

**BEFORE THE
PUBLIC UTILITIES COMMISSION OF OHIO**

In the Matter of the Application of)	
Northeast Ohio Natural Gas Corp. for an)	Case No. 18-1720-GA-AIR
Increase in Gas Distribution Rates)	
)	
In the Matter of the Application of)	
Northeast Ohio Natural Gas Corp. for)	Case No. 18-1721-GA-ATA
Tariff Approval)	
)	
In the Matter of the Application of)	
Northeast Ohio Natural Gas Corp. for)	Case No. 18-1722-GA-ALT
Approval of an Alternative Rate Plan)	

DIRECT TESTIMONY OF

GREGORY E. SCHEIG, CPA/ABV/CFF/CGMA, CFA, CEIV

**ON BEHALF OF
NORTHEAST OHIO NATURAL GAS CORP.**

JANUARY 11, 2019

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EXHIBITS

Exhibit GES-1 Qualifications of Gregory E. Scheig

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1 **I. INTRODUCTION AND QUALIFICATIONS**

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

3 A. My name is Gregory E. Scheig. I am a Principal of ValueScope, Inc., 950 E. State Highway
4 114, Suite 120, Southlake, TX 76092.

5 **Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND DESCRIBE**
6 **YOUR PROFESSIONAL TRAINING AND EXPERIENCE.**

7 A. I have a Bachelor of Science degree in petroleum engineering and a Master of Business
8 Administration in finance from The University of Texas in Austin, Texas. I began my
9 career with FINANCO, Inc., where I spent approximately ten years supporting Dr. Samuel
10 C. Hadaway in preparation of cost of capital testimony. I also performed financial
11 modeling and developed valuation analyses for utility and non-utility companies and
12 assets.

13 After my time with FINANCO, Inc., I worked with Deloitte Consulting as a Senior
14 Manager in their utility strategy practice. At Deloitte, I performed substantive work on
15 numerous regulatory projects in the area of utility M&A and deregulation (“unbundling”).

16 Following Deloitte, I worked with CBIZ Valuation Group as a Managing Director
17 and with Kroll as a Senior Director. In these roles, I focused on business valuation projects
18 for financial reporting, tax reporting, other management requirements and provided expert
19 testimony. I have been a Principal with ValueScope since 2008 providing financial
20 valuation and consulting services for utilities and other energy-related businesses.

21 I earned the designation of Chartered Financial Analyst (CFA) in 1991 and the
22 designation of Certified Public Accountant (CPA) in 1997. As a member of the AICPA, I
23 am Accredited in Business Valuation (ABV), Certified in Financial Forensics (CFF), and
24 I am certified in entity and intangible valuation (CEIV). I have done rate of return and

1 business valuation analyses for over 25 years; each of my projects required the
2 consideration of appropriate market capital structures and rates of return. A list of my
3 publications, speaking engagements and testimony I have given before various courts and
4 agencies is contained in my resume, which is included as Exhibit GES-1.

5 **II. PURPOSE AND SUMMARY OF TESTIMONY**

6 **Q. WHO RETAINED YOU TO PROVIDE TESTIMONY IN THIS PROCEEDING?**

7 A. I have been jointly retained by:

- 8 • Northeast Ohio Natural Gas Corp.,
- 9 • Orwell Natural Gas Company,
- 10 • Brainard Gas Corp., and
- 11 • Spelman Pipeline Holdings, LLC (collectively “Northeast Ohio Natural Gas” or
12 “NEO”).

13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A. The purpose of my testimony is to measure the cost of equity (also referred to as the “return
15 on equity” or “ROE”) for NEO. I have also calculated the overall rate of return (“ROR”) for the company reflecting its capital structure and cost of debt.

17 **Q. ARE YOU PROVIDING ANY EXHIBITS WITH YOUR TESTIMONY?**

18 A. Yes, Exhibit GES-1 is a copy of my qualifications and Exhibit GES-2 includes all of the
19 schedules detailing my analyses.

20 **Q. ON WHAT DO YOU BASE THE OPINIONS IN YOUR TESTIMONY?**

21 A. I base the opinions expressed in this testimony on my review of market information, my
22 analyses which incorporated certain factors from the joint application that is the subject of

1 this proceeding, and my extensive background, experience, and training.

2 **Q. PLEASE OUTLINE AND DESCRIBE THE TESTIMONY YOU WILL PRESENT.**

3 A. My testimony is divided into seven sections, including this section and the previous one
4 (Sections I and II). In Section III, I review various methods for estimating the cost of
5 equity. In Section IV, I specifically discuss:

- 6 • The capital asset pricing model (“CAPM”),
- 7 • the discounted cash flow (“DCF”) method,
- 8 • the Risk Premium method, and
- 9 • the Expected Earnings method.

10 In Section V, I discuss factors that affect the cost of equity, and in Section VI, I
11 discuss the details and indicated results of my cost of equity studies. In Section VII, I
12 summarize my ROR recommendation.

13 **Q. PLEASE SUMMARIZE YOUR COST OF EQUITY STUDIES AND STATE YOUR**
14 **ROE RECOMMENDATION.**

15 A. My ROE recommendation is based on the analyses that I developed using a combination
16 of CAPM models, DCF models, Risk Premium analyses, and an Expected Earnings
17 analysis. I developed the CAPM, DCF, and Expected Earnings models using a comparable
18 group of gas utilities which, although substantially larger than NEO, are followed by *Value*
19 *Line* and for which complete and reliable data are available. My Risk Premium analysis is
20 based on *Moody's* utility-industry interest rates, US Treasury Bond yields, and authorized
21 rates of return approved by various commissions for regulated gas utilities. I also
22 considered and propose adjustments for NEO’s very small capital size, lack of liquidity,
23 and private ownership, traits which vary from the previously stated group.

1 The following table contains my summary results for NEO's market-based return
2 on equity:

Method		ROE Indications (Current Rf of 3.38%)	ROE Indications (Forecasted Rf of 3.84%)	Weighting	Weighted ROE	Weighting
<u>CAPM - Value Line Betas</u>		Equity Risk Premium				
B.5, B.9	D&P Long-Term Average Returns	8.72%	9.35%	33%		
B.6, B.10	S&P500 Stocks - All	13.39%	12.55%	0%		
B.7, B.11	S&P500 Stocks (Dividend Paying Only)	11.92%	11.55%	33%		
B.8, B.12	S&P500 Stocks (Dividends, 5%-15%)	7.76%	8.69%	33%		
					10.09%	10%
<u>CAPM - Bloomberg Betas</u>		Equity Risk Premium				
B.13, B.17	D&P Long-Term Average Returns	8.72%	9.11%	33%		
B.14, B.18	S&P500 Stocks - All	13.39%	12.18%	0%		
B.15, B.19	S&P500 Stocks (Dividend Paying Only)	11.92%	11.22%	33%		
B.16, B.20	S&P500 Stocks (Dividends, 5%-15%)	7.76%	8.48%	33%		
					9.83%	10%
<u>ECAPM - Value Line Betas</u>		Equity Risk Premium				
C.1, C.5	D&P Long-Term Average Returns	8.72%	10.04%	33%		
C.2, C.6	S&P500 Stocks - All	13.39%	13.61%	0%		
C.3, C.7	S&P500 Stocks (Dividend Paying Only)	11.92%	12.49%	33%		
C.4, C.8	S&P500 Stocks (Dividends, 5%-15%)	7.76%	9.30%	33%		
					10.84%	10%
<u>ECAPM - Bloomberg Betas</u>		Equity Risk Premium				
C.9, C.13	D&P Long-Term Average Returns	8.72%	9.86%	33%		
C.10, C.14	S&P500 Stocks - All	13.39%	13.33%	0%		
C.11, C.15	S&P500 Stocks (Dividend Paying Only)	11.92%	12.24%	33%		
C.12, C.16	S&P500 Stocks (Dividends, 5%-15%)	7.76%	9.14%	33%		
					10.64%	10%
<u>DCF Analyses: Constant Growth</u>		Average				
D.1	Value Line Estimated Growth	11.23%			11.23%	15%
<u>DCF Analyses: Non-Constant Growth</u>		Average				
D.2	3 Year Exit	13.79%		0%		
D.3	4 Year Exit	10.84%		50%		
D.4	5 Year Exit	9.10%		50%		
					9.97%	20%
<u>Risk Premium- Authorized Rate Case Returns</u>						
E.1, E.2	Utility Bond Yields	9.74%	9.91%	50%		
E.3, E.4	Long Term Treasuries	9.79%	10.00%	50%		
					9.86%	20%
<u>Expected Earnings</u>		Average				
F.1	2018 and 2019 Estimates	10.39%		50%		
F.2	2021-2023 Estimates	11.15%		50%		
					10.77%	5.0%
Large Company ROE (rounded)					10.33%	100%
<u>Business Risk Adjustments (Schedule G.2)</u>						
G.1	D&P Table - 10th Decile				5.37%	
G.2	Comparable Utility Group- Average				1.22%	
	Comparable Utility Group- Median				1.38%	
G.2	Differential: D&P Implied SSRP less Comparable's Mean SSRP				4.15%	
G.2	Private Equity Liquidity Effects				3.00%	
G.2	Chicago Booth Study			4.00%	5.00%	
Indicated Business Risk Adjustment				1.00%	-	2.00%
Company Selected Business Risk Adjustment					0.50%	
Company Requested ROE					10.83%	

1

1 Under current market and utility industry conditions, a combination approach,
2 based on all methods considered, provides an accurate and reliable estimation of NEO's
3 cost of equity. The data sources and the details of my rate of return analyses are contained
4 in Exhibit GES-2, Schedules A through F.

5 Based on my analyses and my review of current financial market and utility
6 industry conditions, it is my opinion that 11.33% to 12.33% would be an appropriate risk-
7 adjusted range for NEO's fair cost of equity capital after accounting for the business risks
8 of an investment in a small, private, and illiquid utility. However, NEO has informed me
9 that it will request an ROE of only 10.83% (or 50 basis points less than my lower estimate)
10 given its desire to moderate customer rates in this rate case.

11 **Q. PLEASE SUMMARIZE YOUR RATE OF RETURN RECOMMENDATIONS.**

12 A. For NEO, combining the 10.83% ROE with its requested capital structure and cost of debt,
13 the overall rate of return is 8.66%.¹

14 **III. ESTIMATING THE COST OF EQUITY**

15 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

16 A. This section presents a definition of the cost of equity and discusses the methods for
17 estimating the cost of equity.

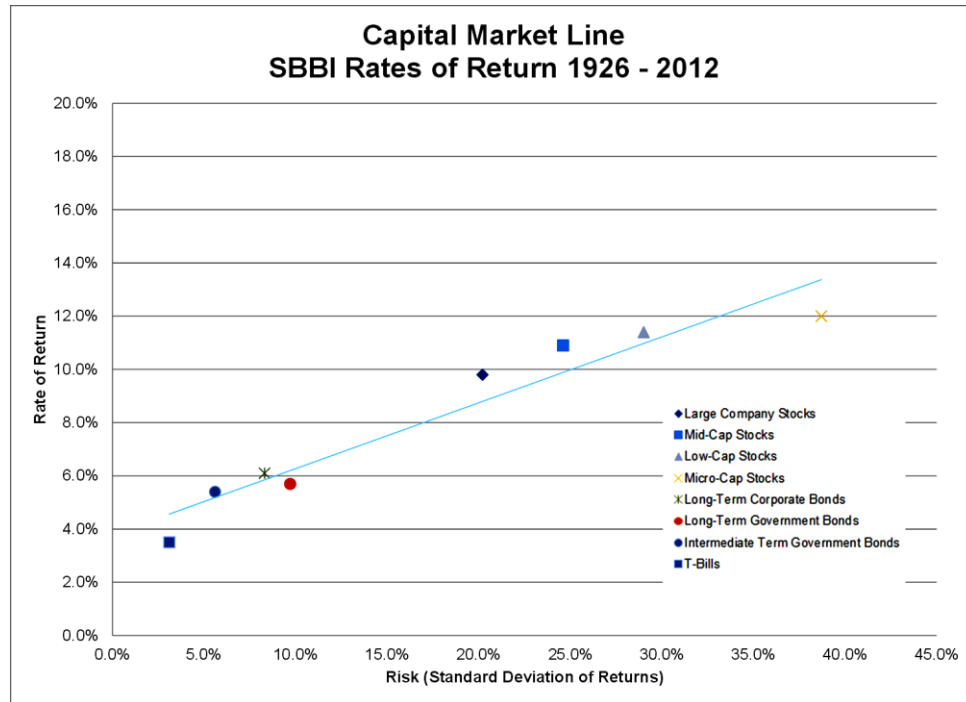
18 **Q. PLEASE DEFINE THE TERM "COST OF CAPITAL" AND HOW IT RELATES**
19 **TO EQUITY SPECIFICALLY.**

20 A. The cost of capital is the rate of return that investors require on their investment. The cost
21 of equity capital is the rate of return that common stockholders require on their investment.
22 Common equity investors expect a return on their capital commensurate with the risks they

¹ Exhibit GES-2, Schedule I.1.

1 assume and the expected returns from other similar investments. Differences in risk
2 between investment types are accounted for in the market through price changes (volatility)
3 and the ultimate rates of return implied by that pricing.

4 The following graph shows long-term historical rates of return calculated by
5 Morningstar.²



6 This graph plots the realized rates of return from different investments versus their risk, as
7 measured by the standard deviation of their returns. The line is referred to as the Capital
8 Market Line and it demonstrates the relationship between risk and rates of return.
9

² Stocks, Bonds, Bills and Inflation Valuation Yearbook, Ibbotson Associates, 2013, Table 2.1: “Total Returns, Income Returns, and Capital Appreciation of the Basic Asset Classes: Summary Statistics of Annual Returns”, pg. 23.

1 **Q. HOW IS THE FAIR RATE OF RETURN IN THE REGULATORY PROCESS**
2 **RELATED TO THE ESTIMATED COST OF EQUITY?**

3 A. The regulatory process is guided by principles established in the U.S. Supreme Court cases,
4 *Bluefield Waterworks and Hope Natural Gas*. The *Bluefield* decision noted:

5 A public utility is entitled to such rates as will permit it to earn a return on
6 the value of the property which it employs for the convenience of the public
7 equal to that generally being made at the same time and in the same general
8 part of the country on investments in other business undertakings which are
9 attended by corresponding risks and uncertainties; but it has no
10 constitutional right to profits such as are realized or anticipated in highly
11 profitable enterprises or speculative ventures.³

12 From the investor or company point of view, it is important that there be enough
13 revenue not only for operating expenses but also for the capital costs of the business. These
14 include service on the debt and dividends on the stock. By that standard, the return to the
15 equity owner should be commensurate with returns on investments in other enterprises
16 having corresponding risks. That return, moreover, should be sufficient to assure
17 confidence in the financial integrity of the enterprise, so as to maintain its credit and to
18 attract capital.⁴

19 In my analysis for the cost of equity and rate of return, I applied observations taken
20 from the debt and equity capital markets, which are reflective of investors' current return
21 expectations and risk preferences.

³ *Bluefield Waterworks & Improvement Company v. Public Service Commission of West Virginia*, 262 U.S. 679, 692
693 (1923).

⁴ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944).

1 IV. RETURN ON EQUITY MODELS CONSIDERED

2 **Q. WHAT FINANCIAL MODELS AND MARKET DATA DID YOU USE TO**
3 **DETERMINE THE COST OF EQUITY?**

4 A. Four different financial models were considered and used in my study:

- 5 1. the CAPM;
- 6 2. the DCF model;
- 7 3. a Risk Premium analysis; and
- 8 4. an Expected Earnings analysis.

9 **Q. PLEASE EXPLAIN THE CAPM.**

10 A. The capital asset pricing model was originally developed in an article by Nobel-prize
11 winning economist William F. Sharpe, “Capital Asset Prices: A Theory of Market
12 Equilibrium under Conditions of Risk.”⁵ Subsequent academic works further developed
13 the concept.

14 The components of the CAPM used to determine the cost of equity (K_e) are as follows:

- 15 • The risk-free rate of return (R_f),
- 16 • An equity market risk premium (designated as MRP in the CAPM
17 equation), and
- 18 • A beta coefficient (β), used as an index of the security’s systematic risk.

19 The CAPM is based on the theory of market equilibrium that measures risk using
20 the beta coefficient. For investors that are theoretically fully-diversified, the relative risk
21 of an individual asset (*e.g.*, common stock in NEO) is its return volatility relative to the
22 return volatility of the market as a whole. Beta reflects the tendency of a stock’s price to
23 change relative to overall market changes. In the CAPM, the market Beta is defined as 1.0.

⁵ Journal of Finance, 1964.

A stock that tends to respond less to market movements has a Beta of less than 1.00, while stocks that tend to move more than the market have Betas greater than 1.00.

The equity market risk premium (designated as MRP in the CAPM equation) reflects the expected return on the market as a whole compared to the returns priced into risk-free assets, typically long-term US Treasury Bonds.

Combining these factors results in the required rate of return on equity (Ke) shown in the formula below:

$$K_e = R_f + \beta (\text{MRP})$$

where:

- R_f is the risk-free rate of return,
- β is the beta coefficient, used as an index of the security's systematic risk, and
- MRP is the equity market risk premium.

Q. PLEASE EXPLAIN THE DCF MODEL.

A. There are two general forms of the DCF model – the constant growth version and the non-constant growth version.⁶ Both versions are based on the concept that a stock's price represents the present value of expected future cash flows to the equity investor. In its most general form, the DCF model is expressed in the following formula:

$$P_0 = D_1/(1+k)^1 + D_2/(1+k)^2 + \dots + D_\infty/(1+k)^\infty$$

where:

- P_0 is today's stock price,

⁶ Eugene F. Brigham and Joel F. Houston, *Fundamentals of Financial Management* (11th Edition, South-Western, OH, 2007), p. 299.

- $D_1, D_2, \dots, D_\infty$ are all expected future dividends, and
- k is the discount rate or the risk-adjusted required rate of return on equity.

This version of the model is considered in my non-constant growth DCF. Under the assumption that dividends are expected to grow at a constant rate g , the equation above can be solved for k and rearranged into the Constant Growth DCF formula:

$$k = D_1/P_0 + g$$

In this equation, D_1/P_0 is the expected dividend yield and g is the long-term expected growth rate (assumed to be constant in this form of the model). In my constant-growth DCF analysis, I applied multiple estimates of growth published by analysts.

Q. PLEASE EXPLAIN THE RISK PREMIUM METHODOLOGY.

A. As shown in the Capital Market Line graph above, Risk Premium Methods are based on the realization that equity securities are riskier than debt and, therefore, equity investors require a higher rate of return. In other words, equity investors must be compensated for bearing additional risk. Risk Premium Methods estimate the cost of equity as the sum of an equity risk premium and the observed yield on debt returns from long-term bonds.

My Risk Premium Methods consider the current and forecast costs of a utility debt index (Moody's Baa index) and long-term US government bond yields.

Q. PLEASE EXPLAIN THE EXPECTED EARNINGS METHODOLOGY.

A. The Expected Earnings method considers analysts' forecast for equity earnings and future book values for common equity. This methodology is consistent with the fair rate of return concepts set forth in the *Bluefield* and *Hope* Supreme Court decisions. The Expected

1 Earnings methodology also avoids the complexities of other methods and relies upon
2 information available to investors.

3 In this method, I relied on the *Value Line* estimates for both of these future forecast
4 items. The resulting return on equity (net income to common equity / book value of
5 common equity) is an indicator of investor expectations for current and future equity
6 returns.

7 **Q. PLEASE SUMMARIZE YOUR DISCUSSION OF THE COST OF EQUITY**
8 **ESTIMATION TECHNIQUES.**

9 A. CAPM is one of the most widely used tools for estimating the cost of equity. Other models
10 such as the DCF and Risk Premium models also provide indications of a market-based cost
11 of equity. The Expected Earnings method relies upon the expected future profitability of
12 utilities, which ultimately drives their returns on equity.

13 As I will discuss later, a Business Risk Adjustment (BR Adjustment) must also be
14 considered in concluding a fair rate of return for NEO. A combination of the models and
15 analyses provides a range of indicated costs of equity and also serves as a check of
16 reasonableness.

17 **V. FACTORS AFFECTING THE COST OF EQUITY**

18 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

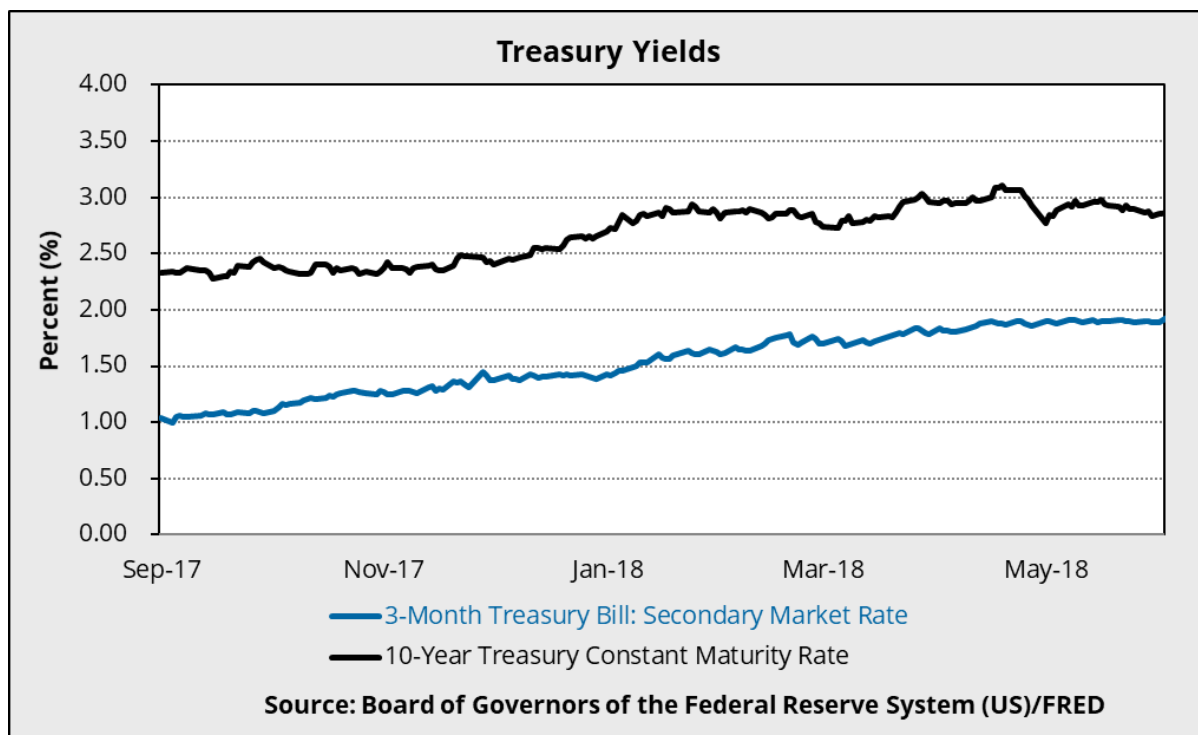
19 A. The purpose of this section is to review recent capital market conditions. I also discuss the
20 gas utility industry and NEO-specific factors that affect the company's cost of equity.

21 **Q. WHAT HAS BEEN THE RECENT EXPERIENCE IN THE U.S. CAPITAL**
22 **MARKETS?**

23 A. According to the Bureau of Labor Statistics, from August 2017 to August 2018, the "All
24 Items Inflation Index" increased by 2.7%. Over this same period, the index for "All Items

1 Less Food and Energy” rose 2.2%. Additionally, the “Energy Index” rose 10.4% and the
2 Food Index increased 1.4%.⁷ According to forecasters surveyed by the Federal Reserve
3 Bank of Philadelphia, inflation is expected to average 2.4% in 2018 and 2.3% in 2019.
4 Over the next ten years, forecasters expect CPI inflation to average 2.2% annually.⁸

5 Interest rates on the three-month Treasury bill increased significantly from 1.04%
6 as of September 29, 2017 to 2.15% as of September 28, 2018, as the Federal Reserve
7 increased rates for the eighth time since the financial crisis in 2008.⁹ The interest rates on
8 10-year Treasury notes also increased, from 2.33% as of September 29, 2017 to 3.05% as
9 of September 28, 2018.¹⁰ These increases are shown in the chart below:



⁷ United States Department of Labor, Bureau of Labor Statistics, *Consumer Price Index: August 2018*

⁸ Federal Reserve Bank of Philadelphia, *Third Quarter 2018 Survey of Professional Forecasters*, August 10, 2018

⁹ Federal Reserve Bank of St. Louis, Federal Reserve Economic Data, Series: DTB3, 3-Month Treasury Bill: Secondary Market Rate

¹⁰ Federal Reserve Bank of St. Louis, Federal Reserve Economic Data, Series: DGS10, 10-Year Treasury Constant Maturity Rate

1 As of September 28, 2018, the yields on Moody's Aaa-rated Corporate Bonds and
2 Baa-rated Corporate Bonds were 3.99% and 4.89%, respectively, while the yield on
3 Moody's Baa-rated Utility Corporate Bonds was 4.75%.¹¹

4 **Q. WHAT IS THE CURRENT POSITION OF THE GAS UTILITY INDUSTRY?**

5 A. According to IBISWorld's industry report,¹² the natural gas distribution industry has
6 performed erratically over the past five years. Total revenue declined significantly in 2012,
7 in line with the shale gas boom, which resulted in a collapse in natural gas prices. The
8 natural gas distribution industry's revenue is anticipated to have rebounded 30.1% in 2017,
9 following the sharp declines in 2015 and 2016 driven by lower natural gas prices.

