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d/b/a Liberty Utilities  
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**Before the Public Service Commission  
of the State of Missouri**

**Direct Testimony**

**of**

**Keith Magee  
ScottMadden, Inc**

**On Behalf Of**

**Liberty Utilities (Midstates Natural Gas) Corp.  
d/b/a Liberty Utilities**

**September 2017**



DIRECT TESTIMONY  
OF  
KEITH MAGEE  
LIBERTY UTILITIES  
BEFORE THE  
MISSOURI PUBLIC SERVICE COMMISSION  
CASE NO. GR-2018-0013

**TABLE OF CONTENTS**

<b>I.</b>	<b>INTRODUCTION</b> .....	1
<b>II.</b>	<b>PURPOSE AND OVERVIEW OF TESTIMONY</b> .....	2
<b>III.</b>	<b>REGULATORY GUIDELINES AND FINANCIAL CONSIDERATIONS</b> .....	8
<b>IV.</b>	<b>PROXY GROUP SELECTION</b> .....	9
<b>V.</b>	<b>COST OF EQUITY ESTIMATION</b> .....	13
	Constant Growth DCF Model.....	15
	Quarterly Growth DCF Model.....	21
	Capital Asset Pricing Model .....	23
	Bond Yield Plus Risk Premium Approach .....	27
	Expected Earnings Analysis .....	29
<b>VI.</b>	<b>BUSINESS RISKS AND OTHER CONSIDERATIONS</b> .....	31
	Small Size Premium.....	31
	Regulatory Risk .....	33
	Flotation Costs .....	37
<b>VII.</b>	<b>CAPITAL MARKET ENVIRONMENT</b> .....	38
<b>VIII.</b>	<b>CAPITAL STRUCTURE</b> .....	48
<b>IX.</b>	<b>COST OF DEBT</b> .....	52
<b>X.</b>	<b>CONCLUSIONS AND RECOMMENDATION</b> .....	52

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1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME, AFFILIATION AND BUSINESS ADDRESS.**

3 A. My name is Keith Magee. I am a Director at ScottMadden, Inc. (“ScottMadden”). My  
4 business address is 1900 West Park Drive, Suite 250, Westborough, MA 01581.

5 **Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?**

6 A. I am submitting this direct testimony (“Direct Testimony”) before the Missouri Public  
7 Service Commission (“Commission”) on behalf of Liberty Utilities (Midstates Natural  
8 Gas) Corp., d/b/a Liberty Utilities (“Liberty Midstates” or the “Company”), an indirect  
9 wholly owned subsidiary of Algonquin Power & Utilities Corp (“APUC”).

10 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL AND PROFESSIONAL**  
11 **EXPERIENCE.**

12 A. I hold a Bachelor’s degree in Economics from Whitman College, and an MBA with a  
13 concentration in Finance from the F.W. Olin Graduate School of Business at Babson  
14 College. I also hold the professional designation of Chartered Financial Analyst (“CFA”) awarded by the CFA Institute, and the professional designation of Certified Rate of  
15 Return Analyst (“CRRA”) awarded by the Society of Utility and Regulatory Financial  
16 Analysts.  
17

18 As a consultant in the utility and energy industry, I have provided consulting

1 services on a range of financial and economic issues including areas such as rate case  
2 activities (e.g., cost of capital, cost of service, financial reporting filing requirements and  
3 rate design) and policy and strategy issues (e.g., capital investment related activities).  
4 Many of my engagements have included developing cost of capital analyses and  
5 testimony. A summary of my professional and educational background is included in  
6 Attachment A to my Direct Testimony.

7 **II. PURPOSE AND OVERVIEW OF TESTIMONY**

8 **Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?**

9 A. The purpose of my Direct Testimony is to present evidence and provide a  
10 recommendation regarding the Company's return on equity ("ROE" or "cost of equity")  
11 and capital structure, and to assess the reasonableness of the Company's cost of debt. My  
12 analyses and conclusions are supported by the data presented in Schedule KM-1 through  
13 Schedule KM-12, which have been prepared by me or under my direction. In addition, I  
14 sponsor WP-1 Rate of Return, setting forth the capital structure and cost of capital, as  
15 noted by Company witness Schwartz.

16 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE APPROPRIATE COST**  
17 **OF EQUITY, CAPITAL STRUCTURE AND COST OF DEBT FOR THE**  
18 **COMPANY?**

19 A. My analyses indicate that the Company's cost of equity currently is in the range of 9.90  
20 percent to 10.35 percent. Based on the quantitative and qualitative analyses discussed  
21 throughout my Direct Testimony, I recommend that the Commission authorize the  
22 Company the opportunity to earn an ROE of 10.25 percent.

23 With respect to the Company's capital structure, I propose a capital structure

1 consisting of 53.00 percent common equity and 47.00 percent long-term debt. That  
2 capital structure includes an equity ratio that is below Liberty Midstates' equity ratio, but  
3 is consistent with those in place at comparable natural gas companies. In light of the  
4 importance of maintaining access to capital, and seeing that it is consistent with similarly  
5 situated utility companies, I conclude that a 53.00 percent equity ratio is reasonable and  
6 appropriate.

7 Lastly, I note that the Company's 4.70 percent cost of debt is consistent with,  
8 although lower than, the debt cost rates authorized for natural gas utilities during the  
9 twelve months ended August 18, 2017. As such, I conclude that the Company's cost of  
10 debt is reasonable and appropriate.

11 **Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE ANALYSES THAT LED TO**  
12 **YOUR ROE RECOMMENDATION.**

13 A. Because all models are subject to various assumptions and constraints, equity analysts  
14 and investors tend use multiple methods to develop their return requirements.<sup>1</sup> My ROE  
15 recommendation in this proceeding relies on the results of the quarterly growth  
16 discounted cash flow ("DCF") model, the capital asset pricing model ("CAPM"), the  
17 bond yield plus risk premium ("Risk Premium") model, and the expected earnings  
18 approach.

19 My recommendation also takes into consideration the Company's risk and cost  
20 profile, in particular: (1) its relatively small size; (2) the regulatory environment in which  
21 the Company operates; and (3) the direct costs associated with equity issuances.

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<sup>1</sup> See, e.g., Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed., 1994, at 341, and Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd ed., 2000, at 214.

1 Although I did not make explicit adjustments to my ROE estimates for those factors, I did  
2 take them into consideration in determining the range in which the Company's cost of  
3 equity likely falls.

4 **Q. WHAT ARE THE KEY FACTORS CONSIDERED IN YOUR ANALYSES AND**  
5 **UPON WHICH YOU BASE YOUR RECOMMENDED ROE?**

6 A. My analyses and recommendations considered the following:

- 7 • The United States Supreme Court's *Bluefield* and *Hope* decisions<sup>2</sup> that established the  
8 following standards for determining a fair and reasonable allowed ROE: (1)  
9 consistency of the allowed return with other businesses having similar risk; (2)  
10 adequacy of the return to provide access to capital and support credit quality; (3) an  
11 end result of just and reasonable rates;
- 12 • The Company's business risks relative to the proxy group of comparable companies  
13 (set forth in Table 2 below) and the implications of those risks in arriving at the  
14 appropriate ROE from within the range of results established by the DCF, CAPM,  
15 Risk Premium and Expected Earnings methods;
- 16 • The capital-intensive nature of utility operations, indicating the need to finance large,  
17 long-lived investments with internally generated and externally acquired funds, even  
18 during periods of capital market distress, both of which depend on the Company's  
19 ability to earn a reasonable return on its rate base; and
- 20 • The effect of current capital market conditions on investors' return requirements.

21 **Q. WHAT ARE THE RESULTS OF YOUR ROE ANALYSES?**

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<sup>2</sup> *Bluefield Waterworks & Improvement Co., v. Public Service Comm'n of West Virginia*, 262 U.S. 679 (1923) ("Bluefield"); *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("Hope").

1 A. The results of my analyses are summarized in Table 1, below.

2 **Table 1: Summary of Analytical Results**

<b>DCF Analyses</b>	<i>Proxy Group</i>		
	<i>Low</i>	<i>Mean</i>	<i>High</i>
Constant Growth, 30-day Stock Prices	7.22%	8.96%	11.13%
Constant Growth, 90-day Stock Prices	7.26%	9.01%	11.17%
Constant Growth, 180-day Stock Prices	7.36%	9.10%	11.27%
Quarterly Growth, 30-day Stock Prices	7.37%	9.08%	11.37%
Quarterly Growth, 90-day Stock Prices	7.42%	9.13%	11.41%
Quarterly Growth, 180-day Stock Prices	7.52%	9.23%	11.52%
<b>CAPM</b>	<i>Bloomberg MRP</i>		<i>Value Line MRP</i>
Value Line Beta, Current Risk-Free Rate (2.85%)	10.53%		11.08%
Value Line Beta, Projected Risk-Free Rate (3.35%)	10.67%		11.22%
Bloomberg Beta, Current Risk-Free Rate (2.85%)	9.62%		10.11%
Bloomberg Beta, Projected Risk-Free Rate (3.35%)	9.80%		10.29%
<b>Bond Yield Plus Risk Premium</b>	<i>Low</i>	<i>Mean</i>	<i>High</i>
Current and Projected Baa Utility Bond Yields	9.52%	9.83%	10.41%
<b>Expected Earnings Analysis</b>	<i>Low</i>	<i>Mean</i>	<i>High</i>
Value Line Projected Return on Book Equity	10.74%	10.93%	11.11%

3  
4 **Q. ARE THERE FACTORS THAT SHOULD BE CONSIDERED IN DETERMINING**  
5 **THE WEIGHT GIVEN TO THE RESULTS OF THE DIFFERENT ROE**  
6 **MODELS?**

7 A. Yes, there are. All of the models used to estimate the cost of equity are subject to certain  
8 assumptions, which may become more or less relevant as market conditions, and market  
9 data, change. An important consideration is the consistency of each model's underlying  
10 assumptions with current and expected market conditions, and the reasonableness of its  
11 results relative to observable benchmarks. For example, utility Price/Earnings (P/E)  
12 ratios recently have been well in excess of their historical averages. Those pricing levels,  
13 which had been associated with Federal Reserve monetary policy initiatives, weighed on

1 utility dividend yields and, therefore, DCF-based ROE estimates. An important  
2 analytical question is whether the increase in P/E ratios represents a fundamental shift in  
3 utility valuation, or a temporary trading position to be unwound as conditions change.  
4 That question is important because the constant growth and quarterly growth models  
5 assume that current underlying relationships will remain constant, forever; the model  
6 does not allow us to incorporate such important factors, nor does it enable us to reflect  
7 the expected risk associated with changing market conditions.

8 Risk premium-based methods (such as the capital asset pricing model), on the  
9 other hand, incorporate measures of risk and have the benefit of directly considering  
10 investors' expectations regarding future market returns. Other risk premium approaches  
11 (the bond yield plus risk premium approach) reflect the well-documented finding that the  
12 cost of equity does not move in lock-step with interest rates. For example, at times  
13 interest rates fall because investors are so risk averse that they would rather accept a very  
14 modest return on Treasury securities than take on the risk of equity ownership. In such  
15 circumstances, low interest rates suggest an increasing, not a decreasing cost of equity.  
16 The important analytical issue, therefore, is understanding each model's fundamental  
17 structure and assumptions, and interpreting its results in the context of current and  
18 expected market conditions.

19 Every model has its own strengths and weaknesses, and it is important to reflect  
20 those relative strengths in estimating the cost of equity. On balance, I believe the DCF  
21 model results in particular should be viewed with considerable caution, and should be  
22 given less weight than the other approaches in the current capital market environment.  
23 And, because risk premium-based methods provide the ability to reflect investors' views



1 of risk, future market returns, and the relationship between interest rates and the cost of  
2 equity, those methods should be given more weight than the DCF method.

3 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING LIBERTY MIDSTATES’**  
4 **COST OF EQUITY?**

5 A. Giving less weight to the low end of the DCF results shown in Table 1, I believe that a  
6 reasonable range of Liberty Midstates’ cost of equity is from 9.90 percent to 10.35  
7 percent. Considering the capital market environment and the Company’s business risks  
8 relative to the proxy group, it is my view that an ROE of 10.25 percent is reasonable.

9 **Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY ORGANIZED?**

10 A. The remainder of my Direct Testimony is organized as follows:

11 Section III – Discusses the regulatory guidelines and financial considerations  
12 pertinent to the development of the cost of capital;

13 Section IV – Explains my selection of the proxy group of natural gas utilities used to  
14 develop my analytical results;

15 Section V – Explains my analyses and the analytical bases for my ROE  
16 recommendation;

17 Section VI – Provides a discussion of specific business risks and other considerations  
18 that have a direct bearing on the Company’s cost of equity;

19 Section VII – Highlights the current capital market conditions and their effect on the  
20 Company’s cost of equity;

21 Section VIII – Explains my recommendation for the Company’s capital structure;

22 Section IX – Briefly discusses the Company’s cost of debt; and

23 Section X – Summarizes my conclusions and recommendations.

1 **III. REGULATORY GUIDELINES AND FINANCIAL CONSIDERATIONS**

2 **Q. PLEASE PROVIDE A BRIEF SUMMARY OF THE GUIDELINES**  
3 **ESTABLISHED BY THE UNITED STATES SUPREME COURT (THE**  
4 **“COURT”) FOR THE PURPOSE OF DETERMINING THE ROE.**

5 A. The Court established the guiding principles for establishing a fair return for capital in  
6 two cases: (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm’n of*  
7 *West Virginia (Bluefield)*; and (2) *Federal Power Comm’n v. Hope Natural Gas Co.*  
8 *(Hope)*. In those cases, the Court recognized that the fair rate of return on equity should  
9 be: (1) comparable to returns investors expect to earn on other investments of similar  
10 risk; (2) sufficient to assure confidence in the company’s financial integrity; and (3)  
11 adequate to maintain and support the company’s credit and to attract capital.

12 **Q. DOES MISSOURI PRECEDENT PROVIDE SIMILAR GUIDANCE?**

13 A. Yes, the Commission cited the *Hope* and *Bluefield* decisions in its order in the  
14 Company’s last rate case and acknowledged its authority and responsibility to set “just  
15 and reasonable” rates for public utility service, stating that:

16 The Commission must draw primary guidance in the evaluation of the  
17 expert testimony from the Supreme Court's *Hope* and *Bluefield*  
18 decisions. Pursuant to those decisions, returns for Liberty’s  
19 shareholders must be commensurate with returns in other enterprises  
20 with corresponding risks. Just and reasonable rates must include  
21 revenue sufficient to cover operating expenses, service debt and pay a  
22 dividend commensurate with the risk involved. The language of *Hope*  
23 and *Bluefield* unmistakably requires a *comparative method*, based on a  
24 quantification of risk.

25 [..]

26 *Hope* and *Bluefield* also expressly refer to objective measures. The  
27 allowed return must be sufficient to ensure confidence in the financial

1 integrity of the company in order to maintain its credit and attract  
2 necessary capital.<sup>3</sup>

3 Based on those standards, the authorized ROE should provide the Company with  
4 the opportunity to earn a fair and reasonable return on its regulated utility operations and  
5 should enable efficient access to external capital under a variety of market conditions.

6 **Q. WHY IS IT IMPORTANT FOR A UTILITY TO BE ALLOWED THE**  
7 **OPPORTUNITY TO EARN A RETURN ADEQUATE TO ATTRACT EQUITY**  
8 **CAPITAL AND MAINTAIN FINANCIAL INTEGRITY?**

9 A. Investors have many options available to them and will only invest in a firm if the  
10 expected return justifies the risks taken on in making that investment. Customers have an  
11 interest in safe, reliable, and efficient service, which depends on investors' willingness to  
12 commit the capital needed to maintain and improve the utility system. In that important  
13 sense, investors and customers have a common interest in a financially strong utility that  
14 is able to access capital on reasonable terms when and as needed. A return that is  
15 adequate to attract capital and maintain financial integrity enables a utility to access  
16 capital markets at reasonable terms and continue to make needed investments. To the  
17 extent Liberty Midstates is provided a reasonable opportunity to earn its market-based  
18 cost of equity, neither customers nor shareholders should be disadvantaged.

19 **IV. PROXY GROUP SELECTION**

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<sup>3</sup> *In the Matter of Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities' Tariff Revisions Designed to Implement a General Rate Increase for Natural Gas Service in the Missouri Service Areas of the Company*, Report and Order, Missouri Public Service Commission, Case No. GR-2014-0152, December 3, 2014, at 27.

1 **Q. AS A PRELIMINARY MATTER, WHY IS IT NECESSARY TO SELECT A**  
2 **GROUP OF PROXY COMPANIES TO DETERMINE THE COST OF EQUITY**  
3 **FOR THE COMPANY?**

4 A. Since the ROE is a market-based concept and Liberty Midstates is not a publicly traded  
5 entity, it is necessary to establish a group of comparable publicly-traded companies to  
6 serve as its “proxy.”

7 Even if Liberty Midstates were a publicly traded entity, short-term events could  
8 bias its market data (such as market value or reported growth expectations) during a  
9 given period of time. A significant benefit of using a proxy group is that it serves to  
10 moderate the effects of anomalous, temporary events associated with any one company.  
11 In addition, the use of a proxy group is consistent with the *Bluefield* and *Hope* standards  
12 that require the allowed return to be commensurate with the returns available to other  
13 investments with comparable risks.

14 **Q. DOES THE SELECTION OF A RISK COMPARABLE PROXY GROUP**  
15 **SUGGEST THAT ANALYTICAL RESULTS WILL BE TIGHTLY CLUSTERED**  
16 **AROUND AVERAGE (I.E., MEAN) RESULTS?**

17 A. No. For example, the constant growth DCF approach, defines the cost of equity as the  
18 sum of the expected dividend yield and projected long-term growth. Despite the care  
19 taken to ensure risk comparability, market expectations with respect to future risks and  
20 growth opportunities will vary from company to company. Even when looking at a  
21 single company, growth projections can vary significantly. Therefore, even within a  
22 group of similarly situated companies, it is common for analytical results to reflect a  
23 seemingly wide range. Consequently, at issue is how to estimate a Company’s ROE from

1 within that range. That determination necessarily must consider a wide range of both  
2 empirical and qualitative information.

3 **Q. PLEASE PROVIDE A SUMMARY PROFILE OF LIBERTY MIDSTATES.**

4 A. Liberty Midstates is a subsidiary of Liberty Utilities Co. (“LUCo”), which in turn is an  
5 indirect wholly owned subsidiary of APUC. Liberty Midstates provides natural gas  
6 distribution service to approximately 82,900 customers in Missouri, Illinois, and Iowa.<sup>4</sup>

7 **Q. HOW DID YOU SELECT THE COMPANIES INCLUDED IN YOUR PROXY**  
8 **GROUP?**

9 A. I began with the universe of companies that Value Line classifies as Electric or Natural  
10 Gas Utilities, which includes a group of 51 domestic U.S. utilities, and applied the  
11 following screening criteria:

- 12 • Because certain of the models used in my analyses assume that earnings and  
13 dividends grow over time, I excluded companies that do not have positive  
14 earnings growth estimates or pay consistent quarterly cash dividends;
- 15 • To ensure that my analyses are based on consensus growth expectations, I  
16 excluded companies that were not covered by at least two utility industry equity  
17 analysts;
- 18 • To select a proxy group with financial characteristics similar to Liberty Midstates,  
19 I excluded companies that have below investment grade corporate credit ratings  
20 and/or senior unsecured bond ratings from Standard & Poor’s (“S&P”) or  
21 Moody’s;

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<sup>4</sup> Source: Algonquin Power & Utilities Corp., Form 40-F for fiscal year ended December 31, 2016, at 43.

- To select companies with a substantial portion of their business activity directly involved in regulated natural gas distribution, I excluded companies with less than 40.00 percent of regulated operating income derived from regulated natural gas utility operations.
- To ensure the data used in my ROE analyses are not skewed by temporary corporate actions, I eliminated companies that are, or have recently have been, party to a merger or other significant transaction.

**Q. WHAT COMPANIES MET THOSE SCREENING CRITERIA?**

A. The criteria discussed above resulted in a proxy group of the following nine companies:

**Table 2: Proxy Group Screening Results**

<b>Company</b>	<b>Ticker</b>
Atmos Energy Corporation	ATO
Black Hills Corporation	BKH
Chesapeake Utilities Corporation	CPK
Northwest Natural Gas Company	NWN
ONE Gas, Inc.	OGS
Sempra Energy	SRE
Southwest Gas Holdings, Inc.	SWX
Spire Inc.	SR
Vectren Corporation	VVC

**Q. DO YOU BELIEVE THAT A PROXY GROUP OF NINE COMPANIES IS SUFFICIENTLY LARGE?**

A. Yes. The analyses performed in estimating the ROE are more likely to be representative of the subject utility's cost of equity to the extent that the chosen proxy companies are fundamentally comparable to the subject utility. Because all analysts use some form of screening process to arrive at a proxy group, the group, by definition, is not randomly

1 drawn from a larger population. Consequently, there is no reason to place more reliance  
2 on the quantitative results of a larger proxy group simply by virtue of the resulting larger  
3 number of observations. In my view, including companies whose fundamental  
4 comparability is tenuous at best simply for the purpose of expanding the number of  
5 observations does not add relevant information to the analysis.

6 **V. COST OF EQUITY ESTIMATION**

7 **Q. PLEASE BRIEFLY DISCUSS THE ROE IN THE CONTEXT OF THE**  
8 **REGULATED RATE OF RETURN.**

9 A. Regulated utilities primarily use common stock and long-term debt to finance their  
10 capital investments. The overall rate of return (“ROR”) weighs the costs of the  
11 individual sources of capital by their respective book values. While the cost of debt can  
12 be directly observed, the cost of equity is market-based and, therefore, must be estimated  
13 based on observable market information.

14 **Q. HOW IS THE REQUIRED ROE DETERMINED?**

15 A. The required ROE is estimated using quantitative models that rely on market data to  
16 quantify investor expectations regarding the range of expected equity returns. The use of  
17 different models, and the use of varying investor assumptions within each model,  
18 produces a range of results from which the market-required ROE must be estimated. As  
19 discussed throughout my Direct Testimony, that estimation must be based on a  
20 comprehensive review of relevant data and information, and does not necessarily lend  
21 itself to a strict mathematical solution. Consequently, the key consideration in  
22 determining the ROE is to ensure that the overall analysis reasonably reflects investors’  
23 view of the financial markets in general and the subject company (in the context of the

1 proxy companies) in particular.

2 **Q. WHAT METHODS DID YOU USE TO DETERMINE THE COMPANY’S ROE?**

3 A. I have relied on DCF, CAPM, Risk Premium and expected earnings methods to  
4 determine my recommended ROE.<sup>5</sup> While I have performed both constant growth and  
5 quarterly DCF analyses, I have relied primarily on the latter in arriving at my ROE  
6 recommendation.

7 **Q. HAVE OTHER REGULATORS RECOGNIZED THE IMPORTANCE OF**  
8 **CONSIDERING MULTIPLE METHODS GIVEN CURRENT MARKET**  
9 **CONDITIONS?**

10 A. Yes. For example, in Opinion No. 531 the Federal Energy Regulatory Commission  
11 (FERC) noted the anomalous nature of prevailing capital markets make it more difficult  
12 to determine the rate of return needed to satisfy the *Hope* and *Bluefield* standards and  
13 expressed concern that economic anomalies may have affected the reliability of DCF  
14 analyses.<sup>6</sup> FERC therefore concluded that a mechanical application of the DCF  
15 methodology would be inappropriate and found it necessary to review alternative  
16 benchmark methods to gain insight into the effect of market conditions on the cost of  
17 equity, including the Risk Premium, CAPM and expected earnings approaches.<sup>7</sup> After  
18 review of the evidence in that case, including economic conditions and the results of

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<sup>5</sup> Referring to the DCF, CAPM and Risk Premium approaches, the Commission noted in Case No. ER-2016-0285: “No one method is any more correct than any other method in all circumstances. Analysts balance their use of all three methods to reach a recommended return on equity.” See Report and Order, *In the Matter of Kansas City Power & Light Company’s Request for Authority to Implement a General Rate Increase for Electric Service*, ER-2016-0285, pp. 15-16 (May 3, 2017).

<sup>6</sup> See, *Martha Coakley v. Bangor Hydro-Electric Company*, Opinion No. 531, 147 FERC ¶ 61,234 (2014), at P 41 and P 145.

<sup>7</sup> *Ibid.*, at P 142 and PP 145-146.



1 multiple ROE methodologies, FERC determined it would be appropriate to set the ROE  
2 at the midpoint of the upper half of the zone of reasonableness established by the DCF  
3 methodology.<sup>8</sup>

4 Commissions in other regulatory jurisdictions, such as Hawaii, Maryland,  
5 Massachusetts, and North Carolina, have also recognized that no single model is most  
6 reliable under all market conditions, and that the application of reasoned judgment is  
7 important in developing ROE estimates.<sup>9</sup> As discussed throughout the balance of my  
8 testimony, I have applied those principles in developing my recommendation.

9 ***CONSTANT GROWTH DCF MODEL***

10 **Q. IS THE DCF METHODOLOGY WIDELY USED IN REGULATORY**  
11 **PROCEEDINGS?**

12 A. Yes. In my experience, the DCF methodology is widely recognized in regulatory  
13 proceedings, as well as in financial literature. Nonetheless, neither the DCF nor any  
14 other model should be applied without considerable judgment in the selection of data and  
15 the interpretation of results.

16 **Q. PLEASE DESCRIBE THE DCF APPROACH.**

---

<sup>8</sup> *Ibid.*, at PP 145-146 and P 152. In April 2017 the United States Court of Appeals for the District of Columbia Circuit issued an opinion in *Emera Maine (formerly known as Bangor Hydro-Electric Company), et al., v. FERC* which vacated and remanded Opinion No. 531 because “FERC did not meet the first requirement of Section 206 that it demonstrate the unlawfulness of transmission owners’ base ROE” and because FERC had relied on the midpoint of the upper half of the zone of reasonableness without adequately “citing record evidence” demonstrating the resulting ROE was a just and reasonable. Importantly, the D.C. Circuit decision did not suggest FERC was wrong to consider alternative methods, nor suggest the alternative methods used or their results were inappropriate.

