John E. Seibert III *December 2, 2016*

(A) Fiscal year ends Sept. 30th. **(B)** Based on diluted shares outstanding. Excludes nonrecurring loss: '06, 7¢. Excludes gain from discontinued operations: '08, 94¢. Next earnings report due late January. **(C)** Dividends historically paid in early January, April, July, and October. ■ Dividend reinvestment plan available. **(D)** Incl. deferred charges. In '14: $383.8 mill., $8.85/sh. **(E)** In millions. **(F)** Qtly. egs. may not sum due to rounding or change in shares outstanding in 2013, 2014, 2016.

Company's Financial Strength	B++
Stock's Price Stability	100
Price Growth Persistence	40
Earnings Predictability	80

LAC / MGE

Summary of Risk Premium Models for

Proxy Group of Seven Natural Gas Companies

	Proxy Group of Seven Natural Gas Companies	
Predictive Risk Premium Model (PRPM) (1)	11.62	%
Risk Premium Using an Adjusted Total Market Approach (2)	9.51	%
Average	10.57	%

Notes:

(1) From page 2 of this Schedule.

(2) From page 3 of this Schedule.

LAC / MGE
Proxy Group of Seven Natural Gas Companies
Indicated ROE
Derived by the Predictive Risk Premium Model (1)

Proxy Group of Seven Natural Gas Companies	[1] LT Average Predicted Variance	[2] Spot Predicted Variance	[3] Average Predicted Variance	[4] GARCH Coefficient	[5] Predicted Risk Premium (2)	[6] Risk-Free Rate (3)	[7] Indicated ROE (4)
Atmos Energy	0.35%	0.28%	0.31%	2.11605	8.16%	3.65%	11.81%
Chesapeake Utilities	0.34%	0.36%	0.35%	2.14402	9.39%	3.65%	13.04%
New Jersey Resources Corp.	0.39%	0.28%	0.34%	2.10596	8.94%	3.65%	12.59%
Northwest Nat. Gas	0.33%	0.32%	0.32%	1.61548	6.38%	3.65%	10.03%
South Jersey Industries, Inc.	0.37%	0.42%	0.40%	1.71378	8.54%	3.65%	12.19%
Southwest Gas Holdings Inc	0.45%	0.37%	0.41%	1.46524	7.45%	3.65%	11.10%
Spire Inc.	0.73%	0.25%	0.49%	0.92462	5.57%	3.65%	9.22%
						Average	11.43%
						Median	11.81%
						Average of Mean and Median	11.62%

Notes:
(1) The Predictive Risk Premium Model uses historical data to generate a predicted variance and a GARCH coefficient. The historical data used are the equity risk premiums for the first available trading month as reported by Bloomberg Professional Service.
(2) (1+(Column [3] * Column [4])^12) - 1.
(3) From note 2 on page 2 of Schedule PMA-D5.
(4) Column [5] + Column [6].

LAC / MGE
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Seven Natural Gas Companies	
1.	Prospective Yield on Aaa Rated Corporate Bonds (1)	4.68	%
2.	Adjustment to Reflect Yield Spread Between Aaa Rated Corporate Bonds and A Rated Public Utility Bonds	0.21	(2)
3.	Adjusted Prospective Yield on A Rated Public Utility Bonds	4.89	%
4.	Equity Risk Premium (3)	4.62	
5.	Risk Premium Derived Common Equity Cost Rate	9.51	%

Notes:
(1) Consensus forecast of Moody's Aaa Rated Corporate bonds from Blue Chip Financial Forecasts (see pages 9-10 of this Schedule).
(2) The average yield spread of A rated public utility bonds over Aaa rated corporate bonds of 0.21% from page 4 of this Schedule.
(3) From page 7 of this Schedule.

LAC / MGE
Interest Rates and Bond Spreads for
Moody's Corporate and Public Utility Bonds

Selected Bond Yields

	[1] Aaa Rated Corporate Bond	[2] A Rated Public Utility Bond	[3] Baa Rated Public Utility Bond
Jan-2017	3.92 %	4.14 %	4.62 %
Dec-2016	4.06	4.27	4.79
Nov-2016	3.86	4.08	4.64
Average	3.95 %	4.16 %	4.68 %

Selected Bond Spreads

A Rated Public Utility Bonds Over Aaa Rated Corporate Bonds: 0.21 % (1)

Baa Rated Public Utility Bonds Over A Rated Public Utility Bonds: 0.52 % (2)

Notes:
(1) Column [2] - Column [1].
(2) Column [3] - Column [2].

Source of Information:
Bloomberg Professional Service

LAC / MGE
Comparison of Long-Term Issuer Ratings for
Proxy Group of Seven Natural Gas Companies

Proxy Group of Seven Natural Gas Companies	Moody's Long-Term Issuer Rating January 2017		Standard & Poor's Long-Term Issuer Rating January 2017	
	Long-Term Issuer Rating	Numerical Weighting(1)	Long-Term Issuer Rating	Numerical Weighting(1)
Atmos Energy Corporation	A2	6.0	A	6.0
Chesapeake Utilities Corporation	NR	- -	NA	- -
New Jersey Resources Corporation (2)	Aa2	3.0	A	6.0
Northwest Natural Gas Company	A3	7.0	A+	5.0
South Jersey Industries, Inc. (3)	A2	6.0	BBB+	8.0
Southwest Gas Holdings, Inc. (4)	A3	7.0	BBB+	8.0
Spire Inc. (5)	A1/A2	- -	A-	7.0
Average	A2	5.8	A-	6.7

Notes:

(1) From page 6 of this Schedule.
(2) Ratings those of New Jersey Natural Gas Co.
(3) Ratings those of South Jersey Gas Co.
(4) Ratings those of Southwest Gas Corp.
(5) Ratings those of Alabama Gas Corp. and Laclede Gas Co.

Source Information: Moody's Investors Service
Standard & Poor's Global Utilities Rating Service

Numerical Assignment for
Moody's and Standard & Poor's Bond Ratings

Moody's Bond Rating	Numerical Bond Weighting	Standard & Poor's Bond Rating
Aaa	1	AAA
Aa1	2	AA+
Aa2	3	AA
Aa3	4	AA-
A1	5	A+
A2	6	A
A3	7	A-
Baa1	8	BBB+
Baa2	9	BBB
Baa3	10	BBB-
Ba1	11	BB+
Ba2	12	BB
Ba3	13	BB-
B1	14	B+
B2	15	B
B3	16	B-

LAC / MGE
Judgment of Equity Risk Premium for
Proxy Group of Seven Natural Gas Companies

Line No.		Proxy Group of Seven Natural Gas Companies
1.	Calculated equity risk premium based on the total market using the beta approach (1)	4.46 %
2.	Mean equity risk premium based on a study using the holding period returns of public utilities with A rated bonds (2)	4.26
3.	Predicted Equity Risk Premium based on Regression Analysis of 752 Fully-Litigated Natural Gas Utility Rate Cases (3)	5.15
4.	Average equity risk premium	4.62 %

Notes: (1) From page 8 of this Schedule.
(2) From page 11 of this Schedule.
(3) From page 12 of this Schedule.