10 The significance of natural gas to the economy has grown in the past decade, with
11 manufacturers and electricity utilities relying increasingly on natural gas as an energy
12 source due to its declining prices. Despite the growth in natural gas consumption, prices
13 have remained extremely volatile over the past five years, slowing revenue growth.

14 Over the next five years, natural gas production is projected to slow, while
15 infrastructure investments will boost pipeline and export capacity. This is expected to
16 cause Henry Hub natural gas prices to increase at an annualized rate of 9.6%.

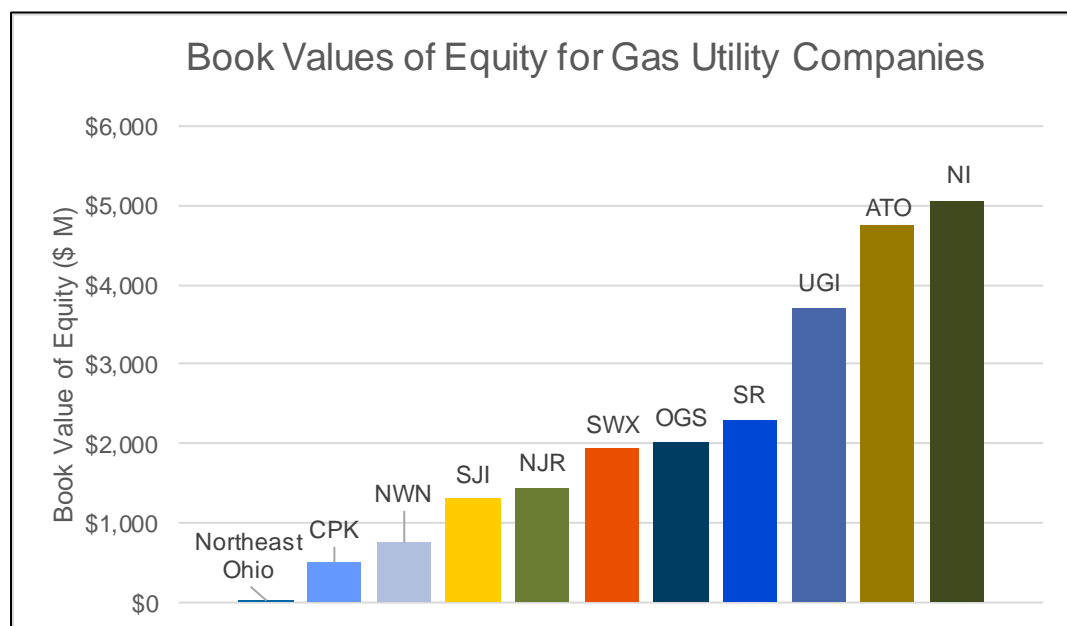
17 Natural gas consumption is forecast to fall slightly. As a result, industry revenue
18 is forecast to rise at an annualized rate of 5.7% to \$215.5 billion from 2017 to 2022.

¹¹ Moody's Seasoned Aaa Corporate Bond Yield®, Moody's Seasoned Baa Corporate Bond Yield®, via Bloomberg L.P.

¹² IBISWorld Report 22121 - Natural Gas Distribution in the US, December 2017

1 **Q. WHAT NEO-SPECIFIC RISK FACTORS NEED TO BE CONSIDERED IN**
2 **ESTIMATING ITS COST OF EQUITY?**

3 A. There are several factors that must be considered regarding NEO's business risk as
4 compared to the public utility group. These factors are considered in my Business Risk
5 Adjustment for a shareholder's investment in NEO. First, NEO's small capital size must
6 be considered. The graph below shows the book value of equity for NEO in relation to the
7 comparable group of public gas utilities covered by Value Line:



8
9 To account for the greater risk associated with smaller companies, investors require what
10 is known as the small stock risk premium, or SSRP, one of the components of my BR
11 Adjustment.

12 **Q. PLEASE DESCRIBE THE SSRP.**

13 A. A premium required for small stock equity returns is well documented in Morningstar's
14 annual publication, Stocks, Bonds, Bills and Inflation, and more recently in Duff and
15 Phelps' 2017 Valuation Handbook. As explained by Morningstar: "One of the most
16 remarkable discoveries of modern finance is that of a relationship between firm size and

1 return. The relationship cuts across the entire size spectrum but is most evident among
2 smaller companies, which have higher returns on average than larger ones.”

3 The need for the SSRP arises because differences in investors’ required rates of
4 return that are related to firm size are not fully captured given market data from large public
5 utilities. To account for this, Duff and Phelps have developed and publish size premiums
6 that need to be added to the indicated cost of equity estimates to account for the level of a
7 firm’s market capitalization.

8 As shown in the Capital Market Line earlier, smaller company stocks have higher
9 risks and expected returns in the market. The SSRP takes into account that smaller
10 companies are usually less liquid. Stocks that are more liquid have higher valuations for
11 the same cash flows, which equate to lower costs of capital and commensurately lower
12 returns, on average. Stocks that are less liquid have higher observed costs of capital and
13 higher returns, on average.

14 **Q. DID YOU CONSIDER OTHER RISK FACTORS IN YOUR BUSINESS RISK**
15 **ADJUSTMENT?**

16 A. Yes. In addition to its small size, NEO is a private company. Shares of private companies
17 do not have a readily available market in which they can be sold, and as a result, investors
18 require a higher rate of return in exchange for the risk associated with an illiquid
19 investment.

20 Additionally, investors also consider unsystematic, or company-specific, risk in
21 determining a required rate of return for an equity investment. For the CAPM, the total
22 cost of equity, including a SSRP and unsystematic risk premium is shown in the following
23 formula:

24
$$K_e = R_f + \beta (MRP) + SSRP + USRP$$

1 where:

- 2 • R_f is the risk-free rate of return,
- 3 • β is the beta coefficient used as an index of the security's systematic risk,
4 and
- 5 • MRP is the equity market risk premium,
- 6 • SSRP is the Small Stock Risk Premium, and
- 7 • USRP is the unsystematic or company-specific risk premium.

8 Per my review of the rate filing package and testimony, I have not included an unsystematic
9 risk premium.

10 **VI. COST OF EQUITY FOR NEO**

11 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

12 A. This section presents the results of my analysis of the cost of equity for NEO followed by
13 a discussion of the methods and details of my analysis.

14 In the first part of my analysis, I developed the CAPM analyses for a group of
15 guideline gas utility companies covered by *Value Line*, considering different sources for
16 the beta coefficient, risk premia, and the risk-free rate. In the second part, I applied DCF
17 models to the same group of *Value Line* comparable gas utility companies. Third, I discuss
18 and develop a cost of equity estimate based on a Risk Premium method. Then I applied an
19 Estimated Earnings analysis to the guideline gas utility companies. These methods support
20 my determination of the cost of equity for a large, public gas utility.

21 Finally, I considered NEO's small size and the related effects to its required return
22 to determine an appropriate cost of equity.

23 **Q. WHAT INFORMATION HAVE YOU PROVIDED TO SUPPORT YOUR**
24 **ANALYSIS OF THE COST OF EQUITY FOR NEO?**
25

1 A. Included in Exhibit GES-2 are the following schedules:

- 2
- 3 • **Schedule A** presents a summary of the results of each methodology, along
- 4 with my conclusion for the required rate of return;
- 5 • **Schedule B** contains my CAPM analyses;
- 6 • **Schedule C** contains my Empirical CAPM (“ECAPM”) analyses;
- 7 • **Schedule D** contains my DCF analyses;
- 8 • **Schedule E** contains my Risk Premium analysis;
- 9 • **Schedule F** contains my Expected Earnings analysis; and
- 10 • **Schedule G** contains my Small Stock Risk Premium analysis.

11 **A. CAPM and ECAPM Analyses**

12 **Q. PLEASE SUMMARIZE YOUR CAPM AND ECAPM ANALYSES RESULTS.**

13 A. The results of my CAPM analyses, as shown in Schedules B.5 - B.20, indicate required
14 rates of return on equity in the range of 8.48% to 13.01%. The results of my ECAPM
15 analyses, as shown in Schedules C.1 - C.16, indicate required rates of return on equity in
16 the range of 9.14% to 14.07%.

17 **Q. PLEASE EXPLAIN HOW YOU ARRIVED AT THESE RESULTS.**

18 A. A key input to the CAPM is the market’s expected equity risk premium (“ERP”). Given
19 the low level of interest rates in the current capital environment, I do not believe ERPs that
20 are based on long-term, historical relationships between equity returns and interest rates
21 produce reliable results (without inclusion of other premia and/or adjustments). Therefore,
22 I considered the following four ERPs:

- 23 • A Duff & Phelps historical arithmetic average ERP of 8.72%
- 24 • A forward-looking ERP for the S&P 500 of 13.39%

- A forward-looking ERP for S&P 500 dividend-paying stocks of 11.92%
- A forward-looking ERP for S&P 500 dividend-paying stocks, excluding outliers, of 7.76%

Q. WHAT IS THE RATIONALE BEHIND USING AN ARITHMETIC AVERAGE RETURN FOR THE DUFF AND PHELPS DATA SET?

A. Per the Duff and Phelps 2018 Cost of Capital Navigator, the arithmetic average rate of return for the market from 1926 to 2017 is 12.1% and the arithmetic average rate of return for long-term government bonds over this period is 6.0%, indicating an average risk premium of 6.0%. However, the current risk-free rate is only 3.38%. Therefore, the risk premium implied by a market return of 12.1%, less the current long-term bond yield of 3.38%, implies an equity risk premium of 8.72%.

Q. WHY DID YOU CALCULATE A CURRENT FORWARD-LOOKING RISK PREMIUM AS IMPLIED BY THE S&P 500 STOCK INDEX?

A. Given that the risk premium required in the CAPM is a forward-looking estimate of investor expectations, I calculated the expected return for each of the companies in the S&P 500 based on a Constant Growth DCF model. To do so, I relied on data from Bloomberg to obtain the following inputs for this DCF model:

- Stock prices,
- Dividends paid (if any), and
- Expected growth rates.

This alternative calculation is not dependent on a historical data series but rather reflects current return expectations priced into the equities in the index.

1 **Q. HOW DID YOU CALCULATE A FORWARD-LOOKING RISK PREMIUM AS**
2 **IMPLIED BY THE S&P 500 STOCKS?**

3 A. As shown in Schedule B.2, a constant growth DCF model was calculated for each
4 company. I then determined a weighted average based on their relative market
5 capitalization. This indicated an expected return of 16.77% for the S&P 500 and a market
6 risk premium of 13.39%.

7 **Q. DID YOU DEVELOP ANY OTHER ESTIMATES OF A FORWARD-LOOKING**
8 **EQUITY RISK PREMIUM?**

9 A. Yes. I added two refinements to the S&P 500 data set above. As shown in Schedule B.3,
10 considering only the stocks in the S&P 500 that paid dividends resulted in a forward-
11 looking risk premium of 11.92%. Mature companies paying dividends may be a better
12 comparable for a utility company, but utilities still need to compete with the entire equity
13 market to attract capital.

14 In Schedule B.4, I removed apparent outliers from the dividend-paying stocks
15 shown in Schedule B.4 by removing all equity returns below 5% and above 15%. This
16 modification resulted in a more conservative risk premium of 7.76%.

17 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR CAPM ANALYSES.**

18 A. My first set of CAPM analyses, as discussed below and shown in Schedules B.5 through
19 B.12, relied upon betas for the sample companies as provided by Value Line.

20 Utilizing an adjusted equity risk premium of 8.72%, based on the average historical
21 returns of large cap stocks over the current risk-free rate as calculated in Schedule B.1,
22 indicates a required rate of return of 9.35% under the CAPM. This ROE conclusion is
23 shown in Schedule B.5. When applying this ERP to the CAPM calculated using the
24 forecasted risk-free rate, the indicated ROE is 9.81%, as shown in Schedule B.9.

Utilizing an adjusted equity risk premium of 13.39%, based on the cost of equity of all stocks in the S&P 500 implied by their current market prices less the current risk-free rate as calculated in Schedule B.2, indicates a required rate of return of 12.55% under the CAPM. This ROE conclusion is shown in Schedule B.6. When applying this ERP to the CAPM calculated using the forecasted risk-free rate, the indicated ROE is 13.01%, as shown in Schedule B.10.

Utilizing an adjusted equity risk premium of 11.92%, based on the implied cost of equity of only the dividend-paying stocks in the S&P 500 as calculated in Schedule B.3, indicates a required rate of return of 11.55% under the CAPM. This ROE conclusion is shown in Schedule B.7. When applying this ERP to the CAPM calculated using the forecasted risk-free rate, the indicated ROE is 12.01%, as shown in Schedule B.11.

Utilizing an adjusted equity risk premium of 7.76%, based on the implied cost of equity of dividend-paying S&P 500 stocks with equity returns between 5% and 15% (as calculated in Schedule B.4), indicates a required rate of return of 8.69% under the CAPM. This ROE conclusion is shown in Schedule B.8. When applying this ERP to the CAPM calculated using the forecasted risk-free rate, the indicated ROE is 9.15%, as shown in Schedule B.12.

Q. DID YOU RELY UPON ANY OTHER SOURCES FOR BETAS IN YOUR CAPM ANALYSES?

A. Yes. My second set of CAPM analyses, shown in Schedules B.13 through B.20, relied upon Betas for the sample companies as provided by Bloomberg.

Q. PLEASE DISCUSS THE RESULTS OF YOUR CAPM ANALYSES USING THE BLOOMBERG BETAS.

A. Utilizing an adjusted equity risk premium of 8.72%, based on the average historical returns

1 of large cap stocks over the current risk-free rate as calculated in Schedule B.1, indicates a
2 required rate of return of 9.11% for NEO under the CAPM. This ROE conclusion is shown
3 in Schedule B.13. When applying this ERP to the CAPM calculated using the forecasted
4 risk-free rate, the indicated ROE is 9.57%, as shown in Schedule B.17.

5 Utilizing an adjusted equity risk premium of 13.39%, based on the cost of equity
6 of all stocks in the S&P 500 implied by their current market prices less the current risk-
7 free rate as calculated in Schedule B.2, indicates a required rate of return of 12.18% under
8 the CAPM. This ROE conclusion is shown in Schedule B.14. When applying this ERP to
9 the CAPM calculated using the forecasted risk-free rate, the indicated ROE is 12.64%, as
10 shown in Schedule B.18.

11 Utilizing an adjusted equity risk premium of 11.92%, based on the implied cost of
12 equity of only the dividend-paying stocks in the S&P 500 as calculated in Schedule B.3,
13 indicates a required rate of return of 11.22% under the CAPM. This ROE conclusion is
14 shown in Schedule B.15. When applying this ERP to the CAPM calculated using the
15 forecasted risk-free rate, the indicated ROE is 11.68%, as shown in Schedule B.19.

16 Utilizing an adjusted equity risk premium of 7.76%, based on the implied cost of
17 equity of dividend-paying S&P 500 stocks with equity returns between 5% and 15% (as
18 calculated in Schedule B.4), indicates a required rate of return of 8.48% under the CAPM.
19 This ROE conclusion is shown in Schedule B.16. When applying this ERP to the CAPM
20 calculated using the forecasted risk-free rate, the indicated ROE is 8.94%, as shown in
21 Schedule B.20.

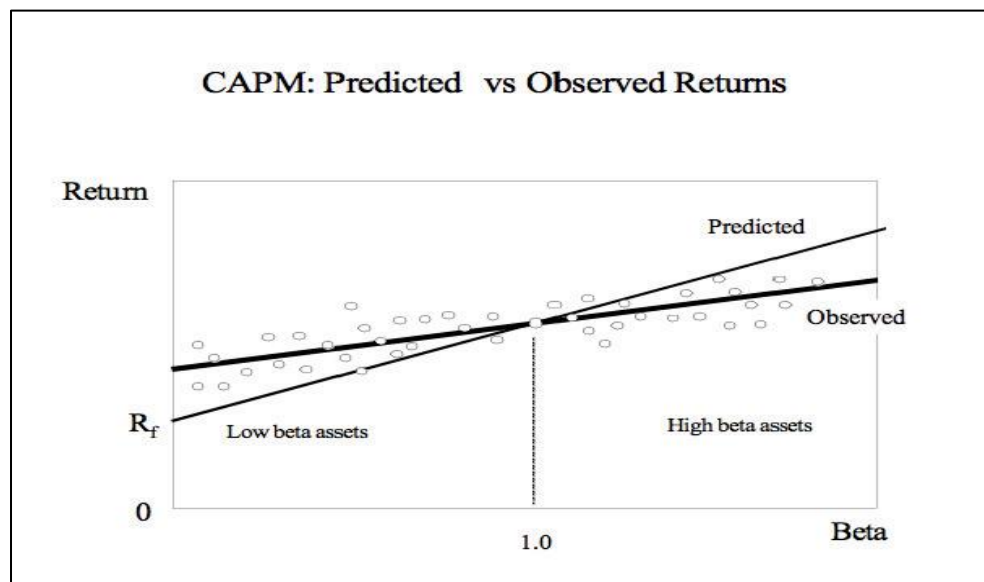
1 **Q. ARE DIFFERENT VERSIONS OF THE CAPM BEING UTILIZED BY**
2 **INVESTORS AND MARKET ANALYSTS?**

3 A. Yes. Most of the different models use the same basic framework, but analysts make
4 adjustments to Beta, the expected market risk premium, and incorporate additional risk
5 premia. One example of an adjusted CAPM is called the Empirical Capital Asset Pricing
6 Model (“ECAPM”).

7 **Q. PLEASE DESCRIBE THE ECAPM.**

8 A. The ECAPM model represents a pragmatic solution to the limitations of the standard
9 CAPM model and was originally applied to public utilities in a paper by Litzenberger,
10 Ramaswamy and Sosin.¹³

11 A CAPM-based estimate of cost of capital underestimates the return required from
12 low-beta securities and overstates the return required from high-beta securities, based on
13 the empirical evidence. This is one of the most well-known results in finance, and it is
14 displayed graphically below.



¹³ “On the CAPM Approach to the Estimation of a Public Utility’s Cost of Equity Capital” (Journal of Finance, 1980).

A number of variations on the original CAPM theory have been proposed to explain this finding. The ECAPM makes use of these empirical findings. The components of the ECAPM used to determine the cost of equity K_e are as follows:

- The risk-free rate of return (R_f);
- An equity market risk premium (designated as MRP in the ECAPM equation);
- A beta coefficient (β) used as an index of the security's systematic risk; and
- A factor to be determined empirically (x).

Combining these factors results in the required rate of return on equity shown in the formula below:

$$K_e = R_f + x (\text{MRP}) + (1-x) \beta (\text{MRP})$$

Inserting the long-term risk-free rate as a proxy for the risk-free rate, an alpha in the range of 1% to 2%, and reasonable values of beta and the MRP in the above equation produces results that are indistinguishable from the following more tractable ECAPM expression:

$$K = R_f + 0.25 (\text{MRP}) + 0.75 \beta (\text{MRP})^{14}$$

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR ECAPM ANALYSES.

A. My first set of ECAPM analyses, as discussed below and shown in Schedules C.1 through C.8, relied upon betas for the sample companies as provided by Value Line.

Utilizing an adjusted equity risk premium of 8.72%, based on the average historical returns of large cap stocks over the current risk-free rate as calculated in Schedule B.1, indicates a required rate of return of 10.04% for NEO under the ECAPM. This ROE

¹⁴ See Chapter 6 of *The New Regulatory Finance* by Roger A. Morin, Ph.D.

1 conclusion is shown in Schedule C.1. When applying this ERP to the ECAPM calculated
2 using the forecasted risk-free rate, the indicated ROE is 10.50%, as shown in Schedule C.5.

3 Utilizing an adjusted equity risk premium of 13.39%, based on the cost of equity
4 of all stocks in the S&P 500 implied by their current market prices less the current risk-
5 free rate as calculated in Schedule B.2, indicates a required rate of return of 13.61% under
6 the ECAPM. This ROE conclusion is shown in Schedule C.2. When applying this ERP
7 to the ECAPM calculated using the forecasted risk-free rate, the indicated ROE is 14.07%,
8 as shown in Schedule C.6.

9 Utilizing an adjusted equity risk premium of 11.92%, based on the implied cost of
10 equity of only the dividend-paying stocks in the S&P 500 as calculated in Schedule B.3,
11 indicates a required rate of return of 12.49% under the ECAPM. This ROE conclusion is
12 shown in Schedule C.3. When applying this ERP to the ECAPM calculated using the
13 forecasted risk-free rate, the indicated ROE is 12.95%, as shown in Schedule C.7.

14 Utilizing an adjusted equity risk premium of 7.76%, based on the implied cost of
15 equity of dividend-paying S&P 500 stocks with equity returns between 5% and 15% (as
16 calculated in Schedule B.4), indicates a required rate of return of 9.30% under the ECAPM.
17 This ROE conclusion is shown in Schedule C.4. When applying this ERP to the ECAPM
18 calculated using the forecasted risk-free rate, the indicated ROE is 9.76%, as shown in
19 Schedule C.8.

20 **Q. DID YOU RELY UPON ANY OTHER SOURCES FOR BETAS IN YOUR ECAPM**
21 **ANALYSES?**

22 A. Yes. Similar to my CAPM analyses discussed previously, my second set of ECAPM
23 analyses, shown in Schedules C.9 through C.16, relied upon betas for the sample
24 companies as provided by Bloomberg.

1 **Q. PLEASE DISCUSS THE RESULTS OF YOUR ECAPM ANALYSES USING THE**
2 **BLOOMBERG BETAS.**

3 A. Utilizing an adjusted equity risk premium of 8.72%, based on the average historical returns
4 of large cap stocks over the current risk-free rate as calculated in Schedule B.1, indicates a
5 required rate of return of 9.86% under the ECAPM. This ROE conclusion is shown in
6 Schedule C.9. When applying this ERP to the ECAPM calculated using the forecasted
7 risk-free rate, the indicated ROE is 10.32%, as shown in Schedule C.13.

8 Utilizing an adjusted equity risk premium of 13.39%, based on the cost of equity
9 of all stocks in the S&P 500 implied by their current market prices less the current risk-
10 free rate as calculated in Schedule B.2, indicates a required rate of return of 13.33% under
11 the ECAPM. This ROE conclusion is shown in Schedule C.10. When applying this ERP
12 to the ECAPM calculated using the forecasted risk-free rate, the indicated ROE is 13.79%,
13 as shown in Schedule C.14.

14 Utilizing an adjusted equity risk premium of 11.92%, based on the implied cost of
15 equity of only the dividend-paying stocks in the S&P 500 as calculated in Schedule B.3,
16 indicates a required rate of return of 12.24% under the ECAPM. This ROE conclusion is
17 shown in Schedule C.11. When applying this ERP to the ECAPM calculated using the
18 forecasted risk-free rate, the indicated ROE is 12.70%, as shown in Schedule C.15.

19 Utilizing an adjusted equity risk premium of 7.76%, based on the implied cost of
20 equity of dividend-paying S&P 500 stocks with equity returns between 5% and 15% (as
21 calculated in Schedule B.4), indicates a required rate of return of 9.14% under the ECAPM.
22 This ROE conclusion is shown in Schedule C.12. When applying this ERP to the ECAPM
23 calculated using the forecasted risk-free rate, the indicated ROE is 9.60%, as shown in
24 Schedule C.16.

1 **B. DCF Analyses**

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

3 A. The results of my DCF analyses are presented in Schedules D.1 through D.4. The constant
4 growth DCF model in Schedule D.1 indicates an ROE of 11.23%. This study includes
5 projected growth rates from *Value Line* for the sample companies to estimate investors'
6 expectations of return on equity. The non-constant growth DCF models in Schedules D.2
7 through D.4 utilize a forecasted price target for each guideline company derived from their
8 respective price to earnings (P/E) ratios and forecasted earnings, as estimated by *Value*
9 *Line*. To account for the potential variances in time taken to achieve the various future
10 price targets, I utilized three scenarios in which the price targets are realized at the end of
11 three, four, and five years. The indicated ROEs from the non-constant DCF analysis range
12 from 9.10% to 13.79%.

13 **C. Risk Premium Analyses**

14 **Q. PLEASE DESCRIBE YOUR RISK PREMIUM STUDIES.**

15 A. The risk premium studies compare authorized ROEs of gas companies to long-term utility
16 debt rates. The differences between average authorized ROEs and debt costs are used to
17 measure each year's equity risk premium. As part of the study, I implemented a one-year
18 regulatory lag.

19 **Q. WHAT ARE THE RESULTS OF YOUR RISK PREMIUM ANALYSIS?**

20 A. My analyses considered authorized returns as published by Regulatory Research
21 Associates for the period 2001 through 2017. I performed a regression analysis of the
22 allowed annual equity risk premiums relative to Moody's Average Utility Index interest
23 rate levels, as shown on Schedule E.1. This regression analysis was then used with the

1 current cost of Moody's Baa Utility debt of 4.29% to arrive at an indicated cost of equity
2 9.46%. This implies that an equity risk premium of 4.75% over and above the cost of
3 utility debt is appropriate given the current level of utility interest rates.

4 Schedule E.2 compares a forecasted utility bond yield of 5.45%¹⁵ to arrive at an
5 indicated cost of equity 9.91%. This implies that an equity risk premium of 4.46% over
6 and above the forecasted yield on utility bonds is appropriate.

7 In Schedule E.3, I performed a similar analysis comparing the current cost of long-
8 term government bonds of 3.38% to arrive at an indicated cost of equity 9.79%. This
9 implies that an equity risk premium of 6.41% over and above the current yield on treasury
10 bonds is appropriate.

11 In Schedule E.4, I performed a similar analysis comparing the forecasted cost of
12 long-term government bonds debt of 3.84% to arrive at an indicated cost of equity 10.00%.
13 This implies that an equity risk premium over and above the current yield on treasury bonds
14 of 6.16% is appropriate.