<sup>9</sup> *See*, for example: (1) Public Utilities Commission of the State of Hawaii, Order No. 13704 in Docket No. 7700, December 28, 1994 at 92; (2) Public Service Commission of Maryland, Order No. 87591 in Case No. 9406, at 153; (3) The Commonwealth of Massachusetts Department of Public Utilities, Order in Docket D.P.U. 15-155, September 30, 2016, at 376-378; and (4) State of North Carolina Utilities Commission, Order in Docket No. G-5, Sub 565, October 28, 2016, at 35-36.

1 A. The DCF approach is based on the theory that a stock's current price represents the  
2 present value of its expected future cash flows. A common formulation of the DCF  
3 approach, also known as the dividend discount model, can be expressed as follows:

$$4 \quad P = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \dots + \frac{D_\infty}{(1+k)^\infty} \quad \text{Equation [1]}$$

5 where  $P$  represents the current stock price,  $D_1 \dots D_\infty$  represent expected future dividends,  
6 and  $k$  is the discount rate, or required ROE. Under the assumption that cash flows will  
7 grow at a constant rate, Equation [1] is a standard present value calculation that can be  
8 simplified and rearranged into the familiar form:

$$9 \quad k = \frac{D_0(1+g)}{P} + g \quad \text{Equation [2]}$$

10 Equation [2] often is referred to as the "constant growth DCF" model, in which the first  
11 term is the expected dividend yield and the second term is the expected long-term annual  
12 growth rate.

13 In its simplest form, the DCF model expresses the cost of equity as the sum of the  
14 expected dividend yield and long-term growth rate. In essence, the DCF model assumes  
15 that the total return received by investors includes the dividend yield, and the rate of  
16 growth. As explained below, under the model's assumptions, the rate of growth equals  
17 the rate of capital appreciation. That is, the model assumes that the investor's return is  
18 the sum of the dividend yield and the increase in the stock price.

19 **Q. WHAT ASSUMPTIONS ARE REQUIRED FOR THE CONSTANT GROWTH**  
20 **DCF MODEL?**

21 A. The constant growth DCF model requires the following assumptions: (1) a constant  
22 average growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a

1 constant price-to-earnings multiple; and (4) a discount rate greater than the expected  
2 growth rate. In addition, the constant growth DCF model assumes that the same return  
3 will be required every year, in perpetuity (*see* Equation [1], above).

4 **Q. WHAT MARKET DATA DID YOU USE TO CALCULATE THE DIVIDEND**  
5 **YIELD IN YOUR CONSTANT GROWTH DCF MODEL?**

6 A. The dividend yield is based on the proxy companies' current annualized dividend, and  
7 average closing stock price over the 30-, 90- and 180-trading days ended August 18,  
8 2017.

9 **Q. WHY DID YOU USE THREE AVERAGING PERIODS TO CALCULATE AN**  
10 **AVERAGE STOCK PRICE?**

11 A. I did so to ensure that the model's results are not skewed by anomalous events that may  
12 affect stock prices on any given trading day. At the same time, the averaging period  
13 should be reasonably representative of expected capital market conditions over the long  
14 term. In my view, using 30-, 90-, and 180-day averaging periods reasonably balances  
15 those concerns.

16 **Q. DID YOU MAKE ANY ADJUSTMENTS TO THE DIVIDEND YIELD TO**  
17 **ACCOUNT FOR PERIODIC GROWTH IN DIVIDENDS?**

18 A. Yes, I did. Since utility companies tend to increase their quarterly dividends at different  
19 times throughout the year, it is reasonable to assume that dividend increases will be  
20 evenly distributed over calendar quarters. Given that assumption, it is appropriate to  
21 calculate the expected dividend yield by applying one-half of the long-term growth rate

1 to the current dividend yield.<sup>10</sup> That adjustment ensures that the expected dividend yield  
2 is, on average, representative of the coming twelve-month period, and does not overstate  
3 the dividends to be paid during that time.

4 **Q. IS IT IMPORTANT TO SELECT APPROPRIATE MEASURES OF LONG-**  
5 **TERM GROWTH IN APPLYING THE DCF MODEL?**

6 A. Yes. In its constant growth form, the DCF model (*i.e.*, as presented in Equation [2]  
7 above) assumes a single growth estimate in perpetuity. In order to reduce the long-term  
8 growth rate to a single measure, one must assume a constant payout ratio, and that  
9 earnings per share, dividends per share and book value per share all grow at the same  
10 constant rate. Over the long term, however, dividend growth can only be sustained by  
11 earnings growth. Consequently, it is important to incorporate a variety of measures of  
12 long-term earnings growth into the constant growth DCF model.

13 **Q. IS IT COMMON IN PRACTICE TO RELY ON ANALYSTS' FORECASTS AS**  
14 **THE BASIS OF GROWTH RATE PROJECTIONS?**

15 A. Yes. The cost of equity is a forward-looking concept that focuses on investor  
16 expectations regarding future returns. The estimation of such returns, therefore, should  
17 be based on forward-looking or projected data. Indeed, substantial academic research has  
18 demonstrated the relationship between analysts' forecasts and investor expectations.<sup>11</sup> In  
19 my view, therefore, Value Line, First Call Corporation (now known as Thomson Reuters  
20 I/B/E/S) ("First Call") and Zacks Investment Research ("Zacks") (the latter two of which

---

<sup>10</sup> See Schedule KM-1.

<sup>11</sup> See, for example, Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 298-303; Harris and Marston, "Estimating Shareholder Risk Premia Using Analysts Growth Forecasts", Financial Management, 21 (Summer 1992); Charles F. Phillips, Jr., The Economics of Regulation, Revised Edition, 1969, Richard D. Irwin, Inc., at 285.

1 are consensus earnings forecast estimates) provide appropriate sources of earnings  
2 growth forecasts.

3 **Q. PLEASE DESCRIBE THE RETENTION GROWTH ESTIMATE AS APPLIED IN**  
4 **YOUR CONSTANT GROWTH DCF MODEL.**

5 A. The Retention Growth model, which is a generally recognized and widely taught method  
6 of estimating long-term growth, is an alternative approach to the use of analysts' earnings  
7 growth estimates. In essence, the model is premised on the proposition that a firm's  
8 growth is a function of its expected earnings, and the extent to which it retains earnings to  
9 invest in the enterprise. In its simplest form, the model represents long-term growth as  
10 the product of the retention ratio (*i.e.*, the percentage of earnings not paid out as  
11 dividends (referred to below as "b")) and the expected return on book equity (referred to  
12 below as "r"). Thus, the simple "b x r" form of the model projects growth as a function  
13 of internally generated funds. That form of the model is limiting, however, in that it does  
14 not provide for growth funded from external equity.

15 The "br + sv" form of the Retention Growth estimate used in my DCF analysis is  
16 meant to reflect growth from both internally generated funds (*i.e.*, the "br" term) and  
17 from issuances of equity (*i.e.*, the "sv" term). The first term, which is the product of the  
18 retention ratio (*i.e.*, "b", or the portion of net income not paid to shareholders as  
19 dividends) and the expected Return on Equity (*i.e.*, "r") represents the portion of net  
20 income that is reinvested into the Company as a means of funding growth. The "sv" term  
21 is represented as:

$$\left(\frac{m}{b} - 1\right) \times \text{Growth rate in Common Shares} \quad \text{Equation [3]}$$

23 where  $\frac{m}{b}$  is the Market-to-Book ratio.

1           In this form, the “sv” term reflects an element of growth as the product of (a) the  
2 expected growth in shares outstanding, and (b) that portion of the market-to-book ratio  
3 that exceeds unity. As shown in Schedule KM-3, all of the components of the Retention  
4 Growth model can be derived from data provided by Value Line.

5 **Q. PLEASE EXPLAIN HOW YOU APPLIED THE CONSTANT GROWTH DCF**  
6 **MODEL.**

7 A. I applied the DCF model to the proxy group of natural gas utility companies using the  
8 following inputs for the price and dividend terms:

- 9           1. The average daily closing prices for the 30-, 90- and 180-trading days ended  
10           August 18, 2017, for the term  $P_0$ ; and
- 11           2. The annualized dividend per share as of August 18, 2017, for the term  $D_0$ .

12 I then calculated my DCF results using each of the following growth terms:

- 13           1. The Zacks consensus long-term earnings growth estimates;
- 14           2. The First Call consensus long-term earnings growth estimates; and
- 15           3. The Value Line long-term earnings growth estimates;
- 16           4. An estimate of Retention Growth.

17 **Q. HOW DID YOU CALCULATE THE HIGH AND LOW DCF RESULTS?**

18 A. I calculated the proxy group mean high DCF result using the highest of the EPS growth  
19 estimates (*i.e.*, the Value Line, Zacks, First Call, and Retention Growth estimates) for  
20 each proxy group company. The proxy group mean high result then reflects the average  
21 of the maximum DCF results for each proxy company. I used a similar approach to  
22 calculate the proxy group mean low results, using instead the lowest of the growth  
23 estimates for each proxy group company.

1 **Q. WHAT ARE THE RESULTS OF YOUR CONSTANT GROWTH DCF**  
2 **ANALYSIS?**

3 A. My constant growth DCF results are summarized in Table 3, below (*see* also Schedule  
4 KM-1).

5 **Table 3: Constant Growth DCF Results<sup>12</sup>**

	<i>Mean Low</i>	<i>Mean</i>	<i>Mean High</i>
30-Day Average	7.22%	8.96%	11.13%
90-Day Average	7.26%	9.01%	11.17%
180-Day Average	7.36%	9.10%	11.27%

6

7 ***QUARTERLY GROWTH DCF MODEL***

8 **Q. PLEASE BRIEFLY DESCRIBE THE QUARTERLY GROWTH DCF MODEL.**

9 A. As noted earlier, the constant growth DCF model is based on several limiting  
10 assumptions, one of which is that dividends are paid annually. However, most dividend-  
11 paying companies, including utilities, pay dividends on a quarterly (as opposed to an  
12 annual) basis. While the adjusted dividend yield discussed earlier is meant to address  
13 that assumption (by increasing the observed dividend yield by one-half of the expected  
14 growth rate), it does not fully reflect the quarterly receipt and reinvestment of dividends.  
15 As a consequence, the constant growth DCF model likely understates the cost of equity.  
16 The quarterly growth DCF model specifically incorporates investors' expectation of the  
17 quarterly payment of dividends, and the associated quarterly compounding of those  
18 dividends as they are reinvested at the required ROE. As noted by Dr. Roger Morin:

19 Clearly, given that dividends are paid quarterly and that the observed

---

<sup>12</sup> DCF results presented in Table 3 are unadjusted (*i.e.*, prior to any adjustment for flotation costs).

1 stock price reflects the quarterly nature of dividend payments, the  
2 market-required return must recognize quarterly compounding, for the  
3 investor receives dividend checks and reinvests the proceeds on a  
4 quarterly schedule ... The annual DCF model inherently understates  
5 the investors' true return because it assumes all cash flows received by  
6 investors are paid annually<sup>13</sup>  
7

8 **Q. HOW IS THE DIVIDEND YIELD PORTION OF THE QUARTERLY DCF**  
9 **MODEL CALCULATED?**

10 A. To reflect the timing and compounding of quarterly dividends, the model replaces the *D*  
11 component of the constant growth DCF model with the following equation:

$$D = d_1(1+k)^{-75} + d_2(1+k)^{-50} + d_3(1+k)^{-25} + d_4(1+k)^0 \quad \text{Equation [4]}$$

13 where:

14  $d_1, d_2, d_3, d_4$  = expected quarterly dividends over the coming year; and

15  $k$  = the required Return on Equity.

16 Because the required ROE ( $k$ ) is a variable in the dividend calculation, the quarterly  
17 growth DCF model is solved in an iterative fashion.

18 To calculate the expected dividends over the coming year for the proxy  
19 companies (*i.e.*,  $d_1, d_2, d_3$ , and  $d_4$ ), I obtained the last four paid quarterly dividends for  
20 each company, and multiplied them by one plus the growth rate (*i.e.*,  $1 + g$ ). For the  $P_0$   
21 component of the dividends yield, I obtained the closing stock prices over the 30-, 90-,  
22 and 180-trading days ended August 18, 2017 for each company in the proxy group.

23 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR DCF ANALYSES.**

24 A. Table 4 (below) presents the results of the quarterly growth DCF analysis (*see* also  
25 Schedule KM-2).

---

<sup>13</sup> Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006 at 344.



Table 4: Quarterly Growth DCF Model Results<sup>14</sup>

	<i>Low</i>	<i>Mean</i>	<i>High</i>
30-Day Average	7.37%	9.08%	11.37%
90-Day Average	7.42%	9.13%	11.41%
180-Day Average	7.52%	9.23%	11.52%

**CAPITAL ASSET PRICING MODEL**

**Q. PLEASE BRIEFLY DESCRIBE THE CAPM.**

A. The CAPM is a risk premium method that estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium (to compensate investors for the non-diversifiable or “systematic” risk of that security). As shown in Equation [4], the CAPM is defined by four components, each of which theoretically must be a forward-looking estimate:

$$k = r_f + \beta(r_m - r_f) \quad \text{Equation [4]}$$

where:

$k$  = the required market ROE for a security;

$\beta$  = the beta coefficient of that security;

$r_f$  = the risk-free rate of return; and

$r_m$  = the required return on the market as a whole.

In Equation [4], the term  $(r_m - r_f)$  represents the market risk premium.<sup>15</sup>

According to the theory underlying the CAPM, since unsystematic risk can be diversified away by adding securities to their investment portfolio, investors should be concerned

<sup>14</sup> DCF results presented in Table 4 are unadjusted (*i.e.*, prior to any adjustment for flotation costs).

<sup>15</sup> The market risk premium is defined as the incremental return of the market over the risk-free rate.

1 only with systematic or non-diversifiable risk. Non-diversifiable risk is measured by the  
2 beta coefficient, which is defined as:

$$3 \quad \beta_j = \frac{\sigma_j}{\sigma_m} \times \rho_{j,m} \quad \text{Equation [5]}$$

4 Where  $\sigma_j$  is the standard deviation of returns for company “j,”  $\sigma_m$  is the standard  
5 deviation of returns for the broad market (as measured, for example, by the S&P 500  
6 Index), and  $\rho_{j,m}$  is the correlation of returns in between company  $j$  and the broad market.  
7 The beta coefficient therefore represents both relative volatility (*i.e.*, the standard  
8 deviation) of returns, and the correlation in returns between the subject company and the  
9 overall market.

10 Intuitively, higher beta coefficients indicate that the subject company’s returns  
11 have been relatively volatile, and are responsive to the movements of the overall market.  
12 If a company has a beta coefficient of 1.00, it is considered as risky as the market and its  
13 required return equals the expected market return.

14 **Q. WHAT RISK-FREE RATE ASSUMPTION DID YOU INCLUDE IN YOUR**  
15 **CAPM ANALYSIS?**

16 A. In determining the security most relevant to the application of the CAPM, it is important  
17 to select the term (or maturity) that best matches the life of the underlying investment.  
18 Natural gas utilities typically are long-duration investments and as such, I used the 30-  
19 year Treasury bonds as my estimate of the risk-free rate. I relied on both the current 30-  
20 day average yield (2.85 percent as of August 18, 2017) and the near-term projected yield  
21 reported by Blue Chip Financial Forecast (3.35 percent).

22 **Q. WHY HAVE YOU CONSIDERED A FORWARD-LOOKING RISK-FREE RATE?**

23 A. In general, the cost of capital is a forward-looking concept. The relevant analytical issue

1 in the application of the CAPM is to ensure that all three components of the model (*i.e.*,  
2 the risk-free rate, beta, and the MRP) are consistent with current market conditions and  
3 investor perceptions.

4 Since the purpose of this proceeding is to establish the cost of equity for Liberty  
5 Midstates' gas distribution operations on a going-forward basis, it is important to develop  
6 a CAPM analysis that reflects investor expectations concerning the risk-free rate. As  
7 discussed in more detail in Section VII, the need to consider forward-looking interest  
8 rates is particularly important at the current time given that the Federal Reserve has  
9 begun to "unwind" its monetary policy actions that were intended to lower Treasury  
10 yields in response to the 2008/2009 financial crisis and the ensuing protracted economic  
11 recovery.

12 **Q. WHAT BETA COEFFICIENTS DID YOU USE IN YOUR CAPM MODEL?**

13 A. I considered the beta coefficients reported by two sources: Bloomberg Professional  
14 ("Bloomberg") and Value Line. For each source, I employed the average of the reported  
15 beta coefficient for each proxy group company. Value Line calculates the beta  
16 coefficient over a five-year period using the New York Stock Exchange ("NYSE") Index  
17 as the market return, while Bloomberg's calculation is based on two years of data and  
18 uses the S&P 500 Index as the market return. Both of those services adjust their  
19 calculated (or raw) beta coefficients to reflect the tendency of the beta coefficient to  
20 regress to the market mean of 1.00.<sup>16</sup> The Value Line and Bloomberg proxy group

---

<sup>16</sup> The regression tendency of beta coefficients to converge to 1.0 over time is well known and widely discussed in financial literature. (*See, e.g.*, Blume, Marshall E., *On the Assessment of Risk*, The Journal of Finance, Vol. 26, No. 1, March 1971, at 1-10).

1 average beta coefficients are 0.73 and 0.64, respectively.<sup>17</sup>

2 **Q. PLEASE DESCRIBE YOUR APPROACH TO ESTIMATING THE MARKET**  
3 **RISK PREMIUM.**

4 A. The approach is based on the market required return, less the current 30-year Treasury  
5 bond yield. To estimate the market required return, I calculated the market capitalization  
6 weighted average ROE using the constant growth DCF model. To do so, I relied on data  
7 from two sources: (1) Bloomberg and (2) Value Line. For both Bloomberg and Value  
8 Line, I calculated the market capitalization weighted expected dividend yield (using the  
9 same one-half growth rate assumption described earlier), and combined that amount with  
10 the market capitalization weighted projected earnings growth rate to arrive at the average  
11 DCF result. I performed that calculation using each of companies in the S&P 500 Index  
12 for which Bloomberg and Value Line provided growth estimates. I then subtracted the  
13 risk-free rate from that amount to arrive at the market DCF-derived ex-ante market risk  
14 premium estimate. The results of those calculations are provided in Schedule KM-4.

15 **Q. WHAT ARE THE RESULTS OF YOUR CAPM ANALYSIS?**

16 A. The results of my CAPM analysis are summarized in Table 5, below (*see* also Schedule  
17 KM-6).

---

<sup>17</sup> *See* Schedule KM-5.

1 **Table 5: Summary of CAPM Results**

	<i>Bloomberg MRP</i>	<i>Value Line MRP</i>
Value Line Beta, Current Risk-Free Rate (2.85%)	10.53%	11.08%
Value Line Beta, Projected Risk-Free Rate (3.35%)	10.67%	11.22%
Bloomberg Beta, Current Risk-Free Rate (2.85%)	9.62%	10.11%
Bloomberg Beta, Projected Risk-Free Rate (3.35%)	9.80%	10.29%

2  
3 ***BOND YIELD PLUS RISK PREMIUM APPROACH***

4 **Q. PLEASE GENERALLY DESCRIBE THE BOND YIELD PLUS RISK PREMIUM**  
5 **APPROACH.**

6 A. This approach is based on the basic financial tenet that equity investors bear the residual  
7 risk associated with ownership and therefore require a premium over the return they  
8 would have earned as a bondholder. That is, because returns to equity holders are more  
9 risky than returns to bondholders, equity investors must be compensated for bearing that  
10 risk. Risk premium approaches, therefore, estimate the cost of equity as the sum of the  
11 equity risk premium and the yield on a particular class of bonds. Because the equity risk  
12 premium is not directly observable, it typically is estimated using a variety of approaches,  
13 some of which incorporate *ex-ante*, or forward-looking estimates of the cost of equity,  
14 and others that consider historical, or *ex-post*, estimates. An alternative approach is to  
15 use actual authorized returns for natural gas utilities to estimate the equity risk premium.

16 **Q. PLEASE EXPLAIN HOW YOU PERFORMED YOUR RISK PREMIUM**  
17 **ANALYSIS.**

18 A. I first defined the equity risk premium as the difference between actual authorized ROEs  
19 and the then-prevailing level of long-term utility bond rates. I then gathered data from

1 547 natural gas rate proceedings between the fourth quarter of 1992 and August 18, 2017  
2 and calculated the average authorized ROE for each calendar quarter.<sup>18</sup> Using that data, I  
3 calculated the observed risk premium in each quarter as the difference between the  
4 average authorized ROE and the average utility Baa bond yield reported by Moody's.

5 Relative to the long-term historical average, the analytical period includes interest  
6 rates and authorized ROEs that are relatively high during one period (*i.e.*, the early  
7 1990s) and that are quite low during another (*i.e.*, the post-Lehman bankruptcy period).  
8 To account for the well-documented inverse relationship between interest rates and the  
9 risk premium,<sup>19</sup> I conducted a regression analysis in which the observed equity risk  
10 premium is the dependent variable, and the average utility Baa bond yield is the  
11 independent variable. The form of the equation for the regression analysis was:

$$RP = \alpha + \beta(T) \quad \text{Equation [6]}$$

12 where "RP" is the risk premium (*i.e.*, average authorized ROE less average utility Baa  
13 bond yield yield), " $\alpha$ " is the intercept term, " $\beta$ " is the slope term and "T" is the average  
14 yield on Baa-rated utility bonds.  
15

16 **Q. WHAT WERE THE RESULTS OF YOUR RISK PREMIUM ANALYSIS?**

17 A. As Chart 1 illustrates, over time there has been a statistically significant, negative  
18 relationship between Baa-rated utility bond yields and the equity risk premium.

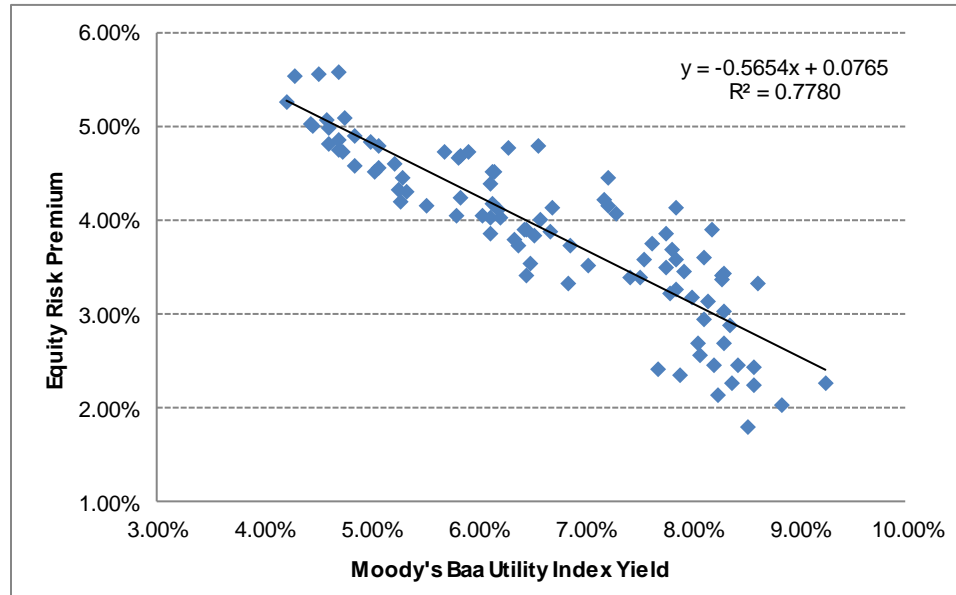
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<sup>18</sup> The period for which data was available. The data covers a number of economic cycles; *see* National Bureau of Economic Research, *U.S. Business Cycle Expansion and Contractions*.

<sup>19</sup> *See, e.g.*, Robert S. Harris and Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management, Summer 1992, at 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, at 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, at 89-95.

1

**Chart 1: Equity Risk Premium**



2

3

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Consequently, simply applying the long-term average equity risk premium of 3.88 percent would significantly understate the cost of equity and produce results well below any reasonable estimate. Based on the regression coefficients in Chart 1, however, the implied ROE is between 9.52 percent and 10.41 percent (*see* Schedule KM-7, and Table 6, below).

**Table 6: Bond Yield Plus Risk Premium Results<sup>20</sup>**

Treasury Yield	Return on Equity
Current Baa Utility Bond Yield (4.53%)	9.52%
Near Term Projected Utility Bond Yield (5.39%)	9.83%
Long Term Projected Utility Bond Yield (6.67%)	10.41%

9

**EXPECTED EARNINGS ANALYSIS**

10

**Q. PLEASE GENERALLY DESCRIBE THE EXPECTED EARNINGS ANALYSIS.**

<sup>20</sup>

Projected Baa utility bond yields calculated as current yield plus Blue Chip Financial Forecast's projected increase in corporate Baa bond yields. *See*, Blue Chip Financial Forecasts, Vol. 36, No. 8, Aug. 1, 2017, at 2; and, Blue Chip Financial Forecasts, Vol. 36, No. 6, Jun. 1, 2017, at 14.

1 A. The expected earnings analysis calculates the projected returns on book value for the gas  
2 industry group as a whole and for the specific firms in the proxy group individually. To  
3 implement the model, I used the projected return on common equity for the period 2020-  
4 2022 provided in the latest Value Line utility reports. I then adjusted those returns to  
5 account for the fact that they show ROE on the basis of book equity at the end of the  
6 period, as opposed to ROE on average book equity.

7 I first considered the expected returns for the proxy group companies for which  
8 the mean and median expected returns were 11.11 percent and 10.80 percent. I then  
9 reviewed the mean and median returns for all Value Line gas utilities (note that mergers  
10 do not affect book returns on equity as they do the DCF returns on market value), which  
11 were 10.74 percent and 10.35 percent, respectively (*see* Exhibit KM-8).

12 **Q. WHAT ARE THE ADVANTAGES OF USING THE EXPECTED EARNINGS**  
13 **APPROACH?**

14 A. Whereas other cost of equity analyses calculate investors' required return on the market  
15 value of their investments, the expected earnings model is uniquely suited to the task of  
16 determining an appropriate return on book value of equity. For example, as noted above,  
17 the DCF model depends on market data. The dividend yield, a principal component of  
18 the DCF analysis, is a market-derived parameter. Since the DCF model calculates the  
19 discount rate that equates the future stream of cash flows to the current market price, it  
20 calculates the required return on the market value of the utility's stock (rather than the  
21 book value of equity). Similarly, the CAPM also calculates a required return on market  
22 price (*e.g.*, risk is based on movements in stock prices, and required risk compensation is  
23 based on expected returns on a market index). In practice, those returns are applied to the



1 book value of the utility's equity to determine the revenue requirement. The market  
2 value, except under very rare circumstances, is not equal to the book value. Given this  
3 mismatch, it is useful to consider a direct measure of the expected return on the book  
4 value, versus market value, of utility stocks.