LAC / MGE
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Seven Natural Gas Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Seven Natural Gas Companies
1.	Ibbotson Equity Risk Premium (1)	5.52 %
2.	Ibbotson Equity Risk Premium based on PRPM (2)	6.38
3.	Regression on Ibbotson Risk Premium Data (3)	7.40
4.	Equity Risk Premium Based on Value Line Summary and Index (4)	4.60
5.	Equity Risk Premium Based on S&P 500 Companies(5)	8.40
6.	Conclusion of Equity Risk Premium (6)	6.46 %
7.	Adjusted Beta (7)	0.69
8.	Forecasted Equity Risk Premium	4.46 %

Notes:
(1) Based on the arithmetic mean historical monthly returns on large company common stocks from Ibbotson® SBBI® 2016 Market Report minus the arithmetic mean monthly yield of Moody's Aaa and Aa corporate bonds from 1928 - 2015. (11.68% - 6.16% = 5.52%).

(2) The Predictive Risk Premium Model (PRPM) is discussed in the accompanying direct testimony. The Ibbotson equity risk premium based on the PRPM is derived by applying the PRPM to the monthly risk premiums between Ibbotson large company common stock monthly returns minus the average Aaa and Aa corporate monthly bond yields, from January 1928 through January 2017.

(3) This equity risk premium is based on a regression of the monthly equity risk premiums of large company common stocks relative to Moody's Aaa/Aa rated corporate bond yields from 1928 - 2015 referenced in Note 1 above.

(4) The equity risk premium based on the Value Line Summary and Index is derived from taking the projected 3-5 year total annual market return of 9.28% (described fully in note 1 of Schedule PMA-D5) and subtracting the average consensus forecast of Aaa corporate bonds of 4.68% (Shown on page 3 of this Schedule). (9.28% - 4.68% = 4.60%).

(5) Using data from the Bloomberg Professional Service for the S&P 500, an expected total return of 13.08% was derived based upon expected dividend yields and long-term growth estimates as a proxy for capital appreciation. Subtracting the average consensus forecast of Aaa corporate bonds of 4.68% results in an expected equity risk premium of 8.40%. (13.08% - 4.68% = 8.40%).

(6) Average of lines 1 through 5.

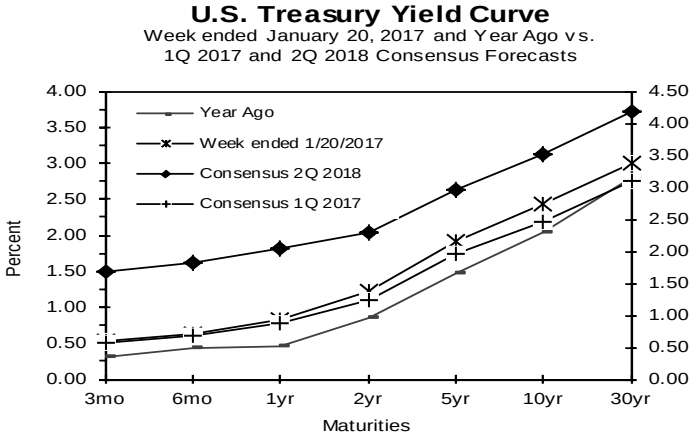
(7) Average of mean and median beta from Schedule PMA-D5.

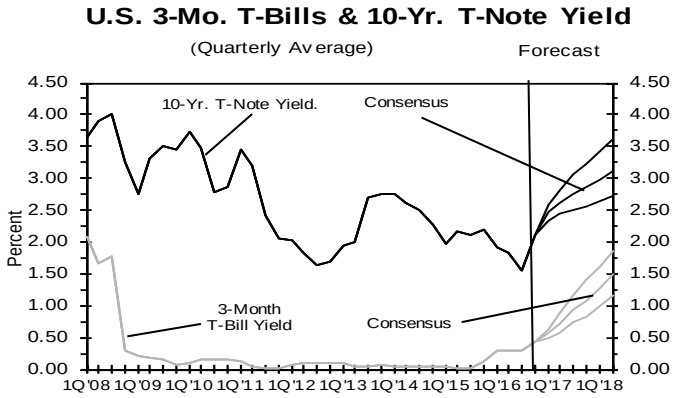
Sources of Information:
Stocks, Bonds, Bills, and Inflation - Ibbotson® SBBI® 2016 Market Report, Morningstar, Inc., 2016 Chicago, IL.
Industrial Manual and Mergent Bond Record Monthly Update.
Value Line Summary and Index
Blue Chip Financial Forecasts, February 1, 2017 and December 1, 2016
Bloomberg Professional Services

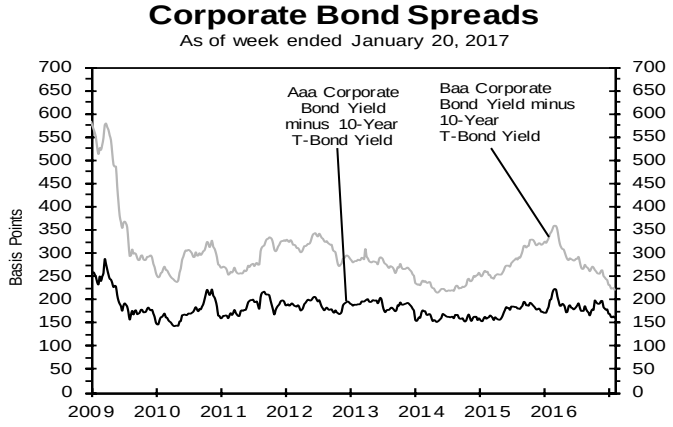
Consensus Forecasts Of U.S. Interest Rates And Key Assumptions[1]