15 **D. Expected Earnings Analyses**

16 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR EXPECTED EARNINGS**
17 **ANALYSES.**

18 A. The results of my Expected Earnings study are shown in Schedules F.1 - F.2. My analysis
19 calculates an implied ROE for each of the guideline companies based on the standard
20 formula of net income per share divided by book value per share. I utilized the Expected
21 Earnings per share and book values per share figures for the years 2018 and 2019 as well
22 as 2021 through 2023 as provided in *Value Line*. The Expected Earnings study indicates a

¹⁵ Forecasted utility bond yield calculated in Schedule E.5

required ROE range of 10.39% to 11.15%.

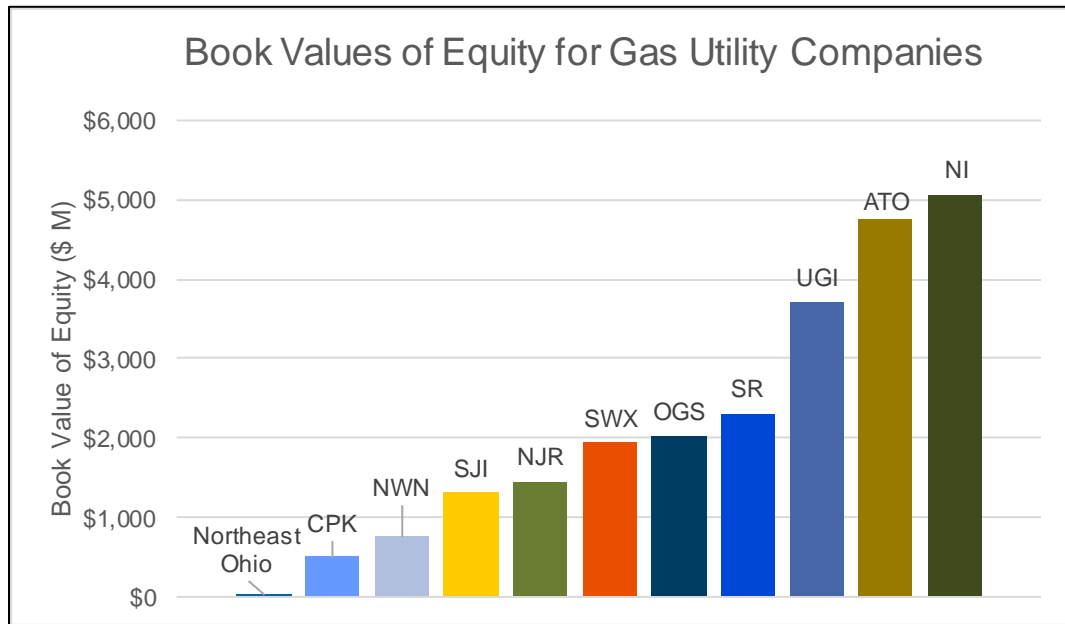
E. Business Risk Adjustment

Q. WHAT WAS YOUR CONCLUDED RETURN ON EQUITY FOR THE LARGE GAS UTILITY COMPANIES IN YOUR ANALYSES?

A. Based on the relative weightings shown in the summary in Schedule A, the indicated return on equity for the comparable large, public gas utility group is 10.33%.

Q. DID YOU THEN ADJUST THE LARGE GAS UTILITY ROE ABOVE TO CALCULATE NEO'S ROE?

A. Yes, NEO is significantly smaller than the comparable utility companies that I relied upon.



Its equity is also an illiquid equity interest, given that the company is not public, reflecting the difficulty for a shareholder to sell its stock.

1 **Q. PLEASE SUMMARIZE THE DUFF AND PHELPS SIZE PREMIA STUDIES.**

2 A. The *Size Premia Study* by Duff & Phelps¹⁶ examines the Stock Size Premiums of the entire
3 universe of NYSE-, AMEX-, and NASDAQ-listed securities from 1926 to the present. The
4 survey is well regarded and is the commonly cited study in utility rate case studies.
5 Specifically, the risk premium required due to each firm's size is estimated by dividing the
6 universe of securities into portfolios¹⁷ by capitalization and measuring the premium
7 required beyond the risk-free rate and the security's equity risk premium estimate (beta).
8 The study concludes that the required SSRP increases inversely to firm size and is in
9 addition to the required systematic (*i.e.*, market) risk. The summary results are in the
10 following table:

Market Capitalization Deciles	Market Cap Range (\$millions)			Size Premium
	Low		High	
1-Largest	\$25,143	-	\$790,050	0.00%
2	\$12,068	-	\$25,096	0.56%
3	\$6,558	-	\$11,979	0.87%
4	\$4,098	-	\$6,546	0.90%
5	\$2,764	-	\$4,092	1.38%
6	\$1,816	-	\$2,760	1.60%
7	\$1,175	-	\$1,815	1.58%
8	\$658	-	\$1,170	1.88%
9	\$299	-	\$657	2.50%
10-Smallest	\$3	-	\$299	5.37%

12 **Q. WHAT DID YOU CONCLUDE FROM YOUR REVIEW OF THE DUFF AND**
13 **PHELPS' STUDIES?**

14 A. Based on the Duff & Phelps data for small stock risk premia, NEO would fall into the 10th
15 decile, which equates to an SSRP of 5.37%. This amount would be added to the result of

¹⁶ Valuation Handbook, Duff & Phelps, 2017 and 2018

¹⁷ Portfolio data provided by the Center for Research in Security Prices (CRSP).

1 the cost of equity analyses based on large public companies. However, some of the risk
2 factors reflected in the Duff and Phelps study are offset by the regulated nature of the utility
3 business. In other words, regulated returns are expected to reduce the volatility of NEO's
4 earnings and therefore reduce the respective risk versus a small, unregulated company.
5 However, I considered NEO's small size in my business risk adjustment.

6 **Q. PLEASE DESCRIBE THE OTHER FACTORS CONSIDERED TO DETERMINE**
7 **AN APPROPRIATE BR ADJUSTMENT FOR NEO.**

8 A. Another way to quantify a required business risk adjustment for NEO is based on academic
9 studies of rates of return for private equity firms. The first source that I considered was
10 titled "What Do Private Equity Firms (Say They) Do?"¹⁸ This paper surveyed 79 private
11 equity (buyout) investors, with a total of over \$750 billion of assets under management,
12 about their practices in firm valuation, capital structure, governance, and value creation.
13 This paper points out that investors rely on internal rates of return and multiples of invested
14 capital for investment decisions. Private equity investors typically target a 22% internal
15 rate of return on their investments on average, with most firms clustered tightly between
16 20% and 25% (a rate of return well above that indicated by the CAPM).

17 This paper cites research which indicates that private equity funds on average
18 outperform the S&P 500 index returns by about 8% before their fees and about 4% after
19 their fees. Therefore, this is one indication of the additional rate of return, or BR
20 Adjustment, required by investors in smaller,¹⁹ riskier, and less liquid private equity
21 investments in private companies.

¹⁸ Paul A. Gompers (Harvard Business School and NBER), Steven N. Kaplan (University of Chicago Booth School of Business and NBER) and Vladimir Mukharlyamov (Harvard University), This Draft: February 2014.

¹⁹ Most of the companies reference were between \$25 million and \$1 billion in enterprise value..

1 A second study considered is entitled “Private Equity Performance and Liquidity
2 Risk.”²⁰ This paper discusses the liquidity risk of an investment in private equity firms, as
3 well as the additional compensation required for taking on that risk. This study concluded
4 that the total risk premium for private equity investments was around 18% per annum, of
5 which there was a “significant” liquidity risk premium for private equity of 3% per annum.
6 This liquidity risk premium is another indication of the BR Adjustment required for
7 smaller, private companies like NEO.

8 A third study considered was “Private Equity Performance: What Do We Know?”²¹
9 This study considered the excess returns indicated by various other academic studies, as
10 well as the authors’ own research. The conclusions regarding the excess returns earned by
11 and expected from private equity investments in smaller, private companies are
12 summarized below:

- 13 • The average private equity fund had a return 6.6% greater than the S&P
14 500, with a median excess return of 3.4%.
- 15 • Private equity funds earned a capital-weighted average excess return of
16 3.7%, with a median of 3.0%.
- 17 • The average private equity fund’s IRR exceeds that of the S&P 500 by 4%
18 to 5%.

19 Lastly, I also calculated the required SSRP for each of the companies in the
20 comparable gas utility company group. Although these companies are public, they are

²⁰ Ludovic Phalippou (University of Oxford, Said Business School), co-authors: Francesco Franzoni and Eric Nowak, both at Swiss Finance Institute – University of Lugano

²¹ Robert Harris, Tim Jenkinson and Steve Kaplan, The University of Chicago Booth School of Business,

1 small enough to warrant a premium to their equity costs based on Duff and Phelps'
2 research.

3 **Q. WHAT IS YOUR CONCLUDED BUSINESS RISK ADJUSTMENT FOR NEO?**

4 A. Based on the approaches considered above, a *minimum* business risk adjustment required
5 for NEO is 1.00% to 2.00%. A summary of this analysis is presented in Schedule G.2.

6 **Q. HAVE REGULATORY COMMISSIONS AND OTHER EXPERTS APPLIED**
7 **ADJUSTMENTS SIMILAR TO YOUR BUSINESS RISK ADJUSTMENT?**

8 A. Yes. These adjustments are considered by investors and financial experts because they are
9 observable in market transactions. For instance, in case number 16-1725-PL-AIR
10 regarding a rate increase application for Cobra Pipeline Company, Ltd., both Cobra's
11 expert, Joseph P. Buckley, and Ohio PUC Staff acknowledged that smaller companies
12 require a higher return on equity in order to attract capital from investors. In its report
13 processed April 13, 2018, the Ohio PUC Staff expert concluded that a premium of 1.77%
14 to Cobra's rate of return was appropriate.

15 **Q. HOW DOES THIS PREMIUM OF 1.77% COMPARE TO YOUR BUSINESS RISK**
16 **ADJUSTMENT?**

17 A. The PUC Staff's recommended 1.77% falls within my recommended 1.0% to 2.0% range.
18 It is over three times as large as NEO's requested business risk adjustment, however, which
19 supports the conservatism in NEO's requested ROE. Additionally, the PUC Staff's
20 premium was applied to the subject company's overall rate of return, not the return on
21 equity. This means a higher premium than 1.77% was recommended for the return on
22 equity.

23 **F. Results of Cost of Equity Analysis**

24 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR COST OF EQUITY**
25 **ANALYSIS.**

1 A. As summarized in Schedule A in my report, I developed multiple analyses for estimating
2 the cost of equity for NEO. I then reviewed the results and selected the points considered
3 most relevant to determining a fair rate of equity return for NEO.

4 My concluded ROE indication for each of the methods reflects the weighted results
5 of the individual calculations under each method. I considered the relative strengths and
6 weaknesses of each method and weighted them in my conclusion of a 10.33% cost of equity
7 for a large, public gas utility company. All of the methods used to derive this conclusion
8 lack any adjustments for size, illiquidity, or other NEO-specific factors. To account for
9 these factors as they pertain to NEO, I incorporated a business risk adjustment of 1.00% to
10 2.00%. As a result, my concluded cost of equity range is 11.33% to 12.33% (rounded).

11 **Q. HOW SHOULD THESE RESULTS BE INTERPRETED TO DETERMINE THE**
12 **FAIR COST OF EQUITY FOR NEO?**

13 A. Based on my review of the CAPM, DCF models, Risk Premium analyses, Expected
14 Earnings analyses, NEO-specific risk factors, and current market and utility industry
15 conditions, it is my opinion that a cost of equity range of 11.33% to 12.33% is a reasonable
16 estimate of NEO's fair cost of equity. However, NEO is only requesting 10.83% given its
17 desire to moderate the rate increase for its customers.

18 **VII. RATE OF RETURN FOR NEO**

19 **Q. IN CALCULATING AN OVERALL RATE OF RETURN, WHAT IS NEO'S**
20 **REQUESTED CAPITAL STRUCTURE?**

21 A. NEO's requested capital structure is 64.47% equity and 35.53% long-term debt.

22 **Q. IS NEO'S REQUESTED CAP STRUCTURE REASONABLE?**

23 A. Yes, given NEO's small size, a higher equity percentage is justified.

24 **Q. IS THIS RELATIONSHIP SUPPORTED BY YOUR ANALYSES?**

1 A. Yes. Based on regression analyses of the public companies' equity percentage versus their
2 size, shown in Schedule H.2, it is apparent that the smaller utilities carry a higher
3 percentage of equity capital on a book value basis.

4 **Q. WHAT EQUITY PERCENT OF CAPITAL DOES YOUR REGRESSION**
5 **ANALYSIS PREDICT FOR NEO?**

6 A. An equity percentage of 62.7% is predicted by the analysis. This is 1.8% lower than NEO's
7 requested equity percentage. However, this analysis has a standard error of 6.89%, and
8 therefore the difference of 1.79% is well within one standard deviation of the mean
9 estimate. Therefore, the requested capital structure is reasonable for a small company like
10 NEO.

11 **Q. IS NEO'S REQUESTED COST OF DEBT REASONABLE?**

12 A. Yes, the requested cost of debt of 4.72% reflects their embedded cost of debt and is lower
13 than the Moody's Baa cost of utility debt of 4.99%. The Moody's Baa utility index is based
14 upon much larger investment grade bonds.

15 **Q. WHAT IS THE OVERALL RATE OF RETURN FOR NEO?**

16 A. Combining the ROE of 10.83% with NEO's requested capital structure and cost of debt,
17 the overall rate of return is 8.66%.

	Book Value	% of Capital Structure
Long-Term Debt	\$19,743,460	35.53%
Common Equity	\$35,831,416	64.47%
Total	\$55,574,876	100.00%

	% of Capital Structure	Cost	Weighted Cost
Long-Term Debt	35.53%	4.72%	1.68%
Common Equity	64.47%	10.83%	6.98%
Total	100.00%		8.66%

1

2 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

3 **A.** Yes, it does.

EXHIBIT GES-1



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Principal, Utilities Practice Leader

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EMPLOYMENT HISTORY

September 2008 – Present

ValueScope, Inc.

Principal

Joined the company as a principal to provide valuation, expert testimony, and financial advisory services.

July 2008 – September 2008

Present Value Advisors, LLC

Principal

Formed Present Value Advisors to provide valuation, litigation support, and financial advisory services. Projects included being a consulting expert in a bankruptcy matter and a contract arrangement with *Vitale, Caturano & Company, LTD* (a Boston-based accounting firm) to provide valuation-related financial review (SAS73 & SAS101) services primarily for biotech, high-tech and other development-stage businesses.

July 2005 – June 2008

Kroll Associates, Inc.

Senior Director

Performed valuation analyses for transactions, financial reporting, tax, and other management requirements, and provided expert testimony for litigation support. Key focus was in the Energy sector with larger clients.

2002 – July 2005

CBIZ Valuation Group, LLC,

Managing Director – Southwest Region

Ran the southwest region's valuation practice for approximately three and a half years. In that role, valued many types of businesses, business interests, and professional practices.

1997 – 2002

Deloitte Consulting

Senior Manager: Strategy Competency

Led projects dealing with valuations, mergers and acquisition synergy analyses, real option analyses, strategic assessments, and complex regulatory issues. Served a wide variety of domestic and international clients, including companies in Canada, England, Republic of South Africa, Italy, Scotland, and Singapore.

1988 – 1997

FINANCO, Inc.

Managing Associate

Specialized in the financial modeling of electric, telecommunication, and gas utility systems. Additionally, developed utility merger and acquisition analyses, bankruptcy filings, regulatory testimony, and litigation support.

1987 - 1988

Lamar Real Estate Services, Austin, Texas

Texas

Real Estate Analyst

Concurrent with MBA program, worked for Lamar Savings and Loan developing cash flow analyses for their real estate owned (REO) portfolio.

FORMAL EDUCATION

Master of Business Administration, Finance and Accounting

The University of Texas Graduate School of Business, Austin, Texas

- Sord Scholar
- Dean's Award for Academic Excellence

Bachelor of Science, Petroleum Engineering

The University of Texas, Austin, Texas

- Pi Epsilon Tau (College of Engineering Honor Society)

ACCREDITATIONS AND DESIGNATIONS

CFA – Chartered Financial Analyst (CFA Institute)

CPA – Certified Public Accountant (State Board of Public Accountancy, Texas)

ABV – Accredited in Business Valuation (AICPA)

CFF – Certified in Financial Forensics (AICPA)

CGMA – Chartered Global Management Accountant (AICPA)

CEIV – Certified in Entity and Intangible Valuations

ORGANIZATIONS AND PROFESSIONAL ASSOCIATIONS

American Institute of Certified Public Accountants (AICPA)
Texas Society of Certified Public Accountants - Energy Conference Committee
CFA Institute
CFA Society of Dallas/Fort Worth
Appraisal Issues Task Force Member (AITF)
American Society of Appraisers
Society of Petroleum Engineers (SPE)

LITIGATION SUPPORT / EXPERT WITNESS TESTIMONY

Regulated Utility Matters

EPCOR Water Company rate case before the New Mexico Public Regulation Commission of Texas. Developed rate of return testimony, awaiting hearing.

Double Diamond Utility Company, Inc. rate case before the Public Utility Commission of Texas. Developed rebuttal analyses and testimony in support of the water utility's requested rate of return analysis. Testified at the SOAH proceeding.

Energy West Montana, Inc. rate case before the Montana Public Service Commission. Developed rate of return analyses and testimony in support of the utility's rate filing. Direct and rebuttal testimony filed, testified at Montana commission hearing.

Cut Bank Gas Company rate case before the Montana Public Service Commission. Developed rate return analyses and testimony in support of the utility's rate filing. Direct and rebuttal testimony filed, testified at Montana commission hearing.

Sharyland Utilities, L.P. rate case before the Texas Public Utilities Commission, PUC Docket No 45414. Developed rate of return analyses and testimony for an intervenor, St. Lawrence Cotton Growers Association. Case settled.

Rio Concho Aviation, Inc. rate case before the Texas Public Utilities Commission, PUC Docket No 45720. Developed rebuttal analyses and testimony in support of the water utility's requested rate of return analysis. Testified at the SOAH proceeding.

Quadvest, LP rate case before the Texas Public Utilities Commission. Provided rate of return analysis and an expert report for the water utility's cost of equity capital. Case settled.

SWWC Utilities, Inc. rate case before the Texas Commission on Environmental Quality. Provided rate of return analysis and testimony for this division of Southwest Water Company, a regulated water company.

Hughes Natural Gas, Inc. rate case before the Texas Railroad Commission in Gas Utilities Docket No. 10083/10093. Provided rate of return analysis and direct testimony for Hughes Natural Gas, Inc., a regulated gas company. Testified at the Texas Railroad Commission hearing.

Monarch Utilities I, L.P. rate case before the Texas Commission on Environmental Quality. Provided rate of return analysis and testimony for Monarch Utilities I, L.P., a regulated water company. Rate case settled.

Canyon Lake Water Service Company, SOAH Docket No. 582-11-1468, TCEQ No. 2010-1841-UCR. Prepared rate of return testimony for Canyon Lake Water Service Company's rate case before the Texas Commission on Environmental Quality. Testified for the company, a regulated water company, in a SOAH proceeding.

Global Water Resources, Inc. vs. Sierra Negra Ranch, LLC, AAA Case No. 76 198 Y 00104 11. Retained to develop a solvency analysis and scenario analyses to assess Global Water Resources, Inc.'s future financial performance versus their need for capital and scheduled debt retirements. Expert and rebuttal reports submitted. Case settled.

City of Blue Mound vs. Monarch Utilities I, LP. Retained to consult Monarch's legal counsel on rebuttal arguments to the City's appraisal of the water system. The City's appraisal was to be considered by a panel in formulating an FMV offer to the utility for the water assets. Provided expert testimony at the proceeding and the panel subsequently recommended a value approximately twice the value suggested by the City's appraiser.

Bankruptcy Matters

Christopher Moser, as Plan Trustee of Tango Transport, LLC et al. v. Navistar International Corp. et al., Case No. Civil Action No.- 4:17-cv-598, pending before the United States District Court for the Eastern District of Texas. Retained by Counsel for Tango to Section 548(a) of the Bankruptcy Code to analyze the solvency of Tango to avoid a fraudulent transfer. The report also assessed whether Reasonably Equivalent Value had been received in the settlement of a lawsuit. Expert report submitted, awaiting trial and deposition.

Correra Bankruptcy; Case #16-30728, U.S. Bankruptcy Court Records for the Northern District of Texas. Retained by Mr. Correra to perform asset tracing services to validate and allocate funds set aside in several Individual Retirement Account balances. Expert report submitted, awaiting trial.

Memorial Production Partners LP, et al., Debtors Chapter 11, Case No. 17-30262. The United States Bankruptcy Court, Southern District of Texas, Houston Division. Retained by large shareholder to develop an enterprise value of MEMP. Case settled.

Technology Container Corp Bankruptcy Case #4:15-bk-40339 The United States Bankruptcy Court for the District of Massachusetts. Retained as a consulting expert by the Creditor Committee's Counsel to review and assess financial plans and forecasts submitted by the debtor.

College Media Corporation v. Digital River, Inc., Digital River Education Services, Inc. and Journey Education Marketing, Inc. The United States Bankruptcy Court for the Eastern District of Texas. Developed an analysis of the economic damages to College Media Corporation related to their allegations against Digital River and Journey Education Marketing. Expert report submitted. Case settled.

Bankruptcy Valuation for Senior Lenders: Synventive Molding Solutions. Retained to determine the enterprise values of the global operations and the European operations of Synventive, a company focused on automobile molding equipment. Analyses and draft reports prepared for counsel. Case settled.

The IT Group, Inc., et al vs. Acres of Diamonds, Case No. 02-10118, Adv. Proc. No. 04-51311-PBL, et al. The United States Bankruptcy Court for the District of Delaware. Retained to value a minority interest deemed a fraudulent transfer of a bankruptcy proceeding. Expert report submitted, deposition testimony provided. Case settled.

Lodestar Energy, Inc., Lodestar Holdings, Inc. Debtors Chapter 11 Proceeding Case Nos. 01-50969 and 01-50972, Jointly Administered Under Case No. 01-50969. The United States Bankruptcy Court, Eastern District of Kentucky, Lexington Division. Developed a solvency opinion of a coal mining company considering the balance sheet, capital adequacy and cash flow tests. Case settled.

In Re Camp Cooley, Ltd., Case No. 0961311, Chapter 11. The United States Bankruptcy Court for the Western District of Texas, Waco Division. Prepared a natural gas reserve valuation report for the debtor and developed a rebuttal report against the bank's expert. Deposition and courtroom testimony provided.

Einstein/Noah Bagel Corp. and Einstein/Noah Bagel Partners, Case No. 00-04447-ECF-CGC and 00-04448-ECF-CGC. The United States Bankruptcy Court for the District of Arizona. Deposition and trial testimony provided on a valuation analysis of the respective interests of Einstein/Noah Bagel Corp. and Einstein/Noah Bagel Partners based on their relative market values.

Leesburg Asphalt Company, L.L.C., Case No. 01-39902-SAF-1. The United States Bankruptcy Court for the Northern District of Texas, Dallas Division. Developed analyses of the debtor's workout plan and reasonableness of an alternative source of financing. Case settled.

Delaware Chancery Court

In the Court of Chancery of the State of Delaware, Kendall Hoyd and Silver Spur Capital Partners, LP v. Trussway Holdings, LLC. Developed an appraisal of the fair value of Trussway Holdings, LLC in connection with a petition for appraisal of stock pursuant to Section 262 of Title 8 of the Delaware Code. Expert report and rebuttal reports submitted, testified in the Chancery Court in Georgetown, Delaware.

US Tax Court Matters

Duane Pankratz, et al., Petitioner(s), vs. Commissioner of Internal Revenue, Tax Court Docket No. 21255-13, 27239-13, U.S. Tax Court, Washington, DC. Developed a valuation of the charitable contributions of Dr. Pankratz involving oil and gas partnership interests and real estate assets. Developed analyses and an expert. Testified in US Tax Court, St. Paul, Minn.

TranSupport, Inc. vs. Commissioner of Internal Revenue, Tax Court Docket No. 12152-13, U.S. Tax Court, Boston, Mass. Developed a reasonable compensation analysis, expert, and rebuttal reports for company personnel in the aircraft industry. Testified in US Tax Court, Washington, DC.

Salty Brine I, Ltd. by and through, Salty Brine, Inc., Tax Matters Partner, vs. United States of America, United States District Court, Northern District of Texas, Abilene Division, Case No.: 5:10-CV-00108-C. Developed an expert report on an off-shore royalty transfer and the use of business protection insurance policies for tax avoidance. Provided deposition and trial testimony.

Mason & Mason Technology Insurance Services, Inc. vs. Commissioner, Tax Court Docket No. 12045-09. Developed an analysis of reasonable compensation for the owner of an insurance brokerage. Case settled.

Garwood Irrigation Company vs. Commissioner, Tax Court Docket No. 001459-03. U.S. Tax Court, Houston, Texas. Developed a valuation and rebuttal report and provided expert testimony on the valuation of an irrigation company and its water rights.

Contract/Partnership Disputes

Glenn M. Darden, et al. v Thomas F. Dardent et al., AAA Case No. 01-17-0003-3695. Analyzed the economic damages related to the transfer of limited partnerships interests in a ranch and its minerals. Expert report submitted, awaiting trial.

Concepts, Ltd v Prestonwood Rehabilitation & Nursing Center, Inc. and Denton Rehabilitation & Nursing Center, Inc. Retained to develop the range of economic damages, if any, incurred by Pharmacy Concepts in a contract dispute. Case settled.