5 **VI. BUSINESS RISKS AND OTHER CONSIDERATIONS**

6 **Q. WHAT ADDITIONAL INFORMATION DID YOU CONSIDER IN ASSESSING**  
7 **THE ANALYTICAL RESULTS NOTED ABOVE?**

8 A. Because the analytical methods discussed above provide a range of estimates, there are  
9 several additional factors that should be taken into consideration when establishing a  
10 reasonable range for the Company's cost of equity. Those factors include (1) the  
11 Company's relatively small size; (2) the regulatory environment in which the Company  
12 operates; and (3) flotation costs associated with equity issuances.

13 ***SMALL SIZE PREMIUM***

14 **Q. PLEASE EXPLAIN THE RISK ASSOCIATED WITH SMALL SIZE.**

15 A. Both the financial and academic communities have long accepted the proposition that the  
16 cost of equity for small firms is subject to a "size effect."<sup>21</sup> While empirical evidence of  
17 the size effect often is based on studies of industries beyond regulated utilities, utility  
18 analysts also have noted the risks associated with small market capitalizations.  
19 Specifically, Ibbotson Associates noted: "For small utilities, investors face additional  
20 obstacles, such as a smaller customer base, limited financial resources, and a lack of  
21 diversification across customers, energy sources, and geography. These obstacles imply

---

<sup>21</sup> See Mario Levis, *The record on small companies: A review of the evidence*, Journal of Asset Management, March 2002, at 368-397, for a review of literature relating to the size effect.

1 a higher investor return.”<sup>22</sup>

2 **Q. HOW DOES LIBERTY MIDSTATES COMPARE IN SIZE TO THE PROXY**  
3 **COMPANIES?**

4 A. Liberty Midstates is significantly smaller than the proxy group, both in terms of number  
5 of customers and annual revenues. Schedule KM-10 estimates the implied market  
6 capitalization for Liberty Midstates (*i.e.*, the implied market capitalization if Liberty  
7 Midstates were a stand-alone, publicly traded entity). That is, because Liberty Midstates  
8 is not a separately traded entity, an estimated stand-alone market capitalization for  
9 Liberty Midstates must be calculated. The implied market capitalization of Liberty  
10 Midstates is calculated by applying the median market-to-book ratio for the proxy group  
11 of 2.21 to the Company’s implied total common equity of approximately \$52.56 million.  
12 The implied market capitalization based on that calculation is \$116.15 million, which is  
13 less than 4 percent of the proxy group median of \$3.79 billion.

14 **Q. HAVE YOU CONSIDERED LIBERTY MIDSTATES’ COMPARATIVELY**  
15 **SMALL SIZE IN YOUR ESTIMATED COST OF EQUITY?**

16 A. Yes. While I have quantified the small size effect, rather than proposing a specific  
17 premium, I have considered the small size of Liberty Midstates in my assessment of  
18 business risks in order to determine where, within a reasonable range of returns, Liberty  
19 Midstates’ required ROE appropriately falls. In that regard, Liberty Midstates’  
20 comparatively small size further supports my conclusion that an ROE at the upper end of  
21 my recommended range is reasonable.

---

<sup>22</sup> Michael Annin, *Equity and the Small-Stock Effect*, Public Utilities Fortnightly, October 15, 1995.

1 **Q. HOW DID YOU ESTIMATE THE SIZE PREMIUM FOR LIBERTY**  
2 **MIDSTATES?**

3 A. In its *2016 Valuation Handbook*, Duff & Phelps presents its calculation of the size  
4 premium for deciles of market capitalizations relative to the S&P 500 Index. An estimate  
5 of the size premium associated with Liberty Midstates, therefore, is the difference in the  
6 Duff & Phelps size risk premiums for the proxy group median market capitalization  
7 relative to the implied market capitalization for Liberty Midstates.

8 As shown on Schedule KM-10, based on recent market data, the median market  
9 capitalization of the proxy group was approximately \$3.79 billion, which corresponds to  
10 the fourth decile of Duff & Phelps's market capitalization data. Based on the Duff &  
11 Phelps analysis, that decile has a size premium of 0.98 percent (or 98 basis points). The  
12 implied market capitalization for Liberty Midstates is approximately \$116 million, which  
13 falls within the 10th decile and corresponds to a size premium of 5.59 percent (or 559  
14 basis points). The difference between those size premiums is 461 basis points (4.61  
15 percent).

16 ***REGULATORY RISK***

17 **Q. HOW DOES THE REGULATORY ENVIRONMENT IN WHICH A UTILITY**  
18 **OPERATES AFFECT ITS ACCESS TO AND COST OF CAPITAL?**

19 A. The regulatory environment in which a utility operates can significantly affect both the  
20 access to, and the cost of capital in several ways. The proportion and cost of debt capital  
21 available to utility companies are influenced by the rating agencies' assessment of the  
22 regulatory environment. One element of this assessment includes evaluating a  
23 company's ability to recover costs. Moody's, for example, considers the nature of

1 regulation, including its effect on cost recovery and cash flow generation, to be of such  
2 consequence that it represents one-half of the factors analyzed in arriving at credit  
3 ratings.<sup>23</sup> As to the overall regulatory environment, Moody's notes that the regulatory  
4 "framework in which a regulated utility operates is typically one of its most significant  
5 credit considerations. The regulatory structure and its general framework is a primary  
6 consideration that differentiates the industry from most other corporate sectors."<sup>24</sup>

7 Moody's further explains:

8 As the revenues set by the regulator are a primary component of a  
9 utility's cash flow, the utility's ability to obtain predictable and  
10 supportive treatment within its regulatory framework is one of the  
11 most significant factors in assessing a utility's credit quality. The  
12 regulatory framework generally provides more certainty around a  
13 utility's cash flow and typically allows the company to operate with  
14 significantly less cushion in its cash flow metrics than comparably  
15 rated companies in other industrial sectors. In situations where the  
16 regulatory framework is less supportive, or is more contentious, a  
17 utility's credit quality can deteriorate rapidly.<sup>25</sup>

18 Similarly, Standard & Poor's has noted that:

19 Regulatory advantage is the most heavily weighted factor when S&P  
20 Global Ratings analyzes a regulated utility's business risk profile. One  
21 significant aspect of regulatory risk that influences credit quality is the  
22 regulatory environment in the jurisdictions where a utility operates.

23 ...

24 When we evaluate U.S utility regulatory environments, we consider  
25 financial stability to be of substantial importance. Cash takes  
26 precedence in credit analysis. A regulatory jurisdiction that recognizes  
27 the significance of cash flow in its decision-making is one that will  
28 appeal to creditors.<sup>26</sup>

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<sup>23</sup> See Moody's Investors Service, *Rating Methodology: Regulated Electric and Gas Utilities*, December 23, 2013, at 6.

<sup>24</sup> See Moody's Investors Service, *Special Comment: Regulatory Frameworks – Ratings and Credit Quality for Investor-Owned Utilities*, June 18, 2010, at 1.

<sup>25</sup> *Ibid.*, at 2.

<sup>26</sup> S&P Global Ratings, RatingsDirect, "Assessing U.S. Investor-Owned Utility Regulatory Environments," August 10, 2016, at 2.

1           It is important to recognize that regulatory mechanisms and regulatory decisions  
2 regarding the authorized ROE and capital structure have direct consequences for the  
3 subject utility’s internal cash flow generation (sometimes referred to as “Funds from  
4 Operations”, or FFO). Since credit ratings are intended to reflect the ability to meet  
5 financial obligations as they come due, the ability to generate the cash flows required to  
6 meet those obligations (and to provide an additional amount for unexpected events) is of  
7 critical importance to debt investors. Two of the most important metrics used to assess  
8 that ability are the ratios of FFO to debt, and FFO to interest expense, both of which are  
9 directly affected by regulatory decisions regarding the appropriate rate of return, and  
10 capital structure.

11 **Q. HAVE YOU PERFORMED ANY ANALYSES OF INVESTOR’S PERCEPTIONS**  
12 **OF THE REGULATORY ENVIRONMENT IN WHICH LIBERTY MIDSTATES**  
13 **OPERATES RELATIVE TO THE PROXY GROUP COMPANIES?**

14 A. Yes, I have. In order to assess investors’ relative view of the Company’s regulatory  
15 environment, I considered the jurisdictional rankings developed by Regulatory Research  
16 Associates (“RRA”).<sup>27</sup> RRA rates regulatory jurisdictions from the perspective of  
17 investors, and assigns ratings of “Above Average,” “Average,” or “Below Average.”  
18 RRA further distinguishes jurisdictions within those respective categories by applying  
19 ratings of 1, 2 or 3, with a rating of “1” being the strongest. In describing its ranking  
20 system, RRA notes that:

21           The evaluations are assigned from an investor perspective and  
22 indicate the relative regulatory risk associated with the  
23 ownership of securities issued by each jurisdiction's electric

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<sup>27</sup> See Regulatory Research Associates, *State Regulatory Evaluations*, May 11, 2017, at 3.

1 and gas utilities. Each evaluation is based upon our  
2 consideration of the numerous factors affecting the regulatory  
3 process in the state, and may be adjusted as events occur that  
4 cause RRA to modify its view of the regulatory risk accruing to  
5 the ownership of utility securities in that individual  
6 jurisdiction.<sup>28</sup>

7 Missouri was downgraded to “Below Average 1” from “Average 2” in May 2017.  
8 Regarding Missouri’s regulatory environment, RRA has noted “[t]he state’s traditional  
9 approach to ratemaking is less investor friendly than the more constructive frameworks  
10 now being utilized in many other jurisdictions” and highlighted that the 2017 legislative  
11 session did not adopt a proposed bill that would have altered the state’s ratemaking  
12 structure to address concerns regarding regulatory lag.

13 To compare Liberty Midstates’ regulatory environment to the proxy group, I used  
14 a numerical approach that ranks jurisdictions from 9 to 1, using Regulatory Research  
15 Associate’s ranking convention. Under that approach, higher values indicate a more  
16 credit supportive jurisdiction. I applied that ranking system to the proxy group  
17 companies by regulatory jurisdiction. For each proxy group company that operates in  
18 multiple jurisdictions, I considered the ranking for each regulatory jurisdiction in which  
19 they operate. As shown in Exhibit KM-12, the simple average of the RRA ranking for  
20 each of the proxy group companies, in all jurisdictions, is 5.10 (*i.e.*, generally Average/2).  
21 The Company’s Missouri operations have a ranking of 3.00 (*i.e.*, Below Average/1).

22 **Q. WHAT IS YOUR CONCLUSION REGARDING THE EFFECT OF THE**  
23 **COMPANY’S REGULATORY RISK ON ITS ROE?**

24 **A.** Rankings such as those provided by RRA are observable and meaningful indicators of the

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<sup>28</sup> *Ibid.*, at 2.

1 financial community's view of the regulatory risks faced by utilities. Based on my  
2 analysis, using the RRA ranking structure, the financial community appears to attribute  
3 somewhat higher regulatory risk to the Company than to the proxy group (on average).  
4 This would support an ROE for the Company toward the upper end of the range of  
5 results.

6 ***FLOTATION COSTS***

7 **Q. WHAT ARE FLOTATION COSTS?**

8 A. Flotation costs are the costs associated with the sale of new issues of common stock.  
9 These include out-of-pocket expenditures for preparation, filing, underwriting, and other  
10 costs of issuance.

11 **Q. ARE FLOTATION COSTS PART OF THE UTILITY'S INVESTED COSTS OR**  
12 **PART OF THE UTILITY'S EXPENSES?**

13 A. Flotation costs are part of capital costs, which are properly reflected on the balance sheet  
14 under "paid in capital" rather than current expenses on the income statement. Flotation  
15 costs are incurred over time, just as investments in rate base or debt issuance costs. As a  
16 result, the great majority of flotation costs are incurred prior to the test year, but remain  
17 part of the cost structure during the test year and beyond.

18 **Q. HOW DID YOU CALCULATE THE FLOTATION COST RECOVERY**  
19 **ADJUSTMENT?**

20 A. I modified the constant growth DCF calculation to provide a dividend yield that would  
21 reimburse investors for issuance costs. My flotation cost adjustment recognizes the costs  
22 of issuing equity that were incurred by APUC and the proxy companies in their most  
23 recent two issuances. As shown in Schedule KM-12, an adjustment of 0.10 percent (*i.e.*,

1 10 basis points) reasonably represents flotation costs for the Company.

2 **Q. ARE YOU PROPOSING TO ADJUST YOUR RECOMMENDED ROE BY 10**  
3 **BASIS POINTS TO REFLECT THE EFFECT OF FLOTATION COSTS ON**  
4 **LIBERTY MIDSTATES' ROE?**

5 A. No. Rather, I have considered the effect of flotation costs, in addition to the Company's  
6 other business risks, in determining where the Company's ROE falls within the range of  
7 results.

8 **VII. CAPITAL MARKET ENVIRONMENT**

9 **Q. DO ECONOMIC CONDITIONS INFLUENCE THE REQUIRED COST OF**  
10 **CAPITAL AND REQUIRED RETURN ON COMMON EQUITY?**

11 A. Yes. The required cost of capital, including the ROE, is a function of prevailing and  
12 expected economic and capital market conditions. As discussed in Section V, the models  
13 used to estimate the cost of equity are meant to reflect, and therefore are influenced by,  
14 current and expected capital market conditions. However, it is important to recognize  
15 that all analytical models used to estimate the required ROE are based on simplifying  
16 assumptions that may not hold true under specific market circumstances. When market  
17 data used in the ROE models reflect unusual market conditions that investors may not  
18 expect to persist (such as current interest rates), it is important to assess the  
19 reasonableness of the results in the context of other observable market data. To the  
20 extent that certain ROE estimates are incompatible with such data or inconsistent with  
21 basic financial principles, it is appropriate to consider whether alternative estimation  
22 techniques are likely to provide more meaningful and reliable results.



1 **Q. ARE THERE ANY MARKET FACTORS THAT CALL INTO QUESTION**  
2 **ROUTINE APPLICATION OF THE DCF, CAPM AND BOND YIELD PLUS**  
3 **RISK PREMIUM ANALYSES AT THE CURRENT TIME?**

4 A. Yes, there are. In particular, as discussed in more detail below, the Federal Reserve's  
5 unprecedented actions after the recent financial crisis have continued to have a significant  
6 influence on capital markets. It is clear, for example, that those actions have led to  
7 historically low long-term yields (which can skew the results of risk premium models  
8 such as the CAPM) and unusually high utility stock valuations (which can suppress DCF-  
9 based market results). Consequently, I believe it is reasonable to give more weight to the  
10 upper end of the range of DCF results at the current time and to give particular  
11 consideration to investors' expectations for future interest rate levels when performing  
12 risk premium analyses.

13 **Q. PLEASE SUMMARIZE THE EFFECT OF RECENT FEDERAL RESERVE**  
14 **POLICIES ON INTEREST RATES AND THE COST OF CAPITAL.**

15 A. Starting in the summer of 2007, the Federal Reserve took a number of steps to respond to  
16 the emerging financial crisis. Among other actions, the Federal Reserve lowered the  
17 Federal Funds target rate from 5.25 percent in September 2007 to a range of 0.00-0.25  
18 percent by December 2008.<sup>29</sup> Beginning in 2008, the Federal Reserve also proceeded on  
19 a steady path of "quantitative easing" ("QE") initiatives intended to lower long-term  
20 Treasury yields.<sup>30</sup> QE was "designed to put downward pressure on longer-term interest  
21 rates by having the Federal Reserve take onto its balance sheet some of the duration and

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<sup>29</sup> See <http://www.federalreserve.gov/monetarypolicy/openmarket.htm>.

<sup>30</sup> See Federal Reserve Press Release dated June 19, 2013.  
(Available at <http://www.federalreserve.gov/newsevents/press/monetary/20130619a.htm>).

1 prepayment risks that would otherwise have been borne by private investors.”<sup>31</sup> While  
2 the Federal Reserve completed its final round of QE in October 2014, it has continued to  
3 reinvest principal repayments from its holdings of agency debt and mortgage-backed  
4 securities.<sup>32</sup> Under that policy, “Securities Held Outright” on the Federal Reserve’s  
5 balance sheet increased from approximately \$489 billion at the beginning of October  
6 2008 to \$4.25 trillion by mid-August 2017.<sup>33</sup> To put that increase in context, the  
7 securities held by the Federal Reserve represented approximately 3.28 percent of Gross  
8 Domestic Product (“GDP”) at the end of September 2008, and had risen to 22.09 percent  
9 of GDP in August 2017.<sup>34</sup> As of the end of 2016, the Federal Reserve held  
10 approximately 36 percent of the supply of U.S. government Treasury securities with  
11 maturities over ten years.<sup>35</sup> As such, the Federal Reserve policy actions have represented  
12 a significant source of liquidity, and have had a substantial effect on capital markets.

13 In December 2015 the Federal Reserve raised the Federal Funds rate for the first  
14 time in nine years, and began the process of rate normalization.<sup>36</sup> Since that time the  
15 Federal Reserve has made three more 25 basis point increases to the federal funds target  
16 rate.<sup>37</sup> The Federal Reserve has also begun to consider unwinding the \$4 trillion of

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31 Federal Reserve Bank of New York, *Domestic Open Market Operations During 2012*, April 2013, at 29.  
(Available at <https://www.newyorkfed.org/medialibrary/media/markets/omo/omo2012-pdf.pdf>).

32 [http://www.federalreserve.gov/monetarypolicy/bst\\_openmarketops.htm](http://www.federalreserve.gov/monetarypolicy/bst_openmarketops.htm).

33 Source: Federal Reserve Schedule H.4.1. “Securities Held Outright” include U.S. Treasury securities,  
Federal agency debt securities, and mortgage-backed securities.

34 Sources: Federal Reserve Schedule H.4.1; Bureau of Economic Analysis, GDP data as of the second  
calendar quarter of 2017.

35 Federal Reserve Bank of New York, *Domestic Open Market Operations During 2016*, April 2017 at 25.

36 *Federal Reserve Press Release* dated December 16, 2015.

(Available at <http://www.federalreserve.gov/newsevents/press/monetary/20151216a1.htm>).

37 25 basis point increases were made in December 14, 2016, March 15, 2017 and June 14, 2017. The current  
federal funds target rate had increased to 1.00% - 1.25% as of August 18, 2017.

1 securities put on its balance sheet during its various QE initiatives (*e.g.*, capping the  
2 dollar amount of maturing securities that are reinvested); there is widespread expectation  
3 that process will begin soon.<sup>38</sup> Although there remains some uncertainty regarding the  
4 timing and approach under which the positions will be unwound, market data indicates  
5 investors expect the Federal Reserve to continue down the path of monetary policy  
6 normalization, and interest rates to increase significantly over the coming year. That  
7 market uncertainty, together with the prospect of increasing interest rates presents  
8 additional risks for utility equity holders.

9 **Q. DOES YOUR RECOMMENDATION CONSIDER THE INTEREST RATE**  
10 **ENVIRONMENT?**

11 A. Yes, it does. From an analytical perspective, it is important that the inputs and  
12 assumptions used to arrive at an ROE recommendation, including assessments of capital  
13 market conditions, are consistent with the recommendation itself. Although all analyses  
14 require an element of judgment, the application of that judgment must be made in the  
15 context of the quantitative and qualitative information available to the analyst, and the  
16 capital market environment in which the analyses were undertaken. Because the cost of  
17 equity is forward-looking, the salient issue is whether investors see the likelihood of  
18 increased interest rates during the period in which the rates set in this proceeding will be  
19 in effect.

20 The low interest rate environment associated with central bank intervention may  
21 lead some analysts to conclude that current capital costs, including the cost of equity, are

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<sup>38</sup> Blue Chip Financial Forecast, Vol. 36, No. 8, August 1, 2017, at 1 and 14.

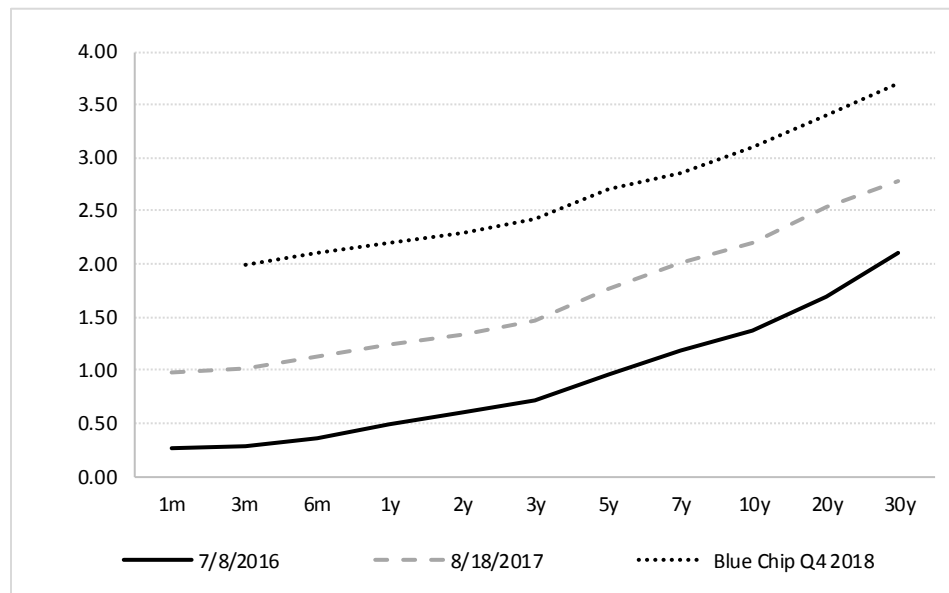
1 low and will remain as such. However, that conclusion only holds true under the  
2 hypothesis of Perfectly Competitive Capital Markets (“PCCM”) and the classical  
3 valuation framework which, under normal economic and capital market conditions,  
4 underpin the traditional cost of equity models. Perfectly Competitive Capital Markets are  
5 those in which no single trader, or “market-mover”, would have the power to change the  
6 prices of goods or services, including bond and common stock securities. In other words,  
7 under the PCCM hypothesis, no single trader would have a significant effect on market  
8 prices.

9 Classic valuation theory assumes investors trade securities rationally, with prices  
10 reflecting their perceptions of value. Although central banks may set benchmark interest  
11 rates, they have maintained below-normal rates to stimulate economic expansion and  
12 capital market recovery. It therefore is reasonable to conclude that the Federal Reserve  
13 and other central banks have been acting as market-movers, thereby having a significant  
14 effect on the market prices of both bonds and stocks. The presence of market-movers,  
15 such as the Federal Reserve, runs counter to the PCCM hypothesis, which underlies  
16 traditional cost of equity models. Consequently, the results of those models should be  
17 considered in the context of both quantitative and qualitative information.

18 Although the Federal Reserve’s market intervention policies have kept interest  
19 rates historically low, since July 8, 2016 (when the 30-year Treasury yield hit an all-time  
20 low of 2.11 percent), rates have risen. As the Federal Reserve increased the Federal  
21 Funds target rate range by 25 basis points in December 2016 (to 0.50-0.75 percent),  
22 March 2017 (to 0.75-1.00 percent) and June 2017 (to 1.00-1.25 percent), short-term

1 interest rates increased by a corresponding amount.<sup>39</sup> Long-term yields have also  
2 increased by similar margins, with the ten-year and 30-year Treasury yields increasing by  
3 82 basis points and 67 basis points, respectively, by August 18, 2017 (*see* Chart 2 below).

4 **Chart 2: Treasury Yield Curve: 7/8/2016, 8/18/2017 and Projected Q4 2018<sup>40</sup>**



5  
6 The increases in the ten and 30-year yields since July 2016 are among the highest  
7 increases in at least 25 years.<sup>41</sup>

8 **Q. DOES MARKET-BASED DATA INDICATE THAT INVESTORS SEE A**  
9 **PROBABILITY OF INCREASING INTEREST RATES?**

10 A. Yes. Forward Treasury yields implied by the slope of the yield curve and published  
11 projections by sources such as *Blue Chip Financial Forecasts* (which provides consensus  
12 estimates from approximately 50 professional economists) indicate investors expect long-

<sup>39</sup> Federal Reserve Board Schedule H.15. 6-month and 1-year Treasury yields increased by 77 basis points and 76 basis points, respectively, July 8, 2016 to August 18, 2017.

<sup>40</sup> Sources: Federal Reserve Board Schedule H.15.; Blue Chip Financial Forecasts, Vol. 36, No.8, August 1, 2017, at 2. 3-year, 7-year and 20-year projected Treasury yields interpolated.

<sup>41</sup> Source: Federal Reserve Schedule H.15. The increases fall in approximately the top 88<sup>th</sup> and 89<sup>th</sup> percentiles for both the 10 and 30-year Treasury yields, respectively.

1 term interest rates to increase (*see* Chart 2 above). Those projections are supported by  
 2 the fact that investors are willing to pay a significantly higher premium for the option to  
 3 sell long-term Government bonds, at today's price, in January 2019 than they are for the  
 4 option to buy.<sup>42</sup> Because the value of bonds fall as interest rates increase, the option to  
 5 sell bonds at today's price becomes more valuable when interest rates are expected to  
 6 increase.<sup>43</sup> That market-based data tells us that investors consider an increase in interest  
 7 rates as likely.

8 Looking to short-term interest rates, data compiled by CME Groups indicates that  
 9 investors see a high likelihood of further Federal Funds rate increases, even after the  
 10 three increases between December 14, 2016 and June 14, 2017. As shown in Table 7,  
 11 (below) the market is now anticipating at least one additional rate hike (69.40 percent  
 12 probability) by June 2018.

13 **Table 7: Probability of Federal Funds Rate Increases<sup>44</sup>**

Target Rate (bps)	Federal Reserve Meeting Date						
	Sep 17	Nov 17	Dec 17	Jan 18	Mar 18	May 18	Jun 18
100-125	98.6%	92.7%	49.6%	48.6%	40.4%	39.5%	30.6%
125-150	1.4%	7.2%	47.0%	47.0%	47.3%	47.1%	45.6%
150-175		0.1%	3.4%	4.3%	11.5%	12.3%	19.2%
175-200				0.1%	0.8%	1.0%	3.3%
200-225							0.2%

42 The option to sell the TLT index in January 2019 at today's price costs approximately one-third more than the option to buy the fund. Source: <http://www.nasdaq.com/symbol/tilt/option-chain?dateindex=7>.