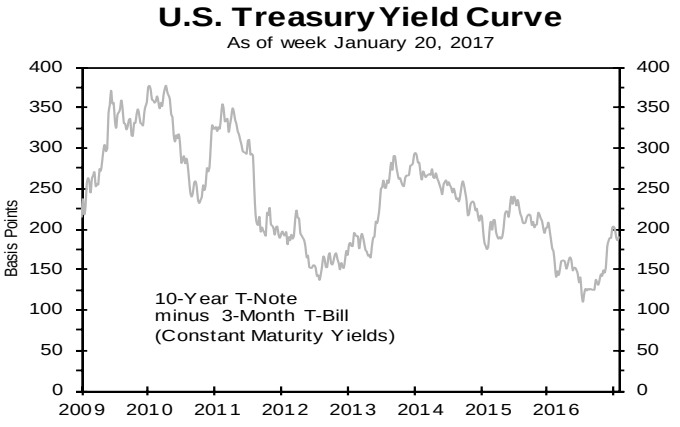
	History								Consensus Forecasts-Quarterly Avg.					
	Average For Week Ending				Average For Month			Latest Qtr	1Q	2Q	3Q	4Q	1Q	2Q
Interest Rates	Jan. 20	Jan. 13	Jan. 6	Dec. 31	Dec	Nov	Oct	4Q 2016*	2017	2017	2017	2017	2018	2018
Federal Funds Rate	0.66	0.66	0.60	0.66	0.54	0.41	0.39	0.45	**0.7**	**0.8**	**1.0**	**1.1**	**1.3**	**1.6**
Prime Rate	3.75	3.75	3.75	3.73	3.63	3.50	3.50	3.54	**3.8**	**3.9**	**4.1**	**4.3**	**4.4**	**4.6**
LIBOR, 3-mo.	1.03	1.02	1.01	1.00	0.97	0.90	0.88	0.92	**1.0**	**1.2**	**1.3**	**1.5**	**1.7**	**1.9**
Commercial Paper, 1-mo.	0.66	0.63	0.62	0.65	0.56	0.43	0.43	0.47	**0.7**	**0.8**	**1.0**	**1.2**	**1.4**	**1.6**
Treasury bill, 3-mo.	0.53	0.52	0.53	0.51	0.51	0.45	0.33	0.43	**0.6**	**0.7**	**0.9**	**1.1**	**1.3**	**1.5**
Treasury bill, 6-mo.	0.62	0.60	0.63	0.63	0.63	0.58	0.47	0.56	**0.7**	**0.8**	**1.1**	**1.2**	**1.4**	**1.6**
Treasury bill, 1 yr.	0.82	0.82	0.86	0.87	0.86	0.74	0.66	0.75	**0.9**	**1.0**	**1.3**	**1.4**	**1.6**	**1.8**
Treasury note, 2 yr.	1.21	1.20	1.21	1.24	1.19	0.98	0.84	1.00	**1.2**	**1.4**	**1.5**	**1.7**	**1.9**	**2.0**
Treasury note, 5 yr.	1.92	1.89	1.92	2.00	1.94	1.60	1.27	1.60	**1.9**	**2.1**	**2.2**	**2.4**	**2.5**	**2.6**
Treasury note, 10 yr.	2.43	2.38	2.43	2.51	2.47	2.14	1.76	2.12	**2.5**	**2.6**	**2.7**	**2.9**	**3.0**	**3.1**
Treasury note, 30 yr.	3.01	2.98	3.01	3.09	3.10	2.86	2.50	2.82	**3.1**	**3.2**	**3.4**	**3.5**	**3.6**	**3.7**
Corporate Aaa bond	4.04	4.02	4.05	4.14	4.18	4.00	3.69	3.96	**4.1**	**4.2**	**4.4**	**4.5**	**4.6**	**4.8**
Corporate Baa bond	4.64	4.63	4.67	4.75	4.81	4.66	4.34	4.60	**4.9**	**5.0**	**5.2**	**5.3**	**5.4**	**5.6**
State & Local bonds	3.67	3.67	3.73	3.75	3.78	3.51	3.35	3.55	**3.7**	**3.8**	**3.9**	**4.1**	**4.2**	**4.3**
Home mortgage rate	4.09	4.12	4.20	4.32	4.20	3.77	3.47	3.81	**4.2**	**4.3**	**4.4**	**4.6**	**4.7**	**4.8**
	History								Consensus Forecasts-Quarterly					
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q
Key Assumptions	2015	2015	2015	2015	2016	2016	2016	2016*	2017	2017	2017	2017	2018	2018
Major Currency Index	89.4	89.9	91.8	93.1	93.3	89.6	90.3	93.7	**94.8**	**95.3**	**95.6**	**95.7**	**95.5**	**95.1**
Real GDP	2.0	2.6	2.0	0.9	0.8	1.4	3.5	1.9	**2.2**	**2.3**	**2.4**	**2.4**	**2.4**	**2.5**
GDP Price Index	-0.1	2.3	1.3	0.8	0.5	2.3	1.4	2.1	**2.0**	**2.1**	**2.0**	**2.1**	**2.1**	**2.2**
Consumer Price Index	-2.9	2.4	1.4	0.8	-0.3	2.5	1.6	3.4	**2.5**	**2.3**	**2.4**	**2.4**	**2.3**	**2.3**

Forecasts for interest rates and the Federal Reserve's Major Currency Index represent averages for the quarter. Forecasts for Real GDP, GDP Price Index and Consumer Price Index are seasonally-adjusted annual rates of change (saar). Individual panel members' forecasts are on pages 4 through 9. Historical data: Treasury rates from the Federal Reserve Board's H.15; AAA-AA and A-BBB corporate bond yields from Bank of America-Merrill Lynch and are 15+ years, yield to maturity; State and local bond yields from Bank of America-Merrill Lynch, A-rated, yield to maturity; Mortgage rates from Freddie Mac, 30-year, fixed; LIBOR quotes from Intercontinental Exchange. All interest rate data is sourced from Haver Analytics. Historical data for Fed's Major Currency Index is from FRSR H.10. Historical data for Real GDP and GDP Chained Price Index are from the Bureau of Economic Analysis (BEA). Consumer Price Index (CPI) history is from the Department of Labor's Bureau of Labor Statistics (BLS).









Long-Range Survey:

The table below contains the results of our twice-annual long-range CONSENSUS survey. There are also Top 10 and Bottom 10 averages for each variable. Shown are consensus estimates for the years 2018 through 2022 and averages for the five-year periods 2018-2022 and 2023-2027. Apply these projections cautiously. Few if any economic, demographic and political forces can be evaluated accurately over such long time spans.