Pharmacy Concepts, Ltd v Prestonwood Rehabilitation & Nursing Center, Inc. and Denton Rehabilitation & Nursing Center, Inc. Retained to develop the range of economic damages, if any, incurred by Pharmacy Concepts in a contract dispute. Case settled.

N8 Medical, Inc. and N8 Medical, LLC and Brigham Young University and N8 Pharmaceuticals, Inc. v. Colgate-Palmolive Co. Retained to develop risk-adjusted analyses in support of settlement negotiations following a previous expert's Daubert exclusion. Case settled.

Highland Capital Management, L.P. and Cornerstone Healthcare Group Holding, Inc. v. Patrick Daugherty, Defendant and Counter-Plaintiff. Retained to develop an analysis of the economic damages to Patrick Daugherty in relation to his equity compensation at the time of his resignation from Highland Capital. Expert and rebuttal reports submitted. Deposition and trial testimony provided.

In the Matter of the Application of John C. Wright for the Dissolution of Hudson Valley Clean Energy, Inc., Supreme Court of the State of New York, County of Dutchess. Retained to determine the fair value of a minority interest in Hudson Valley Clean Energy for a shareholder oppression matter. Prepared an expert report and provided courtroom testimony in the Supreme Court of the State of New York.

Circle Zebra Fabricators, Ltd., David Croft, and Monte Guiles vs. Hydro-X, LLC and Stonehenge Capital Company, LLC. Retained to develop an analysis of the economic damages to Circle Zebra resulting from the termination of a merger agreement. Expert report submitted, deposition testimony provided. The case settled in mediation.

Precision Dialing Services, Inc. vs. Clear Channel Communications, Inc., Cause No. 02-01782, Critical Mass Media, Inc., Clear Channel Broadcasting, Inc., and Clear Channel Radio, Inc. The District Court of Dallas County, Texas, 68th Judicial District. Retained to calculate economic damages related to the dissolution of a joint venture. Report submitted, deposition testimony provided. Case settled.

Oil and Gas Matters

Memorial Production Partners LP, et al., Debtors Chapter 11, Case No. 17-30262. The United States Bankruptcy Court, Southern District of Texas, Houston Division. Retained by large shareholder to develop an enterprise value of MEMP. Case settled.

Gregory Imbruce and Glenrose Holdings, LLC v Cheryl Johnson and Levett Rockwood, P.C., Superior Court, Judicial District of Stamford Ct. Retained to support the value of the common shares of Starboard Resources in a legal malpractice matter related to a previous case (retained by the former opposing counsel's firm). Expert report prepared and deposition testimony provided. Awaiting trial.

Ergon Asphalt & Emulsions, Inc. v Nustar Pipeline Operating Partnership, LP, Et Al. Retained to develop an analysis of the economic damages to Ergon based on Nustar's alleged non-performance of an asphalt terminal lease agreement. Deposition testimony provided. Case settled.

Michael O. Pickens v T. Boone Pickens, Jr., Dallas County District Court Cause No. DC-14-13103. Retained to calculate the value of shares of Primexx Energy Partners and NeoFirma Software in support of mediation. Subsequently requested to develop an expert and supplemental reports. Deposition testimony provided. Case settled.

Gregory Imbruce, Giddings Investments LLC, Giddings GENPAR LLC, Hunton Oil, Asym Capital III LLC, Glenrose Holdings LLC, and Asym Energy Investments LLC v. Charles Henry III, et.al., American Arbitration Association Case No: 12 198 0058 13, Commercial Division. In this matter, I valued the common shares of Starboard Resources as of 2011, 2012, and 2014. The analysis also included determining the fair market value of Starboard's oil and gas reserves in a Stamford, CT trial. Three expert reports and a rebuttal report submitted, trial testimony provided.

Crimson Exploration, Inc. and Crimson Exploration Operating, Inc. v. Allen Drilling Acquisition Company and ADAC II, Inc. Reviewed and rebutted an accounting firm's adjustments made to Operator's invoices in a joint interest billing dispute in a Texas District Court matter. Rebuttal report submitted. Case settled.

Diamond Offshore Company v. Survival Systems International, Inc. Retained to develop an analysis of the economic damages to Diamond Offshore Company resulting from the installation of defective lifeboat hooks by Survival Systems, Inc. on certain offshore drilling rigs. Damage categories considered included original insurance settlement payments and prejudgment interest. Expert and rebuttal reports submitted, deposition testimony provided. Case settled.

Noble Drilling Services, Inc. vs. Certex USA, Inc., Bridon-American Corp., and Bridon International, Ltd., Civil Case No. 4:09-cv-022825. Retained to calculate the economic damages related to anchor ropes that failed during a hurricane. Expert and rebuttal reports submitted, deposition testimony provided. Case settled.

Anadarko Petroleum Corporation vs. Noble Drilling (U.S.) LLC, Civil Case No. 4:10-cv-02185. Retained to develop an expert report on the economic damages related to an offshore drilling rig contract termination for a claimed *force majeure* event after a moratorium on drilling was declared in the Gulf of Mexico. Expert and rebuttal reports submitted, deposition testimony provided. Case settled.

613 Agro Holdings, L.L.C. v. Renick et al. Retained to develop an expert report and rebuttal report on the value of oil and gas royalties in a Kansas District Court matter. Expert and rebuttal reports submitted and the case settled.

Ringo Drilling, I, L.P. v. Victory Drilling, Inc., and Ira Glasser. Cause No. 11-1489. Retained to develop an expert report on rebuttal arguments to Ringo Drilling's claimed damages in a lease transaction. Expert report submitted and the case settled.

Joint Resources Company v. Banc of America Investment Services. FINRA Dispute Resolution. Retained to develop an analysis of the lost profits incurred by Joint Resources Company when they invested in auction rate securities in 2008, preventing access to investment capital. The analysis included documentation of Joint Resources Company's investment model and the calculation of the lost profits from the missed opportunity. Expert report submitted and the case settled.

Patriot Exploration LLC and Patriot Land LLC d/b/a JF Patriot Land, LLC v. Thompson & Knight LLP. Retained to calculate the economic damages to Patriot resulting from not being able complete the sale of certain mineral interests due to alleged legal malpractice and defective title. Expert report submitted, deposition and courtroom testimony provided.

HighMount Exploration and Production, LLC vs. Helmerich and Payne, Inc. Retained to quantify the damages from a drilling rig contract dispute regarding lower "well cycle times" and cost savings not achieved. Expert and rebuttal reports submitted, deposition testimony provided. Case settled.

Robert L. Kovar, Plaintiff vs. Platinum Energy Resources, Inc., Defendant. Retained to quantify the damages related to a transaction dispute which required a valuation of Platinum Energy's stock and cash flow notes. Deposition and trial testimony provided.

Matthew Van Steenwyk, The Matthew Van Steenwyk GST Trust, and the Matthew Van Steenwyk Issue Trust v. Scientific Drilling International, Inc., Donald Van Steenwyk Gene Durocher, Gordon Thomson, Barbara Helbach, Denis Bandera, and Van Steenwyk Holdings, LLC. Retained to develop a valuation of an interest in Scientific Drilling International stock, a company that

developed MWD (measurement while drilling) technologies. Expert report prepared for mediation. Case settled.

Macquarie Bank Limited, Plaintiff vs. Bradley D. Knickel, LexMac Energy, L.P. Retained to provide an affidavit to the court on SEC PV-10 Reserve Reporting and the risks associated with different classifications of hydrocarbon reserves.

Questar Gas Management Company vs. Waukesha Engine Division of Dresser, Inc.; Stewart & Stevenson Power Products, LLC; Stewart & Stevenson Power, File No. 71 198 Y 00749 07, before the American Arbitration Association, Dallas Texas. Retained to develop lost profits and economic damages analyses in a matter related to natural gas compression in the midstream sector. Analyses developed, deposition testimony provided. Case settled.

The Arbitration of Anthony Abernethy vs. J. Bryan Sutherlin, Brad Sutherlin, Kevin Sutherlin, Culebra Oil & Gas Co., Culebra Oil & Gas, L.L.C. Retained to value economic damages related to a minority ownership interest in an E&P company. Deposition and arbitration testimony provided.

Forensic Accounting

Correra Bankruptcy; Case #16-30728, U.S. Bankruptcy Court Records for the Northern District of Texas. Retained by Mr. Correra to perform asset tracing services to validate and allocate funds set aside in several Individual Retirement Account balances. Expert report prepared, awaiting trial.

In the Matter of the Marriage of John Wesley Bryan and Kimberly Lee Bryan; In the 324th Judicial District Court of Tarrant County, Texas; Retained jointly by Husband to perform asset tracing services and to determine the value of the Community Estate. Expert report prepared, case settled.

In the Matter of the Marriage of Michele L. Jones and Gregory G. Jones and in the Interest of Jacob Jones and Preston Jones, Children, Cause No. 360-596303-16; Retained jointly by Husband and Wife to determine the value of the Community Estate. Expert report prepared, case settled.

Family Law, Employment Law and Other

In the Matter of the Marriage of Maria Sarah Pinto-Evans and Joseph Paul Evans, Cause No. 231-626561-17; Jointly retained to develop a valuation of Landmark Mortgage. Expert report prepared, awaiting trial.

In the Matter of the Marriage of John Wesley Bryan and Kimberly Lee Bryan, Cause No. 324-623038-17; Retained by Husband to determine the value of the Community Estate, supported by forensic analyses and asset tracing. Expert report prepared, case settled.

Heather Carson v. Janine Lewis, Stefanie Nielson, and Lewis, Nielson & Associates, L.L.C. d/b/a Elan Partners. Retained to develop a valuation analysis of former managing partner's capital account in support of buy-out negotiations. Expert report prepared, case settled.

Stephen Akin vs. W. R. Starkey Mortgage, LLP. Retained to develop a valuation of Starkey Mortgage to buy-out the former CEO at Fair Market Value of his ownership. Expert report prepared, case settled.

In the Matter of the Marriage of Michele L. Jones and Gregory G. Jones and in the Interest of Jacob Jones and Preston Jones, Children, Cause No. 360-596303-16; Retained jointly by Husband and Wife to determine the value of the Community Estate. Expert report prepared, case settled.

Jerry Blackburn, Gustavo Frafa, and William South v. Small Business Insurance Advisors, f/k/a USCare Marketing, Inc. Retained by the SBIA in a matter involving three agents suing SBIA over its insurance product offerings to agents that were independent, as opposed to being captive. Developed an expert report and testified at the arbitration.

In the Matter of the Marriage of Rebecca L. Ginn and Lonnie James Ginn, Cause No. 325-520240-12. The District Court of Tarrant County, Texas, 325th Judicial District. Retained to develop a valuation of interests in Aspen Scientific I, LP, Aspen Scientific, Inc., Physician Assistant Services of Texas, LLP, and Texas Physician Assistant Surgical Service, PC. Expert report submitted. Case settled.

Progressive Child Care Systems, Inc. vs. Legacy Village Limited Partnership; Legacy Village One, L.C.; Spy, Inc.; Legacy Village Associates, Ltd., Texas Family Fitness 2, LLC, SC Legacy Independence, Ltd., SC Legacy Independence One, LLC, and L&B Realty Acquisitions, LLC., Cause No. 401-01220-2012. Retained to develop a valuation of Texas Family Fitness center in Plano, TX. Expert report submitted, case settled.

In the Matter of the Marriage of Patricia A. Bliss and David P. Bliss, Jr., Cause No. 324-444231-08. The District Court of Tarrant County, Texas, 324th Judicial District. Retained to develop a valuation of an interest in Pediatric Surgical Associates of Fort Worth, P.A. Expert report submitted, testimony provided.

Deirdre Worley, Individually and as Representative of the Estate of Richard Dale Worley, Dr., and Richard Dale Worley, II, Individually vs. Contract Transportation Systems Co., The Sherwin-Williams Company, and Francisco Sanchez, Jr., Individually. Retained to develop an analysis and expert report on the loss of inheritance for Mr. Worley's estate. Deposition and jury trial testimony provided.

Charles Pankey vs. Texas Department of Health, Civil Action No. A 02 CA 284 H. The United States District Court, Western District of Texas, Austin Division. Case dealt with issue of wrongful termination. Prepared a rebuttal analysis of opposing expert's damage report. Case settled.

Jack Holmes vs. Frank Mayborn Enterprises, Inc. d/b/a Killeen Daily Herald, Case No. 188041-C. The District Court of Bell County, Texas, 169th Judicial District. Developed an economic damage analysis and report for an attorney that the newspaper incorrectly reported as being a pedophile. Deposition testimony provided. Case settled.

SEC Receivership Matter

Defendants Civil Action No. 5:09CV0087-C; Securities and Exchange Commission vs. Benny L. Judah and Excel Lease Fund, Inc. The United States District Court for the Northern District of Texas, Lubbock Division. Retained to work with a SEC receiver to provide valuations to the court in support of asset sales at fair values. Assets appraised included casual and fine dining restaurants, bars, notes receivable, stock in community banks, hotels, and a health club facility.

Real Estate Matters

Glenn M. Darden et al. v. Thomas F. Darden, et al., Case No. 01-17-0003-3695

Retained to determine the economic damages and the appropriate discounts, if any, to apply to the economic damages. Expert report submitted, and arbitration testimony provided.

Weldon Glen McBride v Brian Ingram, Leighann Moseley and Keitha Lynn McBride.

Retained to determine the value of an ownership interest in real estate development project. Case settled.

FD Destiny, LLC vs. AVP Destiny, LLC, AVP Destiny, LLC vs Frederick A. Deluca. Retained to develop an analysis of the economic damages to Land Company of Osceola County due to the claimed actions of Fred Deluca, a controlling partner. Expert report submitted, and deposition testimony provided. Case settled.

Clay Partners FG Deerwood Glen, LP vs. the Flexitallic Group S.A.S. and Flexitallic, LP. Retained to develop an analysis of the economic damages to Clay Partners following Flexitallic's repudiation of a lease agreement for three buildings in Deer Park, Texas. Expert report submitted. Deposition and trial testimony provided.

Sharpstown Mall Texas, LLC vs. CCW, LLC. Retained to develop an analysis of the economic damages to Sharpstown Mall given CCW's nonpayment of shared common area maintenance expenses. Expert report submitted. Case settled.

Avalon Construction - Ruidoso, LLC vs. Mueller Company, Inc. and HD Supply Waterworks, Ltd. Retained to develop an analysis of the economic damages to Avalon Construction related to foundation damage for a retail center caused by plumbing defects. Expert report submitted. Case settled.

John W. Clanton, Fibertown DC, LLC and Managed Network Solutions, Inc. vs. Vance Swaggerty. Retained to develop a valuation of three data centers located in Bryan-College Station Texas and Houston Texas. Appraisal report submitted, deposition and trial testimony provided.

Charles E. Simmons and H. Kenneth Barrett, et. al. vs. Dan M. Moody, Jr. and John S. Moody, Jr., et. al. Retained to develop an analysis of the economic damages to Dan Moody and the Moody Simmons Fund I, Ltd. in relation to a real estate development in Katy Texas. Expert report submitted and deposition testimony provided.

LECTURES AND APPEARANCES

"Legal Maneuvers & Value Drivers: Memorial Production Partner Bankruptcy Proceeding" Presentation with attorney Jason Kathman to the Tarrant County Bar Association's Energy Section, June 2018

"TCJA Impacts on Business Valuation" Presentation to the AGN accounting network's North America Regional Meeting, June 2018

"Private Equity Investment in E&P Companies" Presentation to the Tarrant County Bar Association's Energy Section, February 2017

"Oil and Gas Reserves: Distressed Market Values" Presentation to the Tarrant County Bar Association's Energy Section, April 2016

"Oil and Gas Reserves: Distressed Market Values" Presentation to the Houston Bar Association's Bankruptcy Section, March 2016

"Oil and Gas Reserves: What are they worth?" Presentation to the Dallas Bar Association's Energy Section, December 2015.

"Reasonable Compensation Analyses: Insights and Guidance from the Reasonable Compensation Job Aid for IRS Valuation Professionals dated October 29, 2014." Presentation to the Texas Society of CPA's, Fort Worth Chapter, June 2015

"Tools of the Trade, "Northeast Tarrant County Bar Association, September 2014

"What's It Worth?" "Financial Executives International (FEI Fort Worth Chapter), with Mark Rambin, CPA, CFF of Travis Wolff, January 2012

"Rate of Return Analysis: Why Smart People Can Get Different Answers" "Texas Society of CPA's 2011 Energy Conference, May 2011

"Reserve Valuations" – Texas Wesleyan School of Law Energy Symposium, Fort Worth, Texas – March 2011.

"Got Gas? A panel discussion about the Barnett Shale" – Southlake Executive Forum, Southlake, Texas – November 2010.

"Current Trends in Business Valuation" – Flower Mound Bar Association CLE Presentation, Dallas, Texas – November 2010.

"Reserve Valuations (in and out of litigation): Where Engineering and Appraisals Meet" – Dallas Bar Association Energy Section CLE Presentation, Dallas, Texas – September 2010.

"Fair Value Updates / Implications for Energy Companies" – TSCPA Energy Conference, Austin, Texas – May 2009.

"SFAS141R – New Fair Value Standards" – Financial Executives International (FEI), Dallas, Texas – January 2009.

"Energy Valuation Update – Metrics, Multiples and Monte Carlo" – TSCPA Energy Conference, Austin, Texas – May 2008.

"Disastrous Circumstances, a Valuation Point of View" – Risk and Insurance Management Society (RIMS), Dallas, Texas – May 2006.

"FIN47 Valuation Considerations" – Reporting Environmental Liabilities *after* FIN47 Seminar, Advanced Environmental Dimensions, Dallas, Texas – November 2005.

"Valuing Employee Stock Options" – TSCPA Natural Gas, Telecommunications and Electric Industries Conference, Austin, Texas – May 2005.

"Valuing Securities Issued by Financially Distressed Companies" – Winstead's Business Restructuring Practice Group, Dallas, Texas – May 2005.

"Cost of Capital, "Capital Structure and Leverage" and "International Investment Risk" – Lighthouse Seminar Group's Accounting and Finance Primer for Attorneys, Dallas and Houston, Texas – February 2005.

"Valuing Employee Stock Options" for SFAS123R – Association for Corporate Growth, Austin Chapter – November 2004.

"Valuation Update: Making Sense of the Numbers" – TSCPA Natural Gas, Telecommunications and Electric Industries Conference, Austin, Texas – April 2004.

"Valuation Aspects of Commercial Litigation, Intellectual Property and Bankruptcy Cases" – Texas State Attorney General's Office, Austin, Texas – April 2004.

"Economic Damage & Valuation Analysis: The Expert's View" – Hiersche, Hayward, Drakeley & Urback CLE, Dallas, Texas – March 2004.

"SFAS143 Impact on Electric Asset Values" – CBI 6th Annual Electric Asset Valuation Conference, Houston, Texas – February 2004.

"Lessons Learned from SFAS 141/142" – Council of Petroleum Accounting Societies (COPAS), Dallas, Texas - February 2004.

"Valuing Employee Stock Options" – Horn, Murdock & Cole Continuing Professional Education, Dallas, Texas – October 2003.

"Energy Valuation Update" – CBI 5th Annual Electric Asset Valuation Conference, Houston, Texas - February 2003.

"Valuation, Economic Loss and the Expert" – Texas State Attorney General's Office, Austin, Texas – November 2002.

PUBLICATIONS

"First-Quarter Results Show Positive Effects of Low-Interest Rates" *Natural Gas & Electricity*, written with Christopher C. Lucas, CFA, July 2013, Wiley Periodicals, Inc., a Wiley company.

"Utility Stocks Poised to Fall Off the Dividend Cliff?" *Natural Gas & Electricity*, December 2012, Wiley Periodicals, Inc., a Wiley company.

"LNG Development: Timing is Everything" *Natural Gas and Electricity*, June 2009, Wiley Periodicals, Inc.

"Monte Carlo Simulation Improves Decision Making" *Natural Gas and Electricity*, May 2007, Wiley Periodicals, Inc.

"MLPs' Growth in Energy Fueled by Taxes and Regulators," *Natural Gas and Electricity*, January 2007, Wiley Periodicals, Inc.

"Aging Workforce Has Valuation and Intellectual Property Considerations" *Natural Gas and Electricity*, August 2006, Wiley Periodicals, Inc.

"FIN47 Yields Environmental Costs and Opportunities" *Natural Gas and Electricity*, June 2006, Wiley Periodicals, Inc.

"Fair Value Measurement of Environmental Liabilities" *Natural Gas and Electricity*, January 2006, Wiley Periodicals, Inc. (Written with Gregory C. Rogers)

"Role of Fair Value Increasingly Affects Business Combinations" *Natural Gas and Electricity*, November 2005, Wiley Periodicals, Inc.

"New Financial Rules Increase International Comparability" *Natural Gas and Electricity*, June 2005, Wiley Periodicals, Inc.

"Risk/Return Reconciled" *Natural Gas and Electricity*, February 2005, Wiley Periodicals, Inc.

"SFAS 133 Affects Energy Values" *Natural Gas and Electricity*, December 2004, Wiley Periodicals, Inc.

"Bringing Intangible Assets into Focus: Customer Relationships" *Natural Gas and Electricity*, July 2004, Wiley Periodicals, Inc. (Written with Dennis Perrone)

"Nuclear Power Becoming Viable?" *Natural Gas and Electricity*, June 2004, Wiley Periodicals, Inc. (Written with Michael Conroy)

"With FERC Support, Venture Capital Flowing into Merchant Power Opportunities" *Natural Gas and Electricity*, May 2004, Wiley Periodicals, Inc.

"Show Me the Money" chapter 12 in *Measure What Matters*, Laura Patterson, VisionEdge Marketing, Inc., 2004.

"FASB Interpretation No. 45 Making an Impact on Utility Balance Sheets" *Natural Gas and Electricity*, February 2004, Wiley Periodicals, Inc.

"SFAS 143 Asset Retirement Obligations Strongly Affecting Electric & Gas Companies" Chapter 8 in *Electric & Natural Gas Business: Using New Strategies, Understanding the Issues!*, edited by Robert E. Willett, Financial Communications Company, 2004.

"Gas Still the Brightest Sector in Wall Street's View" *Natural Gas and Electricity*, December 2003, Wiley Periodicals, Inc. (Written with Todd C. Fries)

"Utilities Seeing Gains from SFAS 143 Implementation" *Natural Gas and Electricity*, November 2003, Wiley Periodicals, Inc. (Written with Domenic Falcone)

"Today's Financial Market Conditions Encourage New Transmission Investment" *Natural Gas and Electricity*, October 2003, Wiley Periodicals, Inc.

"Companies Planning New Strategies Around Bankruptcy Environment" *Natural Gas* September 2003, Wiley Periodicals, Inc.

"Dividends Revisited: Should the Check Be In The Mail?" *Natural Gas Magazine*, Wiley Periodicals, Inc., April 2003.

"Bad Times for Goodwill? SFAS 142 Will Impact Energy Industry" *Natural Gas Magazine*, Wiley Periodicals, Inc., January 2003.

"Recent FASB Rulings Affecting Valuations" Chapter 8 in *Electric & Natural Gas Business: Understanding It!*, edited by Robert E. Willett, Financial Communications Company, November 2002.

"Valuing Generation Assets Under Competition" *Utility Management Solutions*, July/August 2000.