43 In other words, if there is a high probability that interest rates will increase and bond prices will fall, there is value in the option to sell those bonds in the future at today's price. Conversely, if there is a strong probability that interest rates will decrease (price of bonds will increase), there is value in the option to buy those bonds in the future at today's price.

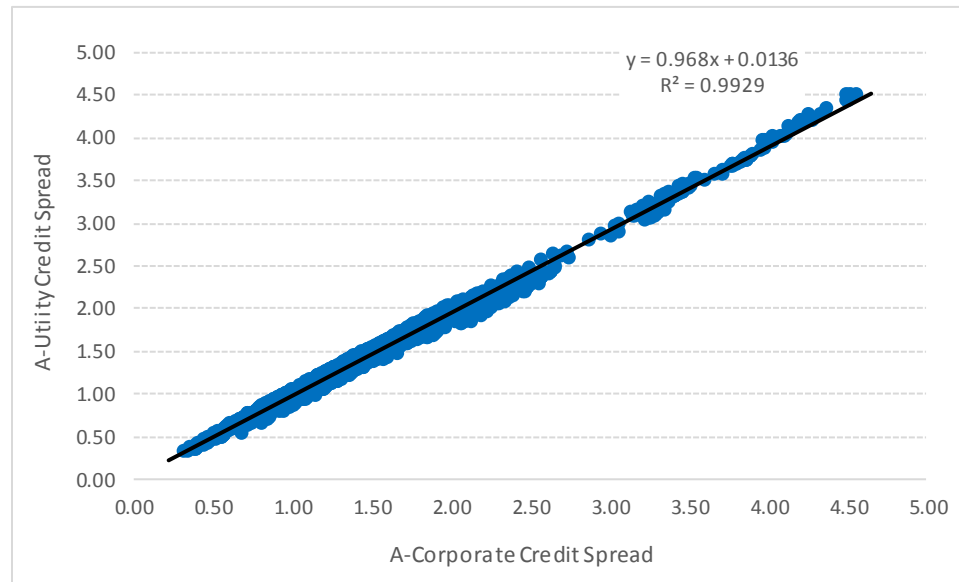
44 Source: <http://www.cmegroup.com/trading/interest-rates/countdown-to-fomc.html>, accessed Aug 1, 2017.

1 **Q. HAVE YOU ALSO REVIEWED THE RELATIONSHIP BETWEEN CREDIT**  
2 **SPREADS FOR A-RATED UTILITY DEBT RELATIVE TO A-RATED**  
3 **CORPORATE DEBT?**

4 A. Yes, I have. Given the historical volatility in the spread between corporate and utility A-  
5 rated debt, there is no reason to conclude that utility yields are different than those of  
6 their corporate counterparts. That conclusion is consistent with the finding that over  
7 time, there has been a nearly one-to-one relationship between credit spreads on A-rated  
8 corporate and utility bonds. In fact, a regression analysis in which corporate credit  
9 spreads are the explanatory variable and utility credit spreads are the dependent variable  
10 shows that slope is approximately 1.00 and highly significant (*see* Chart 3, below).  
11 Because the intercept term is statistically insignificant, we can conclude that there has  
12 been no material difference between the two, and there certainly is no meaningful  
13 difference in the current market.

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**Chart 3: Corporate and Utility Credit Spreads (A-Rated)<sup>45</sup>**



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It also is important to recognize that the policy of reducing asset purchases under the Federal Reserve’s quantitative easing program is related to expectations of improved conditions and sustained growth in the overall economy.<sup>46</sup> From that perspective, we would expect to see higher growth estimates for companies in the overall economy, including the utility sector. Since companies such as Liberty Midstates continue to invest in their rate base, and given that utilities provide a vital service to other industry sectors, it also would not be surprising to see an increase in expected utility growth rates.

10 **Q. HAVE THERE BEEN RECENT PERIODS WHEN UTILITY VALUATION**  
11 **LEVELS WERE HIGH RELATIVE TO BOTH THEIR LONG-TERM AVERAGE**  
12 **AND THE MARKET?**

13 A. Yes. For example, between July and December 2016, the S&P Electric Utility Index lost  
14 approximately 9.00% of its value. At the same time, the S&P 500 increased

<sup>45</sup> Source: Federal Reserve Schedule H.15.

<sup>46</sup> See, Minutes of the Federal Open Market Committee December 17–18, 2013, at 10.



1 approximately by 7.00%, indicating that the utility sector under-performed the market by  
2 about 16.00%. Also during that time, the 30-year Treasury yield increased by  
3 approximately 95 basis points (an increase of nearly 45.00%). The point simply is that as  
4 interest rates increased, utility valuations fell. Because (as noted above) investors see the  
5 strong likelihood of further interest rate increases, there is a continuing risk of losses in  
6 the utility sector.

7 **Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR ANALYSES OF THE**  
8 **CURRENT CAPITAL MARKET ENVIRONMENT, AND HOW DO THOSE**  
9 **CONCLUSIONS AFFECT YOUR ROE RECOMMENDATION?**

10 A. I do not believe we can conclude that the recent levels of utility valuations are due to a  
11 fundamental change in the risk perceptions of utility investors. There is no measurable  
12 difference between credit spreads of A-rated utility debt and A-rated corporate debt. That  
13 is, based on analyses of credit spreads, there is no reason to conclude that investors see  
14 utilities as less risky relative to either historical levels or to their corporate counterparts.

15 From an analytical perspective, it is important that the inputs and assumptions  
16 used to arrive at an ROE determination, including assessments of capital market  
17 conditions, are consistent with the conclusion itself. Although all analyses require an  
18 element of judgment, the application of that judgment must be made in the context of the  
19 quantitative and qualitative information available to the analyst and the capital market  
20 environment in which the analyses were undertaken. Because the application of financial  
21 models and interpretation of their results often is the subject of differences among  
22 analysts in regulatory proceedings, I believe that it is important to review and consider a  
23 variety of data points; doing so enables us to put in context both quantitative analyses and

1 the associated recommendations.

2 Because not all models used to estimate the cost of equity adequately reflect those  
3 changing market dynamics, it is important to give appropriate weight to the methods and  
4 to their results. Moreover, because those models produce a range of results, it is  
5 important to consider the type of data discussed above in determining where the  
6 Company's ROE falls within that range. On balance, I believe that the DCF-based results  
7 should be viewed very carefully, and that somewhat more weight should be afforded the  
8 risk premium-based methods. I believe that doing so supports my recommended range of  
9 9.90 percent to 10.35 percent, and my ROE recommendation of 10.25 percent.

10 **VIII. CAPITAL STRUCTURE**

11 **Q. WHAT CAPITAL STRUCTURE ARE YOU PROPOSING FOR LIBERTY**  
12 **MIDSTATES?**

13 A. I am proposing an authorized capital structure consisting of 53.00 percent common equity  
14 and 47.00 percent long-term debt based on the average capital structure employed by the  
15 proxy companies (*see* Schedule KM-9). A 53.00 percent equity ratio is generally  
16 consistent with Value Line's projected proxy group average equity ratio,<sup>47</sup> but somewhat  
17 lower than Liberty Midstates' equity ratio as of December 31, 2017.<sup>48</sup>

18 **Q. HOW DOES THE CAPITAL STRUCTURE AFFECT THE COST OF EQUITY?**

19 A. The capital structure relates to a Company's financial risk, which represents the risk that  
20 a company may not have adequate cash flows to meet its financial obligations, and is a  
21 function of the percentage of debt (or financial leverage) in its capital structure. In that

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<sup>47</sup> *See* Schedule KM-9.

<sup>48</sup> Calculated from FERC Form 2 data provided by Company.

1 regard, as the percentage of debt in the capital structure increases, so do the fixed  
2 obligations for the repayment of that debt. To the extent earnings and cash flows become  
3 less certain, the ability to meet those fixed obligations also becomes less certain. That is,  
4 as the degree of financial leverage increases, the risk of financial distress (i.e., financial  
5 risk) also increases; it is for that reason that (in general) credit quality deteriorates and the  
6 cost of debt increases with higher levels of debt in the capital structure.

7 From the perspective of equity investors, who do not have the contractual claim  
8 on cash flows given to bondholders, increased levels of debt tend to concentrate the  
9 uncertainty of the cash flows remaining after debt payments are made. Because their risk  
10 is increased, equity investors also require higher returns as the use of debt increases.  
11 Since the capital structure can affect the subject company's overall level of risk,<sup>49</sup> it is an  
12 important consideration in establishing a just and reasonable rate of return.

13 **Q. WILL THE CAPITAL STRUCTURE AND ROE AUTHORIZED IN THIS**  
14 **PROCEEDING AFFECT THE COMPANY'S ABILITY TO MAINTAIN ACCESS**  
15 **TO CAPITAL AT REASONABLE RATES?**

16 A. Yes. The level of earnings authorized by the Commission directly affects the Company's  
17 ability to finance its operations with internally-generated funds. Internally-generated  
18 funds are a very important source of investment funding for all utilities, including the  
19 Company. For that reason, credit rating agencies and investors expect the Company to be  
20 able to generate a substantial portion of its investment funding from operating cash flow  
21 in order to maintain adequate financial strength.

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<sup>49</sup> See Roger A. Morin, *New Regulatory Finance*, Public Utility Reports, Inc., 2006, at 45-46.

1           Similarly, it also is important to realize that because a utility's investment horizon  
2 is very long, investors require the assurance of a sufficiently high ROE to satisfy the  
3 long-run financing requirements of the assets the Company places into service. Those  
4 assurances, which often are measured by the relationship between internally-generated  
5 cash flows and debt (or interest expense), depend quite heavily on the capital structure.  
6 As a consequence, both the ROE and capital structure are very important to both debt and  
7 equity investors.

8 **Q. PLEASE DISCUSS YOUR ANALYSIS OF THE CAPITAL STRUCTURES OF**  
9 **THE PROXY GROUP COMPANIES.**

10 A. I calculated the average capital structure for each of the proxy group companies over the  
11 past eight calendar quarters. As shown in Table 8 (below), the proxy group had a mean  
12 equity ratio of 53.08 percent and a mean long-term debt ratio of 46.92 percent.

1 **Table 8: Proxy Group Average Capital Structure Q3 2015 – Q2 2017<sup>50</sup>**

		<b>Common Equity Ratio</b>	<b>Long-Term Debt Ratio</b>
Atmos Energy Corp.	ATO	57.96%	42.04%
Black Hills Corp.	BKH	36.26%	63.74%
Chesapeake Utilities Corp.	CPK	71.43%	28.57%
Northwest Natural Gas Co.	NWN	55.91%	44.09%
ONE Gas, Inc.	OGS	61.14%	38.86%
Sempra Energy	SRE	45.82%	54.18%
Southwest Gas Corp.	SWX	51.13%	48.87%
Spire Inc.	SR	47.85%	52.15%
Vectren Corp.	VVC	50.23%	49.77%
<b>Average</b>		<b>53.08%</b>	<b>46.92%</b>
<b>Median</b>		<b>51.13%</b>	<b>48.87%</b>

2  
3 **Q. WHAT IS THE BASIS FOR USING AVERAGE CAPITAL COMPONENTS**  
4 **RATHER THAN A POINT-IN-TIME MEASUREMENT?**

5 A. Measuring the capital components at a particular point in time can skew the capital  
6 structure by the specific circumstances of a particular period. Therefore, it is more  
7 appropriate to normalize the relative relationship between the capital components over a  
8 period of time.

9 **Q. WHAT IS YOUR CONCLUSION REGARDING AN APPROPRIATE CAPITAL**  
10 **STRUCTURE FOR LIBERTY MIDSTATES?**

11 A. At the current time, Liberty Midstates' actual equity ratio is at the high end of the range  
12 of equity ratios employed by the proxy companies. Considering the range of capital  
13 structures employed by the proxy group companies, I believe a 53.00 percent equity ratio

<sup>50</sup> See Schedule KM-9.

1 is reasonable and appropriate.

2 **IX. COST OF DEBT**

3 **Q. WHAT IS THE COMPANY'S COST OF DEBT?**

4 A. As shown in WP-1 Rate of Return, the Company's cost of debt of is 4.70 percent.

5 **Q. HAVE YOU ASSESSED THE COMPANY'S COST OF DEBT RELATIVE TO**  
6 **OTHER NATURAL GAS UTILITIES?**

7 A. Yes, I calculated the embedded cost of debt for all authorized returns from January 1,  
8 2016 through August 18, 2017. The mean embedded cost of debt over that period was  
9 4.91 percent and the median was 4.95 percent.<sup>51</sup> Based on that review, I believe the  
10 Company's 4.70 percent cost of debt is reasonable and appropriate.

11 **X. CONCLUSIONS AND RECOMMENDATION**

12 **Q. WHAT IS YOUR CONCLUSION REGARDING THE COMPANY'S COST OF**  
13 **EQUITY?**

14 A. As discussed earlier in my Direct Testimony, I have performed several analyses to  
15 estimate the Company's cost of equity, and have considered several market-wide and  
16 Company-specific issues. In light of those considerations, I believe that a rate of return  
17 on common equity in the range of 9.90 percent to 10.35 percent represents the range of  
18 equity investors' required rate of return for investment in natural gas utilities similar to  
19 Liberty Midstates in today's capital markets. Within that range, it is my view that an  
20 ROE of 10.25 percent is reasonable and appropriate.

21 As discussed earlier in my testimony, my recommendation reflects analytical

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<sup>51</sup> Excludes rate cases from Arkansas and Michigan because those jurisdictions report capital structures that include non-investor supplied financing sources (*e.g.*, deferred taxes), which skews the implied cost of debt calculation.

1 results based on a proxy group of natural gas utilities. My recommendation also takes  
2 into consideration a variety of factors such as the financial environment and the  
3 Company's risk profile, including its relatively small size and its regulatory environment.  
4 My recommendation also considers the direct costs associated with equity issuances,  
5 although I do not make a specific adjustment for those costs.

6 I also conclude that a capital structure consisting of 53.00 percent common equity  
7 and 47.00 percent debt, is consistent with industry practice and, therefore, is reasonable  
8 and appropriate. Lastly, I conclude that the Company's 4.70 percent cost of debt, which  
9 is consistent with the cost of debt reflected in the overall rate of return for gas utilities  
10 since the beginning of 2016, also is reasonable and appropriate.

**Table 9: Summary of Analytical Results**

<b>DCF Analyses</b>	<i>Proxy Group</i>		
	<i>Low</i>	<i>Mean</i>	<i>High</i>
Constant Growth, 30-day Stock Prices	7.22%	8.96%	11.13%
Constant Growth, 90-day Stock Prices	7.26%	9.01%	11.17%
Constant Growth, 180-day Stock Prices	7.36%	9.10%	11.27%
Quarterly Growth, 30-day Stock Prices	7.37%	9.08%	11.37%
Quarterly Growth, 90-day Stock Prices	7.42%	9.13%	11.41%
Quarterly Growth, 180-day Stock Prices	7.52%	9.23%	11.52%
<b>CAPM</b>	<i>Bloomberg</i>		<i>Value Line</i>
		<i>MRP</i>	<i>MRP</i>
Value Line Beta, Current Risk-Free Rate (2.85%)		10.53%	11.08%
Value Line Beta, Projected Risk-Free Rate (3.35%)		10.67%	11.22%
Bloomberg Beta, Current Risk-Free Rate (2.85%)		9.62%	10.11%
Bloomberg Beta, Projected Risk-Free Rate (3.35%)		9.80%	10.29%
<b>Bond Yield Plus Risk Premium</b>	<i>Low</i>	<i>Mean</i>	<i>High</i>
Current and Projected Baa Utility Bond Yields	9.52%	9.83%	10.41%
<b>Expected Earnings Analysis</b>	<i>Low</i>	<i>Mean</i>	<i>High</i>
Value Line Projected Return on Book Equity	10.74%	10.93%	11.11%

12  
13 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

1 A. Yes, it does.



Constant Growth Discounted Cash Flow Model  
30 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$1.80	\$86.23	2.09%	2.16%	7.00%	7.30%	6.00%	8.44%	7.19%	8.15%	9.35%	10.62%
Black Hills Corporation	BKH	\$1.78	\$69.39	2.57%	2.65%	5.00%	7.65%	7.50%	5.51%	6.42%	7.63%	9.06%	10.31%
Chesapeake Utilities	CPK	\$1.30	\$77.71	1.67%	1.75%	6.00%	8.10%	8.00%	13.24%	8.84%	7.72%	10.58%	15.03%
Northwest Natural Gas Company	NWN	\$1.88	\$62.99	2.98%	3.06%	4.30%	4.00%	7.00%	4.10%	4.85%	7.04%	7.91%	10.09%
One Gas Inc	OGS	\$1.68	\$72.42	2.32%	2.39%	5.50%	5.50%	9.50%	4.81%	6.33%	7.19%	8.72%	11.93%
Sempra Energy	SRE	\$3.29	\$114.33	2.88%	2.98%	8.70%	7.80%	8.00%	2.73%	6.81%	5.65%	9.78%	11.70%
Southwest Gas	SWX	\$1.98	\$79.73	2.48%	2.55%	5.00%	4.00%	7.50%	6.03%	5.63%	6.53%	8.19%	10.08%
Spire Inc	SR	\$2.10	\$72.96	2.88%	2.95%	4.40%	3.74%	8.00%	5.16%	5.33%	6.67%	8.28%	10.99%
Vectren Corporation	VVC	\$1.68	\$59.87	2.81%	2.89%	5.70%	5.50%	6.50%	5.96%	5.92%	8.38%	8.81%	9.40%
Proxy Group Mean				2.52%	2.60%	5.73%	5.95%	7.56%	6.22%	6.37%	7.22%	8.96%	11.13%
Proxy Group Median				2.57%	2.65%	5.50%	5.50%	7.50%	5.51%	6.33%	7.19%	8.81%	10.62%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of August 18, 2017
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Schedule KM-3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model  
90 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$1.80	\$83.64	2.15%	2.23%	7.00%	7.30%	6.00%	8.44%	7.19%	8.22%	9.41%	10.68%
Black Hills Corporation	BKH	\$1.78	\$69.09	2.58%	2.66%	5.00%	7.65%	7.50%	5.51%	6.42%	7.64%	9.07%	10.32%
Chesapeake Utilities	CPK	\$1.30	\$75.03	1.73%	1.81%	6.00%	8.10%	8.00%	13.24%	8.84%	7.78%	10.64%	15.09%
Northwest Natural Gas Company	NWN	\$1.88	\$61.37	3.06%	3.14%	4.30%	4.00%	7.00%	4.10%	4.85%	7.12%	7.99%	10.17%
One Gas Inc	OGS	\$1.68	\$70.76	2.37%	2.45%	5.50%	5.50%	9.50%	4.81%	6.33%	7.24%	8.78%	11.99%
Sempra Energy	SRE	\$3.29	\$113.65	2.89%	2.99%	8.70%	7.80%	8.00%	2.73%	6.81%	5.67%	9.80%	11.72%
Southwest Gas	SWX	\$1.98	\$79.27	2.50%	2.57%	5.00%	4.00%	7.50%	6.03%	5.63%	6.55%	8.20%	10.09%
Spire Inc	SR	\$2.10	\$71.02	2.96%	3.04%	4.40%	3.74%	8.00%	5.16%	5.33%	6.75%	8.36%	11.08%
Vectren Corporation	VVC	\$1.68	\$59.93	2.80%	2.89%	5.70%	5.50%	6.50%	5.96%	5.92%	8.38%	8.80%	9.39%
Proxy Group Mean				2.56%	2.64%	5.73%	5.95%	7.56%	6.22%	6.37%	7.26%	9.01%	11.17%
Proxy Group Median				2.58%	2.66%	5.50%	5.50%	7.50%	5.51%	6.33%	7.24%	8.80%	10.68%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of August 18, 2017
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Schedule KM-3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model  
180 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$1.80	\$79.91	2.25%	2.33%	7.00%	7.30%	6.00%	8.44%	7.19%	8.32%	9.52%	10.79%
Black Hills Corporation	BKH	\$1.78	\$66.02	2.70%	2.78%	5.00%	7.65%	7.50%	5.51%	6.42%	7.76%	9.20%	10.45%
Chesapeake Utilities	CPK	\$1.30	\$70.98	1.83%	1.91%	6.00%	8.10%	8.00%	13.24%	8.84%	7.89%	10.75%	15.19%
Northwest Natural Gas Company	NWN	\$1.88	\$60.28	3.12%	3.19%	4.30%	4.00%	7.00%	4.10%	4.85%	7.18%	8.05%	10.23%
One Gas Inc	OGS	\$1.68	\$67.70	2.48%	2.56%	5.50%	5.50%	9.50%	4.81%	6.33%	7.35%	8.89%	12.10%
Sempra Energy	SRE	\$3.29	\$109.46	3.01%	3.11%	8.70%	7.80%	8.00%	2.73%	6.81%	5.78%	9.92%	11.84%
Southwest Gas	SWX	\$1.98	\$79.81	2.48%	2.55%	5.00%	4.00%	7.50%	6.03%	5.63%	6.53%	8.18%	10.07%
Spire Inc	SR	\$2.10	\$68.06	3.09%	3.17%	4.40%	3.74%	8.00%	5.16%	5.33%	6.88%	8.49%	11.21%
Vectren Corporation	VVC	\$1.68	\$57.38	2.93%	3.01%	5.70%	5.50%	6.50%	5.96%	5.92%	8.51%	8.93%	9.52%
Proxy Group Mean				2.65%	2.74%	5.73%	5.95%	7.56%	6.22%	6.37%	7.36%	9.10%	11.27%
Proxy Group Median				2.70%	2.78%	5.50%	5.50%	7.50%	5.51%	6.33%	7.35%	8.93%	10.79%

Notes:

- [1] Source: Bloomberg Professional
- [2] Source: Bloomberg Professional, equals indicated number of trading day average as of August 18, 2017
- [3] Equals [1] / [2]
- [4] Equals [3] x (1 + 0.5 x [9])
- [5] Source: Zacks
- [6] Source: Yahoo! Finance
- [7] Source: Value Line
- [8] Source: Schedule KM-3, Value Line
- [9] Equals Average([5], [6], [7], [8])
- [10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
- [11] Equals [4] + [9]
- [12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Quarterly Discounted Cash Flow Model  
30 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
Company	Ticker	Dividend 1	Dividend 2	Dividend 3	Dividend 4	Expected Dividend 1	Expected Dividend 2	Expected Dividend 3	Expected Dividend 4	Stock Price	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$0.45	\$0.45	\$0.45	\$0.45	\$0.48	\$0.48	\$0.48	\$0.48	\$86.23	7.00%	7.30%	6.00%	8.44%	7.19%	8.33%	9.50%	10.85%
Black Hills Corporation	BKH	\$0.42	\$0.45	\$0.45	\$0.45	\$0.45	\$0.47	\$0.47	\$0.47	\$69.39	5.00%	7.65%	7.50%	5.51%	6.42%	7.80%	9.20%	10.55%
Chesapeake Utilities	CPK	\$0.31	\$0.31	\$0.33	\$0.33	\$0.33	\$0.33	\$0.35	\$0.35	\$77.71	6.00%	8.10%	8.00%	13.24%	8.84%	7.80%	10.67%	15.21%
Northwest Natural Gas Company	NWN	\$0.47	\$0.47	\$0.47	\$0.47	\$0.49	\$0.49	\$0.49	\$0.49	\$62.99	4.30%	4.00%	7.00%	4.10%	4.85%	7.29%	8.07%	10.42%
One Gas Inc	OGS	\$0.35	\$0.42	\$0.42	\$0.42	\$0.37	\$0.45	\$0.45	\$0.45	\$72.42	5.50%	5.50%	9.50%	4.81%	6.33%	7.26%	8.76%	12.10%
Sempra Energy	SRE	\$0.76	\$0.76	\$0.82	\$0.82	\$0.81	\$0.81	\$0.88	\$0.88	\$114.33	8.70%	7.80%	8.00%	2.73%	6.81%	5.72%	9.87%	11.93%
Southwest Gas	SWX	\$0.45	\$0.45	\$0.50	\$0.50	\$0.48	\$0.48	\$0.52	\$0.52	\$79.73	5.00%	4.00%	7.50%	6.03%	5.63%	6.59%	8.21%	10.21%
Spire Inc	SR	\$0.53	\$0.53	\$0.53	\$0.53	\$0.55	\$0.55	\$0.55	\$0.55	\$72.96	4.40%	3.74%	8.00%	5.16%	5.33%	6.90%	8.45%	11.34%
Vectren Corporation	VVC	\$0.42	\$0.42	\$0.42	\$0.42	\$0.44	\$0.44	\$0.44	\$0.44	\$59.87	5.70%	5.50%	6.50%	5.96%	5.92%	8.65%	8.99%	9.69%
Proxy Group Mean											5.73%	5.95%	7.56%	6.22%	6.37%	7.37%	9.08%	11.37%
Proxy Group Median											5.50%	5.50%	7.50%	5.51%	6.33%	7.29%	8.99%	10.85%

Notes:

- [1] Source: Bloomberg Professional Service
- [2] Source: Bloomberg Professional Service
- [3] Source: Bloomberg Professional Service
- [4] Source: Bloomberg Professional Service
- [5] Equals Col. [1] x (1 + Col. [14])
- [6] Equals Col. [2] x (1 + Col. [14])
- [7] Equals Col. [3] x (1 + Col. [14])
- [8] Equals Col. [4] x (1 + Col. [14])
- [9] Source: Bloomberg Professional Service
- [10] Source: Zacks
- [11] Source: Yahoo! Finance
- [12] Source: Value Line
- [13] Source: Schedule KM-3, Value Line
- [14] Equals Average (Cols. [10], [11], [12], [13])
- [15] Implied Low DCF
- [16] Implied Mean DCF
- [17] Implied High DCF