		----------Average For The Year----------					Five-Year Averages	
Interest Rates		**2018**	**2019**	**2020**	**2021**	**2022**	**2018-2022**	**2023-2027**
1. Federal Funds Rate	**CONSENSUS**	**1.8**	**2.4**	**2.8**	**3.0**	**3.0**	**2.6**	**3.0**
	Top 10 Average	2.4	3.1	3.5	3.6	3.7	3.3	3.6
	Bottom 10 Average	1.3	1.5	2.0	2.2	2.2	1.9	2.2
2. Prime Rate	**CONSENSUS**	**4.8**	**5.5**	**5.8**	**6.0**	**6.0**	**5.6**	**5.9**
	Top 10 Average	5.4	6.2	6.6	6.7	6.7	6.3	6.6
	Bottom 10 Average	4.3	4.7	5.0	5.3	5.2	4.9	5.1
3. LIBOR, 3-Mo.	**CONSENSUS**	**2.1**	**2.8**	**3.1**	**3.2**	**3.3**	**2.9**	**3.2**
	Top 10 Average	2.7	3.4	3.8	3.9	3.9	3.5	3.8
	Bottom 10 Average	1.7	2.1	2.4	2.5	2.5	2.2	2.5
4. Commercial Paper, 1-Mo.	**CONSENSUS**	**2.0**	**2.7**	**3.1**	**3.2**	**3.2**	**2.8**	**3.2**
	Top 10 Average	2.5	3.2	3.6	3.7	3.8	3.4	3.7
	Bottom 10 Average	1.6	2.1	2.5	2.6	2.6	2.3	2.6
5. Treasury Bill Yield, 3-Mo.	**CONSENSUS**	**1.7**	**2.4**	**2.8**	**2.9**	**2.9**	**2.6**	**2.9**
	Top 10 Average	2.4	3.2	3.5	3.6	3.7	3.3	3.6
	Bottom 10 Average	1.3	1.7	2.0	2.1	2.1	1.8	2.1
6. Treasury Bill Yield, 6-Mo.	**CONSENSUS**	**1.9**	**2.6**	**2.9**	**3.1**	**3.1**	**2.7**	**3.0**
	Top 10 Average	2.6	3.3	3.7	3.8	3.8	3.4	3.7
	Bottom 10 Average	1.4	1.9	2.1	2.2	2.2	2.0	2.2
7. Treasury Bill Yield, 1-Yr.	**CONSENSUS**	**2.1**	**2.7**	**3.0**	**3.1**	**3.2**	**2.8**	**3.2**
	Top 10 Average	2.8	3.5	3.8	3.9	3.9	3.6	3.8
	Bottom 10 Average	1.5	1.9	2.2	2.3	2.3	2.1	2.3
8. Treasury Note Yield, 2-Yr.	**CONSENSUS**	**2.2**	**2.9**	**3.2**	**3.3**	**3.3**	**3.0**	**3.3**
	Top 10 Average	2.9	3.6	4.0	4.0	4.0	3.7	4.1
	Bottom 10 Average	1.7	2.1	2.4	2.5	2.5	2.2	2.4
10. Treasury Note Yield, 5-Yr.	**CONSENSUS**	**2.7**	**3.2**	**3.5**	**3.6**	**3.6**	**3.3**	**3.6**
	Top 10 Average	3.3	4.0	4.3	4.3	4.4	4.0	4.4
	Bottom 10 Average	2.2	2.4	2.6	2.8	2.8	2.6	2.8
11. Treasury Note Yield, 10-Yr.	**CONSENSUS**	**3.1**	**3.5**	**3.8**	**3.9**	**3.9**	**3.6**	**3.9**
	Top 10 Average	3.8	4.3	4.6	4.6	4.6	4.4	4.7
	Bottom 10 Average	2.5	2.7	2.9	3.1	3.1	2.8	3.1
12. Treasury Bond Yield, 30-Yr.	**CONSENSUS**	**3.8**	**4.1**	**4.3**	**4.4**	**4.4**	**4.2**	**4.5**
	Top 10 Average	4.5	5.0	5.2	5.2	5.3	5.0	5.3
	Bottom 10 Average	3.1	3.3	3.5	3.6	3.6	3.4	3.6
13. Corporate Aaa Bond Yield	**CONSENSUS**	**4.8**	**5.2**	**5.4**	**5.5**	**5.5**	**5.3**	**5.5**
	Top 10 Average	5.4	5.8	6.1	6.1	6.1	5.9	6.2
	Bottom 10 Average	4.3	4.6	4.8	4.8	4.8	4.7	4.9
13. Corporate Baa Bond Yield	**CONSENSUS**	**5.9**	**6.2**	**6.4**	**6.4**	**6.4**	**6.3**	**6.4**
	Top 10 Average	6.5	6.9	7.0	7.1	7.2	6.9	7.2
	Bottom 10 Average	5.3	5.5	5.8	5.8	5.7	5.6	5.7
14. State & Local Bonds Yield	**CONSENSUS**	**4.3**	**4.6**	**4.5**	**4.8**	**4.8**	**4.6**	**4.8**
	Top 10 Average	4.9	5.3	5.4	5.5	5.6	5.3	5.6
	Bottom 10 Average	3.8	3.8	3.5	4.0	4.0	3.8	4.0
15. Home Mortgage Rate	**CONSENSUS**	**4.9**	**5.3**	**5.5**	**5.6**	**5.6**	**5.4**	**5.6**
	Top 10 Average	5.5	6.0	6.2	6.3	6.3	6.0	6.3
	Bottom 10 Average	4.3	4.6	4.7	4.9	4.9	4.7	4.9
A. FRB - Major Currency Index	**CONSENSUS**	**94.6**	**93.8**	**93.6**	**93.5**	**93.2**	**93.8**	**92.1**
	Top 10 Average	97.6	97.9	98.3	98.4	98.4	98.1	97.4
	Bottom 10 Average	91.5	89.6	88.7	88.4	87.9	89.2	86.6
		----------Year-Over-Year, % Change----------					Five-Year Averages	
		2018	**2019**	**2020**	**2021**	**2022**	**2018-2022**	**2023-2027**
B. Real GDP	**CONSENSUS**	**2.3**	**2.2**	**2.1**	**2.1**	**2.1**	**2.2**	**2.1**
	Top 10 Average	2.7	2.5	2.4	2.4	2.4	2.5	2.5
	Bottom 10 Average	1.9	1.8	1.7	1.8	1.8	1.8	1.8
C. GDP Chained Price Index	**CONSENSUS**	**2.1**	**2.1**	**2.1**	**2.1**	**2.0**	**2.1**	**2.0**
	Top 10 Average	2.4	2.4	2.4	2.4	2.2	2.3	2.2
	Bottom 10 Average	1.8	1.8	1.9	1.9	1.9	1.9	1.9
D. Consumer Price Index	**CONSENSUS**	**2.4**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**	**2.3**
	Top 10 Average	2.7	2.6	2.6	2.6	2.5	2.6	2.5
	Bottom 10 Average	2.1	2.1	2.2	2.1	2.0	2.1	2.1

LAC / MGE
Derivation of Mean Equity Risk Premium Based on a Study
Using Holding Period Returns of Public Utilities

Line No.		Over A Rated Moody's Public Utility Bonds (1)
1.	Arithmetic Mean Holding Period Returns on the Standard & Poor's Utility Index 1928-2015 (2):	10.49 %
2.	Arithmetic Mean Yield on Moody's A Rated Public Utility Yields 1928-2015	(6.64)
3.	Historical Equity Risk Premium	3.85 %
4.	Forecasted Equity Risk Premium Based on PRPM (3)	4.34
5.	Regression of Historical Equity Risk Premium (4)	5.50
6.	Forecasted Equity Risk Premium based on Projected Total Return on the S&P Utilities Index (5)	3.36
7.	Average Equity Risk Premium	4.26 %

Notes:
(1) Based on S&P Public Utility Index monthly total returns and Moody's Public Utility Bond average monthly yields from 1928-2015.

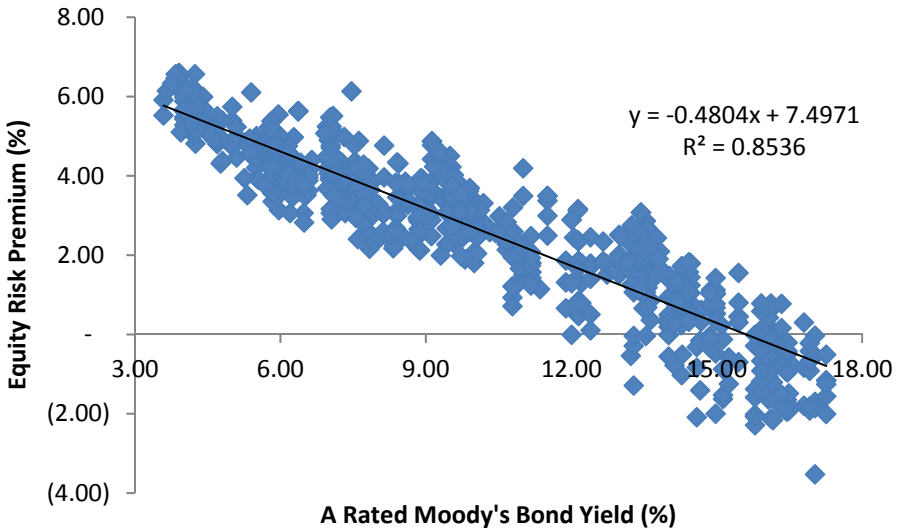
(2) Holding period returns are calculated based upon income received (dividends and interest) plus the relative change in the market value of a security over a one-year holding period.

(3) The Predictive Risk Premium Model (PRPM) is applied to the risk premium of the monthly total returns of the S&P Utility Index and the monthly yields on Moody's A rated public utility bonds from January 1928 - January 2017.

(4) This equity risk premium is based on a regression of the monthly equity risk premiums of the S&P Utility Index relative to Moody's A rated public utility bond yields from 1928 - 2015 referenced in note 1 above.