EXHIBIT GES-2

Method	ROE Indications (Current Rf of 3.38%)	ROE Indications (Forecasted Rf of 3.84%)	Weighting	Weighted ROE	Weighting
<u>CAPM - Value Line Betas</u>					
	Equity Risk Premium				
B.5, B.9	D&P Long-Term Average Returns	8.72%	9.35%	9.81%	33%
B.6, B.10	S&P500 Stocks - All	13.39%	12.55%	13.01%	0%
B.7, B.11	S&P500 Stocks (Dividend Paying Only)	11.92%	11.55%	12.01%	33%
B.8, B.12	S&P500 Stocks (Dividends, 5%-15%)	7.76%	8.69%	9.15%	33%
				10.09%	10%
<u>CAPM - Bloomberg Betas</u>					
	Equity Risk Premium				
B.13, B.17	D&P Long-Term Average Returns	8.72%	9.11%	9.57%	33%
B.14, B.18	S&P500 Stocks - All	13.39%	12.18%	12.64%	0%
B.15, B.19	S&P500 Stocks (Dividend Paying Only)	11.92%	11.22%	11.68%	33%
B.16, B.20	S&P500 Stocks (Dividends, 5%-15%)	7.76%	8.48%	8.94%	33%
				9.83%	10%
<u>ECAPM - Value Line Betas</u>					
	Equity Risk Premium				
C.1, C.5	D&P Long-Term Average Returns	8.72%	10.04%	10.50%	33%
C.2, C.6	S&P500 Stocks - All	13.39%	13.61%	14.07%	0%
C.3, C.7	S&P500 Stocks (Dividend Paying Only)	11.92%	12.49%	12.95%	33%
C.4, C.8	S&P500 Stocks (Dividends, 5%-15%)	7.76%	9.30%	9.76%	33%
				10.84%	10%
<u>ECAPM - Bloomberg Betas</u>					
	Equity Risk Premium				
C.9, C.13	D&P Long-Term Average Returns	8.72%	9.86%	10.32%	33%
C.10, C.14	S&P500 Stocks - All	13.39%	13.33%	13.79%	0%
C.11, C.15	S&P500 Stocks (Dividend Paying Only)	11.92%	12.24%	12.70%	33%
C.12, C.16	S&P500 Stocks (Dividends, 5%-15%)	7.76%	9.14%	9.60%	33%
				10.64%	10%
<u>DCF Analyses: Constant Growth</u>					
D.1	Value Line Estimated Growth	Average			
		11.23%		11.23%	15%
<u>DCF Analyses: Non-Constant Growth</u>					
	Average				
D.2	3 Year Exit	13.79%		0%	
D.3	4 Year Exit	10.84%		50%	
D.4	5 Year Exit	9.10%		50%	
				9.97%	20%
<u>Risk Premium- Authorized Rate Case Returns</u>					
E.1, E.2	Utility Bond Yields	9.74%	9.91%		
E.3, E.4	Long Term Treasuries	9.79%	10.00%		
				9.86%	20%
<u>Expected Earnings</u>					
	Average				
F.1	2018 and 2019 Estimates	10.39%		50%	
F.2	2021-2023 Estimates	11.15%		50%	
				10.77%	5.0%
Large Company ROE (rounded)				10.33%	100%
<u>Business Risk Adjustments (Schedule G.2)</u>					
G.1	D&P Table - 10th Decile			5.37%	
G.2	Comparable Utility Group- Average			1.22%	
	Comparable Utility Group- Median			1.38%	
G.2	Differential: D&P Implied SSRP less Comparable's Mean SSRP			4.15%	
G.2	Private Equity Liquidity Effects			3.00%	
G.2	Chicago Booth Study			4.00%	5.00%
Indicated Business Risk Adjustment				1.00%	-
Company Selected Business Risk Adjustment				0.50%	
Company Requested ROE				10.83%	

**Northeast Ohio Natural Gas
Forecasted 30 Year Treasury Yield**

Schedule A.2

Calculation of Forecasted Risk Free Rate

Calculation of Forecasted Rf Rate	
30 Year Treasury Yield - November 1, 2018	3.38%
10 Year Treasury Yield - November 1, 2018	3.14%
Maturity Premium	<hr/> 0.24%
Forecasted 10 Year Treasury Yield (1) plus: Maturity Premium	3.60% 0.24%
Forecasted 30 Year Treasury Yield	3.84%

Notes:

(1) Forecasted 10-Year Yield at December 2019

Source: Livingston Survey June 2018 - Federal Reserve Bank of Philadelphia

Historical Equity Risk Premium Analysis - D&P Long-Term Average Returns

Market Risk Premium, Current Rf

Risk Premium Consistent with Current Rf Rate	
Market Return (1)	12.10% (1)
Risk-free Rate (2)	3.38% (2)
Risk Premium	8.72%

Notes:

(1) Historical arithmetic mean return of large company stocks, Source: Duff & Phelps 2018
Cost of Capital Navigator

(2) 30-Year United States Treasury rate as of November 1, 2018

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
AGILENT TECHNOLOGIES INC	A	\$20,790	0.09%	0.92%	10.35%	11.27%	0.0096%
AMERICAN AIRLINES GROUP INC	AAL	\$16,751	0.07%	1.26%	14.86%	16.12%	0.0111%
ADVANCE AUTO PARTS INC	AAP	\$12,113	0.05%	0.16%	18.46%	18.62%	0.0093%
APPLE INC	AAPL	\$1,073,306	4.41%	1.29%	9.84%	11.13%	0.4910%
ABBVIE INC	ABBV	\$121,460	0.50%	4.27%	10.15%	14.42%	0.0720%
AMERISOURCEBERGEN CORP	ABC	\$19,671	0.08%	1.80%	9.39%	11.19%	0.0090%
ABBOTT LABORATORIES	ABT	\$123,207	0.51%	1.71%	12.23%	13.93%	0.0705%
ACCENTURE PLC-CL A	ACN	\$101,380	0.42%	2.60%	10.40%	13.00%	0.0542%
ADOBE SYSTEMS INC	ADBE	\$119,729	0.49%	0.00%	19.02%	19.02%	0.0936%
ANALOG DEVICES INC	ADI	\$32,707	0.13%	2.30%	9.53%	11.83%	0.0159%
ARCHER-DANIELS-MIDLAND CO	ADM	\$27,270	0.11%	2.85%	11.40%	14.25%	0.0160%
AUTOMATIC DATA PROCESSING	ADP	\$61,681	0.25%	1.97%	14.00%	15.97%	0.0405%
ALLIANCE DATA SYSTEMS CORP	ADS	\$11,402	0.05%	1.10%	13.23%	14.33%	0.0067%
AUTODESK INC	ADSK	\$29,564	0.12%	0.00%	55.23%	55.23%	0.0671%
AMEREN CORPORATION	AEE	\$15,704	0.06%	2.94%	8.32%	11.26%	0.0073%
AMERICAN ELECTRIC POWER	AEP	\$35,982	0.15%	3.52%	5.40%	8.91%	0.0132%
AES CORP	AES	\$9,753	0.04%	3.69%	8.59%	12.27%	0.0049%
AETNA INC	AET	\$65,526	0.27%	1.05%	10.98%	12.04%	0.0324%
AFLAC INC	AFL	\$32,636	0.13%	2.35%	8.45%	10.80%	0.0145%
ALLERGAN PLC	AGN	\$55,470	0.23%	1.61%	7.25%	8.87%	0.0202%
AMERICAN INTERNATIONAL GROUP	AIG	\$38,144	0.16%	2.82%	11.00%	13.82%	0.0217%
APARTMENT INVT & MGMT CO -A	AIV	\$6,766	0.03%	3.59%	6.20%	9.79%	0.0027%
ARTHUR J GALLAGHER & CO	AJG	\$13,700	0.06%	2.33%	10.91%	13.24%	0.0075%
AKAMAI TECHNOLOGIES INC	AKAM	\$12,253	0.05%	0.00%	13.67%	13.67%	0.0069%
ALBERMARLE	ALB	\$11,433	0.05%	1.44%	13.03%	14.46%	0.0068%
ALIGN TECHNOLOGY INC	ALGN	\$18,472	0.08%	0.00%	31.09%	31.09%	0.0236%
ALASKA AIR GROUP INC	ALK	\$7,859	0.03%	2.02%	3.22%	5.24%	0.0017%
ALLSTATE CORP	ALL	\$30,989	0.13%	1.89%	7.10%	8.99%	0.0114%
ALLEGION PLC	ALLE	\$8,309	0.03%	0.98%	11.03%	12.01%	0.0041%
ALEXION PHARMACEUTICALS INC	ALXN	\$26,705	0.11%	0.00%	16.32%	16.32%	0.0179%
APPLIED MATERIALS INC	AMAT	\$34,749	0.14%	1.84%	12.09%	13.93%	0.0199%
ADVANCED MICRO DEVICES INC	AMD	\$20,208	0.08%	0.00%	25.45%	25.45%	0.0211%
AMETEK INC	AME	\$16,611	0.07%	0.75%	12.05%	12.80%	0.0087%
AFFILIATED MANAGERS GROUP	AMG	\$6,229	0.03%	0.92%	8.34%	9.26%	0.0024%
AMGEN INC	AMGN	\$122,920	0.51%	2.66%	6.60%	9.27%	0.0468%
AMERIPRISE FINANCIAL INC	AMP	\$18,417	0.08%	2.67%	11.80%	14.47%	0.0110%
AMERICAN TOWER CORP	AMT	\$67,403	0.28%	2.20%	16.37%	18.57%	0.0514%
AMAZON.COM INC	AMZN	\$814,392	3.35%	0.00%	51.80%	51.80%	1.7337%
ARISTA NETWORKS INC	ANET	\$18,030	0.07%	0.00%	27.63%	27.63%	0.0205%
ANSYS INC	ANSS	\$12,909	0.05%	0.00%	13.83%	13.83%	0.0073%
ANTHEM INC	ANTM	\$68,781	0.28%	1.14%	11.63%	12.78%	0.0361%
AON PLC	AON	\$37,499	0.15%	1.04%	9.77%	10.81%	0.0167%
A.O. SMITH CORP	AOS	\$8,204	0.03%	1.58%	10.33%	11.91%	0.0040%
APACHE CORP	APA	\$13,812	0.06%	2.22%	-8.42%	-6.20%	-0.0035%
ANADARKO PETROLEUM CORP	APC	\$27,665	0.11%	1.37%	20.39%	21.76%	0.0247%
AIR PRODUCTS & CHEMICALS INC	APD	\$34,068	0.14%	2.85%	12.97%	15.81%	0.0221%
AMPHENOL CORP-CL A	APH	\$27,074	0.11%	1.02%	11.87%	12.89%	0.0143%
APTIV PLC	APTIV	\$20,403	0.08%	1.30%	10.46%	11.76%	0.0099%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
ALEXANDRIA REAL ESTATE EQUITIES	ARE	\$13,149	0.05%	3.08%	6.57%	9.64%	0.0052%
ARCONIC INC	ARNC	\$10,279	0.04%	1.21%	15.80%	17.01%	0.0072%
ACTIVISION BLIZZARD INC	ATVI	\$52,850	0.22%	0.98%	14.50%	15.48%	0.0336%
AVALONBAY COMMUNITIES INC	AVB	\$24,234	0.10%	3.40%	6.38%	9.78%	0.0097%
BROADCOM LTD	AVGO	\$95,043	0.39%	2.87%	12.62%	15.49%	0.0605%
AVERY DENNISON CORP	AVY	\$8,071	0.03%	2.04%	7.10%	9.14%	0.0030%
AMERICAN WATER WORKS CO INC	AWK	\$15,952	0.07%	2.03%	8.22%	10.25%	0.0067%
AMERICAN EXPRESS CO	AXP	\$88,877	0.37%	1.50%	17.30%	18.80%	0.0687%
AUTOZONE INC	AZO	\$19,064	0.08%	0.00%	11.91%	11.91%	0.0093%
BOEING CO/THE	BA	\$206,182	0.85%	1.93%	15.57%	17.49%	0.1482%
BANK OF AMERICA CORP	BAC	\$272,933	1.12%	1.93%	14.10%	16.03%	0.1798%
BAXTER INTERNATIONAL INC	BAX	\$33,696	0.14%	1.05%	12.38%	13.43%	0.0186%
BB&T CORP	BBT	\$37,914	0.16%	3.32%	14.87%	18.19%	0.0283%
BEST BUY CO INC	BBY	\$20,065	0.08%	2.35%	13.94%	16.29%	0.0134%
BECTON DICKINSON AND CO	BDX	\$62,653	0.26%	1.34%	15.23%	16.57%	0.0427%
FRANKLIN RESOURCES INC	BEN	\$16,092	0.07%	13.82%	10.00%	23.82%	0.0158%
BROWN-FORMAN CORP-CLASS B	BF/B	\$22,754	0.09%	3.54%	9.44%	12.98%	0.0121%
BRIGHTHOUSE FINANCIAL INC	BHF	\$4,860	0.02%	0.00%	8.77%	8.77%	0.0018%
BAKER HUGHES INC	BHGE	\$28,477	0.12%	2.36%	57.21%	59.57%	0.0697%
BIOGEN INC	BIIB	\$63,534	0.26%	0.00%	5.98%	5.98%	0.0156%
BANK OF NEW YORK MELLON CORP	BK	\$46,987	0.19%	2.11%	7.00%	9.11%	0.0176%
BOOKING HOLDINGS INC	BKNG	\$90,011	0.37%	0.00%	16.63%	16.63%	0.0615%
BLACKROCK INC	BLK	\$66,306	0.27%	2.80%	8.73%	11.53%	0.0314%
BALL CORP	BLL	\$16,377	0.07%	0.91%	5.63%	6.55%	0.0044%
BRISTOL-MYERS SQUIBB CO	BMJ	\$85,087	0.35%	3.00%	11.16%	14.16%	0.0495%
BERKSHIRE HATHAWAY INC-CL B	BRK/B	\$507,675	2.09%	0.00%	-5.60%	-5.60%	-0.1168%
BOSTON SCIENTIFIC CORP	BSX	\$51,187	0.21%	0.00%	10.00%	10.00%	0.0210%
BORGWARNER INC	BWA	\$8,548	0.04%	1.34%	6.56%	7.90%	0.0028%
BOSTON PROPERTIES INC	BXP	\$18,520	0.08%	2.93%	6.03%	8.96%	0.0068%
CITIGROUP INC	C	\$160,766	0.66%	2.19%	13.11%	15.30%	0.1011%
CONAGRA BRANDS INC	CAG	\$17,297	0.07%	2.50%	7.85%	10.35%	0.0074%
CARDINAL HEALTH INC	CAH	\$15,776	0.06%	5.01%	23.18%	28.19%	0.0183%
CATERPILLAR INC	CAT	\$73,586	0.30%	3.40%	28.03%	31.43%	0.0950%
CHUBB LTD	CB	\$57,840	0.24%	2.36%	10.83%	13.20%	0.0314%
CBOE GLOBAL MARKETS INC	CBOE	\$12,356	0.05%	1.20%	12.92%	14.12%	0.0072%
CBRE GROUP INC	CBRE	\$14,356	0.06%	0.00%	11.00%	11.00%	0.0065%
CBS CORP-CLASS B NON VOTING	CBS	\$21,884	0.09%	1.40%	16.37%	17.76%	0.0160%
CROWN CASTLE INTL CORP	CCI	\$45,368	0.19%	4.34%	22.35%	26.69%	0.0498%
CARNIVAL CORP	CCL	\$39,985	0.16%	3.47%	12.90%	16.37%	0.0269%
CADENCE DESIGN SYSTEMS INC	CDNS	\$12,784	0.05%	0.00%	12.00%	12.00%	0.0063%
CELGENE CORP	CELG	\$52,870	0.22%	0.00%	21.49%	21.49%	0.0467%
CERNER CORP	CERN	\$18,926	0.08%	0.00%	11.60%	11.60%	0.0090%
CF INDUSTRIES HOLDINGS INC	CF	\$11,782	0.05%	2.56%	16.65%	19.21%	0.0093%
CITIZENS FINANCIAL GROUP	CFG	\$17,737	0.07%	2.59%	15.49%	18.08%	0.0132%
CHURCH & DWIGHT CO INC	CHD	\$15,973	0.07%	1.51%	9.40%	10.91%	0.0072%
C.H. ROBINSON WORLDWIDE INC	CHRW	\$12,594	0.05%	2.09%	10.18%	12.27%	0.0063%
CHARTER COMMUNICATIONS INC-A	CHTR	\$82,679	0.34%	0.00%	48.35%	48.35%	0.1643%
CIGNA CORP	CI	\$52,672	0.22%	0.02%	14.40%	14.42%	0.0312%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
COLGATE-PALMOLIVE CO	CL	\$52,109	0.21%	2.72%	6.99%	9.71%	0.0208%
CLOROX COMPANY	CLX	\$19,624	0.08%	2.55%	5.11%	7.66%	0.0062%
COMERICA INC	CMA	\$13,372	0.05%	1.98%	19.07%	21.05%	0.0116%
COMCAST CORP-CLASS A	CMCSA	\$172,654	0.71%	2.10%	5.26%	7.35%	0.0522%
CME GROUP INC	CME	\$62,587	0.26%	3.65%	9.30%	12.95%	0.0333%
CHIPOTLE MEXICAN GRILL INC	CMG	\$13,133	0.05%	0.00%	19.33%	19.33%	0.0104%
CUMMINS INC	CMI	\$22,830	0.09%	3.22%	9.51%	12.73%	0.0119%
CMS ENERGY CORP	CMS	\$13,773	0.06%	2.92%	6.55%	9.47%	0.0054%
CENTENE CORP	CNC	\$26,928	0.11%	0.00%	15.77%	15.77%	0.0174%
CENTERPOINT ENERGY INC	CNP	\$13,627	0.06%	4.14%	6.90%	11.05%	0.0062%
CAPITAL ONE FINANCIAL CORP	COF	\$42,298	0.17%	1.86%	12.25%	14.10%	0.0245%
CABOT OIL & GAS CORP	COG	\$10,499	0.04%	1.14%	32.98%	34.12%	0.0147%
ROCKWELL COLLINS INC	COL	\$21,425	0.09%	0.78%	11.60%	12.38%	0.0109%
COOPER COS INC/THE	COO	\$12,928	0.05%	0.04%	10.80%	10.84%	0.0058%
CONOCOPHILLIPS	COP	\$80,103	0.33%	1.58%	6.00%	7.58%	0.0249%
COSTCO WHOLESALE CORP	COST	\$100,613	0.41%	1.00%	11.18%	12.18%	0.0503%
COTY INC-CL A	COTY	\$8,214	0.03%	4.80%	13.15%	17.95%	0.0061%
CAMPBELL SOUP CO	CPB	\$11,407	0.05%	3.80%	3.46%	7.26%	0.0034%
COPART INC	CPRT	\$11,733	0.05%	0.00%	10.00%	10.00%	0.0048%
SALESFORCE.COM INC	CRM	\$105,628	0.43%	0.00%	26.28%	26.28%	0.1141%
CISCO SYSTEMS INC	CSCO	\$206,803	0.85%	2.79%	7.18%	9.97%	0.0847%
CSX CORP	CSX	\$58,763	0.24%	1.30%	12.28%	13.58%	0.0328%
CINTAS CORP	CTAS	\$19,324	0.08%	0.93%	12.02%	12.95%	0.0103%
CENTURYLINK INC	CTL	\$22,229	0.09%	7.11%	-15.59%	-8.48%	-0.0078%
COGNIZANT TECH SOLUTIONS-A	CTSH	\$39,826	0.16%	1.10%	13.95%	15.05%	0.0246%
CITRIX SYSTEMS INC	CTXS	\$13,995	0.06%	0.00%	13.17%	13.17%	0.0076%
CVS HEALTH CORP	CVS	\$75,754	0.31%	2.81%	10.26%	13.07%	0.0407%
CHEVRON CORP	CVX	\$213,018	0.88%	3.89%	6.65%	10.54%	0.0922%
CONCHO RESOURCES INC	CXO	\$28,766	0.12%	0.00%	31.00%	31.00%	0.0366%
DOMINION RESOURCES INC/VA	D	\$45,979	0.19%	4.67%	5.69%	10.36%	0.0196%
DELTA AIR LINES INC	DAL	\$38,422	0.16%	2.56%	14.35%	16.91%	0.0267%
DEERE & CO	DE	\$45,243	0.19%	1.71%	7.33%	9.04%	0.0168%
DISCOVER FINANCIAL SERVICES	DFS	\$23,554	0.10%	2.06%	10.17%	12.23%	0.0118%
DOLLAR GENERAL CORP	DG	\$30,053	0.12%	1.09%	15.26%	16.35%	0.0202%
QUEST DIAGNOSTICS INC	DGX	\$12,736	0.05%	2.04%	8.78%	10.82%	0.0057%
DR HORTON INC	DHI	\$13,940	0.06%	1.45%	20.48%	21.93%	0.0126%
DANAHER CORP	DHR	\$70,444	0.29%	0.80%	8.82%	9.62%	0.0278%
WALT DISNEY CO/THE	DIS	\$172,669	0.71%	1.55%	12.98%	14.53%	0.1031%
DISCOVERY COMMUNICATIONS INC	DISCA	\$21,958	0.09%	0.00%	4.60%	4.60%	0.0042%
DISH NETWORK CORP	DISH	\$14,811	0.06%	0.00%	-12.71%	-12.71%	-0.0077%
DIGITAL REALTY TRUST INC	DLR	\$22,688	0.09%	13.20%	19.80%	33.00%	0.0308%
DOLLAR TREE INC	DLTR	\$20,197	0.08%	0.00%	11.36%	11.36%	0.0094%
DOVER CORP	DOV	\$12,204	0.05%	2.41%	11.70%	14.11%	0.0071%
DUKE REALTY CORP	DRE	\$9,965	0.04%	0.96%	4.56%	5.52%	0.0023%
DARDEN RESTAURANTS INC	DRI	\$13,014	0.05%	10.03%	10.62%	20.65%	0.0110%
DTE ENERGY COMPANY	DTE	\$20,392	0.08%	3.39%	5.87%	9.25%	0.0078%
DUKE ENERGY CORP	DUK	\$58,171	0.24%	3.29%	5.04%	8.34%	0.0199%
DAVITA INC	DVA	\$11,438	0.05%	0.00%	18.00%	18.00%	0.0085%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
DEVON ENERGY CORP	DVN	\$16,719	0.07%	0.46%	14.36%	14.82%	0.0102%
DOWDUPONT INC	DWDP	\$134,451	0.55%	4.39%	7.80%	12.19%	0.0674%
DXC TECHNOLOGY CO	DXC	\$20,125	0.08%	1.31%	6.36%	7.66%	0.0063%
ELECTRONIC ARTS INC	EA	\$28,714	0.12%	0.00%	15.20%	15.20%	0.0179%
EBAY INC	EBAY	\$28,423	0.12%	0.00%	10.14%	10.14%	0.0118%
ECOLAB INC	ECL	\$44,120	0.18%	5.73%	13.00%	18.73%	0.0340%
CONSOLIDATED EDISON INC	ED	\$23,553	0.10%	1.92%	3.60%	5.52%	0.0053%
EQUIFAX INC	EFX	\$12,629	0.05%	2.10%	6.60%	8.70%	0.0045%
EDISON INTERNATIONAL	EIX	\$22,217	0.09%	2.10%	5.44%	7.54%	0.0069%
ESTEE LAUDER COMPANIES-CL A	EL	\$51,503	0.21%	2.32%	11.28%	13.60%	0.0288%
EASTMAN CHEMICAL CO	EMN	\$11,439	0.05%	1.76%	7.40%	9.16%	0.0043%
EMERSON ELECTRIC CO	EMR	\$43,961	0.18%	2.43%	11.20%	13.62%	0.0246%
EOG RESOURCES INC	EOG	\$61,986	0.25%	1.11%	11.32%	12.43%	0.0317%
EQUINIX INC	EQIX	\$30,745	0.13%	8.16%	19.45%	27.61%	0.0349%
EQUITY RESIDENTIAL	EQR	\$23,882	0.10%	0.54%	5.73%	6.27%	0.0062%
EQT CORP	EQT	\$8,874	0.04%	0.20%	17.50%	17.70%	0.0065%
EVERSOURCE ENERGY	ES	\$19,866	0.08%	4.85%	5.80%	10.65%	0.0087%
EXPRESS SCRIPTS HOLDING CO	ESRX	\$54,830	0.23%	0.00%	5.79%	5.79%	0.0131%
ESSEX PROPERTY TRUST INC	ESS	\$16,691	0.07%	7.89%	4.92%	12.80%	0.0088%
E*TRADE FINANCIAL CORP	ETFC	\$12,839	0.05%	0.00%	30.67%	30.67%	0.0162%
EATON CORP PLC	ETN	\$31,963	0.13%	5.39%	8.80%	14.19%	0.0186%
ENTERGY CORP	ETR	\$15,013	0.06%	4.45%	0.87%	5.32%	0.0033%
EVERGY INC	EVERG	\$15,244	0.06%	1.51%	8.19%	9.70%	0.0061%
EDWARDS LIFESCIENCES CORP	EW	\$31,667	0.13%	0.00%	14.00%	14.00%	0.0182%
EXELON CORP	EXC	\$42,162	0.17%	0.95%	4.19%	5.14%	0.0089%
EXPEDITORS INTL WASH INC	EXPD	\$12,029	0.05%	2.11%	11.60%	13.71%	0.0068%
EXPEDIA INC	EXPE	\$19,012	0.08%	1.91%	14.15%	16.06%	0.0125%
EXTRA SPACE STORAGE INC	EXR	\$11,434	0.05%	2.77%	5.46%	8.23%	0.0039%
FORD MOTOR CO	F	\$36,955	0.15%	0.80%	-9.16%	-8.36%	-0.0127%
FASTENAL CO	FAST	\$14,872	0.06%	17.76%	17.50%	35.26%	0.0216%
FACEBOOK INC-A	FB	\$436,737	1.79%	0.00%	24.31%	24.31%	0.4363%
FORTUNE BRANDS HOME & SECURI	FBHS	\$6,684	0.03%	0.55%	11.63%	12.18%	0.0033%
FREEMPORT-MCMORAN INC	FCX	\$17,794	0.07%	0.30%	-5.82%	-5.51%	-0.0040%
FEDEX CORP	FDX	\$59,038	0.24%	22.07%	15.80%	37.87%	0.0919%
FIRSTENERGY CORP	FE	\$19,010	0.08%	0.80%	-0.35%	0.45%	0.0004%
F5 NETWORKS INC	FFIV	\$10,784	0.04%	0.00%	10.42%	10.42%	0.0046%
FIDELITY NATIONAL INFO SERV	FIS	\$34,042	0.14%	0.74%	4.63%	5.37%	0.0075%
FISERV INC	FISV	\$29,849	0.12%	0.00%	11.00%	11.00%	0.0135%
FIFTH THIRD BANCORP	FITB	\$17,923	0.07%	0.88%	4.35%	5.23%	0.0039%
FOOT LOCKER INC	FL	\$5,508	0.02%	4.96%	4.91%	9.87%	0.0022%
FLUOR CORP	FLR	\$6,306	0.03%	1.70%	26.17%	27.87%	0.0072%
FLOWSERVE CORP	FLS	\$6,099	0.03%	1.68%	19.90%	21.57%	0.0054%
FLEETCOR TECHNOLOGIES INC	FLT	\$17,716	0.07%	0.00%	16.50%	16.50%	0.0120%
FMC CORP	FMC	\$10,976	0.05%	0.36%	23.10%	23.46%	0.0106%
TWENTY-FIRST CENTURY FOX INC	FOX	\$86,083	0.35%	0.91%	9.95%	10.86%	0.0384%
FEDERAL REALTY INVS TRUST	FRT	\$9,180	0.04%	9.09%	5.17%	14.26%	0.0054%
FMC TECHNOLOGIES INC	FTI	\$12,053	0.05%	0.00%	9.85%	9.85%	0.0049%
#N/A	FTNT	\$14,155	0.06%	0.00%	19.40%	19.40%	0.0113%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
FORTIVE CORP	FTV	\$24,984	0.10%	1.03%	14.07%	15.10%	0.0155%
GENERAL DYNAMICS CORP	GD	\$52,833	0.22%	4.63%	11.18%	15.80%	0.0343%
GENERAL ELECTRIC CO	GE	\$83,328	0.34%	0.61%	1.63%	2.25%	0.0077%
GILEAD SCIENCES INC	GILD	\$90,981	0.37%	1.20%	5.55%	6.76%	0.0253%
GENERAL MILLS INC	GIS	\$26,425	0.11%	16.69%	6.43%	23.12%	0.0251%
CORNING INC	GLW	\$26,493	0.11%	0.99%	10.36%	11.35%	0.0124%
GENERAL MOTORS CO	GM	\$51,474	0.21%	3.66%	11.08%	14.74%	0.0312%
ALPHABET INC	GOOGL	\$749,301	3.08%	0.00%	17.82%	17.82%	0.5489%
GENUINE PARTS CO	GPC	\$14,357	0.06%	8.51%	-2.36%	6.15%	0.0036%
GLOBAL PAYMENTS INC	GPN	\$18,158	0.07%	0.00%	15.43%	15.44%	0.0115%
GAP INC/THE	GPS	\$10,491	0.04%	0.09%	10.22%	10.31%	0.0044%
GARMIN LTD	GRMN	\$13,354	0.05%	2.20%	6.03%	8.22%	0.0045%
GOLDMAN SACHS GROUP INC	GS	\$89,008	0.37%	2.81%	12.07%	14.88%	0.0544%
WW GRAINGER INC	GWV	\$16,137	0.07%	8.76%	14.77%	23.53%	0.0156%
HALLIBURTON CO	HAL	\$30,460	0.13%	0.42%	59.96%	60.38%	0.0756%
HASBRO INC	HAS	\$12,341	0.05%	11.95%	7.97%	19.91%	0.0101%
HUNTINGTON BANCSHARES INC	HBAN	\$15,265	0.06%	0.16%	13.13%	13.29%	0.0083%
HANESBRANDS INC	HBI	\$5,851	0.02%	1.60%	4.75%	6.35%	0.0015%
HCA HOLDINGS INC	HCA	\$46,955	0.19%	0.38%	13.58%	13.96%	0.0269%
HCP INC	HCP	\$13,219	0.05%	10.40%	3.20%	13.60%	0.0074%
HOME DEPOT INC	HD	\$206,471	0.85%	25.07%	13.27%	38.35%	0.3254%
HESS CORP	HES	\$17,334	0.07%	0.72%	-7.63%	-6.91%	-0.0049%
HOLLYFRONTIER CORP	HFC	\$11,654	0.05%	5.25%	7.38%	12.63%	0.0061%
HARTFORD FINANCIAL SVCS GRP	HIG	\$16,430	0.07%	0.59%	9.50%	10.09%	0.0068%
HUNTINGTON INGALLS INC	HII	\$9,702	0.04%	5.04%	27.50%	32.54%	0.0130%
HILTON HOTELS CORP	HLT	\$21,546	0.09%	0.96%	11.20%	12.16%	0.0108%
HARLEY-DAVIDSON INC	HOG	\$6,544	0.03%	3.26%	8.15%	11.41%	0.0031%
HOLOGIC INC	HOLX	\$10,909	0.04%	0.00%	2.64%	2.64%	0.0012%
HONEYWELL INTERNATIONAL INC	HON	\$106,935	0.44%	4.42%	14.68%	19.10%	0.0839%
HELMERICH & PAYNE INC	HP	\$6,775	0.03%	8.38%	122.95%	131.33%	0.0366%
HEWLETT PACKARD ENTERPRIS	HPE	\$23,252	0.10%	0.98%	9.09%	10.06%	0.0096%
HP INC	HPQ	\$38,753	0.16%	0.58%	9.08%	9.66%	0.0154%
H&R BLOCK INC	HRB	\$5,438	0.02%	1.54%	10.00%	11.54%	0.0026%
HORMEL FOODS CORP	HRL	\$23,175	0.10%	4.83%	5.00%	9.83%	0.0094%
HENRY SCHEIN INC	HSIC	\$12,962	0.05%	0.00%	9.94%	9.94%	0.0053%
HOST HOTELS & RESORTS INC	HST	\$14,337	0.06%	2.30%	2.97%	5.26%	0.0031%
HERSHEY CO/THE	HSY	\$22,521	0.09%	2.09%	8.83%	10.92%	0.0101%
HUMANA INC	HUM	\$44,204	0.18%	2.41%	14.00%	16.41%	0.0298%
INTL BUSINESS MACHINES CORP	IBM	\$106,174	0.44%	32.20%	4.05%	36.25%	0.1582%
INTERCONTINENTAL EXCHANGE IN	ICE	\$43,209	0.18%	0.92%	8.82%	9.73%	0.0173%
IDEXX LABORATORIES INC	IDXX	\$17,683	0.07%	0.00%	16.43%	16.43%	0.0119%
INTL FLAVORS & FRAGRANCES	IFF	\$15,593	0.06%	2.17%	10.80%	12.97%	0.0083%
ILLUMINA INC	ILMN	\$45,973	0.19%	0.00%	23.86%	23.86%	0.0451%
INCYTE CORP	INCY	\$14,562	0.06%	0.00%	58.03%	58.03%	0.0347%
IHS MARKIT LTD	INFO	\$20,682	0.08%	0.00%	10.12%	10.12%	0.0086%
INTEL CORP	INTC	\$220,076	0.90%	0.52%	10.60%	11.12%	0.1005%
INTUIT INC	INTU	\$54,932	0.23%	2.60%	16.11%	18.71%	0.0422%
INTERNATIONAL PAPER CO	IP	\$18,841	0.08%	3.79%	8.25%	12.04%	0.0093%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
INTERPUBLIC GROUP OF COS INC	IPG	\$8,921	0.04%	1.84%	8.53%	10.37%	0.0038%
IPG PHOTONICS CORP	IPGP	\$7,566	0.03%	0.00%	9.24%	9.24%	0.0029%
IQVIA HOLDINGS INC	IQV	\$24,730	0.10%	0.00%	13.92%	13.92%	0.0141%
INGERSOLL-RAND PLC	IR	\$24,185	0.10%	11.14%	12.37%	23.51%	0.0234%
IRON MOUNTAIN INC	IRM	\$9,042	0.04%	1.77%	8.70%	10.47%	0.0039%
INTUITIVE SURGICAL INC	ISRG	\$59,225	0.24%	0.00%	15.61%	15.61%	0.0380%
GARTNER INC	IT	\$12,885	0.05%	0.00%	15.02%	15.02%	0.0080%
ILLINOIS TOOL WORKS	ITW	\$42,958	0.18%	10.12%	9.71%	19.83%	0.0350%
INVESCO LTD	IVZ	\$9,041	0.04%	0.23%	5.32%	5.55%	0.0021%
HUNT (JB) TRANSPRT SVCS INC	JBHT	\$12,108	0.05%	0.69%	16.92%	17.61%	0.0088%
JOHNSON CONTROLS INTERNATIONAL	JCI	\$30,837	0.13%	0.83%	10.30%	11.13%	0.0141%
JACOBS ENGINEERING GROUP INC	JEC	\$10,718	0.04%	0.00%	18.33%	18.33%	0.0081%
JOHNSON & JOHNSON	JNJ	\$377,676	1.55%	10.75%	7.80%	18.55%	0.2879%
JUNIPER NETWORKS INC	JNPR	\$10,220	0.04%	0.90%	11.15%	12.05%	0.0051%
JPMORGAN CHASE & CO	JPM	\$362,403	1.49%	12.10%	9.10%	21.20%	0.3157%
NORDSTROM INC	JWN	\$11,039	0.05%	1.12%	8.43%	9.54%	0.0043%
KELLOGG CO	K	\$22,209	0.09%	7.89%	7.01%	14.89%	0.0136%
KEYCORP	KEY	\$19,025	0.08%	0.50%	17.93%	18.43%	0.0144%
#N/A	KEYS	\$10,788	0.04%	0.00%	14.00%	14.00%	0.0062%
KRAFT HEINZ CO/THE	KHC	\$68,517	0.28%	3.70%	5.27%	8.97%	0.0252%
KIMCO REALTY CORP	KIM	\$6,683	0.03%	6.10%	5.30%	11.40%	0.0031%
KLA-TENCOR CORP	KLAC	\$14,530	0.06%	4.45%	5.04%	9.48%	0.0057%
KIMBERLY-CLARK CORP	KMB	\$36,718	0.15%	7.33%	5.68%	13.01%	0.0196%
KINDER MORGAN INC	KMI	\$37,872	0.16%	4.94%	12.00%	16.94%	0.0264%
CARMAX INC	KMX	\$12,176	0.05%	0.00%	13.12%	13.12%	0.0066%
COCA-COLA CO/THE	KO	\$203,206	0.84%	1.47%	7.50%	8.97%	0.0749%
MICHAEL KORS HOLDINGS LTD	KORS	\$8,568	0.04%	0.00%	3.66%	3.66%	0.0013%
KROGER CO	KR	\$23,388	0.10%	0.76%	7.01%	7.77%	0.0075%
KOHL'S CORP	KSS	\$12,607	0.05%	5.21%	7.23%	12.44%	0.0064%
KANSAS CITY SOUTHERN	KSU	\$10,485	0.04%	2.40%	5.07%	7.47%	0.0032%
L BRANDS INC	LB	\$9,204	0.04%	3.44%	9.33%	12.77%	0.0048%
LENNAR CORP-A	LEN	\$14,264	0.06%	0.37%	19.95%	20.31%	0.0119%
LABORATORY CRP OF AMER HLDGS	LH	\$16,586	0.07%	0.00%	9.86%	9.86%	0.0067%
LKQ CORP	LKQ	\$8,805	0.04%	0.00%	13.57%	13.57%	0.0049%
L-3 COMMUNICATIONS HOLDINGS	LLL	\$15,003	0.06%	2.01%	13.24%	15.25%	0.0094%
ELI LILLY & CO	LLY	\$115,840	0.48%	1.46%	11.44%	12.90%	0.0614%
LOCKHEED MARTIN CORP	LMT	\$85,163	0.35%	31.16%	21.72%	52.87%	0.1850%
ALLIANT ENERGY CORP	LNT	\$10,200	0.04%	1.23%	5.78%	7.01%	0.0029%
LOWE'S COS INC	LOW	\$78,758	0.32%	0.56%	15.22%	15.79%	0.0511%
LAM RESEARCH CORP	LRCX	\$23,566	0.10%	5.16%	7.07%	12.22%	0.0118%
SOUTHWEST AIRLINES CO	LUV	\$28,650	0.12%	1.36%	7.23%	8.59%	0.0101%
LYONDELLBASELL INDU-CL A	LYB	\$35,500	0.15%	3.94%	8.20%	12.14%	0.0177%
MACY'S INC	M	\$10,618	0.04%	1.05%	0.50%	1.55%	0.0007%
MASTERCARD INC - A	MA	\$206,259	0.85%	1.89%	20.48%	22.37%	0.1896%
MACERICH CO/THE	MAC	\$7,349	0.03%	9.22%	6.76%	15.97%	0.0048%
MARRIOTT INTERNATIONAL -CL A	MAR	\$42,017	0.17%	0.77%	14.35%	15.13%	0.0261%
MASCO CORP	MAS	\$9,590	0.04%	0.46%	15.71%	16.17%	0.0064%
MATTEL INC	MAT	\$4,925	0.02%	0.00%	10.00%	10.00%	0.0020%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