Quarterly Discounted Cash Flow Model  
90 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
Company	Ticker	Dividend 1	Dividend 2	Dividend 3	Dividend 4	Expected Dividend 1	Expected Dividend 2	Expected Dividend 3	Expected Dividend 4	Stock Price	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$0.45	\$0.45	\$0.45	\$0.45	\$0.48	\$0.48	\$0.48	\$0.48	\$83.64	7.00%	7.30%	6.00%	8.44%	7.19%	8.41%	9.57%	10.92%
Black Hills Corporation	BKH	\$0.42	\$0.45	\$0.45	\$0.45	\$0.45	\$0.47	\$0.47	\$0.47	\$69.09	5.00%	7.65%	7.50%	5.51%	6.42%	7.82%	9.21%	10.57%
Chesapeake Utilities	CPK	\$0.31	\$0.31	\$0.33	\$0.33	\$0.33	\$0.33	\$0.35	\$0.35	\$75.03	6.00%	8.10%	8.00%	13.24%	8.84%	7.86%	10.73%	15.28%
Northwest Natural Gas Company	NWN	\$0.47	\$0.47	\$0.47	\$0.47	\$0.49	\$0.49	\$0.49	\$0.49	\$61.37	4.30%	4.00%	7.00%	4.10%	4.85%	7.38%	8.16%	10.52%
One Gas Inc	OGS	\$0.35	\$0.42	\$0.42	\$0.42	\$0.37	\$0.45	\$0.45	\$0.45	\$70.76	5.50%	5.50%	9.50%	4.81%	6.33%	7.32%	8.82%	12.16%
Sempra Energy	SRE	\$0.76	\$0.76	\$0.82	\$0.82	\$0.81	\$0.81	\$0.88	\$0.88	\$113.65	8.70%	7.80%	8.00%	2.73%	6.81%	5.74%	9.88%	11.95%
Southwest Gas	SWX	\$0.45	\$0.45	\$0.50	\$0.50	\$0.48	\$0.48	\$0.52	\$0.52	\$79.27	5.00%	4.00%	7.50%	6.03%	5.63%	6.60%	8.22%	10.22%
Spire Inc	SR	\$0.53	\$0.53	\$0.53	\$0.53	\$0.55	\$0.55	\$0.55	\$0.55	\$71.02	4.40%	3.74%	8.00%	5.16%	5.33%	6.99%	8.54%	11.43%
Vectren Corporation	VVC	\$0.42	\$0.42	\$0.42	\$0.42	\$0.44	\$0.44	\$0.44	\$0.44	\$59.93	5.70%	5.50%	6.50%	5.96%	5.92%	8.64%	8.98%	9.68%
Proxy Group Mean											5.73%	5.95%	7.56%	6.22%	6.37%	7.42%	9.13%	11.41%
Proxy Group Median											5.50%	5.50%	7.50%	5.51%	6.33%	7.38%	8.98%	10.92%

Notes:

- [1] Source: Bloomberg Professional Service
- [2] Source: Bloomberg Professional Service
- [3] Source: Bloomberg Professional Service
- [4] Source: Bloomberg Professional Service
- [5] Equals Col. [1] x (1 + Col. [14])
- [6] Equals Col. [2] x (1 + Col. [14])
- [7] Equals Col. [3] x (1 + Col. [14])
- [8] Equals Col. [4] x (1 + Col. [14])
- [9] Source: Bloomberg Professional Service
- [10] Source: Zacks
- [11] Source: Yahoo! Finance
- [12] Source: Value Line
- [13] Source: Schedule KM-3, Value Line
- [14] Equals Average (Cols. [10], [11], [12], [13])
- [15] Implied Low DCF
- [16] Implied Mean DCF
- [17] Implied High DCF

Quarterly Discounted Cash Flow Model  
180 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]
Company	Ticker	Dividend 1	Dividend 2	Dividend 3	Dividend 4	Expected Dividend 1	Expected Dividend 2	Expected Dividend 3	Expected Dividend 4	Stock Price	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$0.45	\$0.45	\$0.45	\$0.45	\$0.48	\$0.48	\$0.48	\$0.48	\$79.91	7.00%	7.30%	6.00%	8.44%	7.19%	8.52%	9.69%	11.04%
Black Hills Corporation	BKH	\$0.42	\$0.45	\$0.45	\$0.45	\$0.45	\$0.47	\$0.47	\$0.47	\$66.02	5.00%	7.65%	7.50%	5.51%	6.42%	7.95%	9.34%	10.71%
Chesapeake Utilities	CPK	\$0.31	\$0.31	\$0.33	\$0.33	\$0.33	\$0.33	\$0.35	\$0.35	\$70.98	6.00%	8.10%	8.00%	13.24%	8.84%	7.97%	10.84%	15.40%
Northwest Natural Gas Company	NWN	\$0.47	\$0.47	\$0.47	\$0.47	\$0.49	\$0.49	\$0.49	\$0.49	\$60.28	4.30%	4.00%	7.00%	4.10%	4.85%	7.44%	8.22%	10.58%
One Gas Inc	OGS	\$0.35	\$0.42	\$0.42	\$0.42	\$0.37	\$0.45	\$0.45	\$0.45	\$67.70	5.50%	5.50%	9.50%	4.81%	6.33%	7.43%	8.94%	12.28%
Sempra Energy	SRE	\$0.76	\$0.76	\$0.82	\$0.82	\$0.81	\$0.81	\$0.88	\$0.88	\$109.46	8.70%	7.80%	8.00%	2.73%	6.81%	5.85%	10.00%	12.07%
Southwest Gas	SWX	\$0.45	\$0.45	\$0.50	\$0.50	\$0.48	\$0.48	\$0.52	\$0.52	\$79.81	5.00%	4.00%	7.50%	6.03%	5.63%	6.58%	8.21%	10.20%
Spire Inc	SR	\$0.53	\$0.53	\$0.53	\$0.53	\$0.55	\$0.55	\$0.55	\$0.55	\$68.06	4.40%	3.74%	8.00%	5.16%	5.33%	7.13%	8.68%	11.59%
Vectren Corporation	VVC	\$0.42	\$0.42	\$0.42	\$0.42	\$0.44	\$0.44	\$0.44	\$0.44	\$57.38	5.70%	5.50%	6.50%	5.96%	5.92%	8.79%	9.12%	9.83%
Proxy Group Mean											5.73%	5.95%	7.56%	6.22%	6.37%	7.52%	9.23%	11.52%
Proxy Group Median											5.50%	5.50%	7.50%	5.51%	6.33%	7.44%	9.12%	11.04%

Notes:

- [1] Source: Bloomberg Professional Service
- [2] Source: Bloomberg Professional Service
- [3] Source: Bloomberg Professional Service
- [4] Source: Bloomberg Professional Service
- [5] Equals Col. [1] x (1 + Col. [14])
- [6] Equals Col. [2] x (1 + Col. [14])
- [7] Equals Col. [3] x (1 + Col. [14])
- [8] Equals Col. [4] x (1 + Col. [14])
- [9] Source: Bloomberg Professional Service
- [10] Source: Zacks
- [11] Source: Yahoo! Finance
- [12] Source: Value Line
- [13] Source: Schedule KM-3, Value Line
- [14] Equals Average (Cols. [10], [11], [12], [13])
- [15] Implied Low DCF
- [16] Implied Mean DCF
- [17] Implied High DCF

Retention Growth Estimate

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]
Company	Ticker	Projected Earnings per share 2020-22	Projected Dividend per share 2020-22	Retention Ratio (B)	Projected Book Value per Share 2018	Projected Book Value per Share 2020-22	Return on Average Book Value (R)	B x R	Projected Common Shares 2018	Projected Common Shares 2020-22	Common Shares Growth Rate	2017 High Price	2017 Low Price	2017 Price Midpoint	Projected Book Value per Share 2017
Atmos Energy Corporation	ATO	4.50	2.30	48.89%	37.15	38.50	11.76%	5.75%	110.00	120.00	2.94%	82.70	72.50	\$ 77.60	37.10
Black Hills Corporation	BKH	4.25	2.20	48.24%	35.35	41.00	10.61%	5.12%	60.25	61.00	0.41%	72.00	60.00	\$ 66.00	31.85
Chesapeake Utilities	CPK	4.20	1.55	63.10%	32.20	32.90	12.81%	8.08%	17.00	20.00	5.57%	74.90	63.00	\$ 68.95	31.05
Northwest Natural Gas Company	NWN	3.15	2.00	36.51%	30.40	32.25	9.86%	3.60%	29.50	30.00	0.56%	61.70	56.50	\$ 59.10	29.90
One Gas Inc	OGS	4.00	2.45	38.75%	38.95	41.45	9.75%	3.78%	52.50	55.00	1.56%	70.60	61.40	\$ 66.00	37.80
Sempra Energy	SRE	7.50	4.55	39.33%	55.25	58.25	12.99%	5.11%	254.00	236.00	-2.42%	118.00	99.70	\$ 108.85	53.45
Southwest Gas	SWX	4.75	2.50	47.37%	42.85	57.70	8.60%	4.07%	49.00	52.00	2.00%	86.60	75.60	\$ 81.10	38.55
Spire Inc	SR	4.65	2.50	46.24%	41.85	48.30	9.85%	4.55%	48.50	50.00	1.02%	70.70	62.30	\$ 66.50	39.50
Vectren Corporation	VVC	3.35	2.00	40.30%	23.80	28.50	12.09%	4.87%	84.00	86.00	0.79%	62.80	51.50	\$ 57.15	22.50

Company	Ticker	[15]	[16]	[17]	[18]	[19]
		Market/Book Ratio	"S"	"V"	S x V	BR + SV
Atmos Energy Corporation	ATO	2.09	6.16%	52.19%	3.21%	8.44%
Black Hills Corporation	BKH	2.07	0.86%	51.74%	0.44%	5.51%
Chesapeake Utilities	CPK	2.22	12.36%	54.97%	6.79%	13.24%
Northwest Natural Gas Company	NWN	1.98	1.11%	49.41%	0.55%	4.10%
One Gas Inc	OGS	1.75	2.73%	42.73%	1.17%	4.81%
Sempra Energy	SRE	2.04	-4.93%	50.90%	-2.51%	2.73%
Southwest Gas	SWX	2.10	4.21%	52.47%	2.21%	6.03%
Spire Inc	SR	1.68	1.72%	40.60%	0.70%	5.16%
Vectren Corporation	VVC	2.54	2.00%	60.63%	1.21%	5.96%
					Mean:	6.22%
					Median:	5.51%

Notes:

- |  |                                     |                                       |
|--|-------------------------------------|---------------------------------------|
| [1] Source: Value Line                         | [8] Source: Value Line              | [15] Equals [13] / [14]               |
| [2] Source: Value Line                         | [9] Source: Value Line              | [16] Equals [10] x [15]               |
| [3] Equals 1 - [2] / [1]                       | [10] Equals ([9] / [8]) ^ (1/3) - 1 | [17] Equals 1 - (1 / [15])            |
| [4] Source: Value Line                         | [11] Source: Value Line             | [18] Equals [16] x [17]               |
| [5] Source: Value Line                         | [12] Source: Value Line             | [19] Equals ([7] + [18]) / (1 + [16]) |
| [6] Equals [1] / ([4] + (2.5/3) x ([5] - [4])) | [13] Equals Average ([11], [12])    |                                       |
| [7] Equals [3] x [6]                           | [14] Source: Value Line             |                                       |

Ex-Ante Market Risk Premium  
Market DCF Method Based - Value Line & Bloomberg

	Bloomberg	Value Line
Est. S&P 500 Return [1]:	13.41%	14.16%
Current Risk-Free Rate [2]:	2.85%	2.85%
Near-Term Projected Risk-Free Rate [3]:	3.35%	3.35%
Current Market Risk Premium [4]:	10.56%	11.31%
Near-Term Projected Market Risk Premium [5]:	10.06%	10.81%

Company	Ticker	Market Capitalization (\$MM)	Dividend Yield	Bloomberg			Value Line		
				Growth Rate	DCF Result	Weight in Index	Growth Rate	DCF Result	Weight in Index
AGILENT TECHNOLOGIES INC	A	19,681.92	0.86%	9.53%	10.43%	0.09%	7.00%	7.89%	0.10%
AMERICAN AIRLINES GROUP INC	AAL	22,183.27	0.94%	-1.26%	-0.32%	0.10%	1.00%	1.94%	0.11%
ADVANCE AUTO PARTS INC	AAP	6,888.42	0.27%	11.68%	11.96%	0.03%	9.50%	9.78%	0.03%
APPLE INC	AAPL	813,523.41	1.53%	10.35%	11.96%	3.71%	10.00%	11.60%	4.10%
ABBVIE INC	ABBV	111,522.87	3.68%	7.45%	11.27%	0.51%	11.50%	15.39%	0.56%
AMERISOURCEBERGEN CORP	ABC	17,222.17	1.86%	9.23%	11.17%	0.08%	8.00%	9.93%	0.09%
ABBOTT LABORATORIES	ABT	84,682.98	2.22%	11.33%	13.67%	0.39%	8.50%	10.82%	0.43%
ACCENTURE PLC-CL A	ACN	82,294.66	1.91%	9.75%	11.75%	0.38%	9.00%	10.99%	0.42%
ADOBE SYSTEMS INC	ADBE	73,009.24	0.00%	19.56%	19.56%	0.33%	29.50%	29.50%	0.37%
ANALOG DEVICES INC	ADI	28,531.47	2.12%	11.70%	13.95%	0.13%	16.00%	18.29%	0.14%
ARCHER-DANIELS-MIDLAND CO	ADM	23,216.33	3.11%	9.80%	13.07%	0.11%	4.00%	7.18%	0.12%
AUTOMATIC DATA PROCESSING	ADP	46,397.17	2.26%	11.60%	13.99%	0.21%	9.00%	11.36%	0.23%
ALLIANCE DATA SYSTEMS CORP	ADS	12,276.82	0.82%	14.00%	14.88%	0.06%	9.50%	10.36%	0.06%
AUTODESK INC	ADSK	23,925.72	0.00%	26.00%	26.00%	0.11%	N/A	N/A	N/A
AMEREN CORPORATION	AEE	14,366.41	3.04%	5.60%	8.72%	0.07%	6.00%	9.13%	0.07%
AMERICAN ELECTRIC POWER	AEP	35,491.20	3.30%	3.67%	7.02%	0.16%	4.00%	7.36%	0.18%
AES CORP	AES	7,309.04	4.35%	9.33%	13.89%	0.03%	N/A	N/A	N/A
AETNA INC	AET	51,292.85	1.08%	11.46%	12.60%	0.23%	8.50%	9.63%	0.26%
AFLAC INC	AFL	31,555.09	2.18%	5.00%	7.24%	0.14%	4.00%	6.23%	0.16%
ALLERGAN PLC	AGN	74,881.24	1.31%	16.00%	17.42%	0.34%	10.00%	11.38%	0.38%
AMERICAN INTERNATIONAL GROUP	AIG	55,414.90	2.10%	11.00%	13.22%	0.25%	27.00%	29.39%	0.28%
APARTMENT INVT & MGMT CO -A	AIV	7,089.58	3.20%	19.14%	22.65%	0.03%	N/A	N/A	N/A
ASSURANT INC	AIZ	5,389.22	2.17%	20.39%	22.78%	0.02%	4.00%	6.21%	0.03%
ARTHUR J GALLAGHER & CO	AJG	10,438.70	2.69%	9.95%	12.78%	0.05%	15.50%	18.40%	0.05%
AKAMAI TECHNOLOGIES INC	AKAM	7,775.75	0.00%	13.72%	13.72%	0.04%	12.50%	12.50%	0.04%
ALBEMARLE CORP	ALB	12,438.13	1.14%	12.20%	13.41%	0.06%	9.50%	10.70%	0.06%
ALIGN TECHNOLOGY INC	ALGN	13,514.19	0.00%	29.87%	29.87%	0.06%	21.50%	21.50%	0.07%
ALASKA AIR GROUP INC	ALK	9,690.57	1.54%	9.95%	11.56%	0.04%	10.00%	11.61%	0.05%
ALLSTATE CORP	ALL	33,577.53	1.57%	9.00%	10.65%	0.15%	7.50%	9.13%	0.17%
ALLEGION PLC	ALLE	7,424.97	0.76%	12.58%	13.39%	0.03%	10.00%	10.80%	0.04%
ALEXION PHARMACEUTICALS INC	ALXN	29,772.91	0.00%	20.04%	20.04%	0.14%	23.50%	23.50%	0.15%
APPLIED MATERIALS INC	AMAT	47,606.18	0.93%	19.68%	20.70%	0.22%	18.00%	19.02%	0.24%
ADVANCED MICRO DEVICES	AMD	11,711.66	0.00%	5.00%	5.00%	0.05%	N/A	N/A	N/A
AMETEK INC	AME	14,526.26	0.60%	11.62%	12.26%	0.07%	5.50%	6.12%	0.07%
AFFILIATED MANAGERS GROUP	AMG	9,672.19	0.46%	15.79%	16.29%	0.04%	7.00%	7.48%	0.05%
AMGEN INC	AMGN	122,067.29	2.75%	4.67%	7.48%	0.56%	7.50%	10.36%	0.62%
AMERIPRISE FINANCIAL INC	AMP	20,812.12	2.34%	N/A	N/A	N/A	11.50%	13.98%	0.10%
AMERICAN TOWER CORP	AMT	60,084.84	1.87%	20.68%	22.74%	0.27%	11.00%	12.97%	0.30%
AMAZON.COM INC	AMZN	460,429.36	0.00%	27.62%	27.62%	2.10%	56.00%	56.00%	2.32%
ANDEAVOR	ANDV	14,565.17	2.46%	16.76%	19.42%	0.07%	6.50%	9.04%	0.07%
ANSYS INC	ANSS	10,646.79	0.00%	11.80%	11.80%	0.05%	7.00%	7.00%	0.05%
ANTHEM INC	ANTM	50,158.93	1.41%	9.78%	11.25%	0.23%	10.00%	11.48%	0.25%
AON PLC	AON	34,722.13	1.03%	10.86%	11.95%	0.16%	9.50%	10.58%	0.18%
SMITH (A.O.) CORP	AOS	9,305.02	1.04%	15.00%	16.12%	0.04%	11.50%	12.60%	0.05%
APACHE CORP	APA	15,355.45	2.48%	-20.62%	-18.39%	0.07%	23.00%	25.77%	0.08%
ANADARKO PETROLEUM CORP	APC	23,630.30	0.47%	-10.30%	-9.85%	0.11%	N/A	N/A	N/A
AIR PRODUCTS & CHEMICALS INC	APD	31,769.47	2.53%	8.89%	11.54%	0.14%	9.00%	11.65%	0.16%
AMPHENOL CORP-CL A	APH	23,952.99	0.84%	10.00%	10.88%	0.11%	8.50%	9.37%	0.12%
ALEXANDRIA REAL ESTATE EQUIT	ARE	11,236.07	2.83%	6.90%	9.82%	0.05%	N/A	N/A	N/A
ARCONIC INC	ARNC	10,712.64	1.21%	16.90%	18.21%	0.05%	N/A	N/A	N/A
ACTIVISION BLIZZARD INC	ATVI	46,812.66	0.48%	13.17%	13.69%	0.21%	9.00%	9.51%	0.24%
AVALONBAY COMMUNITIES INC	AVB	26,096.34	3.00%	6.91%	10.02%	0.12%	N/A	N/A	N/A
BROADCOM LTD	AVGO	101,392.00	1.63%	15.42%	17.18%	0.46%	44.00%	45.99%	0.51%
AVERY DENNISON CORP	AVY	8,223.63	1.83%	7.65%	9.55%	0.04%	9.00%	10.91%	0.04%



		[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
					<u>Bloomberg</u>			<u>Value Line</u>	
AMERICAN WATER WORKS CO INC	AWK	14,519.31	1.99%	7.00%	9.06%	0.07%	8.50%	10.58%	0.07%
AMERICAN EXPRESS CO	AXP	75,474.18	1.57%	9.00%	10.64%	0.34%	6.00%	7.62%	0.38%
ACUITY BRANDS INC	AYI	7,506.50	0.29%	17.67%	17.99%	0.03%	16.50%	16.82%	0.04%
AUTOZONE INC	AZO	14,300.98	0.00%	11.69%	11.69%	0.07%	11.50%	11.50%	0.07%
BOEING CO/THE	BA	139,359.73	2.41%	16.35%	18.96%	0.64%	9.50%	12.03%	0.70%
BANK OF AMERICA CORP	BAC	232,670.71	1.66%	17.07%	18.86%	1.06%	16.00%	17.79%	1.17%
BAXTER INTERNATIONAL INC	BAX	33,166.29	0.97%	13.56%	14.60%	0.15%	4.00%	4.99%	0.17%
BB&T CORP	BBT	37,269.23	2.73%	9.75%	12.61%	0.17%	5.50%	8.31%	0.19%
BEST BUY CO INC	BBY	18,136.11	2.28%	13.28%	15.71%	0.08%	8.00%	10.37%	0.09%
CR BARD INC	BCR	23,124.08	0.33%	8.73%	9.08%	0.11%	9.50%	9.85%	0.12%
BECTON DICKINSON AND CO	BDX	44,987.32	1.47%	10.05%	11.60%	0.21%	9.00%	10.54%	0.23%
FRANKLIN RESOURCES INC	BEN	23,328.65	1.91%	10.00%	12.00%	0.11%	5.00%	6.96%	0.12%
BROWN-FORMAN CORP-CLASS B	BF/B	19,988.12	1.50%	8.47%	10.03%	0.09%	9.00%	10.57%	0.10%
BRIGHTHOUSE FINANCIAL INC	BHF	6,880.96	0.00%	14.05%	14.05%	0.03%	N/A	N/A	N/A
BAKER HUGHES A GE CO	BHGE	37,526.30	1.70%	N/A	N/A	N/A	N/A	N/A	N/A
BIOGEN INC	BIIB	59,575.12	0.00%	6.11%	6.11%	0.27%	7.00%	7.00%	0.30%
BANK OF NEW YORK MELLON CORP	BK	53,827.44	1.65%	12.08%	13.83%	0.25%	8.50%	10.22%	0.27%
BLACKROCK INC	BLK	67,716.47	2.41%	13.60%	16.18%	0.31%	8.50%	11.01%	0.34%
BALL CORP	BLL	14,113.64	0.76%	7.23%	8.01%	0.06%	15.00%	15.82%	0.07%
BRISTOL-MYERS SQUIBB CO	BMY	92,524.65	2.78%	8.00%	10.89%	0.42%	14.50%	17.48%	0.47%
BERKSHIRE HATHAWAY INC-CL B	BRK/B	438,811.07	0.00%	2.00%	2.00%	2.00%	N/A	N/A	N/A
BOSTON SCIENTIFIC CORP	BSX	36,896.50	0.00%	10.69%	10.69%	0.17%	18.50%	18.50%	0.19%
BORGWARNER INC	BWA	9,358.51	1.27%	5.48%	6.79%	0.04%	7.00%	8.32%	0.05%
BOSTON PROPERTIES INC	BXP	18,491.89	2.53%	5.25%	7.84%	0.08%	N/A	N/A	N/A
CITIGROUP INC	C	181,400.94	1.45%	10.18%	11.70%	0.83%	11.00%	12.53%	0.91%
CA INC	CA	13,636.51	3.15%	2.97%	6.16%	0.06%	7.00%	10.26%	0.07%
CONAGRA BRANDS INC	CAG	14,323.48	2.46%	8.65%	11.22%	0.07%	1.00%	3.47%	0.07%
CARDINAL HEALTH INC	CAH	20,373.29	2.80%	9.19%	12.12%	0.09%	13.00%	15.98%	0.10%
CATERPILLAR INC	CAT	67,323.62	2.73%	8.05%	10.89%	0.31%	10.00%	12.87%	0.34%
CHUBB LTD	CB	67,690.11	1.95%	10.00%	12.05%	0.31%	8.00%	10.03%	0.34%
CBRE GROUP INC - A	CBG	11,908.84	0.00%	9.35%	9.35%	0.05%	7.00%	7.00%	0.06%
CBOE HOLDINGS INC	CBOE	10,860.46	1.08%	21.49%	22.68%	0.05%	12.50%	13.65%	0.05%
CBS CORP-CLASS B NON VOTING	CBS	26,050.84	1.13%	13.37%	14.57%	0.12%	12.00%	13.20%	0.13%
CROWN CASTLE INTL CORP	CCI	42,300.54	3.70%	21.60%	25.70%	0.19%	8.50%	12.36%	0.21%
CARNIVAL CORP	CCL	48,975.45	2.29%	13.11%	15.56%	0.22%	12.50%	14.94%	0.25%
CELGENE CORP	CELG	99,867.06	0.00%	19.46%	19.46%	0.46%	25.00%	25.00%	0.50%
CERNER CORP	CERN	21,304.18	0.00%	12.70%	12.70%	0.10%	9.50%	9.50%	0.11%
CF INDUSTRIES HOLDINGS INC	CF	6,771.17	4.13%	6.00%	10.26%	0.03%	10.00%	14.34%	0.03%
CITIZENS FINANCIAL GROUP	CFG	16,552.19	1.92%	21.44%	23.57%	0.08%	10.50%	12.52%	0.08%
CHURCH & DWIGHT CO INC	CHD	12,487.93	1.52%	9.14%	10.73%	0.06%	7.00%	8.57%	0.06%
CHESAPEAKE ENERGY CORP	CHK	3,597.02	0.00%	-13.13%	-13.13%	0.02%	N/A	N/A	N/A
C.H. ROBINSON WORLDWIDE INC	CHRW	9,374.98	3.24%	9.20%	12.58%	0.04%	6.50%	9.84%	0.05%
CHARTER COMMUNICATIONS INC-A	CHTR	119,038.24	0.00%	23.96%	23.96%	0.54%	26.00%	26.00%	0.60%
CIGNA CORP	CI	44,572.28	0.02%	12.91%	12.93%	0.20%	11.50%	11.52%	0.22%
CINCINNATI FINANCIAL CORP	CINF	12,682.40	2.59%	N/A	N/A	N/A	6.50%	9.17%	0.06%
COLGATE-PALMOLIVE CO	CL	62,557.40	2.29%	8.99%	11.38%	0.29%	11.50%	13.92%	0.32%
CLOROX COMPANY	CLX	17,776.61	2.46%	6.88%	9.43%	0.08%	7.50%	10.05%	0.09%
COMERICA INC	CMA	12,202.94	1.57%	14.10%	15.78%	0.06%	13.50%	15.17%	0.06%
COMCAST CORP-CLASS A	CMCSA	190,985.85	1.55%	11.57%	13.21%	0.87%	11.00%	12.64%	0.96%
CME GROUP INC	CME	42,621.59	4.72%	10.47%	15.44%	0.19%	8.50%	13.42%	0.21%
CHIPOTLE MEXICAN GRILL INC	CMG	8,874.03	0.00%	50.88%	50.88%	0.04%	15.50%	15.50%	0.04%
CUMMINS INC	CMI	25,275.51	2.75%	10.23%	13.12%	0.12%	7.50%	10.35%	0.13%
CMS ENERGY CORP	CMS	13,595.83	2.75%	7.50%	10.36%	0.06%	6.50%	9.34%	0.07%
CENTENE CORP	CNC	14,399.99	0.00%	12.48%	12.48%	0.07%	17.00%	17.00%	0.07%
CENTERPOINT ENERGY INC	CNP	12,504.02	3.71%	6.00%	9.82%	0.06%	6.00%	9.82%	0.06%
CAPITAL ONE FINANCIAL CORP	COF	39,435.46	1.96%	6.99%	9.02%	0.18%	4.00%	6.00%	0.20%
CABOT OIL & GAS CORP	COG	11,280.20	0.70%	31.95%	32.75%	0.05%	N/A	N/A	N/A
COACH INC	COH	11,410.77	3.38%	12.23%	15.81%	0.05%	9.50%	13.04%	0.06%
ROCKWELL COLLINS INC	COL	20,231.49	1.08%	10.86%	12.00%	0.09%	8.00%	9.12%	0.10%
COOPER COS INC/THE	COO	11,972.35	0.02%	11.20%	11.23%	0.05%	16.50%	16.53%	0.06%
CONOCOPHILLIPS	COP	52,462.68	2.47%	7.00%	9.55%	0.24%	60.50%	63.71%	0.26%
COSTCO WHOLESALE CORP	COST	68,894.24	2.98%	10.18%	13.32%	0.31%	9.00%	12.12%	0.35%
COTY INC-CL A	COTY	14,377.09	2.94%	2.01%	4.98%	0.07%	8.00%	11.06%	0.07%
CAMPBELL SOUP CO	CPB	16,271.58	2.57%	5.37%	8.01%	0.07%	5.00%	7.64%	0.08%
SALESFORCE.COM INC	CRM	64,639.27	0.00%	26.88%	26.88%	0.30%	N/A	N/A	N/A
CISCO SYSTEMS INC	CSCO	151,851.65	3.91%	7.54%	11.60%	0.69%	7.00%	11.04%	0.77%
CSRA INC	CSRA	5,165.81	1.27%	7.55%	8.86%	0.02%	N/A	N/A	N/A
CSX CORP	CSX	44,551.41	1.60%	11.33%	13.02%	0.20%	9.00%	10.67%	0.22%
CINTAS CORP	CTAS	13,981.85	1.09%	11.58%	12.73%	0.06%	9.50%	10.64%	0.07%