(5) Using data from Bloomberg Professional Service for the S&P Utilities Index, an expected return of 8.25% was derived based on expected dividend yields and long-term growth estimates as a proxy for market appreciation. Subtracting the expected A rated public utility bond yield of 4.89%, calculated on line 3 of page 3 of this Schedule results in an equity risk premium of 3.36%. (8.25% - 4.89% = 3.36%)

LAC / MGE
Prediction of Equity Risk Premiums Relative to
Moody's A Rated Utility Bond Yields



Constant	Slope	Prospective A Rated Utility Bond (1)	Prospective Equity Risk Premium
7.497094 %	-0.48037	4.89 %	5.15 %

Notes:
(1) From line 3 of page 3 of this Schedule.

Source of Information: Regulatory Research Associates

LAC / MGE
Indicated Common Equity Cost Rate Through Use
of the Traditional Capital Asset Pricing Model (CAPM) and Empirical Capital Asset Pricing Model (ECAPM)

Proxy Group of Seven Natural Gas Companies	[1] Value Line Adjusted Beta	[2] Bloomberg Adjusted Beta	[3] Average Beta	[4] Market Risk Premium (1)	[5] Risk-Free Rate (2)	[6] Traditional CAPM Cost Rate	[7] ECAPM Cost Rate	[8] Indicated Common Equity Cost Rate (3)
Atmos Energy	0.70	0.65	0.68	7.53 %	3.65 %	8.77 %	9.37 %	9.07 %
Chesapeake Utilities	0.65	0.65	0.65	7.53	3.65	8.54	9.20	8.87
New Jersey Resources Corp.	0.80	0.74	0.77	7.53	3.65	9.45	9.88	9.66
Northwest Nat. Gas	0.65	0.59	0.62	7.53	3.65	8.32	9.03	8.68
South Jersey Industries, Inc.	0.80	0.70	0.75	7.53	3.65	9.30	9.77	9.53
Southwest Gas Holdings Inc	0.75	0.61	0.68	7.53	3.65	8.77	9.37	9.07
Spire Inc.	0.70	0.66	0.68	7.53	3.65	8.77	9.37	9.07
Average			0.69			8.85 %	9.43 %	9.14 %
Median			0.68			8.77 %	9.37 %	9.07 %
Average of Mean and Median			0.69			8.81	9.40	9.11 %

Notes on page 2 of this Schedule.

LAC / MGE
Notes to Accompany the Application of the CAPM and ECAPM

Notes:

(1) The market risk premium (MRP) is an average of five different measures. The first measure of the MRP derives the total return on the market by adding the thirteen-week average forecasted 3-5 year capital appreciation to the thirteen-week average expected dividend yield from Value Line Summary and Index. The projected risk-free rate (developed in Note 2) is then subtracted from the total return to arrive at the projected MRP. The second measure of MRP is based on the arithmetic mean of historical monthly return data of large company stocks less the income return on long-term government bonds from 1926-2015 as published by Morningstar, Inc. The third measure applies the PRPM to the Ibbotson historical data to derive a projected MRP. The fourth measure applies a regression analysis to the Ibbotson historical data to derive a projected MRP. The fifth measure uses data from Bloomberg Professional Services to derive a total projected return on the S&P 500 by using expected dividend yields and long-term growth estimates as a proxy for capital appreciation. The projected risk-free rate is then subtracted from the projected total return to arrive at the projected MRP. The five measures of MRP are illustrated below:

Measure 1: Value Line Projected MRP (Thirteen weeks ending February 10, 2017

Total projected return on the market 3 -5 years hence:	9.28 %
Projected Risk-Free Rate (described in Note 2):	3.65
MRP based on Value Line Summary & Index:	5.63 %

Measure 2: Ibbotson Arithmetic Mean MRP (1926-2015)

Arithmetic Mean Monthly Returns for Large Stocks 1926-2015:	11.95 %
Arithmetic Mean Income Returns on Long-Term Government Bonds:	5.20
MRP based on Ibbotson Historical Data:	6.75 %

Measure 3: Application of the PRPM to Ibbotson Historical Data:

(January 1926 - January 2017)	7.20 %

Measure 4: Application of a Regression Analysis to Ibbotson Historical Data

(1926-2015)	8.66 %

Measure 5: Bloomberg Projected MRP

Total return on the Market based on the S&P 500:	13.08 %
Projected Risk-Free Rate (described in Note 2):	3.65
MRP based on Bloomberg data	9.43 %

Average MRP:	7.53 %

(2) For reasons explained in the direct testimony, the appropriate risk-free rate for cost of capital purposes is the average forecast of 30 year Treasury Bonds per the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts. (See pages 9-10 of Schedule PMA-D4.) The projection of the risk-free rate is illustrated below:

First Quarter 2017	3.10 %
Second Quarter 2017	3.20
Third Quarter 2017	3.40
Fourth Quarter 2017	3.50
First Quarter 201 8	3.60
Second Quarter 2018	3.70
2018-2022	4.20
2023-2027	4.50 %
	3.65 %

(3) Average of Column 6 and Column 7.

Sources of Information:

Value Line Summary and Index
Blue Chip Financial Forecasts, February 1, 2017 and December 1, 2016
Stocks, Bonds, Bills, and Inflation - Ibbotson® SBBI® 2016 Market Report, Morningstar, Inc., 2016 Chicago, IL.
Bloomberg Professional Services

LAC / MGE

Basis of Selection of the Group of Non-Price Regulated Companies

Comparable in Total Risk to the Proxy Group of Seven Natural Gas Companies

The criteria for selection of the proxy group of sixteen non-price regulated companies was that the non-price regulated companies be domestic and reported in Value Line Investment Survey (Standard Edition).

The proxy group of sixteen non-price regulated companies were then selected based on the unadjusted beta range of 0.44 – 0.70 and residual standard error of the regression range of 1.9593 – 2.3369 of the water proxy group.

These ranges are based upon plus or minus two standard deviations of the unadjusted beta and standard error of the regression. Plus or minus two standard deviations captures 95.50% of the distribution of unadjusted betas and residual standard errors of the regression.

The standard deviation of the water industry's residual standard error of the regression is 0.1095. The standard deviation of the standard error of the regression is calculated as follows:

$$\text{Standard Deviation of the Std. Err. of the Regr.} = \frac{\text{Standard Error of the Regression}}{\sqrt{2N}}$$

where: N = number of observations. Since Value Line betas are derived from weekly price change observations over a period of five years, N = 259

$$\text{Thus, } 0.0944 = \frac{2.1481}{\sqrt{518}} = \frac{2.4926}{22.7596}$$

Source of Information: Value Line, Inc., December 2016
Value Line Investment Survey (Standard Edition)

LAC / MGE
Basis of Selection of Comparable Risk
Domestic Non-Price Regulated Companies