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30-Year Treasury Rate - Current	3.38%
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MCDONALD'S CORP	MCD	\$134,817	0.55%	3.60%	8.69%	12.29%	0.0681%
MICROCHIP TECHNOLOGY INC	MCHP	\$16,576	0.07%	4.82%	14.05%	18.87%	0.0129%
MCKESSON CORP	MCK	\$25,221	0.10%	10.16%	5.87%	16.04%	0.0166%
MOODY'S CORP	MCO	\$28,729	0.12%	1.04%	8.00%	9.04%	0.0107%
MONDELEZ INTERNATIONAL INC-A	MDLZ	\$61,599	0.25%	1.41%	9.15%	10.57%	0.0268%
MEDTRONIC PLC	MDT	\$123,639	0.51%	1.51%	8.00%	9.51%	0.0483%
METLIFE INC	MET	\$41,724	0.17%	1.12%	13.58%	14.70%	0.0252%
MGM RESORTS INTERNATIONAL	MGM	\$14,841	0.06%	1.17%	2.87%	4.04%	0.0025%
MOHAWK INDUSTRIES INC	MHK	\$9,826	0.04%	0.00%	5.04%	5.04%	0.0020%
MCCORMICK & CO-NON VTG SHRS	MKC	\$19,107	0.08%	4.83%	8.90%	13.73%	0.0108%
MARTIN MARIETTA MATERIALS	MLM	\$11,045	0.05%	7.30%	13.95%	21.25%	0.0096%
MARSH & MCLENNAN COS	MMC	\$42,604	0.18%	1.63%	15.72%	17.35%	0.0304%
3M CO	MMM	\$111,927	0.46%	3.98%	8.65%	12.63%	0.0581%
MONSTER BEVERAGE CORP	MNST	\$30,085	0.12%	0.00%	17.00%	17.00%	0.0210%
ALTRIA GROUP INC	MO	\$119,639	0.49%	3.66%	9.00%	12.66%	0.0622%
MOSAIC CO/THE	MOS	\$12,381	0.05%	0.06%	7.00%	7.06%	0.0036%
MARATHON PETROLEUM CORP	MPC	\$49,117	0.20%	3.65%	20.50%	24.15%	0.0487%
MERCK & CO. INC.	MRK	\$194,464	0.80%	3.21%	7.92%	11.13%	0.0890%
MARATHON OIL CORP	MRO	\$15,896	0.07%	0.64%	5.00%	5.64%	0.0037%
MORGAN STANLEY	MS	\$80,068	0.33%	1.46%	13.63%	15.08%	0.0496%
MSCI INC	MSCI	\$13,084	0.05%	2.57%	13.10%	15.67%	0.0084%
MICROSOFT CORP	MSFT	\$818,647	3.36%	8.76%	12.27%	21.02%	0.7073%
MOTOROLA SOLUTIONS INC	MSI	\$20,085	0.08%	4.75%	7.45%	12.20%	0.0101%
M & T BANK CORP	MTB	\$23,203	0.10%	2.22%	12.53%	14.76%	0.0141%
METTLER-TOLEDO INTERNATIONAL	MTD	\$14,112	0.06%	0.00%	11.10%	11.10%	0.0064%
MICRON TECHNOLOGY INC	MU	\$45,506	0.19%	0.00%	-2.10%	-2.10%	-0.0039%
MYLAN NV	MYL	\$16,720	0.07%	0.00%	3.61%	3.61%	0.0025%
NOBLE ENERGY INC	NBL	\$12,585	0.05%	0.09%	31.35%	31.44%	0.0163%
NORWEGIAN CRUISE HOLDINGS	NCLH	\$10,276	0.04%	0.00%	20.32%	20.32%	0.0086%
NASDAQ INC	NDAQ	\$14,312	0.06%	5.17%	9.32%	14.49%	0.0085%
NEXTERA ENERGY INC	NEE	\$81,475	0.33%	15.25%	8.25%	23.50%	0.0787%
NEWMONT MINING CORP	NEM	\$17,077	0.07%	0.98%	-3.00%	-2.02%	-0.0014%
NETFLIX INC	NFLX	\$138,405	0.57%	0.00%	41.07%	41.07%	0.2336%
NEWFIELD EXPLORATION CO	NFX	\$4,700	0.02%	0.00%	17.71%	17.71%	0.0034%
NISOURCE INC	NI	\$9,217	0.04%	3.20%	5.63%	8.83%	0.0033%
NIKE INC -CL B	NKE	\$121,951	0.50%	0.26%	17.49%	17.75%	0.0889%
NIELSEN HOLDINGS PLC	NLSN	\$9,505	0.04%	5.80%	12.00%	17.80%	0.0070%
NORTHROP GRUMMAN CORP	NOC	\$47,424	0.19%	6.32%	15.27%	21.59%	0.0421%
NATIONAL-OILWELL VARCO INC	NOV	\$13,997	0.06%	0.46%	14.30%	14.76%	0.0085%
NRG ENERGY INC	NRG	\$11,248	0.05%	0.56%	46.66%	47.22%	0.0218%
NORFOLK SOUTHERN CORP	NSC	\$45,847	0.19%	1.00%	10.53%	11.53%	0.0217%
NETAPP INC	NTAP	\$20,609	0.08%	2.62%	14.43%	17.05%	0.0144%
NORTHERN TRUST CORP	NTRS	\$20,867	0.09%	5.29%	14.28%	19.57%	0.0168%
NUCOR CORP	NUE	\$18,984	0.08%	0.92%	6.25%	7.17%	0.0056%
NVIDIA CORP	NVDA	\$132,611	0.54%	0.79%	10.63%	11.42%	0.0623%
NEWELL BRANDS INC	NWL	\$7,820	0.03%	0.96%	2.76%	3.71%	0.0012%
NEWS CORP - CLASS B	NWS	\$7,715	0.03%	0.37%	26.30%	26.67%	0.0085%
REALTY INCOME CORP	O	\$18,058	0.07%	1.11%	4.15%	5.26%	0.0039%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
ONEOK INC	OKE	\$26,660	0.11%	20.06%	25.37%	45.44%	0.0498%
OMNICOM GROUP	OMC	\$16,741	0.07%	18.62%	6.64%	25.25%	0.0174%
ORACLE CORP	ORCL	\$184,090	0.76%	6.05%	7.90%	13.95%	0.1056%
O'REILLY AUTOMOTIVE INC	ORLY	\$25,760	0.11%	0.00%	15.47%	15.47%	0.0164%
OCCIDENTAL PETROLEUM CORP	OXY	\$52,269	0.21%	4.99%	14.30%	19.29%	0.0414%
PAYCHEX INC	PAYX	\$23,337	0.10%	3.07%	9.67%	12.74%	0.0122%
PEOPLE'S UNITED FINANCIAL	PBCT	\$5,936	0.02%	1.45%	2.00%	3.45%	0.0008%
PACCAR INC	PCAR	\$20,687	0.09%	0.69%	6.38%	7.07%	0.0060%
P G & E CORP	PCG	\$24,399	0.10%	0.00%	5.05%	5.05%	0.0051%
PUBLIC SERVICE ENTERPRISE GP	PEG	\$26,986	0.11%	2.69%	7.43%	10.12%	0.0112%
PEPSICO INC	PEP	\$157,404	0.65%	22.06%	6.78%	28.84%	0.1866%
PFIZER INC	PFE	\$255,998	1.05%	2.23%	6.18%	8.40%	0.0884%
PRINCIPAL FINANCIAL GROUP	PFG	\$13,634	0.06%	4.46%	6.50%	10.96%	0.0061%
PROCTER & GAMBLE CO/THE	PG	\$223,205	0.92%	5.39%	6.54%	11.93%	0.1094%
PROGRESSIVE CORP	PGR	\$40,260	0.17%	1.49%	8.00%	9.49%	0.0157%
PARKER HANNIFIN CORP	PH	\$21,100	0.09%	6.77%	9.52%	16.29%	0.0141%
PULTEGROUP INC	PHM	\$6,926	0.03%	0.74%	21.15%	21.89%	0.0062%
PACKAGING CORP OF AMERICA	PKG	\$9,059	0.04%	3.53%	10.00%	13.53%	0.0050%
PERKINELMER INC	PKI	\$9,058	0.04%	0.44%	16.46%	16.90%	0.0063%
PROLOGIS INC	PLD	\$40,767	0.17%	1.18%	6.91%	8.09%	0.0135%
PHILIP MORRIS INTERNATIONAL	PM	\$137,342	0.56%	19.69%	8.68%	28.37%	0.1601%
PNC FINANCIAL SERVICES GROUP	PNC	\$59,865	0.25%	3.55%	8.25%	11.80%	0.0290%
PENTAIR PLC	PNR	\$7,142	0.03%	1.46%	11.21%	12.67%	0.0037%
PINNACLE WEST CAPITAL	PNW	\$9,245	0.04%	5.56%	4.56%	10.11%	0.0038%
PPG INDUSTRIES INC	PPG	\$25,605	0.11%	2.21%	7.41%	9.62%	0.0101%
PPL CORP	PPL	\$21,463	0.09%	1.31%	8.10%	9.41%	0.0083%
PERRIGO CO PLC	PRGO	\$9,929	0.04%	1.85%	4.00%	5.85%	0.0024%
PRUDENTIAL FINANCIAL INC	PRU	\$39,565	0.16%	4.30%	6.00%	10.30%	0.0167%
PUBLIC STORAGE	PSA	\$35,938	0.15%	7.97%	4.56%	12.54%	0.0185%
PHILLIPS 66	PSX	\$47,265	0.19%	10.13%	5.50%	15.63%	0.0304%
PVH CORP	PVH	\$9,652	0.04%	0.28%	10.98%	11.26%	0.0045%
QUANTA SERVICES INC	PWR	\$4,991	0.02%	0.00%	16.50%	16.50%	0.0034%
PIONEER NATURAL RESOURCES CO	PXD	\$25,489	0.10%	0.18%	27.13%	27.31%	0.0286%
PAYPAL HOLDINGS INC	PYPL	\$100,177	0.41%	0.00%	20.17%	20.17%	0.0831%
QUALCOMM INC	QCOM	\$93,597	0.38%	1.97%	10.06%	12.03%	0.0463%
QORVO INC	QRVO	\$9,804	0.04%	0.00%	10.48%	10.48%	0.0042%
ROYAL CARIBBEAN CRUISES LTD	RCL	\$22,666	0.09%	1.60%	13.39%	14.99%	0.0140%
EVEREST RE GROUP LTD	RE	\$8,933	0.04%	6.63%	10.00%	16.63%	0.0061%
REGENCY CENTERS CORP	REG	\$10,865	0.04%	3.39%	5.49%	8.87%	0.0040%
REGENERON PHARMACEUTICALS	REGN	\$38,372	0.16%	0.00%	13.22%	13.22%	0.0208%
REGIONS FINANCIAL CORP	RF	\$18,974	0.08%	0.39%	19.79%	20.17%	0.0157%
ROBERT HALF INTERNAT INC	RHI	\$7,525	0.03%	0.54%	15.67%	16.20%	0.0050%
RED HAT INC	RHT	\$30,436	0.13%	0.00%	18.93%	18.93%	0.0237%
RAYMOND JAMES FINANCIAL INC	RJF	\$11,507	0.05%	0.31%	14.95%	15.26%	0.0072%
RALPH LAUREN CORP	RL	\$10,746	0.04%	13.37%	5.81%	19.19%	0.0085%
RESMED INC	RMD	\$15,105	0.06%	2.39%	12.15%	14.54%	0.0090%
ROCKWELL AUTOMATION INC	ROK	\$21,352	0.09%	2.84%	12.34%	15.18%	0.0133%
ROLLINS INC	ROL	\$12,820	0.05%	0.93%	10.00%	10.93%	0.0058%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
ROPER TECHNOLOGIES INC	ROP	\$29,356	0.12%	1.38%	13.47%	14.85%	0.0179%
ROSS STORES INC	ROST	\$36,747	0.15%	0.77%	10.43%	11.19%	0.0169%
REPUBLIC SERVICES INC	RSG	\$23,356	0.10%	0.87%	11.85%	12.72%	0.0122%
RAYTHEON COMPANY	RTN	\$51,460	0.21%	6.33%	14.71%	21.04%	0.0445%
SBA COMMUNICATIONS CORP	SBAC	\$18,815	0.08%	0.00%	48.30%	48.30%	0.0373%
STARBUCKS CORP	SBUX	\$79,098	0.33%	1.46%	14.16%	15.62%	0.0508%
SCANA CORP	SCG	\$5,712	0.02%	2.03%	-2.79%	-0.75%	-0.0002%
SCHWAB (CHARLES) CORP	SCHW	\$62,676	0.26%	0.24%	21.22%	21.45%	0.0553%
SEALED AIR CORP	SEE	\$5,320	0.02%	0.42%	3.38%	3.80%	0.0008%
SHERWIN-WILLIAMS CO/THE	SHW	\$37,250	0.15%	6.31%	11.28%	17.59%	0.0269%
SVB FINANCIAL GROUP	SIVB	\$12,816	0.05%	0.00%	8.88%	8.88%	0.0047%
JM SMUCKER CO/THE	SJM	\$12,482	0.05%	6.84%	4.13%	10.97%	0.0056%
SCHLUMBERGER LTD	SLB	\$71,549	0.29%	6.56%	27.57%	34.13%	0.1004%
SL GREEN REALTY CORP	SLG	\$7,916	0.03%	0.81%	5.26%	6.07%	0.0020%
SNAP-ON INC	SNA	\$8,747	0.04%	1.20%	7.50%	8.70%	0.0031%
SOUTHERN CO/THE	SO	\$45,535	0.19%	4.15%	4.00%	8.15%	0.0153%
SIMON PROPERTY GROUP INC	SPG	\$56,182	0.23%	8.60%	6.22%	14.82%	0.0342%
S&P GLOBAL INC	SPGI	\$45,857	0.19%	1.23%	11.05%	12.28%	0.0231%
STERICYCLE INC	SRCL	\$4,600	0.02%	0.00%	8.91%	8.91%	0.0017%
SEMPRA ENERGY	SRE	\$29,934	0.12%	8.69%	20.29%	28.98%	0.0356%
SUNTRUST BANKS INC	STI	\$28,664	0.12%	1.03%	13.14%	14.17%	0.0167%
STATE STREET CORP	STT	\$26,552	0.11%	0.98%	10.94%	11.93%	0.0130%
SEAGATE TECHNOLOGY	STX	\$12,374	0.05%	4.76%	-1.31%	3.45%	0.0018%
CONSTELLATION BRANDS INC-A	STZ	\$38,016	0.16%	2.32%	11.30%	13.62%	0.0213%
STANLEY BLACK & DECKER INC	SWK	\$18,653	0.08%	4.26%	10.77%	15.02%	0.0115%
SKYWORKS SOLUTIONS INC	SWKS	\$16,017	0.07%	1.31%	12.33%	13.64%	0.0090%
SYNCHRONY FINANCIAL	SYF	\$21,159	0.09%	1.56%	6.20%	7.76%	0.0068%
STRYKER CORP	SYK	\$62,328	0.26%	0.88%	8.70%	9.58%	0.0245%
SYMANTEC CORP	SYMC	\$11,965	0.05%	0.25%	8.50%	8.75%	0.0043%
SYSCO CORP	SYU	\$37,380	0.15%	1.76%	11.37%	13.13%	0.0202%
AT&T INC	T	\$221,662	0.91%	6.82%	4.85%	11.67%	0.1063%
MOLSON COORS BREWING CO -B	TAP	\$14,267	0.06%	0.98%	2.55%	3.53%	0.0021%
TRANSDIGM GROUP INC	TDG	\$18,188	0.07%	0.00%	14.28%	14.28%	0.0107%
TE CONNECTIVITY LTD	TEL	\$26,918	0.11%	2.47%	9.23%	11.70%	0.0129%
TARGET CORP	TGT	\$44,335	0.18%	8.04%	7.15%	15.19%	0.0277%
TIFFANY & CO	TIF	\$14,118	0.06%	3.58%	10.53%	14.11%	0.0082%
TJX COMPANIES INC	TJX	\$68,151	0.28%	0.22%	11.10%	11.32%	0.0317%
TORCHMARK CORP	TMK	\$9,583	0.04%	0.84%	13.70%	14.54%	0.0057%
THERMO FISHER SCIENTIFIC INC	TMO	\$94,117	0.39%	0.82%	11.00%	11.82%	0.0457%
TAPESTRY INC	TPR	\$12,437	0.05%	1.25%	10.96%	12.21%	0.0062%
TRIPADVISOR INC	TRIP	\$7,330	0.03%	0.00%	16.29%	16.29%	0.0049%
T ROWE PRICE GROUP INC	TROW	\$23,589	0.10%	3.31%	11.19%	14.50%	0.0141%
TRAVELERS COS INC/THE	TRV	\$33,153	0.14%	1.39%	17.75%	19.14%	0.0261%
TRACTOR SUPPLY COMPANY	TSCO	\$11,257	0.05%	2.80%	14.41%	17.21%	0.0080%
TYSON FOODS INC-CL A	TSN	\$24,809	0.10%	3.94%	5.90%	9.84%	0.0100%
TOTAL SYSTEM SERVICES INC	TSS	\$16,750	0.07%	0.55%	14.15%	14.70%	0.0101%
TAKETWO SOFTWARE INC	TTWO	\$14,674	0.06%	0.00%	10.00%	10.00%	0.0060%
TWITTER INC	TWTR	\$26,354	0.11%	0.00%	45.93%	45.93%	0.0497%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	16.77%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	13.39%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
TEXAS INSTRUMENTS INC	TXN	\$94,886	0.39%	4.26%	10.58%	14.84%	0.0579%
TEXTRON INC	TXT	\$13,365	0.05%	0.09%	14.11%	14.20%	0.0078%
UNDER ARMOUR INC	UAA	\$9,846	0.04%	0.00%	26.74%	26.74%	0.0108%
UNITED CONTINENTAL HOLDINGS	UAL	\$24,000	0.10%	0.00%	16.62%	16.62%	0.0164%
UDR INC	UDR	\$10,534	0.04%	1.32%	5.38%	6.70%	0.0029%
UNIVERSAL HEALTH SERVICES-B	UHS	\$11,527	0.05%	0.67%	10.21%	10.89%	0.0052%
ULTA SALON COSMETICS & FRAGR	ULTA	\$16,314	0.07%	0.00%	20.50%	20.50%	0.0137%
UNITEDHEALTH GROUP INC	UNH	\$251,138	1.03%	18.10%	13.96%	32.06%	0.3309%
UNUM GROUP	UNM	\$8,083	0.03%	1.17%	9.00%	10.17%	0.0034%
UNION PACIFIC CORP	UNP	\$108,441	0.45%	7.83%	10.66%	18.49%	0.0824%
UNITED PARCEL SERVICE-CL B	UPS	\$92,384	0.38%	3.77%	8.97%	12.74%	0.0484%
UNITED RENTALS INC	URI	\$10,195	0.04%	0.00%	23.52%	23.52%	0.0099%
US BANCORP	USB	\$84,920	0.35%	0.50%	7.25%	7.75%	0.0270%
UNITED TECHNOLOGIES CORP	UTX	\$102,190	0.42%	7.96%	10.49%	18.45%	0.0775%
VISA INC-CLASS A SHARES	V	\$285,181	1.17%	0.63%	18.80%	19.43%	0.2277%
VARIAN MEDICAL SYSTEMS INC	VAR	\$11,031	0.05%	0.00%	8.00%	8.00%	0.0036%
VF CORP	VFC	\$33,776	0.14%	1.43%	9.36%	10.80%	0.0150%
VIACOM INC-CLASS B	VIAB	\$13,396	0.06%	1.19%	6.68%	7.87%	0.0043%
VALERO ENERGY CORP	VLO	\$39,539	0.16%	2.56%	16.36%	18.92%	0.0307%
VULCAN MATERIALS CO	VMC	\$13,568	0.06%	0.84%	16.49%	17.32%	0.0097%
VORNADO REALTY TRUST	VNO	\$12,962	0.05%	2.33%	4.68%	7.01%	0.0037%
VERISK ANALYTICS INC	VRSK	\$19,037	0.08%	0.00%	11.47%	11.47%	0.0090%
VERISIGN INC	VRSN	\$17,021	0.07%	0.00%	10.50%	10.50%	0.0073%
VERTEX PHARMACEUTICALS INC	VRTX	\$44,771	0.18%	0.00%	54.43%	54.43%	0.1001%
VENTAS INC	VTR	\$20,714	0.09%	3.19%	2.95%	6.15%	0.0052%
VERIZON COMMUNICATIONS INC	VZ	\$231,599	0.95%	3.53%	5.31%	8.84%	0.0842%
WATERS CORP	WAT	\$14,904	0.06%	0.00%	10.06%	10.06%	0.0062%
WALGREENS BOOTS ALLIANCE INC	WBA	\$75,838	0.31%	1.19%	10.05%	11.24%	0.0350%
WELLCARE HEALTH PLANS INC	WCG	\$13,391	0.06%	0.00%	17.76%	17.76%	0.0098%
WESTERN DIGITAL CORP	WDC	\$13,663	0.06%	3.56%	-3.39%	0.17%	0.0001%
WEC ENERGY GROUP INC	WEC	\$21,418	0.09%	4.04%	4.92%	8.97%	0.0079%
WELLTOWER INC	WELL	\$25,356	0.10%	1.94%	7.20%	9.14%	0.0095%
WELLS FARGO & CO	WFC	\$252,353	1.04%	2.27%	13.41%	15.68%	0.1626%
WHIRLPOOL CORP	WHR	\$7,281	0.03%	1.55%	9.94%	11.49%	0.0034%
WILLIS TOWERS WATSON PLC	WLTW	\$18,713	0.08%	4.73%	15.35%	20.08%	0.0154%
WASTE MANAGEMENT INC	WM	\$37,557	0.15%	2.80%	11.51%	14.31%	0.0221%
WILLIAMS COS INC	WMB	\$31,171	0.13%	2.05%	-0.80%	1.25%	0.0016%
WAL-MART STORES INC	WMT	\$294,572	1.21%	4.06%	6.24%	10.30%	0.1247%
WESTROCK CO	WRK	\$11,419	0.05%	1.59%	5.83%	7.43%	0.0035%
WESTERN UNION CO	WU	\$8,002	0.03%	0.54%	4.20%	4.74%	0.0016%
WEYERHAEUSER CO	WY	\$20,393	0.08%	1.51%	7.00%	8.51%	0.0071%
WYNN RESORTS LTD	WYNN	\$12,237	0.05%	10.34%	18.30%	28.64%	0.0144%
CIMAREX ENERGY CO	XEC	\$7,711	0.03%	0.82%	72.57%	73.39%	0.0233%
XCEL ENERGY INC	XL	\$24,906	0.10%	3.45%	5.84%	9.29%	0.0095%
XILINX INC	XLNX	\$22,012	0.09%	8.15%	8.13%	16.28%	0.0147%
EXXON MOBIL CORP	XOM	\$341,541	1.40%	11.70%	11.72%	23.41%	0.3286%
DENTSPLY SIRONA INC	XRAY	\$7,835	0.03%	0.24%	6.40%	6.64%	0.0021%
XEROX CORP	XR	\$6,796	0.03%	1.11%	0.60%	1.71%	0.0005%