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CENTURYLINK INC	CTL	10,530.51	11.27%	-2.62%	8.51%	0.05%	8.50%	20.25%	0.05%
COGNIZANT TECH SOLUTIONS-A	CTSH	41,384.93	0.71%	14.35%	15.11%	0.19%	12.00%	12.76%	0.21%
CITRIX SYSTEMS INC	CTXS	11,319.41	0.00%	13.10%	13.10%	0.05%	5.50%	5.50%	0.06%
CVS HEALTH CORP	CVS	78,946.42	2.61%	12.00%	14.77%	0.36%	9.00%	11.73%	0.40%
CHEVRON CORP	CVX	201,779.89	4.07%	42.57%	47.51%	0.92%	15.50%	19.89%	1.02%
CONCHO RESOURCES INC	CXO	16,138.24	0.00%	7.90%	7.90%	0.07%	27.00%	27.00%	0.08%
DOMINION ENERGY INC	D	50,565.09	3.84%	5.45%	9.39%	0.23%	5.50%	9.44%	0.26%
DELTA AIR LINES INC	DAL	34,413.16	2.04%	6.93%	9.04%	0.16%	11.50%	13.66%	0.17%
DU PONT (E.I.) DE NEMOURS	DD	70,448.49	1.88%	7.50%	9.45%	0.32%	8.00%	9.96%	0.36%
DEERE & CO	DE	37,523.02	2.05%	8.73%	10.88%	0.17%	6.00%	8.12%	0.19%
DISCOVER FINANCIAL SERVICES	DFS	22,128.88	2.16%	6.19%	8.41%	0.10%	5.00%	7.21%	0.11%
DOLLAR GENERAL CORP	DG	20,243.30	1.41%	9.08%	10.55%	0.09%	9.50%	10.97%	0.10%
QUEST DIAGNOSTICS INC	DGX	14,304.85	1.69%	7.84%	9.59%	0.07%	9.50%	11.27%	0.07%
DR HORTON INC	DHI	13,358.16	1.12%	12.66%	13.85%	0.06%	11.50%	12.69%	0.07%
DANAHER CORP	DHR	56,179.57	0.68%	8.78%	9.49%	0.26%	9.00%	9.71%	0.28%
WALT DISNEY CO/THE	DIS	155,428.53	1.61%	7.89%	9.57%	0.71%	8.00%	9.68%	0.78%
DISCOVERY COMMUNICATIONS-A	DISCA	12,630.97	0.00%	6.35%	6.35%	0.06%	13.50%	13.50%	0.06%
DISH NETWORK CORP-A	DISH	26,493.83	0.00%	-7.33%	-7.33%	0.12%	6.00%	6.00%	0.13%
DELPHI AUTOMOTIVE PLC	DLPH	24,621.71	1.28%	10.84%	12.19%	0.11%	14.00%	15.37%	0.12%
DIGITAL REALTY TRUST INC	DLR	18,905.79	3.25%	5.58%	8.92%	0.09%	N/A	N/A	N/A
DOLLAR TREE INC	DLTR	17,574.12	0.00%	17.10%	17.10%	0.08%	16.50%	16.50%	0.09%
DOVER CORP	DOV	13,059.88	2.15%	15.47%	17.78%	0.06%	4.50%	6.70%	0.07%
DOW CHEMICAL CO/THE	DOW	77,566.41	3.09%	5.70%	8.88%	0.35%	8.00%	11.22%	0.39%
DR PEPPER SNAPPLE GROUP INC	DPS	16,551.49	2.55%	8.58%	11.24%	0.08%	7.00%	9.64%	0.08%
DUKE REALTY CORP	DRE	10,266.43	5.28%	4.52%	9.92%	0.05%	33.50%	39.67%	0.05%
DARDEN RESTAURANTS INC	DRI	10,528.26	3.01%	10.05%	13.21%	0.05%	14.50%	17.73%	0.05%
DTE ENERGY COMPANY	DTE	19,845.73	3.00%	5.35%	8.43%	0.09%	6.00%	9.09%	0.10%
DUKE ENERGY CORP	DUK	60,455.91	4.07%	3.50%	7.64%	0.28%	4.50%	8.66%	0.30%
DAVITA INC	DVA	10,751.18	0.00%	7.38%	7.38%	0.05%	10.50%	10.50%	0.05%
DEVON ENERGY CORP	DVN	15,978.24	0.79%	18.42%	19.28%	0.07%	15.00%	15.85%	0.08%
DXC TECHNOLOGY CO	DXC	23,726.02	0.88%	15.25%	16.20%	0.11%	18.00%	18.96%	0.12%
ELECTRONIC ARTS INC	EA	36,084.10	0.00%	13.75%	13.75%	0.16%	12.00%	12.00%	0.18%
EBAY INC	EBAY	37,225.57	0.00%	8.05%	8.05%	0.17%	9.50%	9.50%	0.19%
ECOLAB INC	ECL	37,651.40	1.15%	12.86%	14.08%	0.17%	8.50%	9.70%	0.19%
CONSOLIDATED EDISON INC	ED	25,879.35	3.30%	4.50%	7.88%	0.12%	2.50%	5.84%	0.13%
EQUIFAX INC	EFX	16,838.91	1.12%	11.17%	12.35%	0.08%	10.00%	11.18%	0.08%
EDISON INTERNATIONAL	EIX	25,719.54	2.77%	6.23%	9.08%	0.12%	4.00%	6.83%	0.13%
ESTEE LAUDER COMPANIES-CL A	EL	38,960.80	1.39%	10.54%	12.00%	0.18%	8.50%	9.95%	0.20%
EASTMAN CHEMICAL CO	EMN	12,010.48	2.48%	7.43%	10.00%	0.05%	10.00%	12.60%	0.06%
EMERSON ELECTRIC CO	EMR	37,121.14	3.32%	7.45%	10.89%	0.17%	5.00%	8.40%	0.19%
EOG RESOURCES INC	EOG	48,557.61	0.80%	-16.18%	-15.44%	0.22%	30.00%	30.92%	0.24%
EQUINIX INC	EQIX	35,075.30	1.78%	32.64%	34.71%	0.16%	23.00%	24.99%	0.18%
EQUITY RESIDENTIAL	EQR	24,672.43	3.00%	9.54%	12.69%	0.11%	N/A	N/A	N/A
EQT CORP	EQT	10,442.95	0.20%	20.00%	20.22%	0.05%	20.50%	20.72%	0.05%
EVERSOURCE ENERGY	ES	19,982.82	3.02%	6.00%	9.11%	0.09%	6.50%	9.62%	0.10%
EXPRESS SCRIPTS HOLDING CO	ESRX	34,976.37	0.00%	11.15%	11.15%	0.16%	12.50%	12.50%	0.18%
ESSEX PROPERTY TRUST INC	ESS	17,207.48	2.68%	7.37%	10.14%	0.08%	N/A	N/A	N/A
E*TRADE FINANCIAL CORP	ETFC	10,911.48	0.00%	15.37%	15.37%	0.05%	14.00%	14.00%	0.06%
EATON CORP PLC	ETN	31,669.76	3.36%	11.28%	14.83%	0.14%	7.00%	10.48%	0.16%
ENTERGY CORP	ETR	13,973.84	4.53%	-3.83%	0.62%	0.06%	-3.50%	0.95%	0.07%
ENVISION HEALTHCARE CORP	EVHC	6,066.70	0.00%	8.03%	8.03%	0.03%	N/A	N/A	N/A
EDWARDS LIFESCIENCES CORP	EW	23,884.08	0.00%	16.60%	16.60%	0.11%	17.00%	17.00%	0.12%
EXELON CORP	EXC	35,169.74	3.45%	2.00%	5.49%	0.16%	7.00%	10.57%	0.18%
EXPEDITORS INTL WASH INC	EXPD	9,917.10	1.53%	8.40%	10.00%	0.05%	8.00%	9.59%	0.05%
EXPEDIA INC	EXPE	21,791.69	0.79%	17.98%	18.84%	0.10%	23.00%	23.88%	0.11%
EXTRA SPACE STORAGE INC	EXR	9,417.25	4.25%	6.20%	10.58%	0.04%	N/A	N/A	N/A
FORD MOTOR CO	F	41,941.73	5.86%	-2.07%	3.73%	0.19%	2.50%	8.44%	0.21%
FASTENAL CO	FAST	11,714.95	3.13%	15.40%	18.77%	0.05%	4.00%	7.19%	0.06%
FACEBOOK INC-A	FB	486,151.98	0.00%	26.79%	26.79%	2.22%	31.50%	31.50%	2.45%
FORTUNE BRANDS HOME & SECURI	FBHS	9,625.68	1.14%	12.12%	13.33%	0.04%	12.00%	13.21%	0.05%
FREEMPORT-MCMORAN INC	FCX	20,479.40	0.00%	24.46%	24.46%	0.09%	N/A	N/A	N/A
FEDEX CORP	FDX	55,261.41	0.98%	14.00%	15.05%	0.25%	12.50%	13.54%	0.28%
FIRSTENERGY CORP	FE	14,586.52	4.39%	-5.00%	-0.72%	0.07%	9.00%	13.58%	0.07%
F5 NETWORKS INC	FFIV	7,401.91	0.00%	12.48%	12.48%	0.03%	10.00%	10.00%	0.04%
FIDELITY NATIONAL INFO SERV	FIS	29,860.65	1.30%	9.18%	10.53%	0.14%	10.00%	11.37%	0.15%
FISERV INC	FISV	25,331.63	0.00%	10.80%	10.80%	0.12%	9.00%	9.00%	0.13%
FIFTH THIRD BANCORP	FITB	19,397.99	2.27%	4.20%	6.52%	0.09%	5.00%	7.33%	0.10%
FOOT LOCKER INC	FL	4,514.21	3.56%	3.40%	7.02%	0.02%	9.00%	12.72%	0.02%
FLIR SYSTEMS INC	FLIR	5,190.11	1.48%	N/A	N/A	N/A	7.50%	9.04%	0.03%

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FLUOR CORP	FLR	5,269.98	2.26%	12.72%	15.13%	0.02%	4.50%	6.81%	0.03%
FLOWERVE CORP	FLS	4,979.90	2.00%	12.68%	14.81%	0.02%	2.50%	4.53%	0.03%
FMC CORP	FMC	11,083.03	0.82%	14.13%	15.01%	0.05%	7.50%	8.35%	0.06%
TWENTY-FIRST CENTURY FOX-A	FOXA	50,084.53	1.50%	9.23%	10.80%	0.23%	9.50%	11.08%	0.25%
FEDERAL REALTY INVS TRUST	FRT	9,173.52	3.16%	6.20%	9.47%	0.04%	N/A	N/A	N/A
TECHNIPFMC PLC	FTI	12,030.96	0.94%	10.23%	11.22%	0.05%	N/A	N/A	N/A
FORTIVE CORP	FTV	22,572.01	0.34%	9.37%	9.73%	0.10%	N/A	N/A	N/A
GENERAL DYNAMICS CORP	GD	59,512.04	1.67%	9.54%	11.28%	0.27%	5.50%	7.21%	0.30%
GENERAL ELECTRIC CO	GE	212,552.57	3.91%	11.00%	15.13%	0.97%	14.00%	18.19%	1.07%
GGP INC	GGP	18,081.07	4.58%	4.65%	9.34%	0.08%	N/A	N/A	N/A
GILEAD SCIENCES INC	GILD	94,170.34	2.98%	-7.44%	-4.57%	0.43%	-3.50%	-0.57%	0.47%
GENERAL MILLS INC	GIS	32,759.20	3.53%	7.57%	11.23%	0.15%	5.00%	8.62%	0.17%
CORNING INC	GLW	25,180.76	2.24%	9.05%	11.39%	0.11%	10.50%	12.86%	0.13%
GENERAL MOTORS CO	GM	50,754.56	4.40%	9.04%	13.64%	0.23%	5.50%	10.02%	0.26%
ALPHABET INC-CL A	GOOGL	635,972.51	0.00%	16.64%	16.64%	2.90%	N/A	N/A	N/A
GENUINE PARTS CO	GPC	11,981.41	3.31%	7.81%	11.25%	0.05%	7.00%	10.42%	0.06%
GLOBAL PAYMENTS INC	GPN	14,297.35	0.05%	14.50%	14.55%	0.07%	12.00%	12.05%	0.07%
GAP INC/THE	GPS	8,963.94	4.05%	6.14%	10.32%	0.04%	0.50%	4.56%	0.05%
GARMIN LTD	GRMN	10,135.62	4.04%	5.68%	9.83%	0.05%	5.00%	9.14%	0.05%
GOLDMAN SACHS GROUP INC	GS	89,425.22	1.37%	11.19%	12.64%	0.41%	9.50%	10.94%	0.45%
GOODYEAR TIRE & RUBBER CO	GT	7,489.97	1.34%	N/A	N/A	N/A	10.00%	11.41%	0.04%
WW GRAINGER INC	GWV	9,310.70	3.15%	9.55%	12.85%	0.04%	5.00%	8.22%	0.05%
HALLIBURTON CO	HAL	33,983.51	1.84%	N/A	N/A	N/A	21.50%	23.54%	0.17%
HASBRO INC	HAS	11,946.49	2.39%	9.70%	12.20%	0.05%	10.50%	13.01%	0.06%
HUNTINGTON BANCSHARES INC	HBAN	13,799.61	2.76%	10.71%	13.61%	0.06%	10.00%	12.89%	0.07%
HANESBRANDS INC	HBI	8,576.19	2.50%	9.76%	12.38%	0.04%	9.00%	11.61%	0.04%
HCA HEALTHCARE INC	HCA	28,007.69	0.00%	11.30%	11.30%	0.13%	9.50%	9.50%	0.14%
WELLTOWER INC	HCN	26,061.28	4.94%	4.37%	9.41%	0.12%	N/A	N/A	N/A
HCP INC	HCP	13,529.59	5.14%	3.37%	8.59%	0.06%	N/A	N/A	N/A
HOME DEPOT INC	HD	176,332.40	2.41%	13.07%	15.64%	0.80%	10.50%	13.04%	0.89%
HESS CORP	HES	12,221.09	2.64%	-14.74%	-12.29%	0.06%	N/A	N/A	N/A
HARTFORD FINANCIAL SVCS GRP	HIG	20,240.51	1.72%	9.50%	11.30%	0.09%	12.50%	14.32%	0.10%
HILTON WORLDWIDE HOLDINGS IN	HLT	19,796.42	0.98%	15.76%	16.82%	0.09%	7.00%	8.02%	0.10%
HARLEY-DAVIDSON INC	HOG	7,997.47	3.14%	8.90%	12.18%	0.04%	8.00%	11.26%	0.04%
HOLOGIC INC	HOLX	10,495.32	0.00%	9.08%	9.08%	0.05%	27.00%	27.00%	0.05%
HONEYWELL INTERNATIONAL INC	HON	102,638.81	2.00%	9.95%	12.05%	0.47%	8.50%	10.59%	0.52%
HELMERICH & PAYNE	HP	4,745.01	6.41%	N/A	N/A	N/A	8.00%	14.66%	0.02%
HEWLETT PACKARD ENTERPRIS	HPE	28,220.39	1.47%	-1.80%	-0.34%	0.13%	4.00%	5.50%	0.14%
HP INC	HPQ	31,158.53	2.87%	3.30%	6.22%	0.14%	N/A	N/A	N/A
H&R BLOCK INC	HRB	6,225.69	3.18%	11.00%	14.35%	0.03%	8.00%	11.31%	0.03%
HORMEL FOODS CORP	HRL	18,018.28	1.99%	6.40%	8.46%	0.08%	10.50%	12.60%	0.09%
HARRIS CORP	HRS	14,472.19	1.90%	N/A	N/A	N/A	7.00%	8.96%	0.07%
HENRY SCHEIN INC	HSIC	13,399.20	0.00%	10.54%	10.54%	0.06%	8.50%	8.50%	0.07%
HOST HOTELS & RESORTS INC	HST	12,899.10	4.66%	2.97%	7.70%	0.06%	N/A	N/A	N/A
HERSHEY CO/THE	HSY	22,804.04	2.38%	9.53%	12.02%	0.10%	7.00%	9.46%	0.12%
HUMANA INC	HUM	35,736.21	0.65%	16.59%	17.29%	0.16%	9.50%	10.18%	0.18%
INTL BUSINESS MACHINES CORP	IBM	130,192.06	4.20%	3.54%	7.81%	0.59%	N/A	N/A	N/A
INTERCONTINENTAL EXCHANGE IN	ICE	38,010.73	1.28%	10.92%	12.26%	0.17%	12.00%	13.35%	0.19%
IDEXX LABORATORIES INC	IDXX	13,129.77	0.00%	10.81%	10.81%	0.06%	15.00%	15.00%	0.07%
INTL FLAVORS & FRAGRANCES	IFF	10,648.30	1.93%	7.75%	9.76%	0.05%	7.50%	9.50%	0.05%
ILLUMINA INC	ILMN	27,640.72	0.00%	15.11%	15.11%	0.13%	17.00%	17.00%	0.14%
INCYTE CORP	INCY	24,929.36	0.00%	43.93%	43.93%	0.11%	62.00%	62.00%	0.13%
IHS MARKIT LTD	INFO	18,263.27	0.00%	14.21%	14.21%	0.08%	19.00%	19.00%	0.09%
INTEL CORP	INTC	164,511.99	3.09%	8.20%	11.42%	0.75%	7.50%	10.71%	0.83%
INTUIT INC	INTU	34,361.25	1.01%	15.72%	16.82%	0.16%	13.00%	14.08%	0.17%
INTERNATIONAL PAPER CO	IP	22,417.16	3.40%	6.73%	10.24%	0.10%	18.50%	22.22%	0.11%
INTERPUBLIC GROUP OF COS INC	IPG	8,065.94	3.51%	8.64%	12.30%	0.04%	10.00%	13.68%	0.04%
INGERSOLL-RAND PLC	IR	21,607.43	1.93%	10.53%	12.56%	0.10%	9.50%	11.52%	0.11%
IRON MOUNTAIN INC	IRM	9,753.37	5.67%	14.60%	20.68%	0.04%	11.00%	16.98%	0.05%
INTUITIVE SURGICAL INC	ISRG	36,645.84	0.00%	10.05%	10.05%	0.17%	14.00%	14.00%	0.18%
GARTNER INC	IT	10,827.29	0.00%	17.50%	17.50%	0.05%	15.50%	15.50%	0.05%
ILLINOIS TOOL WORKS	ITW	46,690.75	2.00%	9.20%	11.30%	0.21%	9.50%	11.60%	0.24%
INVESCO LTD	IVZ	13,370.46	3.52%	12.29%	16.03%	0.06%	5.50%	9.12%	0.07%
HUNT (JB) TRANSPRT SVCS INC	JBHT	10,574.75	0.95%	13.35%	14.36%	0.05%	9.50%	10.49%	0.05%
JOHNSON CONTROLS INTERNATION	JCI	34,545.37	2.72%	12.50%	15.39%	0.16%	0.50%	3.22%	0.17%
JACOBS ENGINEERING GROUP INC	JEC	5,997.71	0.90%	8.73%	9.67%	0.03%	8.00%	8.94%	0.03%
JOHNSON & JOHNSON	JNJ	355,978.88	2.52%	6.03%	8.63%	1.62%	9.50%	12.14%	1.80%
JUNIPER NETWORKS INC	JNPR	10,329.18	1.54%	9.46%	11.08%	0.05%	8.00%	9.60%	0.05%
JPMORGAN CHASE & CO	JPM	319,310.83	2.33%	10.20%	12.65%	1.46%	5.50%	7.89%	1.61%