Proxy Group of Seven Natural Gas Companies	[1] Value Line Adjusted Beta	[2] Unadjusted Beta	[3] Residual Standard Error of the Regression	[4] Standard Deviation of Beta
Atmos Energy	0.80	0.66	2.0450	0.0597
Chesapeake Utilities	0.65	0.43	2.6612	0.0777
New Jersey Resources Corp.	0.80	0.65	2.3606	0.0689
Northwest Nat. Gas	0.65	0.45	2.0380	0.0595
South Jersey Industries, Inc.	0.80	0.69	2.0154	0.0588
Southwest Gas Holdings Inc	0.80	0.63	2.1700	0.0633
Spire Inc.	0.70	0.51	1.7462	0.0510
Average	0.74	0.57	2.1481	0.0627
Beta Range (+/- 2 std. Devs. of Beta)	0.44	0.70		
2 std. Devs. of Beta	0.13			
Residual Std. Err. Range (+/- 2 std. Devs. of the Residual Std. Err.)	1.9593	2.3369		
Std. dev. of the Res. Std. Err.	0.0944			
2 std. devs. of the Res. Std. Err.	0.1888			

Source of Information: Valueline Proprietary Database December-2016

LAC / MGE
Proxy Group of Non-Price Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Natural Gas Companies

Proxy Group of Sixteen Non-Price-Regulated Companies	[1] VL Adjusted Beta	[2] Unadjusted Beta	[3] Residual Standard Error of the Regression	[4] Standard Deviation of Beta
AmerisourceBergen	0.80	0.65	2.1089	0.0616
AutoZone Inc.	0.65	0.46	2.0988	0.0613
Bard (C.R.)	0.80	0.66	2.2216	0.0648
Campbell Soup	0.70	0.49	1.9728	0.0576
Dr Pepper Snapple	0.75	0.55	2.0574	0.0600
Erie Indemnity	0.75	0.62	2.1273	0.0621
Lancaster Colony	0.80	0.63	2.2055	0.0644
Lilly (Eli)	0.80	0.63	2.1902	0.0639
Merck & Co.	0.80	0.66	2.2052	0.0644
Reynolds American	0.70	0.48	2.2439	0.0655
Smucker (J.M.)	0.75	0.54	2.1053	0.0614
Stericycle Inc.	0.80	0.69	2.2738	0.0664
Target Corp.	0.70	0.52	2.2600	0.0660
TJX Companies	0.80	0.65	2.2068	0.0644
Verisk Analytics	0.80	0.64	2.1656	0.0632
Waste Connections	0.75	0.58	2.0257	0.0591
Average	0.76	0.59	2.1543	0.0629
Proxy Group of Seven Natural Gas Companies	0.74	0.57	2.1481	0.0627

LAC / MGE

Summary of Cost of Equity Models Applied to the
Proxy Group of Sixteen Non-Price-Regulated Companies
Comparable in Total Risk to the
Proxy Group of Seven Natural Gas Companies

Principal Methods	Proxy Group of Sixteen Non-Price-Regulated Companies
Discounted Cash Flow Model (DCF) (1)	11.86 %
Risk Premium Model (RPM) (2)	10.30
Capital Asset Pricing Model (CAPM) (3)	9.62
Mean	10.59 %
Median	10.30 %
Average of Mean and Median	10.45 %

Notes:

(1) From page 2 of this Schedule.
(2) From page 3 of this Schedule.
(3) From page 6 of this Schedule.

LAC / MGE

DCF Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to the Proxy Group of Seven Natural Gas Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Sixteen Non-Price-Regulated Companies	Average Dividend Yield	Value Line Projected Five Year Growth in EPS	Reuters Mean Consensus Projected Five Year Growth Rate in EPS	Zack's Five Year Projected Growth Rate in EPS	Yahoo! Finance Projected Five Year Growth in EPS	Average Projected Five Year Growth Rate in EPS	Adjusted Dividend Yield	Indicated Common Equity Cost Rate (1)
AmerisourceBergen	1.83 %	11.00 %	9.31 %	10.10 %	9.31 %	9.93 %	1.92 %	11.85 %
AutoZone Inc.	-	11.50	11.65	13.80	11.65	12.15	-	NA
Bard (C.R.)	0.47	10.00	11.35	11.20	11.35	10.98	0.50	11.48
Campbell Soup	2.38	5.50	5.30	5.60	5.30	5.43	2.44	7.87
Dr Pepper Snapple	2.39	9.00	9.82	9.40	9.83	9.51	2.50	12.01
Erie Indemnity	2.85	10.00	7.00	10.00	10.00	9.25	2.98	12.23
Lancaster Colony	1.60	7.00	3.00	3.00	3.00	4.00	1.63	5.63
Lilly (Eli)	2.83	9.50	11.18	11.90	11.18	10.94	2.98	13.92
Merck & Co.	3.07	6.00	5.91	6.40	5.92	6.06	3.16	9.22
Reynolds American	5.38	12.50	10.77	10.10	10.77	11.04	5.68	16.72
Smucker (J.M.)	-	7.50	5.30	6.80	4.63	6.06	-	NA
Stericycle Inc.	-	10.81	12.00	10.90	10.81	11.13	-	NA
Target Corp.	3.31	9.50	5.20	9.40	5.20	7.33	3.43	10.76
TJX Companies	1.36	11.00	13.30	10.70	9.75	11.19	1.44	12.63
Verisk Analytics	-	11.00	9.74	11.60	9.74	10.52	-	NA
Waste Connections	0.92	15.00	NA	20.80	12.55	16.12	0.99	17.11
							Mean	11.79 %
							Median	11.93 %
							Average of Mean and Median	11.86 %

NA= Not Available
NMF= Not Meaningful Figure

(1) The application of the DCF model to the domestic, non-price regluated comparable risk companies is identical to the application of the DCF to the utility proxy group. The dividend yield is derived by using the 60 day average price and the spot indicated dividend as of January 31, 2017. The dividend yield is then adjusted by 1/2 the average projected growth rate in EPS, which is calculated by averaging the 5 year projected growth in EPS provided by Value Line, www.reuters.com, www.zacks.com, and www.yahoo.com (excluding any negative growth rates) and then adding that growth rate to the adjusted dividend yield.

Source of Information: Value Line Investment Survey:
www.reuters.com Downloaded on 01/31/2017
www.zacks.com Downloaded on 01/31/2017
www.yahoo.com Downloaded on 01/31/2017

LAC / MGE
Indicated Common Equity Cost Rate
Through Use of a Risk Premium Model
Using an Adjusted Total Market Approach

Line No.		Proxy Group of Sixteen Non-Price-Regulated Companies
1.	Prospective Yield on Baa Rated Corporate Bonds (1)	5.51 %
2.	Adjustment to Reflect Bond rating Difference of Non-Price Regulated Companies (2)	(0.18)
3.	Adjusted Prospective Bond Yield	5.33
4.	Equity Risk Premium (3)	4.97
5.	Risk Premium Derived Common Equity Cost Rate	10.30 %

Notes: (1) Average forecast of Baa corporate bonds based upon the consensus of nearly 50 economists reported in Blue Chip Financial Forecasts dated February 1, 2017 and December 1, 2016 (see pages 9 and 10 of Schedule PMA-D4). The estimates are detailed below.

First Quarter 2017	4.90 %
Second Quarter 2017	5.00
Third Quarter 2017	5.20
Fourth Quarter 2017	5.30
First Quarter 201 8	5.40
Second Quarter 2018	5.60
2018-2022	6.30
2023-2027	6.40
Average	5.51 %

(2) The average yield spread of Baa rated corporate bonds over A corporate bonds for the three months ending January 2017. To reflect the Baa1 average rating of the non-utility proxy group, the prosepctive yield on A corporate bonds must be adjusted by 2/3 of the spread between A and Baa corporate bond yields as shown below:

	A Corp. Bond Yield	Baa Corp. Bond Yield	Spread
Jan-2017	4.16 %	4.66 %	0.50 %
Dec-2016	4.28	4.83	0.55
Nov-2016	4.11	4.71	0.60
		Average yield spread	0.55 %
		1/3 of spread	0.18 %

(3) From page 5 of this Schedule.