Market Risk Premium, All Stocks in S&P 500

Equity Risk Premium Analysis

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30-Year Treasury Rate - Current	3.38%
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XYLEM INC	XYL	\$12,355	0.05%	1.80%	15.30%	17.10%	0.0087%
YUM! BRANDS INC	YUM	\$27,541	0.11%	1.88%	12.83%	14.71%	0.0167%
ZIMMER BIOMET HOLDINGS INC	ZBH	\$23,808	0.10%	1.19%	3.03%	4.22%	0.0041%
ZIONS BANCORPORATION	ZION	\$9,250	0.04%	2.62%	9.50%	12.12%	0.0046%
ZOETIS INC	ZTS	\$45,282	0.19%	1.53%	16.41%	17.93%	0.0334%
Total Market Capitalization:		\$24,333,047	100.00%			Weighted Total:	16.77%

Source: Bloomberg data for S&P500 companies where growth rate estimates were available

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
A	\$66.35	\$20,790	\$0.132	\$0.149	\$0.149	\$0.149	\$0.58	10.35%	0.609	0.92%
AAL	\$33.99	\$16,751	\$0.100	\$0.100	\$0.100	\$0.100	\$0.40	14.86%	0.430	1.26%
AAP	\$164.74	\$12,113	\$0.060	\$0.060	\$0.060	\$0.060	\$0.24	18.46%	0.262	0.16%
AAPL	\$220.90	\$1,073,306	\$0.630	\$0.630	\$0.730	\$0.730	\$2.72	9.84%	2.854	1.29%
ABBV	\$88.28	\$121,460	\$0.710	\$0.960	\$0.960	\$0.960	\$3.59	10.15%	3.772	4.27%
ABC	\$89.82	\$19,671	\$0.380	\$0.380	\$0.380	\$0.400	\$1.54	9.39%	1.612	1.80%
ABMD	\$378.14	\$16,916	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	-	-	0.00%
ABT	\$69.64	\$123,207	\$0.280	\$0.280	\$0.280	\$0.280	\$1.12	12.23%	1.188	1.71%
ACN	\$161.58	\$101,380	\$1.330	\$1.330	\$1.330	\$0.000	\$3.99	10.40%	4.197	2.60%
ADBE	\$251.72	\$119,729	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	19.02%	-	0.00%
ADI	\$84.80	\$32,707	\$0.450	\$0.450	\$0.480	\$0.480	\$1.86	9.53%	1.949	2.30%
ADM	\$49.19	\$27,270	\$0.320	\$0.335	\$0.335	\$0.335	\$1.33	11.40%	1.401	2.85%
ADP	\$143.64	\$61,681	\$0.630	\$0.630	\$0.690	\$0.690	\$2.64	14.00%	2.825	1.97%
ADS	\$215.92	\$11,402	\$0.520	\$0.570	\$0.570	\$0.570	\$2.23	13.23%	2.377	1.10%
ADSK	\$138.01	\$29,564	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	55.23%	-	0.00%
AEE	\$64.90	\$15,704	\$0.458	\$0.458	\$0.458	\$0.458	\$1.83	8.32%	1.907	2.94%
AEP	\$72.42	\$35,982	\$0.620	\$0.620	\$0.620	\$0.620	\$2.48	5.40%	2.547	3.52%
AES	\$14.71	\$9,753	\$0.130	\$0.130	\$0.130	\$0.130	\$0.52	8.59%	0.542	3.69%
AET	\$200.36	\$65,526	\$0.500	\$0.500	\$0.500	\$0.500	\$2.00	10.98%	2.110	1.05%
AFL	\$44.65	\$32,636	\$0.225	\$0.260	\$0.260	\$0.260	\$1.01	8.45%	1.047	2.35%
AGN	\$183.53	\$55,470	\$0.700	\$0.720	\$0.720	\$0.720	\$2.86	7.25%	2.964	1.61%
AIG	\$47.95	\$38,144	\$0.320	\$0.320	\$0.320	\$0.320	\$1.28	11.00%	1.350	2.82%
AIV	\$43.14	\$6,766	\$0.360	\$0.380	\$0.380	\$0.380	\$1.50	6.20%	1.547	3.59%
AIZ	\$102.89	\$6,068	\$0.560	\$0.560	\$0.560	\$0.560	\$2.24	-	2.240	2.18%
AJG	\$73.43	\$13,700	\$0.390	\$0.410	\$0.410	\$0.410	\$1.62	10.91%	1.708	2.33%
AKAM	\$65.81	\$12,253	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.67%	-	0.00%
ALB	\$98.09	\$11,433	\$0.320	\$0.335	\$0.335	\$0.335	\$1.33	13.03%	1.411	1.44%
ALGN	\$307.80	\$18,472	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	31.09%	-	0.00%
ALK	\$63.33	\$7,859	\$0.300	\$0.320	\$0.320	\$0.320	\$1.26	3.22%	1.280	2.02%
ALL	\$95.89	\$30,989	\$0.370	\$0.460	\$0.460	\$0.460	\$1.75	7.10%	1.812	1.89%
ALLE	\$85.30	\$8,309	\$0.160	\$0.210	\$0.210	\$0.210	\$0.79	11.03%	0.834	0.98%
ALXN	\$124.15	\$26,705	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.32%	-	0.00%
AMAT	\$34.65	\$34,749	\$0.100	\$0.100	\$0.200	\$0.200	\$0.60	12.09%	0.636	1.84%
AMD	\$24.53	\$20,208	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	25.45%	-	0.00%
AME	\$72.48	\$16,611	\$0.090	\$0.140	\$0.140	\$0.140	\$0.51	12.05%	0.541	0.75%
AMG	\$124.76	\$6,229	\$0.200	\$0.300	\$0.300	\$0.300	\$1.10	8.34%	1.146	0.92%
AMGN	\$198.28	\$122,920	\$1.150	\$1.320	\$1.320	\$1.320	\$5.11	6.60%	5.279	2.66%
AMP	\$137.02	\$18,417	\$0.830	\$0.830	\$0.900	\$0.900	\$3.46	11.80%	3.664	2.67%
AMT	\$148.03	\$67,403	\$0.700	\$0.750	\$0.770	\$0.790	\$3.01	16.37%	3.256	2.20%
AMZN	\$1,777.20	\$814,392	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	51.80%	-	0.00%
ANET	\$235.19	\$18,030	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	27.63%	-	0.00%
ANSS	\$158.80	\$12,909	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.83%	-	0.00%
ANTM	\$273.20	\$68,781	\$0.700	\$0.750	\$0.750	\$0.750	\$2.95	11.63%	3.122	1.14%
AON	\$152.70	\$37,499	\$0.360	\$0.360	\$0.400	\$0.400	\$1.52	9.77%	1.594	1.04%
AOS	\$47.91	\$8,204	\$0.140	\$0.180	\$0.180	\$0.220	\$0.72	10.33%	0.757	1.58%
APA	\$43.12	\$13,812	\$0.250	\$0.250	\$0.250	\$0.250	\$1.00	-8.42%	0.958	2.22%
APC	\$64.39	\$27,665	\$0.050	\$0.250	\$0.250	\$0.250	\$0.80	20.39%	0.882	1.37%
APD	\$158.96	\$34,068	\$0.950	\$1.100	\$1.100	\$1.100	\$4.25	12.97%	4.526	2.85%
APH	\$87.33	\$27,074	\$0.190	\$0.190	\$0.230	\$0.230	\$0.84	11.87%	0.890	1.02%
APTV	\$76.76	\$20,403	\$0.510	\$0.000	\$0.220	\$0.220	\$0.95	10.46%	1.000	1.30%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
ARE	\$122.76	\$13,149	\$0.900	\$0.900	\$0.930	\$0.930	\$3.66	6.57%	3.780	3.08%
ARNC	\$21.41	\$10,279	\$0.060	\$0.060	\$0.060	\$0.060	\$0.24	15.80%	0.259	1.21%
ATVI	\$74.20	\$52,850	\$0.000	\$0.340	\$0.340	\$0.000	\$0.68	14.50%	0.729	0.98%
AVB	\$176.69	\$24,234	\$1.420	\$1.470	\$1.470	\$1.470	\$5.83	6.38%	6.016	3.40%
AVGO	\$232.55	\$95,043	\$1.020	\$1.750	\$1.750	\$1.750	\$6.27	12.62%	6.666	2.87%
AVY	\$98.32	\$8,071	\$0.450	\$0.450	\$0.520	\$0.520	\$1.94	7.10%	2.009	2.04%
AWK	\$89.36	\$15,952	\$0.415	\$0.415	\$0.455	\$0.455	\$1.74	8.22%	1.812	2.03%
AXP	\$104.50	\$88,877	\$0.350	\$0.350	\$0.350	\$0.390	\$1.44	17.30%	1.565	1.50%
AZO	\$754.69	\$19,064	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.91%	-	0.00%
BA	\$366.24	\$206,182	\$1.420	\$1.710	\$1.710	\$1.710	\$6.55	15.57%	7.060	1.93%
BAC	\$28.35	\$272,933	\$0.120	\$0.120	\$0.120	\$0.150	\$0.51	14.10%	0.546	1.93%
BAX	\$70.62	\$33,696	\$0.160	\$0.160	\$0.190	\$0.190	\$0.70	12.38%	0.743	1.05%
BBT	\$48.05	\$37,914	\$0.330	\$0.375	\$0.375	\$0.405	\$1.49	14.87%	1.595	3.32%
BBY	\$72.04	\$20,065	\$0.340	\$0.340	\$0.450	\$0.450	\$1.58	13.94%	1.690	2.35%
BDX	\$241.78	\$62,653	\$0.750	\$0.750	\$0.750	\$0.750	\$3.00	15.23%	3.228	1.34%
BEN	\$29.79	\$16,092	\$0.230	\$3.230	\$0.230	\$0.230	\$3.92	10.00%	4.116	13.82%
BF/B	\$47.94	\$22,754	\$0.146	\$0.158	\$1.158	\$0.158	\$1.62	9.44%	1.696	3.54%
BHF	\$42.55	\$4,860	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	8.77%	-	0.00%
BHGE	\$29.99	\$28,477	\$0.010	\$0.180	\$0.180	\$0.180	\$0.55	57.21%	0.707	2.36%
BIIB	\$326.43	\$63,534	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	5.98%	-	0.00%
BK	\$48.94	\$46,987	\$0.240	\$0.240	\$0.240	\$0.280	\$1.00	7.00%	1.035	2.11%
BKNG	\$1,850.63	\$90,011	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.63%	-	0.00%
BLK	\$424.08	\$66,306	\$2.500	\$2.880	\$2.880	\$3.130	\$11.39	8.73%	11.887	2.80%
BLL	\$45.00	\$16,377	\$0.100	\$0.100	\$0.100	\$0.100	\$0.40	5.63%	0.411	0.91%
BMJ	\$56.30	\$85,087	\$0.400	\$0.400	\$0.400	\$0.400	\$1.60	11.16%	1.689	3.00%
BR	\$119.79	\$13,597	\$0.365	\$0.365	\$0.365	\$0.485	\$1.58		1.580	1.32%
BRK/B	\$209.36	\$507,675	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	-5.60%	-	0.00%
BSX	\$36.99	\$51,187	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.00%	-	0.00%
BWA	\$39.33	\$8,548	\$0.170	\$0.000	\$0.170	\$0.170	\$0.51	6.56%	0.527	1.34%
BXP	\$117.73	\$18,520	\$0.800	\$0.800	\$0.800	\$0.950	\$3.35	6.03%	3.451	2.93%
C	\$68.56	\$160,766	\$0.320	\$0.320	\$0.320	\$0.450	\$1.41	13.11%	1.502	2.19%
CAG	\$35.27	\$17,297	\$0.213	\$0.213	\$0.213	\$0.213	\$0.85	7.85%	0.883	2.50%
CAH	\$52.45	\$15,776	\$0.462	\$0.462	\$0.953	\$0.476	\$2.35	23.18%	2.626	5.01%
CAT	\$136.13	\$73,586	\$0.780	\$0.780	\$1.640	\$0.860	\$4.06	28.03%	4.629	3.40%
CB	\$128.53	\$57,840	\$0.710	\$0.710	\$0.730	\$0.730	\$2.88	10.83%	3.036	2.36%
CBOE	\$103.08	\$12,356	\$0.270	\$0.270	\$0.310	\$0.310	\$1.16	12.92%	1.235	1.20%
CBRE	\$40.62	\$14,356	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.00%	-	0.00%
CBS	\$55.72	\$21,884	\$0.180	\$0.180	\$0.180	\$0.180	\$0.72	16.37%	0.779	1.40%
CCI	\$107.57	\$45,368	\$1.050	\$1.050	\$1.050	\$1.050	\$4.20	22.35%	4.669	4.34%
CCL	\$58.31	\$39,985	\$0.450	\$0.450	\$0.500	\$0.500	\$1.90	12.90%	2.023	3.47%
CDNS	\$42.73	\$12,784	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	12.00%	-	0.00%
CELG	\$81.59	\$52,870	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	21.49%	-	0.00%
CERN	\$62.06	\$18,926	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.60%	-	0.00%
CF	\$50.71	\$11,782	\$0.300	\$0.300	\$0.300	\$0.300	\$1.20	16.65%	1.300	2.56%
CFG	\$36.97	\$17,737	\$0.180	\$0.220	\$0.220	\$0.270	\$0.89	15.49%	0.959	2.59%
CHD	\$58.99	\$15,973	\$0.190	\$0.220	\$0.220	\$0.220	\$0.85	9.40%	0.890	1.51%
CHRW	\$92.39	\$12,594	\$0.460	\$0.460	\$0.460	\$0.460	\$1.84	10.18%	1.934	2.09%
CHTR	\$316.16	\$82,679	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	48.35%	-	0.00%
CI	\$210.31	\$52,672	\$0.000	\$0.040	\$0.000	\$0.000	\$0.04	14.40%	0.043	0.02%
CINF	\$75.53	\$12,764	\$1.000	\$0.530	\$0.530	\$0.530	\$2.59		2.590	3.43%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
CL	\$63.24	\$52,109	\$0.000	\$0.820	\$0.420	\$0.420	\$1.66	6.99%	1.718	2.72%
CLX	\$149.38	\$19,624	\$0.840	\$0.960	\$0.960	\$0.960	\$3.72	5.11%	3.815	2.55%
CMA	\$85.22	\$13,372	\$0.300	\$0.300	\$0.340	\$0.600	\$1.54	19.07%	1.687	1.98%
CMCSA	\$35.63	\$172,654	\$0.158	\$0.190	\$0.190	\$0.190	\$0.73	5.26%	0.747	2.10%
CME	\$179.46	\$62,587	\$4.160	\$0.700	\$0.700	\$0.700	\$6.26	9.30%	6.551	3.65%
CMG	\$439.52	\$13,133	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	19.33%	-	0.00%
CMI	\$142.45	\$22,830	\$1.080	\$1.080	\$1.080	\$1.140	\$4.38	9.51%	4.588	3.22%
CMS	\$49.76	\$13,773	\$0.333	\$0.358	\$0.358	\$0.358	\$1.41	6.55%	1.451	2.92%
CNC	\$138.67	\$26,928	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	15.77%	-	0.00%
CNP	\$27.58	\$13,627	\$0.270	\$0.280	\$0.278	\$0.278	\$1.11	6.90%	1.143	4.14%
COF	\$91.32	\$42,298	\$0.400	\$0.400	\$0.400	\$0.400	\$1.60	12.25%	1.698	1.86%
COG	\$23.40	\$10,499	\$0.050	\$0.060	\$0.060	\$0.060	\$0.23	32.98%	0.268	1.14%
COL	\$133.72	\$21,425	\$0.330	\$0.330	\$0.330	\$0.000	\$0.99	11.60%	1.047	0.78%
COO	\$259.17	\$12,928	\$0.000	\$0.030	\$0.030	\$0.030	\$0.09	10.80%	0.095	0.04%
COP	\$73.22	\$80,103	\$0.255	\$0.285	\$0.290	\$0.290	\$1.12	6.00%	1.154	1.58%
COST	\$226.93	\$100,613	\$0.500	\$0.500	\$0.570	\$0.570	\$2.14	11.18%	2.260	1.00%
COTY	\$11.10	\$8,214	\$0.125	\$0.125	\$0.125	\$0.125	\$0.50	13.15%	0.533	4.80%
CPB	\$37.46	\$11,407	\$0.350	\$0.350	\$0.350	\$0.350	\$1.40	3.46%	1.424	3.80%
CPRT	\$50.03	\$11,733	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.00%	-	0.00%
CRM	\$144.17	\$105,628	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	26.28%	-	0.00%
CSCO	\$46.08	\$206,803	\$0.290	\$0.290	\$0.330	\$0.330	\$1.24	7.18%	1.285	2.79%
CSX	\$70.34	\$58,763	\$0.200	\$0.220	\$0.220	\$0.220	\$0.86	12.28%	0.913	1.30%
CTAS	\$184.50	\$19,324	\$1.620	\$0.000	\$0.000	\$0.000	\$1.62	12.02%	1.717	0.93%
CTL	\$21.01	\$22,229	\$0.540	\$0.540	\$0.540	\$0.000	\$1.62	-15.59%	1.494	7.11%
CTSH	\$72.65	\$39,826	\$0.150	\$0.200	\$0.200	\$0.200	\$0.75	13.95%	0.802	1.10%
CTXS	\$104.24	\$13,995	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.17%	-	0.00%
CVS	\$74.92	\$75,754	\$0.500	\$0.500	\$0.500	\$0.500	\$2.00	10.26%	2.103	2.81%
CVX	\$117.88	\$213,018	\$1.080	\$1.120	\$1.120	\$1.120	\$4.44	6.65%	4.588	3.89%
CXO	\$147.64	\$28,766	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	31.00%	-	0.00%
D	\$72.08	\$45,979	\$0.770	\$0.835	\$0.835	\$0.835	\$3.28	5.69%	3.368	4.67%
DAL	\$53.31	\$38,422	\$0.305	\$0.310	\$0.310	\$0.350	\$1.28	14.35%	1.366	2.56%
DE	\$145.77	\$45,243	\$0.600	\$0.600	\$0.600	\$0.600	\$2.40	7.33%	2.488	1.71%
DFS	\$74.13	\$23,554	\$0.350	\$0.350	\$0.350	\$0.400	\$1.45	10.17%	1.524	2.06%
DG	\$108.15	\$30,053	\$0.260	\$0.260	\$0.290	\$0.290	\$1.10	15.26%	1.184	1.09%
DGX	\$99.71	\$12,736	\$0.450	\$0.500	\$0.500	\$0.500	\$1.95	8.78%	2.036	2.04%
DHI	\$37.89	\$13,940	\$0.125	\$0.125	\$0.125	\$0.125	\$0.50	20.48%	0.551	1.45%
DHR	\$102.37	\$70,444	\$0.140	\$0.160	\$0.160	\$0.320	\$0.78	8.82%	0.814	0.80%
DIS	\$115.29	\$172,669	\$0.840	\$0.000	\$0.840	\$0.000	\$1.68	12.98%	1.789	1.55%
DISCA	\$32.25	\$21,958	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	4.60%	-	0.00%
DISH	\$29.42	\$14,811	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	-12.71%	-	0.00%
DLR	\$32.97	\$22,688	\$0.930	\$1.010	\$1.010	\$1.010	\$3.96	19.80%	4.352	13.20%
DLTR	\$109.77	\$20,197	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.36%	-	0.00%
DOV	\$83.03	\$12,204	\$0.470	\$0.470	\$0.470	\$0.480	\$1.89	11.70%	2.001	2.41%
DRE	\$83.90	\$9,965	\$0.190	\$0.200	\$0.200	\$0.200	\$0.79	4.56%	0.808	0.96%
DRI	\$27.72	\$13,014	\$0.630	\$0.630	\$0.630	\$0.750	\$2.64	10.62%	2.780	10.03%
DTE	\$107.14	\$20,392	\$0.885	\$0.880	\$0.880	\$0.880	\$3.53	5.87%	3.628	3.39%
DUK	\$112.01	\$58,171	\$0.890	\$0.890	\$0.890	\$0.928	\$3.60	5.04%	3.688	3.29%
DVA	\$81.64	\$11,438	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	18.00%	-	0.00%
DVN	\$69.54	\$16,719	\$0.060	\$0.080	\$0.080	\$0.080	\$0.30	14.36%	0.322	0.46%
DWDP	\$35.95	\$134,451	\$0.380	\$0.380	\$0.760	\$0.000	\$1.52	7.80%	1.579	4.39%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
DXC	\$58.47	\$20,125	\$0.180	\$0.180	\$0.190	\$0.190	\$0.74	6.36%	0.764	1.31%
EA	\$84.68	\$28,714	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	15.20%	-	0.00%