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					<u>Bloomberg</u>			<u>Value Line</u>	
NORDSTROM INC	JWN	7,361.09	3.39%	7.56%	11.08%	0.03%	2.00%	5.42%	0.04%
KELLOGG CO	K	24,142.17	3.04%	6.23%	9.36%	0.11%	6.50%	9.64%	0.12%
KEYCORP	KEY	19,129.92	2.17%	10.90%	13.18%	0.09%	11.50%	13.79%	0.10%
KRAFT HEINZ CO/THE	KHC	102,930.04	2.91%	8.39%	11.42%	0.47%	N/A	N/A	N/A
KIMCO REALTY CORP	KIM	8,231.81	5.65%	20.25%	26.46%	0.04%	N/A	N/A	N/A
KLA-TENCOR CORP	KLAC	14,156.42	2.48%	2.30%	4.81%	0.06%	12.50%	15.13%	0.07%
KIMBERLY-CLARK CORP	KMB	42,887.43	3.17%	6.22%	9.49%	0.20%	10.50%	13.84%	0.22%
KINDER MORGAN INC	KMI	41,426.37	2.70%	20.00%	22.96%	0.19%	24.00%	27.02%	0.21%
CARMAX INC	KMX	11,722.34	0.00%	13.89%	13.89%	0.05%	10.00%	10.00%	0.06%
COCA-COLA CO/THE	KO	194,796.44	3.23%	5.14%	8.45%	0.89%	4.50%	7.81%	0.98%
MICHAEL KORS HOLDINGS LTD	KORS	6,361.60	0.00%	4.75%	4.75%	0.03%	2.00%	2.00%	0.03%
KROGER CO	KR	20,513.34	2.24%	7.03%	9.34%	0.09%	6.50%	8.81%	0.10%
KOHLS CORP	KSS	6,355.55	5.97%	3.48%	9.55%	0.03%	7.00%	13.18%	0.03%
KANSAS CITY SOUTHERN	KSU	11,153.56	1.32%	13.00%	14.40%	0.05%	9.50%	10.88%	0.06%
LOEWS CORP	L	16,015.49	0.53%	N/A	N/A	N/A	14.50%	15.06%	0.08%
L BRANDS INC	LB	10,383.72	6.63%	6.39%	13.23%	0.05%	0.50%	7.15%	0.05%
LEGETT & PLATT INC	LEG	6,140.69	3.04%	14.50%	17.76%	0.03%	7.50%	10.65%	0.03%
LENNAR CORP-A	LEN	11,918.94	0.31%	11.29%	11.62%	0.05%	10.00%	10.32%	0.06%
LABORATORY CRP OF AMER HLDGS	LH	15,668.04	0.00%	10.75%	10.75%	0.07%	8.50%	8.50%	0.08%
LKQ CORP	LKQ	10,516.72	0.00%	12.50%	12.50%	0.05%	11.50%	11.50%	0.05%
L3 TECHNOLOGIES INC	LLL	13,929.07	1.72%	5.93%	7.70%	0.06%	10.00%	11.81%	0.07%
ELI LILLY & CO	LLY	84,853.22	2.70%	9.35%	12.18%	0.39%	11.00%	13.85%	0.43%
LOCKHEED MARTIN CORP	LMT	86,166.87	2.47%	9.42%	12.01%	0.39%	9.50%	12.09%	0.43%
LINCOLN NATIONAL CORP	LNC	15,062.65	1.74%	8.66%	10.47%	0.07%	7.00%	8.80%	0.08%
ALLIANT ENERGY CORP	LNT	9,760.08	2.98%	5.75%	8.81%	0.04%	6.50%	9.57%	0.05%
LOWE'S COS INC	LOW	62,168.84	2.19%	15.67%	18.02%	0.28%	13.50%	15.83%	0.31%
LAM RESEARCH CORP	LRCX	26,072.35	1.11%	12.46%	13.63%	0.12%	15.00%	16.19%	0.13%
LEUCADIA NATIONAL CORP	LUK	8,596.49	1.50%	18.00%	19.64%	0.04%	31.50%	33.24%	0.04%
SOUTHWEST AIRLINES CO	LUV	31,825.72	0.85%	8.20%	9.09%	0.15%	11.00%	11.90%	0.16%
LEVEL 3 COMMUNICATIONS INC	LVLT	19,110.23	0.00%	5.00%	5.00%	0.09%	14.50%	14.50%	0.10%
LYONDELLBASELL INDU-CL A	LYB	34,569.52	4.05%	6.50%	10.68%	0.16%	4.00%	8.13%	0.17%
MACY'S INC	M	5,934.84	7.95%	-2.48%	5.37%	0.03%	2.00%	10.03%	0.03%
MASTERCARD INC - A	MA	139,650.63	0.67%	14.33%	15.06%	0.64%	12.50%	13.22%	0.70%
MID-AMERICA APARTMENT COMM	MAA	12,016.29	3.31%	N/A	N/A	N/A	N/A	N/A	N/A
MACERICH CO/THE	MAC	7,514.76	5.80%	7.76%	13.78%	0.03%	N/A	N/A	N/A
MARRIOTT INTERNATIONAL -CL A	MAR	36,508.34	1.31%	15.32%	16.73%	0.17%	15.00%	16.41%	0.18%
MASCO CORP	MAS	11,596.81	1.15%	14.33%	15.55%	0.05%	13.50%	14.72%	0.06%
MATTEL INC	MAT	5,764.66	4.93%	11.30%	16.51%	0.03%	11.50%	16.72%	0.03%
MCDONALD'S CORP	MCD	127,785.07	2.42%	10.05%	12.60%	0.58%	9.00%	11.53%	0.64%
MICROCHIP TECHNOLOGY INC	MCHP	18,985.99	1.77%	17.06%	18.98%	0.09%	11.50%	13.37%	0.10%
MCKESSON CORP	MCK	30,698.04	0.85%	5.38%	6.26%	0.14%	11.00%	11.90%	0.15%
MOODY'S CORP	MCO	24,923.59	1.17%	8.00%	9.22%	0.11%	7.00%	8.21%	0.13%
MONDELEZ INTERNATIONAL INC-A	MDLZ	64,738.06	1.87%	11.64%	13.62%	0.30%	10.00%	11.96%	0.33%
MEDTRONIC PLC	MDT	113,356.41	2.25%	6.06%	8.38%	0.52%	5.50%	7.81%	0.57%
METLIFE INC	MET	49,976.10	3.41%	28.28%	32.17%	0.23%	7.00%	10.53%	0.25%
MGM RESORTS INTERNATIONAL	MGM	17,664.15	1.43%	17.24%	18.79%	0.08%	41.50%	43.23%	0.09%
MOHAWK INDUSTRIES INC	MHK	18,507.98	0.00%	8.48%	8.48%	0.08%	7.50%	7.50%	0.09%
MCCORMICK & CO-NON VGT SHRS	MKC	12,604.36	1.94%	9.60%	11.64%	0.06%	7.50%	9.51%	0.06%
MARTIN MARIETTA MATERIALS	MLM	12,601.87	0.85%	21.24%	22.18%	0.06%	17.50%	18.43%	0.06%
MARSH & MCLENNAN COS	MMC	39,648.92	1.85%	12.29%	14.26%	0.18%	10.00%	11.94%	0.20%
3M CO	MMM	121,460.02	2.31%	7.87%	10.27%	0.55%	8.00%	10.40%	0.61%
MONSTER BEVERAGE CORP	MNST	30,709.54	0.00%	20.30%	20.30%	0.14%	12.00%	12.00%	0.15%
ALTRIA GROUP INC	MO	122,193.57	4.02%	0.61%	4.64%	0.56%	9.50%	13.71%	0.62%
MONSANTO CO	MON	51,343.68	1.94%	10.20%	12.24%	0.23%	8.00%	10.02%	0.26%
MOSAIC CO/THE	MOS	6,971.85	3.68%	16.25%	20.22%	0.03%	3.00%	6.73%	0.04%
MARATHON PETROLEUM CORP	MPC	25,368.38	3.01%	11.96%	15.14%	0.12%	5.50%	8.59%	0.13%
MERCK & CO. INC.	MRK	167,705.02	3.06%	6.07%	9.22%	0.77%	5.50%	8.64%	0.85%
MARATHON OIL CORP	MRO	9,237.71	1.84%	5.00%	6.89%	0.04%	N/A	N/A	N/A
MORGAN STANLEY	MS	83,362.40	2.02%	16.72%	18.91%	0.38%	10.50%	12.63%	0.42%
MICROSOFT CORP	MSFT	558,335.67	2.32%	9.12%	11.55%	2.55%	8.00%	10.42%	2.82%
MOTOROLA SOLUTIONS INC	MSI	14,211.04	2.16%	4.10%	6.30%	0.06%	10.50%	12.77%	0.07%
M & T BANK CORP	MTB	23,310.91	1.97%	10.19%	12.26%	0.11%	8.00%	10.05%	0.12%
METTLER-TOLEDO INTERNATIONAL	MTD	14,749.89	0.00%	12.08%	12.08%	0.07%	11.00%	11.00%	0.07%
MICRON TECHNOLOGY INC	MU	33,845.32	0.00%	10.00%	10.00%	0.15%	22.50%	22.50%	0.17%
MYLAN NV	MYL	16,474.54	0.00%	3.20%	3.20%	0.08%	10.00%	10.00%	0.08%
NAVIENT CORP	NAVI	3,727.82	4.78%	8.00%	12.97%	0.02%	6.00%	10.92%	0.02%
NOBLE ENERGY INC	NBL	11,506.79	1.69%	3.72%	5.44%	0.05%	N/A	N/A	N/A
NASDAQ INC	NDAQ	12,494.71	1.97%	9.08%	11.13%	0.06%	10.00%	12.06%	0.06%
NEXTERA ENERGY INC	NEE	70,352.30	2.62%	6.88%	9.59%	0.32%	7.00%	9.71%	0.35%

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NEWMONT MINING CORP	NEM	19,107.12	0.69%	-11.65%	-11.00%	0.09%	0.50%	1.19%	0.10%
NETFLIX INC	NFLX	71,903.60	0.00%	40.60%	40.60%	0.33%	44.50%	44.50%	0.36%
NEWFIELD EXPLORATION CO	NFX	5,044.77	0.00%	12.19%	12.19%	0.02%	18.00%	18.00%	0.03%
NISOURCE INC	NI	8,730.07	2.62%	6.98%	9.69%	0.04%	5.50%	8.19%	0.04%
NIKE INC -CL B	NKE	90,194.59	1.42%	11.00%	12.49%	0.41%	15.50%	17.03%	0.45%
NIELSEN HOLDINGS PLC	NLSN	14,141.86	3.37%	10.00%	13.53%	0.06%	N/A	N/A	N/A
NORTHROP GRUMMAN CORP	NOC	46,589.38	1.46%	8.81%	10.34%	0.21%	8.00%	9.52%	0.23%
NATIONAL OILWELL VARCO INC	NOV	11,545.57	0.66%	N/A	N/A	N/A	3.00%	3.67%	0.06%
NRG ENERGY INC	NRG	8,155.19	0.47%	-9.00%	-8.56%	0.04%	N/A	N/A	N/A
NORFOLK SOUTHERN CORP	NSC	34,187.01	2.06%	12.68%	14.87%	0.16%	8.00%	10.14%	0.17%
NETAPP INC	NTAP	10,641.77	2.03%	8.60%	10.72%	0.05%	9.50%	11.63%	0.05%
NORTHERN TRUST CORP	NTRS	20,090.77	1.82%	12.14%	14.07%	0.09%	7.50%	9.39%	0.10%
NUCOR CORP	NUE	17,284.14	2.79%	12.00%	14.96%	0.08%	20.50%	23.58%	0.09%
NVIDIA CORP	NVDA	96,092.50	0.35%	12.52%	12.90%	0.44%	19.00%	19.39%	0.48%
NEWELL BRANDS INC	NWL	24,338.37	1.83%	12.05%	14.00%	0.11%	23.50%	25.55%	0.12%
NEWS CORP - CLASS A	NWSA	7,818.11	1.72%	12.59%	14.42%	0.04%	48.00%	50.13%	0.04%
REALTY INCOME CORP	O	15,581.18	4.46%	4.87%	9.43%	0.07%	N/A	N/A	N/A
ONEOK INC	OKE	19,353.82	5.61%	7.53%	13.35%	0.09%	14.50%	20.52%	0.10%
OMNICOM GROUP	OMC	17,712.69	2.94%	6.97%	10.02%	0.08%	7.50%	10.55%	0.09%
ORACLE CORP	ORCL	201,125.48	1.40%	9.40%	10.86%	0.92%	8.00%	9.45%	1.01%
O'REILLY AUTOMOTIVE INC	ORLY	17,420.26	0.00%	15.27%	15.27%	0.08%	11.00%	11.00%	0.09%
OCCIDENTAL PETROLEUM CORP	OXY	45,224.50	5.19%	-3.39%	1.71%	0.21%	25.00%	30.84%	0.23%
PAYCHEX INC	PAYX	19,763.17	3.57%	8.28%	11.99%	0.09%	8.50%	12.22%	0.10%
PEOPLE'S UNITED FINANCIAL	PBCT	5,730.19	4.15%	2.00%	6.19%	0.03%	10.50%	14.87%	0.03%
PACCAR INC	PCAR	22,136.72	2.83%	6.73%	9.66%	0.10%	6.50%	9.43%	0.11%
P G & E CORP	PCG	35,456.49	3.03%	6.00%	9.12%	0.16%	9.50%	12.67%	0.18%
PRICELINE GROUP INC/THE	PCLN	88,796.82	0.00%	17.26%	17.26%	0.41%	15.50%	15.50%	0.45%
PATTERSON COS INC	PDCO	3,491.03	2.98%	5.25%	8.30%	0.02%	13.00%	16.17%	0.02%
PUBLIC SERVICE ENTERPRISE GP	PEG	23,614.94	3.68%	2.90%	6.64%	0.11%	1.00%	4.70%	0.12%
PEPSICO INC	PEP	167,640.03	2.69%	6.39%	9.17%	0.77%	7.50%	10.29%	0.85%
PFIZER INC	PFE	194,299.89	3.92%	5.50%	9.53%	0.89%	11.00%	15.13%	0.98%
PRINCIPAL FINANCIAL GROUP	PFG	18,184.30	2.94%	9.37%	12.44%	0.08%	4.50%	7.50%	0.09%
PROCTER & GAMBLE CO/THE	PG	235,799.82	3.04%	7.22%	10.37%	1.08%	7.50%	10.66%	1.19%
PROGRESSIVE CORP	PGR	28,256.38	1.93%	8.00%	10.01%	0.13%	8.00%	10.01%	0.14%
PARKER HANNIFIN CORP	PH	20,663.40	1.74%	9.94%	11.76%	0.09%	7.50%	9.30%	0.10%
PULTEGROUP INC	PHM	7,627.20	1.30%	18.40%	19.82%	0.03%	16.50%	17.91%	0.04%
PACKAGING CORP OF AMERICA	PKG	10,377.72	2.25%	8.25%	10.59%	0.05%	6.50%	8.82%	0.05%
PERKINELMER INC	PKI	6,995.32	0.44%	10.66%	11.12%	0.03%	8.00%	8.46%	0.04%
PROLOGIS INC	PLD	32,424.95	2.85%	5.84%	8.77%	0.15%	N/A	N/A	N/A
PHILIP MORRIS INTERNATIONAL	PM	179,129.18	3.68%	9.61%	13.46%	0.82%	7.50%	11.32%	0.90%
PNC FINANCIAL SERVICES GROUP	PNC	60,911.94	2.05%	10.15%	12.30%	0.28%	5.50%	7.60%	0.31%
PENTAIR PLC	PNR	11,064.79	2.29%	5.78%	8.14%	0.05%	11.50%	13.92%	0.06%
PINNACLE WEST CAPITAL	PNW	9,966.95	2.98%	5.50%	8.56%	0.05%	5.50%	8.56%	0.05%
PPG INDUSTRIES INC	PPG	26,181.46	1.66%	8.09%	9.82%	0.12%	10.50%	12.24%	0.13%
PPL CORP	PPL	26,496.39	4.05%	2.00%	6.10%	0.12%	N/A	N/A	N/A
PERRIGO CO PLC	PRGO	11,019.56	0.83%	1.64%	2.48%	0.05%	-0.50%	0.33%	0.06%
PRUDENTIAL FINANCIAL INC	PRU	43,532.65	2.99%	10.93%	14.09%	0.20%	5.50%	8.57%	0.22%
PUBLIC STORAGE	PSA	34,155.00	4.11%	4.25%	8.44%	0.16%	N/A	N/A	N/A
PHILLIPS 66	PSX	41,718.82	3.35%	10.00%	13.52%	0.19%	5.00%	8.43%	0.21%
PVH CORP	PVH	9,423.26	0.16%	10.40%	10.57%	0.04%	7.50%	7.66%	0.05%
QUANTA SERVICES INC	PWR	5,281.99	0.00%	8.00%	8.00%	0.02%	12.50%	12.50%	0.03%
PRAXAIR INC	PX	37,846.42	2.40%	11.73%	14.27%	0.17%	8.00%	10.49%	0.19%
PIONEER NATURAL RESOURCES CO	PXD	22,444.37	0.06%	20.00%	20.07%	0.10%	38.50%	38.57%	0.11%
PAYPAL HOLDINGS INC	PYPL	71,470.48	0.00%	19.44%	19.44%	0.33%	N/A	N/A	N/A
QUALCOMM INC	QCOM	76,637.39	4.22%	8.75%	13.16%	0.35%	6.00%	10.35%	0.39%
QORVO INC	QRVO	8,866.74	0.00%	13.18%	13.18%	0.04%	N/A	N/A	N/A
ROYAL CARIBBEAN CRUISES LTD	RCL	25,557.34	1.66%	19.10%	20.92%	0.12%	12.50%	14.27%	0.13%
EVEREST RE GROUP LTD	RE	10,800.59	1.95%	10.00%	12.04%	0.05%	3.50%	5.48%	0.05%
REGENCY CENTERS CORP	REG	11,013.07	3.26%	9.43%	12.84%	0.05%	N/A	N/A	N/A
REGENERON PHARMACEUTICALS	REGN	50,145.10	0.00%	17.94%	17.94%	0.23%	22.00%	22.00%	0.25%
REGIONS FINANCIAL CORP	RF	16,802.83	2.27%	13.86%	16.29%	0.08%	9.50%	11.88%	0.08%
ROBERT HALF INTL INC	RHI	5,467.57	2.21%	8.30%	10.60%	0.02%	4.50%	6.76%	0.03%
RED HAT INC	RHT	17,822.27	0.00%	16.93%	16.93%	0.08%	17.50%	17.50%	0.09%
RAYMOND JAMES FINANCIAL INC	RJF	11,225.01	1.12%	15.45%	16.66%	0.05%	11.00%	12.18%	0.06%
RALPH LAUREN CORP	RL	6,852.05	2.45%	0.15%	2.60%	0.03%	1.00%	3.46%	0.03%
RESMED INC	RMD	10,391.22	1.96%	11.56%	13.63%	0.05%	8.50%	10.54%	0.05%
ROCKWELL AUTOMATION INC	ROK	20,714.61	1.90%	11.37%	13.37%	0.09%	5.50%	7.45%	0.10%
ROPER TECHNOLOGIES INC	ROP	23,326.53	0.61%	12.93%	13.58%	0.11%	7.00%	7.63%	0.12%
ROSS STORES INC	ROST	22,969.53	1.07%	13.40%	14.54%	0.10%	8.50%	9.61%	0.12%

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RANGE RESOURCES CORP	RRC	4,451.49	0.45%	0.21%	0.65%	0.02%	28.00%	28.51%	0.02%
REPUBLIC SERVICES INC	RSG	21,515.75	2.04%	11.46%	13.62%	0.10%	8.50%	10.63%	0.11%
RAYTHEON COMPANY	RTN	51,345.05	1.78%	8.41%	10.27%	0.23%	8.00%	9.85%	0.26%
STARBUCKS CORP	SBUX	76,093.53	1.93%	16.68%	18.77%	0.35%	15.00%	17.07%	0.38%
SCANA CORP	SCG	8,693.64	4.03%	4.07%	8.18%	0.04%	4.00%	8.11%	0.04%
SCHWAB (CHARLES) CORP	SCHW	52,908.61	0.80%	19.46%	20.34%	0.24%	14.00%	14.86%	0.27%
SEALED AIR CORP	SEE	8,543.81	1.42%	7.45%	8.93%	0.04%	12.00%	13.51%	0.04%
SHERWIN-WILLIAMS CO/THE	SHW	30,729.14	1.03%	10.74%	11.82%	0.14%	13.50%	14.60%	0.15%
SIGNET JEWELERS LTD	SIG	3,666.29	1.90%	2.90%	4.83%	0.02%	1.50%	3.42%	0.02%
JM SMUCKER CO/THE	SJM	13,823.92	2.62%	4.93%	7.61%	0.06%	6.50%	9.20%	0.07%
SCHLUMBERGER LTD	SLB	87,668.07	3.18%	44.21%	48.10%	0.40%	17.50%	20.96%	0.44%
SL GREEN REALTY CORP	SLG	9,691.93	3.24%	0.80%	4.05%	0.04%	N/A	N/A	N/A
SNAP-ON INC	SNA	8,520.20	2.00%	10.85%	12.96%	0.04%	8.50%	10.59%	0.04%
SCRIPPS NETWORKS INTER-CL A	SNI	11,121.06	1.36%	8.53%	9.94%	0.05%	6.50%	7.90%	0.06%
SYNOPSIS INC	SNPS	11,602.12	0.00%	9.12%	9.12%	0.05%	9.50%	9.50%	0.06%
SOUTHERN CO/THE	SO	48,069.38	4.78%	4.77%	9.66%	0.22%	3.50%	8.36%	0.24%
SIMON PROPERTY GROUP INC	SPG	47,739.23	4.62%	7.26%	12.04%	0.22%	N/A	N/A	N/A
S&P GLOBAL INC	SPGI	38,575.70	1.09%	10.00%	11.15%	0.18%	12.00%	13.16%	0.19%
STAPLES INC	SPLS	6,691.91	4.74%	N/A	N/A	N/A	2.50%	7.30%	0.03%
STERICYCLE INC	SRCL	6,033.45	0.15%	7.68%	7.83%	0.03%	5.50%	5.65%	0.03%
SEMPRA ENERGY	SRE	29,234.40	2.82%	10.67%	13.64%	0.13%	8.00%	10.93%	0.15%
SUNTRUST BANKS INC	STI	26,938.80	2.36%	8.56%	11.02%	0.12%	7.00%	9.45%	0.14%
STATE STREET CORP	STT	34,560.96	1.73%	9.05%	10.86%	0.16%	7.50%	9.30%	0.17%
SEAGATE TECHNOLOGY	STX	9,154.18	8.16%	8.73%	17.24%	0.04%	4.50%	12.85%	0.05%
CONSTELLATION BRANDS INC-A	STZ	38,579.19	1.06%	16.36%	17.51%	0.18%	13.00%	14.13%	0.19%
STANLEY BLACK & DECKER INC	SWK	21,058.47	1.74%	11.00%	12.84%	0.10%	9.50%	11.33%	0.11%
SKYWORKS SOLUTIONS INC	SWKS	18,780.08	1.13%	13.59%	14.80%	0.09%	13.50%	14.71%	0.09%
SYNCHRONY FINANCIAL	SYF	23,915.73	1.87%	8.07%	10.02%	0.11%	7.50%	9.44%	0.12%
STRYKER CORP	SYK	53,973.59	1.19%	9.23%	10.47%	0.25%	14.00%	15.27%	0.27%
SYMANTEC CORP	SYMC	17,483.66	1.08%	13.14%	14.29%	0.08%	10.50%	11.64%	0.09%
SYSCO CORP	SYO	27,386.06	2.66%	11.47%	14.28%	0.12%	11.50%	14.31%	0.14%
AT&T INC	T	229,451.80	5.26%	5.25%	10.65%	1.05%	5.50%	10.91%	1.16%
MOLSON COORS BREWING CO -B	TAP	19,325.54	1.84%	7.32%	9.23%	0.09%	14.50%	16.48%	0.10%
TRANSDIGM GROUP INC	TDG	14,177.29	0.00%	10.21%	10.21%	0.06%	12.00%	12.00%	0.07%
TE CONNECTIVITY LTD	TEL	27,461.48	1.96%	6.87%	8.90%	0.13%	8.00%	10.04%	0.14%
TARGET CORP	TGT	30,702.57	4.46%	-0.78%	3.66%	0.14%	4.50%	9.06%	0.15%
TIFFANY & CO	TIF	10,972.85	2.15%	10.10%	12.35%	0.05%	8.00%	10.23%	0.06%
TJX COMPANIES INC	TJX	45,331.68	1.73%	12.44%	14.28%	0.21%	10.50%	12.33%	0.23%
TORCHMARK CORP	TMK	8,911.30	0.78%	7.17%	7.97%	0.04%	7.50%	8.30%	0.04%
THERMO FISHER SCIENTIFIC INC	TMO	69,063.76	0.35%	12.40%	12.77%	0.32%	9.00%	9.36%	0.35%
TRIPADVISOR INC	TRIP	5,539.01	0.00%	14.50%	14.50%	0.03%	8.00%	8.00%	0.03%
T ROWE PRICE GROUP INC	TROW	19,781.46	2.71%	12.85%	15.74%	0.09%	8.00%	10.82%	0.10%
TRAVELERS COS INC/THE	TRV	35,290.87	2.21%	6.37%	8.64%	0.16%	1.00%	3.22%	0.18%
TRACTOR SUPPLY COMPANY	TSCO	6,930.27	1.92%	14.90%	16.96%	0.03%	10.50%	12.52%	0.03%
TYSON FOODS INC-CL A	TSN	25,481.33	1.29%	8.60%	9.95%	0.12%	9.50%	10.86%	0.13%
TOTAL SYSTEM SERVICES INC	TSS	11,966.26	0.68%	11.00%	11.71%	0.05%	10.50%	11.21%	0.06%
TIME WARNER INC	TWX	78,705.72	1.63%	8.30%	9.99%	0.36%	9.50%	11.20%	0.40%
TEXAS INSTRUMENTS INC	TXN	79,173.39	2.55%	10.53%	13.21%	0.36%	9.50%	12.17%	0.40%
TEXTRON INC	TXT	12,624.20	0.18%	8.78%	8.97%	0.06%	12.00%	12.19%	0.06%
UNDER ARMOUR INC-CLASS A	UAA	7,196.28	0.00%	13.26%	13.26%	0.03%	14.00%	14.00%	0.04%
UNITED CONTINENTAL HOLDINGS	UAL	19,698.59	0.00%	4.37%	4.37%	0.09%	6.00%	6.00%	0.10%
UDR INC	UDR	10,424.65	3.18%	5.97%	9.25%	0.05%	N/A	N/A	N/A
UNIVERSAL HEALTH SERVICES-B	UHS	10,330.03	0.28%	8.69%	8.98%	0.05%	10.00%	10.29%	0.05%
ULTA BEAUTY INC	ULTA	15,148.34	0.00%	22.17%	22.17%	0.07%	21.00%	21.00%	0.08%
UNITEDHEALTH GROUP INC	UNH	184,496.21	1.51%	12.13%	13.73%	0.84%	12.50%	14.10%	0.93%
UNUM GROUP	UNM	10,816.97	1.79%	7.00%	8.86%	0.05%	10.50%	12.39%	0.05%
UNION PACIFIC CORP	UNP	83,159.99	2.36%	11.73%	14.22%	0.38%	8.00%	10.45%	0.42%
UNITED PARCEL SERVICE-CL B	UPS	98,148.84	2.92%	9.13%	12.17%	0.45%	10.00%	13.06%	0.49%
UNITED RENTALS INC	URI	9,456.65	0.00%	14.17%	14.17%	0.04%	8.00%	8.00%	0.05%
US BANCORP	USB	86,448.76	2.24%	12.13%	14.51%	0.39%	5.00%	7.30%	0.44%
UNITED TECHNOLOGIES CORP	UTX	92,242.28	2.37%	8.56%	11.03%	0.42%	8.00%	10.46%	0.47%
VISA INC-CLASS A SHARES	V	234,416.32	0.64%	17.50%	18.20%	1.07%	11.50%	12.18%	1.18%
VARIAN MEDICAL SYSTEMS INC	VAR	9,225.99	0.00%	7.20%	7.20%	0.04%	7.00%	7.00%	0.05%
VF CORP	VFC	24,711.55	2.72%	8.77%	11.61%	0.11%	8.50%	11.34%	0.12%
VIACOM INC-CLASS B	VIAB	12,002.15	2.81%	2.96%	5.81%	0.05%	2.00%	4.83%	0.06%
VALERO ENERGY CORP	VLO	28,597.74	4.33%	10.30%	14.85%	0.13%	5.00%	9.44%	0.14%
VULCAN MATERIALS CO	VMC	15,075.38	0.88%	24.06%	25.04%	0.07%	20.50%	21.47%	0.08%
VORNADO REALTY TRUST	VNO	14,003.36	6.04%	-3.15%	2.79%	0.06%	14.50%	20.98%	0.07%
VERISK ANALYTICS INC	VRSK	13,271.43	0.00%	7.96%	7.96%	0.06%	10.50%	10.50%	0.07%