LAC / MGE
Comparison of Long-Term Issuer Ratings for the
Proxy Group of Sixteen Non-Price-Regulated Companies of comparable risk to the
Proxy Group of Seven Natural Gas Companies

	Moody's Long-Term Issuer Rating January 2017		Standard & Poor's Long-Term Issuer Rating January 2017	
Proxy Group of Sixteen Non-Price-Regulated Companies	Long-Term Issuer Rating	Numerical Weighting (1)	Long-Term Issuer Rating	Numerical Weighting (1)
AmerisourceBergen	Baa2	9.0	A-	7.0
AutoZone Inc.	Baa1	8.0	BBB	9.0
Bard (C.R.)	Baa1	8.0	A	6.0
Campbell Soup	A3	7.0	BBB+	8.0
Dr Pepper Snapple	Baa1	8.0	BBB+	8.0
Erie Indemnity	NA	--	NA	--
Lancaster Colony	NA	--	NA	--
Lilly (Eli)	A2	6.0	AA-	4.0
Merck & Co.	A1	5.0	AA	3.0
Reynolds American	Baa3	10.0	BBB	9.0
Smucker (J.M.)	Baa2	9.0	BBB	9.0
Stericycle Inc.	A	--	NR	--
Target Corp.	A2	6.0	A	6.0
TJX Companies	A2	6.0	A+	5.0
Verisk Analytics	Baa3	10.0	BBB-	10.0
Waste Connections	NA	--	NR	--
Average	Baa1	7.7	A-	7.0

Notes:
(1) From page 6 of Schedule PMA-D4.

Source of Information:
Bloomberg Professional Services

LAC / MGE
Derivation of Equity Risk Premium Based on the Total Market Approach
Using the Beta for
Proxy Group of Sixteen Non-Price-Regulated Companies of comparable risk to the
Proxy Group of Seven Natural Gas Companies

Line No.	Equity Risk Premium Measure	Proxy Group of Sixteen Non-Price-Regulated Companies
1.	Ibbotson Equity Risk Premium (1)	5.52 %
2.	Ibbotson Equity Risk Premium based on PRPM (2)	6.38
3.	Regression on Ibbotson Risk Premium Data (3)	7.40
4.	Equity Risk Premium Based on Value Line Summary and Index (3)	4.60
5.	Equity Risk Premium Based on S&P 500 Companies(4)	8.40
6.	Conclusion of Equity Risk Premium (6)	6.46 %
7.	Adjusted Beta (7)	0.77
8.	Forecasted Equity Risk Premium	4.97 %

Notes:
(1) From note 1 of page 8 of Schedule PMA-D4.
(2) From note 2 of page 8 of Schedule PMA-D4.
(3) From note 3 of page 8 of Schedule PMA-D4.
(4) From note 4 of page 8 of Schedule PMA-D4.
(5) From note 5 of page 8 of Schedule PMA-D4.
(6) Average of lines 1 through 5.
(7) Average of mean and median beta from page 6 of this Schedule.

Sources of Information:
Stocks, Bonds, Bills, and Inflation - Ibbotson® SBBI® 2016 Market Report, Morningstar, Inc., 2016 Chicago, IL.

Value Line Summary and Index
Blue Chip Financial Forecasts, February 1, 2017 and December 1, 2016
Bloomberg Professional Services

LAC / MGE

Traditional CAPM and ECAPM Results for the Proxy Group of Non-Price-Regulated Companies Comparable in Total Risk to
Proxy Group of Seven Natural Gas Companies

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Proxy Group of Sixteen Non-Price-Regulated Companies	Value Line Adjusted Beta	Bloomberg Beta	Average Beta	Market Risk Premium (1)	Risk-Free Rate (2)	Traditional CAPM Cost Rate	ECAPM Cost Rate	Indicated Common Equity Cost Rate (3)
AmerisourceBergen	0.85	0.92	0.89	7.53 %	3.65 %	10.35 %	10.56 %	10.46 %
AutoZone Inc.	0.75	0.77	0.76	7.53	3.65	9.37	9.82	9.60
Bard (C.R.)	0.80	0.70	0.75	7.53	3.65	9.30	9.77	9.53
Campbell Soup	0.70	0.63	0.66	7.53	3.65	8.62	9.26	8.94
Dr Pepper Snapple	0.75	0.67	0.71	7.53	3.65	9.00	9.54	9.27
Erie Indemnity	0.80	0.79	0.80	7.53	3.65	9.67	10.05	9.86
Lancaster Colony	0.80	0.67	0.74	7.53	3.65	9.22	9.71	9.47
Lilly (Eli)	0.75	0.72	0.74	7.53	3.65	9.22	9.71	9.47
Merck & Co.	0.85	0.89	0.87	7.53	3.65	10.20	10.45	10.32
Reynolds American	0.65	0.69	0.67	7.53	3.65	8.70	9.32	9.01
Smucker (J.M.)	0.70	0.76	0.73	7.53	3.65	9.15	9.66	9.40
Stericycle Inc.	0.85	0.78	0.81	7.53	3.65	9.75	10.11	9.93
Target Corp.	0.80	0.80	0.80	7.53	3.65	9.67	10.05	9.86
TJX Companies	0.85	0.90	0.87	7.53	3.65	10.20	10.45	10.32
Verisk Analytics	0.85	0.80	0.83	7.53	3.65	9.90	10.22	10.06
Waste Connections	0.80	0.60	0.70	7.53	3.65	8.92	9.49	9.20
Mean			0.77			9.45 %	9.88 %	9.67 %
Median			0.76			9.34 %	9.80 %	9.57 %
Average of Mean and Median			0.77			9.40 %	9.84 %	9.62 %

Notes:
(1) From Schedule PMA-D5, note 1.
(2) From Schedule PMA-D5, note 2.
(3) Average of CAPM and ECAPM cost rates.

LAC / MGE
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

Equity Issuances and Flotation Costs of Spire Inc. (formerly (The Laclede Group, Inc.) Since 2011

Date	Transaction (1)	[Column 1] Shares Issued	[Column 2] Market Price per Share	[Column 3] Offering Price per Share	[Column 4] Market Pressure (2)	[Column 5] Underwriting Discount	[Column 6] Net Proceeds per Share (3)	[Column 7] Gross Equity Issue before Costs (4)	[Column 8] Total Net Proceeds (5)	[Column 9] Total Flotation Costs (6)	[Column 10] Flotation Cost Percentage (7)
05/13/16	Equity Offering	2,185,000	$ 64.7000	$ 63.0500	$ 1.6500	$ 2.0491	$ 61.0009	$ 141,369,500	$ 133,286,967	$ 8,082,534	5.72%
06/06/14	Equity Offering	10,350,000	$ 47.1900	$ 46.2500	$ 0.9400	$ 1.7113	$ 44.5388	$ 488,416,500	$ 460,976,063	$ 27,440,438	5.62%
05/23/13	Equity Offering	10,005,000	$ 45.0900	$ 44.5000	$ 0.5900	$ 1.7244	$ 42.7756	$ 451,125,450	$ 427,970,128	$ 23,155,322	5.13%
								$ 1,080,911,450	$ 1,022,233,157	$ 58,678,293	5.43%

Flotation Cost Adjustment

	Average Dividend Yield	Average Projected EPS Growth Rate	Adjusted Dividend Yield	Average DCF Cost Rate Unadjusted for Flotation (8)	DCF Cost Rate Adjusted for Flotation (9)	Flotation Cost Adjustment (10)
Proxy Group of Seven Natural Gas Utilities	2.78 %	5.80 %	2.86 %	8.66 %	8.82 %	0.16 %

See page 2 of this Schedule for notes.