		[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
					<u>Bloomberg</u>			<u>Value Line</u>	
VERISIGN INC	VRSN	9,812.21	0.00%	10.20%	10.20%	0.04%	10.50%	10.50%	0.05%
VERTEX PHARMACEUTICALS INC	VRTX	37,346.37	0.00%	72.50%	72.50%	0.17%	N/A	N/A	N/A
VENTAS INC	VTR	23,548.65	4.73%	3.99%	8.81%	0.11%	N/A	N/A	N/A
VERIZON COMMUNICATIONS INC	VZ	194,546.97	4.89%	1.92%	6.86%	0.89%	2.00%	6.94%	0.98%
WATERS CORP	WAT	14,344.30	0.00%	8.28%	8.28%	0.07%	8.50%	8.50%	0.07%
WALGREENS BOOTS ALLIANCE INC	WBA	85,639.82	1.87%	9.35%	11.31%	0.39%	11.00%	12.98%	0.43%
WESTERN DIGITAL CORP	WDC	24,231.37	2.42%	11.74%	14.30%	0.11%	11.00%	13.56%	0.12%
WEC ENERGY GROUP INC	WEC	20,383.09	3.22%	5.55%	8.86%	0.09%	6.00%	9.32%	0.10%
WELLS FARGO & CO	WFC	256,536.66	2.98%	11.46%	14.61%	1.17%	5.00%	8.05%	1.29%
WHOLE FOODS MARKET INC	WFM	13,364.10	1.53%	6.53%	8.11%	0.06%	3.50%	5.06%	0.07%
WHIRLPOOL CORP	WHR	12,412.35	2.49%	14.19%	16.85%	0.06%	9.50%	12.11%	0.06%
WILLIS TOWERS WATSON PLC	WLTW	19,933.84	1.42%	10.00%	11.49%	0.09%	N/A	N/A	N/A
WASTE MANAGEMENT INC	WM	33,112.69	2.26%	10.22%	12.59%	0.15%	7.00%	9.34%	0.17%
WILLIAMS COS INC	WMB	24,030.74	4.13%	13.00%	17.40%	0.11%	18.50%	23.01%	0.12%
WAL-MART STORES INC	WMT	239,079.93	2.72%	5.12%	7.91%	1.09%	4.00%	6.77%	1.21%
WESTROCK CO	WRK	14,297.69	2.84%	9.67%	12.65%	0.07%	N/A	N/A	N/A
WESTERN UNION CO	WU	8,760.22	3.71%	8.00%	11.86%	0.04%	5.50%	9.31%	0.04%
WEYERHAEUSER CO	WY	23,469.16	4.01%	7.40%	11.56%	0.11%	14.50%	18.80%	0.12%
WYNDHAM WORLDWIDE CORP	WYN	9,941.44	2.40%	14.40%	16.97%	0.05%	6.50%	8.98%	0.05%
WYNN RESORTS LTD	WYNN	13,836.16	1.51%	31.90%	33.65%	0.06%	14.00%	15.61%	0.07%
CIMAREX ENERGY CO	XEC	9,365.83	0.33%	39.33%	39.72%	0.04%	31.00%	31.38%	0.05%
XCEL ENERGY INC	XEL	24,880.38	2.94%	6.10%	9.13%	0.11%	4.50%	7.50%	0.13%
XL GROUP LTD	XL	11,295.37	2.01%	9.00%	11.10%	0.05%	13.00%	15.14%	0.06%
XILINX INC	XLNX	15,169.66	2.31%	8.37%	10.77%	0.07%	8.00%	10.40%	0.08%
EXXON MOBIL CORP	XOM	324,731.79	4.00%	4.74%	8.83%	1.48%	11.50%	15.73%	1.64%
DENTSPLY SIRONA INC	XRAY	12,129.17	0.65%	9.35%	10.04%	0.06%	8.50%	9.18%	0.06%
XEROX CORP	XRX	7,993.64	3.24%	2.90%	6.18%	0.04%	4.00%	7.30%	0.04%
XYLEM INC	XYL	10,599.93	1.12%	15.00%	16.20%	0.05%	12.00%	13.19%	0.05%
YUM! BRANDS INC	YUM	25,999.35	1.71%	12.74%	14.56%	0.12%	6.00%	7.76%	0.13%
ZIMMER BIOMET HOLDINGS INC	ZBH	22,520.58	0.89%	8.26%	9.18%	0.10%	11.00%	11.93%	0.11%
ZIONS BANCORPORATION	ZION	8,879.40	1.00%	9.00%	10.05%	0.04%	14.50%	15.57%	0.04%
ZOETIS INC	ZTS	29,713.53	0.69%	13.43%	14.17%	0.14%	11.50%	12.23%	0.15%
	Total Market Capitalization:	22,094,195			13.41%			14.16%	
	W/ Bloomberg Growth Est.:	21,911,024							
	W/ Value Line Growth Est.:	19,828,726							

Notes:

[1] Equals sumproduct of Cols. [9] x [10], and Cols. [12] x [13]

[2] Source: Bloomberg Professional

[3] Source: Blue Chip Financial Forecasts, Vol. 36, No. 8, August 1, 2017, at 2. (6 quarters ending December 2018)

[4] Equals [1] - [2]

[5] Equals [1] - [3]

[6] Source: Bloomberg Professional

[7] Source: Bloomberg Professional

[8] Source: Bloomberg Professional

[9] Equals (([7] x (1 + (0.5 x [8]))) + [8])

[10] Equals weight in S&P 500 based on market capitalization, excluding N/As

[11] Source: Value Line

[12] Equals (([7] x (1 + (0.5 x [11]))) + [11])

[13] Equals weight in S&P 500 based on market capitalization, excluding N/As

Value Line and Bloomberg Beta Coefficients

Company	Ticker	[1]	[2]
		Value Line	Bloomberg
Atmos Energy Corporation	ATO	0.70	0.61
Black Hills Corporation	BKH	0.85	0.54
Chesapeake Utilities	CPK	0.70	0.71
Northwest Natural Gas Company	NWN	0.65	0.55
One Gas Inc	OGS	0.70	0.69
Sempra Energy	SRE	0.80	0.72
Southwest Gas	SWX	0.75	0.63
Spire Inc	SR	0.70	0.63
Vectren Corporation	VVC	0.70	0.68
Mean		0.73	0.64

Notes:

[1] Source: Value Line

[2] Source: Bloomberg Professional Service



Capital Asset Pricing Model Results

	[1]	[2]	[3]	[4]	[5]	[6]
					CAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
<b>VALUE LINE BETA COEFFICIENT</b>						
Current 30-Year Treasury (30-day average) [7]	2.85%	0.728	10.56%	11.31%	10.53%	11.08%
Near-Term Projected Treasury Yield [8]	3.35%	0.728	10.06%	10.81%	10.67%	11.22%
<b>BLOOMBERG BETA COEFFICIENT</b>						
Current 30-Year Treasury (30-day average) [7]	2.85%	0.642	10.56%	11.31%	9.62%	10.11%
Near-Term Projected Treasury Yield [8]	3.35%	0.642	10.06%	10.81%	9.80%	10.29%

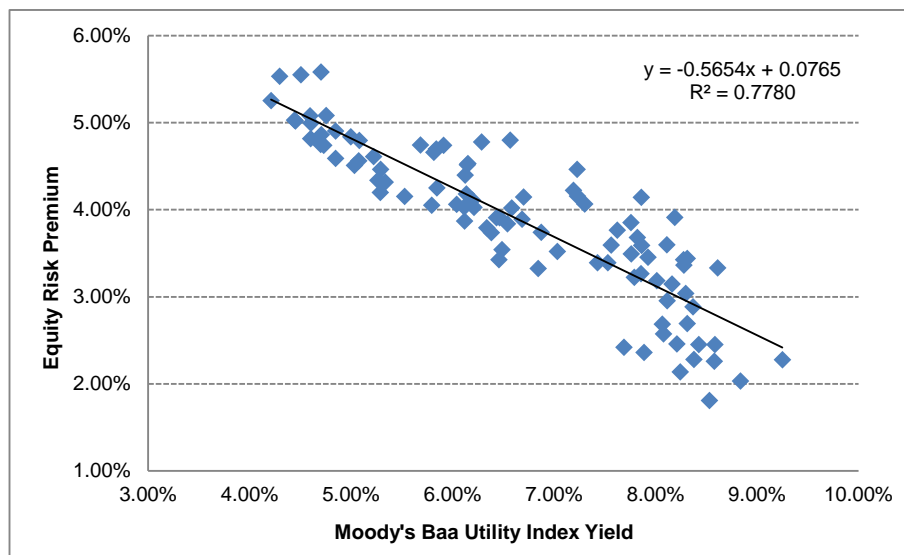
Summary of Results	
Mean:	10.42%
Minimum:	9.62%
Maximum:	11.22%

Notes:

- [1] See Notes [7], [8]  
 [2] Source: Schedule KM-5  
 [3] Source: Schedule KM-4  
 [4] Source: Schedule KM-4  
 [5] Equals Col. [1] + (Col. [2] x Col. [3])  
 [6] Equals Col. [1] + (Col. [2] x Col. [4])  
 [7] Source: Bloomberg Professional  
 [8] Source: Blue Chip Financial Forecasts, Vol. 36, No. 8, August 1, 2017, at 2. (6 quarters ending December 2018)

Bond Yield Plus Risk Premium

Scenario	[1] Constant	[2] Slope	[3] Baa Utility Bond Yield	[4] Risk Premium	[5] Return on Equity
Current Utility Bond Yield	7.65%	-0.565	4.30%	5.22%	9.52%
Near-Term Projected Utility Bond Yield	7.65%	-0.565	5.03%	4.81%	9.83%
Long-Term Projected Utility Bond Yield	7.65%	-0.565	6.36%	4.05%	10.41%



Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Projected yields = Current yield + projected change in corporate Baa bond yields

Sources: Current = Bloomberg Professional (30-day average);

Near Term Projected = Blue Chip Financial Forecasts, Vol. 36, No. 8, August 1, 2017, at 2;

Long Term Projected = Blue Chip Financial Forecasts, Vol. 36, No. 6, June 1, 2017, at 14

[4] Equals [1] + [3] x [2]

[5] Equals [3] + [4]

Expected Earnings Analysis - Proxy Group

Company	Ticker	[1] Expected ROE 2020-2022	[2] Projected Common Shares 2018	[3] Projected Common Shares 2020-22	[4] Projected BPS 2018	[5] Projected BPS 2020-22	[6] Book Value Growth Rate	[7] Adjusted ROE
Atmos Energy Corporation	ATO	11.50%	110.00	120.00	37.15	38.50	4.17%	11.75%
Black Hills Corporation	BKH	10.50%	60.25	61.00	35.35	41.00	5.50%	10.80%
Chesapeake Utilities Corporation	CPK	13.00%	17.00	20.00	32.20	32.90	6.33%	13.42%
Northwest Natural Gas Company	NWN	10.00%	29.50	30.00	30.40	32.25	2.56%	10.13%
One Gas Inc	OGS	9.50%	52.50	55.00	38.95	41.45	3.69%	9.68%
Sempra Energy	SRE	13.00%	254.00	236.00	55.25	58.25	-0.69%	12.96%
Southwest Gas Corporation	SWX	8.50%	49.00	52.00	42.85	57.70	12.64%	9.07%
Spire Inc	SR	9.50%	48.50	50.00	41.85	48.30	5.96%	9.79%
Vectren Corporation	VVC	12.00%	84.00	86.00	23.80	28.50	7.03%	12.44%
								11.11%
								10.80%

Expected Earnings Analysis - Value Line Gas Universe

Company	Ticker	[1] Expected ROE 2020-2022	[2] Projected Common Shares 2018	[3] Projected Common Shares 2020-22	[4] Projected BPS 2018	[5] Projected BPS 2020-22	[6] Book Value Growth Rate	[7] Adjusted ROE
Atmos Energy Corporation	ATO	11.50%	110.00	120.00	37.15	38.50	4.17%	11.75%
Chesapeake Utilities Corporation	CPK	13.00%	17.00	20.00	32.20	32.90	6.33%	13.42%
New Jersey Resources Corporation	NJR	12.00%	86.00	86.00	15.25	18.25	6.17%	12.38%
NiSource Inc.	NI	11.00%	325.00	330.00	13.20	13.60	1.52%	11.08%
Northwest Natural Gas Company	NWN	10.00%	29.50	30.00	30.40	32.25	2.56%	10.13%
One Gas Inc	OGS	9.50%	52.50	55.00	38.95	41.45	3.69%	9.68%
South Jersey Industries Inc	SJI	7.00%	83.00	86.00	19.60	25.00	9.74%	7.36%
Southwest Gas Corporation	SWX	8.50%	49.00	52.00	42.85	57.70	12.64%	9.07%
Spire Inc	SR	9.50%	48.50	50.00	41.85	48.30	5.96%	9.79%
UGI Corporation	UGI	12.50%	170.00	170.00	19.05	24.75	9.12%	13.10%
WGL Holdings, Inc.	WGL	10.00%	53.00	55.00	32.10	37.60	6.72%	10.35%
								10.74%
								10.35%

Notes:

- [1] Source: Value Line
- [2] Source: Value Line
- [3] Source: Value Line
- [4] Source: Value Line
- [5] Source: Value Line
- [6] Equals  $(([3] \times [5]) / ([2] \times [4]))^{(1/3)-1}$
- [7] Equals  $[1] \times (1 / (1 - 0.5 \times [6]))$

Proxy Group Capital Structure - Current

Company	Ticker	% Common Equity								
		2017Q2	2017Q1	2016Q4	2016Q3	2016Q2	2016Q1	2015Q4	2015Q3	Average
Atmos Energy Corporation	ATO	55.99%	59.92%	59.06%	58.68%	58.54%	57.66%	57.13%	56.72%	57.96%
Black Hills Corporation	BKH	34.62%	34.23%	33.42%	33.28%	33.14%	31.91%	44.16%	45.32%	36.26%
Chesapeake Utilities Corporation	CPK	68.36%	75.61%	74.95%	73.80%	70.88%	70.35%	69.37%	68.16%	71.43%
Northwest Natural Gas Company	NWN	54.58%	54.86%	54.17%	56.69%	57.35%	57.57%	56.75%	55.29%	55.91%
ONE Gas, Inc.	OGS	61.84%	61.98%	61.29%	60.97%	61.14%	61.04%	60.71%	60.12%	61.14%
Sempra Energy	SRE	45.01%	46.52%	45.77%	46.12%	45.55%	45.97%	45.68%	45.91%	45.82%
Southwest Gas Holdings, Inc.	SWX	50.05%	51.89%	50.97%	49.74%	52.67%	53.47%	50.37%	49.84%	51.13%
Spire Inc.	SR	51.30%	49.44%	46.45%	46.06%	49.49%	47.76%	46.36%	45.94%	47.85%
Vectren Corporation	VVC	51.14%	51.09%	50.78%	50.25%	49.82%	49.62%	48.53%	50.60%	50.23%
Mean		52.54%	53.95%	52.99%	52.84%	53.17%	52.82%	53.23%	53.10%	53.08%
Median		51.30%	51.89%	50.97%	50.25%	52.67%	53.47%	50.37%	50.60%	51.13%

Company	Ticker	% Long-Term Debt								
		2017Q2	2017Q1	2016Q4	2016Q3	2016Q2	2016Q1	2015Q4	2015Q3	Average
Atmos Energy Corporation	ATO	44.01%	40.08%	40.94%	41.32%	41.46%	42.34%	42.87%	43.28%	42.04%
Black Hills Corporation	BKH	65.38%	65.77%	66.58%	66.72%	66.86%	68.09%	55.84%	54.68%	63.74%
Chesapeake Utilities Corporation	CPK	31.64%	24.39%	25.05%	26.20%	29.12%	29.65%	30.63%	31.84%	28.57%
Northwest Natural Gas Company	NWN	45.42%	45.14%	45.83%	43.31%	42.65%	42.43%	43.25%	44.71%	44.09%
ONE Gas, Inc.	OGS	38.16%	38.02%	38.71%	39.03%	38.86%	38.96%	39.29%	39.88%	38.86%
Sempra Energy	SRE	54.99%	53.48%	54.23%	53.88%	54.45%	54.03%	54.32%	54.09%	54.18%
Southwest Gas Holdings, Inc.	SWX	49.95%	48.11%	49.03%	50.26%	47.33%	46.53%	49.63%	50.16%	48.87%
Spire Inc.	SR	48.70%	50.56%	53.55%	53.94%	50.51%	52.24%	53.64%	54.06%	52.15%
Vectren Corporation	VVC	48.86%	48.91%	49.22%	49.75%	50.18%	50.38%	51.47%	49.40%	49.77%
Mean		47.46%	46.05%	47.01%	47.16%	46.83%	47.18%	46.77%	46.90%	46.92%
Median		48.70%	48.11%	49.03%	49.75%	47.33%	46.53%	49.63%	49.40%	48.87%

Source: SNL Financial

Proxy Group Capital Structure - Value Line Projections

Company	Ticker	% Common Equity		
		2017	2018	2020-22
Atmos Energy Corporation	ATO	62.00%	61.00%	55.00%
Black Hills Corporation	BKH	32.50%	39.50%	40.50%
Chesapeake Utilities Corporation	CPK	77.00%	75.00%	70.00%
Northwest Natural Gas Company	NWN	55.50%	55.00%	54.50%
ONE Gas, Inc.	OGS	62.00%	62.00%	62.00%
Sempra Energy	SRE	46.50%	46.00%	40.00%
Southwest Gas Holdings, Inc.	SWX	52.00%	54.00%	59.00%
Spire Inc.	SR	49.50%	50.00%	51.00%
Vectren Corporation	VVC	52.50%	52.50%	54.00%
Mean		54.39%	55.00%	54.00%
Median		52.50%	54.00%	54.50%

Company	Ticker	% Long-Term Debt		
		2017	2018	2020-22
Atmos Energy Corporation	ATO	38.00%	39.00%	45.00%
Black Hills Corporation	BKH	67.50%	60.50%	59.50%
Chesapeake Utilities Corporation	CPK	23.00%	25.00%	30.00%
Northwest Natural Gas Company	NWN	44.50%	45.00%	45.50%
ONE Gas, Inc.	OGS	38.00%	38.00%	38.00%
Sempra Energy	SRE	53.50%	54.00%	60.00%
Southwest Gas Holdings, Inc.	SWX	48.00%	46.00%	41.00%
Spire Inc.	SR	50.50%	50.00%	49.00%
Vectren Corporation	VVC	47.50%	47.50%	46.00%
Mean		45.61%	45.00%	46.00%
Median		47.50%	46.00%	45.50%

Source: SNL Financial

Small Size Premium

	[1]	[2]
	Customers (Mil)	(\$Mil)
Liberty IL	0.06	\$52.56
Median Market to Book for Comp Group		2.21
Liberty IL Implied Market Cap		\$116.15

Company Name	Ticker	[3] Customers (Mil)	[4] Market Cap (\$Mil)	[5] Market to Book Ratio
Atmos Energy Corporation	ATO	3.19	\$9,145.63	2.36
Black Hills Corporation	BKH	1.03	\$3,710.50	2.21
Chesapeake Utilities Corporation	CPK	0.15	\$1,266.65	2.74
Northwest Natural Gas Company	NWN	0.73	\$1,805.29	2.07
ONE Gas, Inc.	OGS	2.15	\$3,785.47	1.96
Sempra Energy	SRE	6.81	\$28,701.63	2.16
Southwest Gas Holdings, Inc.	SWX	1.98	\$3,793.69	2.21
Spire Inc.	SR	1.68	\$3,521.21	1.76
Vectren Corporation	VVC	1.02	\$4,968.24	2.77
MEDIAN		1.7	\$3,785.47	2.21
MEAN		2.1	\$6,744.26	2.25

Market Capitalization (\$Mil) [6]				
Decile	Low	High	Size Premium	
2	\$ 10,784.101	\$ 24,233.747	0.61%	
3	\$ 5,683.991	\$ 10,711.194	0.89%	
4	\$ 3,520.566	\$ 5,676.716	0.98%	
5	\$ 2,392.689	\$ 3,512.913	1.51%	
6	\$ 1,571.193	\$ 2,390.899	1.66%	
7	\$ 1,033.341	\$ 1,569.984	1.72%	
8	\$ 569.279	\$ 1,030.426	2.08%	
9	\$ 263.715	\$ 567.843	2.68%	
10	\$ 2.516	\$ 262.891	5.59%	
Proxy Group Median		\$ 3,785.474	0.98%	
10th Decile Size Premium		\$ 116.155	5.59%	
Difference from Proxy Group Median			4.61%	

Notes:

[1] Algonquin Power & Utilities Corporation, Annual Information Form, March 30, 2017, at 43.

[2] Requested Rate Base x Equity Ratio

[3] Source: SNL Financial

[4] Source: Bloomberg Professional Services, 30-day average

[5] Source: Bloomberg Professional Services, 30-day average

[6] Source: Duff & Phelps, *2017 Valuation Handbook*, Appendix 3

RRA Regulatory Risk Ranking

Company	State of Operation		RRA Rank [1]	Numeric Conversion [2]
Atmos Energy Corporation	CO	Colorado	Average / 2	5
	GA	Georgia	Above Average / 2	8
	IA	Iowa	Average / 1	6
	IL	Illinois	Average / 2	5
	KS	Kansas	Below Average / 1	3
	KY	Kentucky	Average / 1	6
	LA	Louisiana	Average / 2	5
	MO	Missouri	Below Average / 1	3
	MS	Mississippi	Above Average / 3	7
	TN	Tennessee	Above Average / 3	7
	TX	Texas	Average / 2	5
VA	Virginia	Above Average / 2	8	
Black Hills Corporation	AR	Arkansas	Average / 1	6
	CO	Colorado	Average / 2	5
	IA	Iowa	Average / 1	6
	KS	Kansas	Below Average / 1	3
	MT	Montana	Average / 3	4
	NE	Nebraska	Average / 1	6
	SD	South Dakota	Average / 2	5
	WY	Wyoming	Average / 3	4
Chesapeake Utilities	DE	Delaware	Average / 3	4
	FL	Florida	Above Average / 2	8
	MD	Maryland	Below Average / 3	1
New Jersey Resources Corporation	NJR	New Jersey	Below Average / 2	2
Northwest Natural Gas Company	OR	Oregon	Average / 2	5
	WA	Washington	Average / 3	4
One Gas Inc	KS	Kansas	Below Average / 1	3
	OK	Oklahoma	Average / 3	4
	TX	Texas	Average / 2	5
South Jersey Industries, Inc.	SJI	New Jersey	Below Average / 2	2
Sempra Energy	CA	California	Above Average / 3	7
Southwest Gas Corporation	AZ	Arizona	Average / 3	4
	CA	California	Above Average / 3	7
	NV	Nevada	Average / 2	5
Spire Inc	AL	Alabama	Above Average / 1	9
	MO	Missouri	Below Average / 1	3
	MS	Mississippi	Above Average / 3	7
Vectren Corporation	IN	Indiana	Average / 1	6
	OH	Ohio	Average / 2	5
Proxy Group Average				5.1
Liberty Utilities	Missouri		Below Average / 1	3

Notes:

[1] Source: RRA, *State Regulatory Evaluations*, Updated May 10, 2017.

[2] Highest risk (Below Average / 3) = 1; lowest risk (Above Average / 1) = 9

Flotation Cost Adjustment

Two most recent open market follow-on common stock issuances per company, if available

Company	Date	Shares Issued	Offering Price	Underwriting Discount	Offering Expense	Net Proceeds Per Share	Total Flotation Costs	Gross Equity Issue Before Costs	Net Proceeds	Flotation Cost Percent
Algonquin Power & Utilities Corp.	11/25/2015	16,508,250	\$10.45	\$0.4180	\$500,000	\$10.00	\$7,400,449	\$172,511,213	\$165,110,764	4.290%
Algonquin Power & Utilities Corp.	12/2/2014	10,055,000	\$9.95	\$0.3980	\$700,000	\$9.48	\$4,701,890	\$100,047,250	\$95,345,360	4.700%
Atmos Energy Corporation	2/11/2014	9,200,000	\$44.00	\$1.5400	\$350,000	\$42.42	\$14,518,000	\$404,800,000	\$390,282,000	3.586%
Atmos Energy Corporation	12/7/2006	6,325,000	\$31.50	\$1.1025	\$400,000	\$30.33	\$7,373,313	\$199,237,500	\$191,864,188	3.701%
Black Hills Corp.	11/19/2015	6,325,000	\$40.25	\$1.4088	\$1,200,000	\$38.65	\$10,110,344	\$254,581,250	\$244,470,906	3.971%
Black Hills Corp.	12/7/2010	4,413,519	\$29.75	\$1.0413	\$276,650	\$28.65	\$4,872,227	\$131,302,190	\$126,429,964	3.711%
Chesapeake Utilities Corporation	9/22/2016	960,488	\$62.26	\$2.3300	\$157,000	\$59.77	\$2,394,937	\$59,799,983	\$57,405,046	4.005%
Chesapeake Utilities Corporation	11/16/2006	690,345	\$30.10	\$1.1250	\$225,000	\$28.65	\$1,001,638	\$20,779,385	\$19,777,746	4.820%
Northwest Natural Gas Company	11/10/2016	1,012,000	\$54.63	\$2.0500	\$250,000	\$52.33	\$2,324,600	\$55,285,560	\$52,960,960	4.205%
Northwest Natural Gas Company	3/30/2004	1,290,000	\$31.00	\$1.0100	\$175,000	\$29.85	\$1,477,900	\$39,990,000	\$38,512,100	3.696%
Sempra Energy	10/9/2003	16,500,000	\$28.00	\$0.8400	\$500,000	\$27.13	\$14,360,000	\$462,000,000	\$447,640,000	3.108%
Spire Inc.	5/13/2016	2,185,000	\$63.05	\$2.0491	\$300,000	\$60.86	\$4,777,284	\$137,764,250	\$132,986,967	3.468%
Spire Inc.	6/5/2014	10,350,000	\$46.25	\$1.7113	\$1,000,000	\$44.44	\$18,711,438	\$478,687,500	\$459,976,063	3.909%
Vectren Corporation	2/20/2007	5,290,000	\$28.33	\$0.9900	\$425,000	\$27.26	\$5,662,100	\$149,865,700	\$144,203,600	3.778%
Vectren Corporation	7/31/2003	7,475,000	\$22.81	\$0.7980	\$300,000	\$21.97	\$6,265,050	\$170,504,750	\$164,239,700	3.674%
Mean							\$7,063,411	\$189,143,769		
							WEIGHTED AVERAGE FLOTATION COSTS:			3.734%

Discounted Cash Flow Model Adjustment for Flotation Costs - 30 Day Average Stock Price

Company	Ticker	[1]	[2]
		Expected Dividend Yield	Dividend Yield Adjusted for Flot. Costs
Atmos Energy Corporation	ATO	2.16%	2.25%
Black Hills Corporation	BKH	2.65%	2.75%
Chesapeake Utilities	CPK	1.75%	1.81%
Northwest Natural Gas Company	NWN	3.06%	3.18%
One Gas Inc	OGS	2.39%	2.49%
Sempra Energy	SRE	2.98%	3.09%
Southwest Gas	SWX	2.55%	2.65%
Spire Inc	SR	2.95%	3.07%
Vectren Corporation	VVC	2.89%	3.00%
PROXY GROUP MEAN		2.60%	2.70%

Dividend Yield Adjusted For Flotation Costs:	2.70%
Dividend Yield Unadjusted For Flotation Costs:	2.60%
Difference (Flotation Cost Adjustment):	0.10% [3]

Notes:

The proxy group DCF result is adjusted for flotation costs by dividing each company's expected dividend yield by (1 - flotation cost). The flotation cost adjustment is derived as the difference between the unadjusted DCF result and the DCF result adjusted for flotation costs.

[1] Source: Schedule KM-2

[2] Equals [1] / (1 - 0.0373)

[3] Equals average [2] - average [1]