LAC / MGE
Notes to Accompany the
Derivation of the Flotation Cost Adjustment to the Cost of Common Equity

(1) Company-provided.

(2) Column 2 – Column 3.

(3) Column 2 – the sum of columns 4 and 5.

(4) Column 1 * Column 2.

(5) Column 1 * Column 6.

(6) Column 1 * (the sum of columns 4 and 5).

(7) (Column 7 – Column 8) divided by Column 7.

(8) Using the average growth rate from page 1 of Schedule PMA-D3.

(9) Adjustment for flotation costs based on adjusting the average DCF constant growth cost rate in accordance with the following:

$$K = \frac{D(1+0.5g)}{P(1-F)} + g \,,$$

where g is the growth factor and F is the percentage of flotation costs.

(10) Flotation cost adjustment of 0.16% equals the difference between the flotation adjusted average DCF cost rate of 8.82% and the unadjusted average DCF cost rate of 8.66% of the proxy group of seven natural gas utilities.

Source of Information:

Company provided information

LAC / MGE
Derivation of Investment Risk Adjustment Based upon
Ibbotson Associates' Size Premia for the Decile Portfolios of the NYSE/AMEX/NASDAQ

Line No.		[1] Market Capitalization on January 31, 2017 (1) (millions)	(times larger)	[2] Applicable Decile of the NYSE/AMEX/ NASDAQ (2)	[3] Applicable Size Premium (3)	[4] Spread from Applicable Size Premium (4)
1.	LAC / MGE	$ 2,466.000		5-6	1.56%	
2.	Proxy Group of Seven Natural Gas Companies	$ 3,220.742		4-5	1.24%	
	LAC / MGE		1.3 x			0.32%

	(A) Decile	(B) Number of Companies (millions)	(C) Recent Total Market Capitalization (millions)	(D) Recent Average Market Capitalization (millions)	(E) Size Premium (Return in Excess of CAPM)
	1	193	$14,835,871.93	$76,869.80	-0.36%
	2	209	$2,942,893.47	$14,080.83	0.57%
	3	208	$1,538,888.75	$7,398.50	0.86%
	4	240	$998,160.99	$4,159.00	0.99%
	5	240	$665,743.39	$2,773.93	1.49%
	6	258	$480,964.63	$1,864.20	1.63%
	7	350	$419,011.59	$1,197.18	1.62%
	8	392	$270,179.79	$689.23	2.04%
	9	494	$175,122.78	$354.50	2.54%
Smallest	10	796	$81,112.94	$101.90	5.60%

*From Duff & Phelps 2016 Valuation Handbook Guide to Cost of Capital

Notes:

(1) From Page 2 of this Schedule.

(2) Gleaned from Column (D) on the bottom of this page. The appropriate decile (Column (A)) corresponds to the market capitalization of the proxy group, which is found in Column 1.

(3) Corresponding risk premium to the decile is provided on Column (E) on the bottom of this page.

(4) Line No. 1 Column 3 – Line No. 2 Column 3. The 0.32% in Column 4, Line No. 2 is derived as follows 0.32% = 1.56% - 1.24%.

LAC / MGE
Market Capitalization of LAC / MGE and the
Proxy Group of Seven Natural Gas Companies

Company	Exchange	[1] Common Stock Shares Outstanding at Fiscal Year End 2015 (millions)	[2] Book Value per Share at Fiscal Year End 2015 (1)	[3] Total Common Equity at Fiscal Year End 2015 (millions)	[4] Closing Stock Market Price on January 31, 2017	[5] Market-to-Book Ratio on January 31, 2017 (2)	[6] Market Capitalization on January 31, 2017 (3) (millions)
LAC / MGE		NA (4)	NA	$ 1,037.879 (4)	NA		
Based upon the Proxy Group of Seven Natural Gas Companies							
LAC / MGE						237.6 % (5)	$ 2,466.000 (6)
Proxy Group of Seven Natural Gas Companies							
Atmos Energy	NYSE	101.479	$ 31.482	$ 3,194.797	$ 76.180	242.0 %	$ 7,730.656
Chesapeake Utilities	NYSE	15.271	23.453	358.138	65.400	278.9	$ 998.701
New Jersey Resources Corp.	NYSE	85.531	12.942	1,106.956	37.700	291.3	$ 3,224.535
Northwest Nat. Gas	NYSE	27.427	28.475	780.972	58.900	206.8	$ 1,615.450
South Jersey Industries, Inc.	NYSE	70.966	14.620	1,037.539	33.000	225.7	$ 2,341.866
Southwest Gas Holdings Inc	NYSE	47.378	33.653	1,594.408	80.570	239.4	$ 3,817.211
Spire Inc.	NYSE	43.335	36.312	1,573.600	65.000	179.0	$ 2,816.776
Average		55.912	$ 25.848	$ 1,378.059	$ 59.536	237.6 %	$ 3,220.742

NA= Not Available

Notes: (1) Column 3 / Column 1.
(2) Column 4 / Column 2.
(3) Column 4 * Column 1.
(4) From LAC / MGE 2015 Annual Reports to the Missouri Public Service Commission.

(5) The market-to-book ratio of LAC / MGE on January 31, 2017 is assumed to be equal to the market-to-book ratio of the Proxy Group of Seven Natural Gas Companies on January 31, 2017.

(6) LAC / MGE's common stock, if traded, would trade at a market-to-book ratio equal to the average market-to-book ratio at January 31, 2017 of the Proxy Group of Seven Natural Gas Companies, 237.6%, and LAC / MGE's market capitalization on January 31, 2017 would therefore have been $2,466.00 million.

Source of Information: 2015 Annual Forms 10K
yahoo.finance.com

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	)))	File No. GR-2017-0215
In the Matter of Laclede Gas Company d/b/a Missouri Gas Energy's Request to Increase its Revenues for Gas Service	)))	File No. GR-2017-0216

AFFIDAVIT

STATE OF NEW JERSEY	)	
	)	SS.
CITY OF MARLTON	)	

Pauline M. Ahern, of lawful age, being first duly sworn, deposes and states:

1. My name is Pauline M. Ahern. I am an Executive Director of ScottMadden, Inc. My business address is 1900 West Park Road, Suite 250, Westborough, MA 01581. My mailing address is 3000 Atrium Way, Suite 241, Mount Laurel, NJ 08054.

2. Attached hereto and made a part hereof for all purposes is my direct testimony on behalf of Laclede Gas Company and MGE.

3. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded are true and correct to the best of my knowledge and belief.

Pauline M. Ahern

Subscribed and sworn to before me this 3RD April, 2017.

Notary Public

JUSTICE S. MORALES
NOTARY PUBLIC OF NEW JERSEY
My Commission Expires 10/20/2019