EBAY	\$104.44	\$28,423	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.14%	-	0.00%
ECL	\$30.50	\$44,120	\$0.410	\$0.410	\$0.410	\$0.410	\$1.64	13.00%	1.747	5.73%
ED	\$150.85	\$23,553	\$0.690	\$0.720	\$0.720	\$0.720	\$2.85	3.60%	2.901	1.92%
EFX	\$76.68	\$12,629	\$0.390	\$0.390	\$0.390	\$0.390	\$1.56	6.60%	1.612	2.10%
EIX	\$118.52	\$22,217	\$0.605	\$0.605	\$0.605	\$0.605	\$2.42	5.44%	2.486	2.10%
EL	\$69.24	\$51,503	\$0.380	\$0.380	\$0.380	\$0.380	\$1.52	11.28%	1.606	2.32%
EMN	\$132.24	\$11,439	\$0.560	\$0.560	\$0.560	\$0.560	\$2.24	7.40%	2.323	1.76%
EMR	\$84.31	\$43,961	\$0.485	\$0.485	\$0.485	\$0.485	\$1.94	11.20%	2.049	2.43%
EOG	\$72.35	\$61,986	\$0.168	\$0.185	\$0.185	\$0.220	\$0.76	11.32%	0.800	1.11%
EQIX	\$118.82	\$30,745	\$2.000	\$2.280	\$2.280	\$2.280	\$8.84	19.45%	9.700	8.16%
EQR	\$406.97	\$23,882	\$0.504	\$0.540	\$0.540	\$0.540	\$2.12	5.73%	2.185	0.54%
EQT	\$64.78	\$8,874	\$0.030	\$0.030	\$0.030	\$0.030	\$0.12	17.50%	0.131	0.20%
ES	\$42.20	\$19,866	\$0.460	\$0.510	\$0.510	\$0.510	\$1.99	5.80%	2.048	4.85%
ESRX	\$62.67	\$54,830	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	5.79%	-	0.00%
ESS	\$95.23	\$16,691	\$1.750	\$1.860	\$1.860	\$1.860	\$7.33	4.92%	7.510	7.89%
ETFC	\$246.68	\$12,839	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	30.67%	-	0.00%
ETN	\$50.00	\$31,963	\$0.600	\$0.660	\$0.660	\$0.660	\$2.58	8.80%	2.694	5.39%
ETR	\$79.02	\$15,013	\$0.830	\$0.890	\$0.890	\$0.890	\$3.50	0.87%	3.515	4.45%
EVRG	\$82.71	\$15,244	\$0.000	\$0.400	\$0.400	\$0.400	\$1.20	8.19%	1.249	1.51%
EW	\$56.07	\$31,667	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	14.00%	-	0.00%
EXC	\$147.68	\$42,162	\$0.328	\$0.350	\$0.350	\$0.350	\$1.38	4.19%	1.406	0.95%
EXPD	\$43.60	\$12,029	\$0.420	\$0.000	\$0.450	\$0.000	\$0.87	11.60%	0.920	2.11%
EXPE	\$68.53	\$19,012	\$0.300	\$0.300	\$0.300	\$0.320	\$1.22	14.15%	1.306	1.91%
EXR	\$121.64	\$11,434	\$0.780	\$0.780	\$0.860	\$0.860	\$3.28	5.46%	3.370	2.77%
F	\$86.90	\$36,955	\$0.150	\$0.280	\$0.150	\$0.150	\$0.73	-9.16%	0.697	0.80%
FAST	\$8.94	\$14,872	\$0.320	\$0.370	\$0.370	\$0.400	\$1.46	17.50%	1.588	17.76%
FB	\$52.93	\$436,737	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	24.31%	-	0.00%
FBHS	\$154.09	\$6,684	\$0.200	\$0.200	\$0.200	\$0.200	\$0.80	11.63%	0.847	0.55%
FCX	\$47.93	\$17,794	\$0.000	\$0.050	\$0.050	\$0.050	\$0.15	-5.82%	0.146	0.30%
FDX	\$12.47	\$59,038	\$0.500	\$0.500	\$0.250	\$1.300	\$2.55	15.80%	2.751	22.07%
FE	\$223.73	\$19,010	\$0.360	\$0.360	\$0.360	\$0.720	\$1.80	-0.35%	1.797	0.80%
FFIV	\$37.68	\$10,784	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.42%	-	0.00%
FIS	\$173.61	\$34,042	\$0.290	\$0.320	\$0.320	\$0.320	\$1.25	4.63%	1.279	0.74%
FISV	\$104.23	\$29,849	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.00%	-	0.00%
FITB	\$78.82	\$17,923	\$0.160	\$0.160	\$0.180	\$0.180	\$0.68	4.35%	0.695	0.88%
FL	\$27.05	\$5,508	\$0.310	\$0.310	\$0.345	\$0.345	\$1.31	4.91%	1.342	4.96%
FLIR	\$48.07	\$6,606	\$0.150	\$0.160	\$0.160	\$0.160	\$0.63		0.630	1.31%
FLR	\$55.88	\$6,306	\$0.210	\$0.210	\$0.210	\$0.210	\$0.84	26.17%	0.950	1.70%
FLS	\$49.76	\$6,099	\$0.190	\$0.190	\$0.190	\$0.190	\$0.76	19.90%	0.836	1.68%
FLT	\$49.90	\$17,716	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.50%	-	0.00%
FMC	\$206.55	\$10,976	\$0.165	\$0.165	\$0.165	\$0.165	\$0.66	23.10%	0.736	0.36%
FOX	\$83.19	\$86,083	\$0.180	\$0.180	\$0.180	\$0.180	\$0.72	9.95%	0.756	0.91%
FRT	\$45.38	\$9,180	\$1.000	\$1.000	\$1.000	\$1.020	\$4.02	5.17%	4.124	9.09%
FTI	\$45.72	\$12,053	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	9.85%	-	0.00%
FTNT	\$122.57	\$14,155	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	19.40%	-	0.00%
FTV	\$29.04	\$24,984	\$0.070	\$0.070	\$0.070	\$0.070	\$0.28	14.07%	0.300	1.03%
GD	\$82.82	\$52,833	\$0.840	\$0.930	\$0.930	\$0.930	\$3.63	11.18%	3.833	4.63%
GE	\$78.90	\$83,328	\$0.120	\$0.120	\$0.120	\$0.120	\$0.48	1.63%	0.484	0.61%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
GILD	\$190.27	\$90,981	\$0.520	\$0.570	\$0.570	\$0.570	\$2.23	5.55%	2.292	1.20%
GIS	\$12.12	\$26,425	\$0.490	\$0.490	\$0.490	\$0.490	\$1.96	6.43%	2.023	16.69%
GLW	\$73.59	\$26,493	\$0.155	\$0.180	\$0.180	\$0.180	\$0.70	10.36%	0.731	0.99%
GM	\$43.86	\$51,474	\$0.380	\$0.380	\$0.380	\$0.380	\$1.52	11.08%	1.604	3.66%
GOOGL	\$32.57	\$749,301	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	17.82%	-	0.00%
GPC	\$32.94	\$14,357	\$0.675	\$0.720	\$0.720	\$0.720	\$2.84	-2.36%	2.802	8.51%
GPV	\$1,109.23	\$18,158	\$0.010	\$0.020	\$0.010	\$0.000	\$0.04	15.43%	0.043	0.00%
GPS	\$1,119.79	\$10,491	\$0.230	\$0.230	\$0.243	\$0.243	\$0.95	10.22%	0.993	0.09%
GRMN	\$98.45	\$13,354	\$0.510	\$0.530	\$0.530	\$0.530	\$2.10	6.03%	2.163	2.20%
GS	\$116.95	\$89,008	\$0.750	\$0.750	\$0.800	\$0.800	\$3.10	12.07%	3.287	2.81%
GT	\$27.06	\$5,086	\$0.140	\$0.140	\$0.140	\$0.140	\$0.56		0.560	2.07%
GWV	\$64.71	\$16,137	\$1.280	\$1.280	\$1.360	\$1.360	\$5.28	14.77%	5.670	8.76%
HAL	\$220.89	\$30,460	\$0.180	\$0.180	\$0.180	\$0.180	\$0.72	59.96%	0.936	0.42%
HAS	\$21.41	\$12,341	\$0.570	\$0.630	\$0.630	\$0.630	\$2.46	7.97%	2.558	11.95%
HBAN	\$304.77	\$15,265	\$0.110	\$0.110	\$0.110	\$0.140	\$0.47	13.13%	0.501	0.16%
HBI	\$38.44	\$5,851	\$0.150	\$0.150	\$0.150	\$0.150	\$0.60	4.75%	0.614	1.60%
HCA	\$98.00	\$46,955	\$0.000	\$0.350	\$0.000	\$0.000	\$0.35	13.58%	0.374	0.38%
HCP	\$14.45	\$13,219	\$0.370	\$0.370	\$0.370	\$0.370	\$1.48	3.20%	1.504	10.40%
HD	\$16.93	\$206,471	\$0.890	\$1.030	\$1.030	\$1.030	\$3.98	13.27%	4.244	25.07%
HES	\$134.48	\$17,334	\$0.250	\$0.250	\$0.250	\$0.250	\$1.00	-7.63%	0.962	0.72%
HFC	\$26.06	\$11,654	\$0.330	\$0.330	\$0.330	\$0.330	\$1.32	7.38%	1.369	5.25%
HIG	\$187.62	\$16,430	\$0.250	\$0.250	\$0.250	\$0.300	\$1.05	9.50%	1.100	0.59%
HII	\$65.06	\$9,702	\$0.720	\$0.720	\$0.720	\$0.720	\$2.88	27.50%	3.276	5.04%
HLT	\$66.20	\$21,546	\$0.150	\$0.150	\$0.150	\$0.150	\$0.60	11.20%	0.634	0.96%
HOG	\$47.15	\$6,544	\$0.365	\$0.370	\$0.370	\$0.370	\$1.48	8.15%	1.535	3.26%
HOLX	\$236.72	\$10,909	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	2.64%	-	0.00%
HON	\$72.36	\$106,935	\$0.745	\$0.745	\$0.745	\$0.745	\$2.98	14.68%	3.199	4.42%
HP	\$40.67	\$6,775	\$0.700	\$0.700	\$0.710	\$0.000	\$2.11	122.95%	3.407	8.38%
HPE	\$40.13	\$23,252	\$0.000	\$0.150	\$0.113	\$0.113	\$0.38	9.09%	0.392	0.98%
HPQ	\$150.70	\$38,753	\$0.130	\$0.280	\$0.139	\$0.280	\$0.83	9.08%	0.867	0.58%
HRB	\$66.97	\$5,438	\$0.240	\$0.240	\$0.250	\$0.250	\$0.98	10.00%	1.029	1.54%
HRL	\$15.55	\$23,175	\$0.170	\$0.188	\$0.188	\$0.188	\$0.73	5.00%	0.751	4.83%
HRS	\$24.28	\$17,650	\$0.570	\$0.570	\$0.570	\$0.685	\$2.40		2.395	9.86%
HSIC	\$26.03	\$12,962	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	9.94%	-	0.00%
HST	\$41.08	\$14,337	\$0.250	\$0.200	\$0.280	\$0.200	\$0.93	2.97%	0.944	2.30%
HSY	\$163.53	\$22,521	\$0.656	\$1.252	\$0.639	\$0.722	\$3.27	8.83%	3.413	2.09%
HUM	\$84.32	\$44,204	\$0.400	\$0.500	\$0.500	\$0.500	\$1.90	14.00%	2.033	2.41%
IBM	\$19.45	\$106,174	\$1.500	\$1.500	\$1.570	\$1.570	\$6.14	4.05%	6.264	32.20%
ICE	\$104.85	\$43,209	\$0.200	\$0.240	\$0.240	\$0.240	\$0.92	8.82%	0.961	0.92%
IDXX	\$326.34	\$17,683	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.43%	-	0.00%
IFF	\$136.06	\$15,593	\$0.690	\$0.690	\$0.690	\$0.730	\$2.80	10.80%	2.951	2.17%
ILMN	\$74.41	\$45,973	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	23.86%	-	0.00%
INCY	\$220.72	\$14,562	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	58.03%	-	0.00%
INFO	\$138.33	\$20,682	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.12%	-	0.00%
INTC	\$320.13	\$220,076	\$0.373	\$0.300	\$0.300	\$0.600	\$1.57	10.60%	1.656	0.52%
INTU	\$64.88	\$54,932	\$0.390	\$0.390	\$0.390	\$0.390	\$1.56	16.11%	1.686	2.60%
IP	\$52.17	\$18,841	\$0.475	\$0.475	\$0.475	\$0.475	\$1.90	8.25%	1.978	3.79%
IPG	\$45.90	\$8,921	\$0.180	\$0.210	\$0.210	\$0.210	\$0.81	8.53%	0.845	1.84%
IPGP	\$213.12	\$7,566	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	9.24%	-	0.00%
IQV	\$44.66	\$24,730	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.92%	-	0.00%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
IR	\$22.98	\$24,185	\$0.450	\$0.450	\$0.980	\$0.530	\$2.41	12.37%	2.559	11.14%
IRM	\$138.45	\$9,042	\$0.588	\$0.589	\$0.588	\$0.588	\$2.35	8.70%	2.454	1.77%
ISRG	\$124.92	\$59,225	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	15.61%	-	0.00%
IT	\$97.91	\$12,885	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	15.02%	-	0.00%
ITW	\$32.34	\$42,958	\$0.780	\$0.780	\$0.780	\$0.780	\$3.12	9.71%	3.271	10.12%
IVZ	\$522.60	\$9,041	\$0.290	\$0.290	\$0.300	\$0.300	\$1.18	5.32%	1.211	0.23%
JBHT	\$148.62	\$12,108	\$0.230	\$0.240	\$0.240	\$0.240	\$0.95	16.92%	1.030	0.69%
JCI	\$132.15	\$30,837	\$0.260	\$0.260	\$0.260	\$0.260	\$1.04	10.30%	1.094	0.83%
JEC	\$21.62	\$10,718	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	18.33%	-	0.00%
JEF	\$113.10	\$6,917	\$0.100	\$0.100	\$0.100	\$0.125	\$0.43		0.425	0.38%
JNJ	\$33.63	\$377,676	\$0.840	\$0.840	\$0.900	\$0.900	\$3.48	7.80%	3.616	10.75%
JNPR	\$74.87	\$10,220	\$0.100	\$0.180	\$0.180	\$0.180	\$0.64	11.15%	0.676	0.90%
JPM	\$21.44	\$362,403	\$0.560	\$0.560	\$0.560	\$0.800	\$2.48	9.10%	2.593	12.10%
JWN	\$138.33	\$11,039	\$0.370	\$0.370	\$0.370	\$0.370	\$1.48	8.43%	1.542	1.12%
K	\$28.61	\$22,209	\$0.540	\$0.540	\$0.540	\$0.560	\$2.18	7.01%	2.256	7.89%
KEY	\$109.26	\$19,025	\$0.105	\$0.105	\$0.120	\$0.170	\$0.50	17.93%	0.545	0.50%
KEYS	\$61.28	\$10,788	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	14.00%	-	0.00%
KHC	\$69.35	\$68,517	\$0.625	\$0.625	\$0.625	\$0.625	\$2.50	5.27%	2.566	3.70%
KIM	\$18.67	\$6,683	\$0.270	\$0.280	\$0.280	\$0.280	\$1.11	5.30%	1.139	6.10%
KLAC	\$61.74	\$14,530	\$0.590	\$0.590	\$0.750	\$0.750	\$2.68	5.04%	2.747	4.45%
KMB	\$55.69	\$36,718	\$0.970	\$1.000	\$1.000	\$1.000	\$3.97	5.68%	4.083	7.33%
KMI	\$15.55	\$37,872	\$0.125	\$0.200	\$0.200	\$0.200	\$0.73	12.00%	0.769	4.94%
KMX	\$93.69	\$12,176	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.12%	-	0.00%
KO	\$108.98	\$203,206	\$0.370	\$0.390	\$0.390	\$0.390	\$1.54	7.50%	1.598	1.47%
KORS	\$17.56	\$8,568	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	3.66%	-	0.00%
KR	\$69.94	\$23,388	\$0.125	\$0.125	\$0.125	\$0.140	\$0.52	7.01%	0.533	0.76%
KSS	\$46.15	\$12,607	\$0.550	\$0.550	\$0.610	\$0.610	\$2.32	7.23%	2.404	5.21%
KSU	\$61.40	\$10,485	\$0.360	\$0.360	\$0.360	\$0.360	\$1.44	5.07%	1.476	2.40%
L	\$28.25	\$14,902	\$0.063	\$0.063	\$0.063	\$0.063	\$0.25		0.250	0.88%
LB	\$73.11	\$9,204	\$0.600	\$0.600	\$0.600	\$0.600	\$2.40	9.33%	2.512	3.44%
LEG	\$106.13	\$4,899	\$0.360	\$0.360	\$0.380	\$0.380	\$1.48		1.480	1.39%
LEN	\$47.68	\$14,264	\$0.040	\$0.040	\$0.040	\$0.040	\$0.16	19.95%	0.176	0.37%
LH	\$30.38	\$16,586	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	9.86%	-	0.00%
LIN	\$39.25	\$89,271	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00		-	0.00%
LKQ	\$43.13	\$8,805	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.57%	-	0.00%
LLL	\$167.39	\$15,003	\$0.750	\$0.800	\$0.800	\$0.800	\$3.15	13.24%	3.359	2.01%
LLY	\$162.82	\$115,840	\$0.560	\$0.563	\$0.563	\$0.563	\$2.25	11.44%	2.376	1.46%
LMT	\$28.47	\$85,163	\$2.000	\$2.000	\$2.000	\$2.000	\$8.00	21.72%	8.869	31.16%
LNC	\$207.35	\$13,231	\$0.330	\$0.330	\$0.330	\$0.330	\$1.32		1.320	0.64%
LNT	\$110.43	\$10,200	\$0.315	\$0.335	\$0.335	\$0.335	\$1.32	5.78%	1.358	1.23%
LOW	\$326.19	\$78,758	\$0.410	\$0.410	\$0.410	\$0.480	\$1.71	15.22%	1.840	0.56%
LRCX	\$64.25	\$23,566	\$0.500	\$0.500	\$1.100	\$1.100	\$3.20	7.07%	3.313	5.16%
LUV	\$43.29	\$28,650	\$0.125	\$0.125	\$0.160	\$0.160	\$0.57	7.23%	0.591	1.36%
LYB	\$102.97	\$35,500	\$0.900	\$1.000	\$1.000	\$1.000	\$3.90	8.20%	4.060	3.94%
M	\$144.48	\$10,618	\$0.378	\$0.378	\$0.378	\$0.378	\$1.51	0.50%	1.514	1.05%
MA	\$56.56	\$206,259	\$0.220	\$0.250	\$0.250	\$0.250	\$0.97	20.48%	1.069	1.89%
MAA	\$96.01	\$11,178	\$0.923	\$0.923	\$0.923	\$0.923	\$3.69		3.690	3.84%
MAC	\$33.19	\$7,349	\$0.740	\$0.740	\$0.740	\$0.740	\$2.96	6.76%	3.060	9.22%
MAR	\$204.78	\$42,017	\$0.330	\$0.330	\$0.410	\$0.410	\$1.48	14.35%	1.586	0.77%
MAS	\$98.35	\$9,590	\$0.105	\$0.105	\$0.105	\$0.105	\$0.42	15.71%	0.453	0.46%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
MAT	\$51.60	\$4,925	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.00%	-	0.00%
MCD	\$117.15	\$134,817	\$1.010	\$1.010	\$1.010	\$1.010	\$4.04	8.69%	4.215	3.60%
MCHP	\$32.26	\$16,576	\$0.363	\$0.364	\$0.364	\$0.364	\$1.45	14.05%	1.556	4.82%
MCK	\$14.28	\$25,221	\$0.340	\$0.340	\$0.340	\$0.390	\$1.41	5.87%	1.451	10.16%
MCO	\$169.32	\$28,729	\$0.380	\$0.440	\$0.440	\$0.440	\$1.70	8.00%	1.768	1.04%
MDLZ	\$68.03	\$61,599	\$0.220	\$0.220	\$0.220	\$0.260	\$0.92	9.15%	0.962	1.41%
MDT	\$129.57	\$123,639	\$0.460	\$0.460	\$0.460	\$0.500	\$1.88	8.00%	1.955	1.51%
MET	\$156.52	\$41,724	\$0.400	\$0.400	\$0.420	\$0.420	\$1.64	13.58%	1.751	1.12%
MGM	\$41.75	\$14,841	\$0.120	\$0.120	\$0.120	\$0.120	\$0.48	2.87%	0.487	1.17%
MHK	\$94.31	\$9,826	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	5.04%	-	0.00%
MKC	\$43.91	\$19,107	\$0.470	\$0.520	\$0.520	\$0.520	\$2.03	8.90%	2.120	4.83%
MLM	\$26.38	\$11,045	\$0.440	\$0.440	\$0.440	\$0.480	\$1.80	13.95%	1.926	7.30%
MMC	\$151.53	\$42,604	\$0.375	\$0.375	\$0.375	\$1.165	\$2.29	15.72%	2.470	1.63%
MMM	\$137.73	\$111,927	\$1.175	\$1.360	\$1.360	\$1.360	\$5.26	8.65%	5.482	3.98%
MNST	\$171.06	\$30,085	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	17.00%	-	0.00%
MO	\$81.76	\$119,639	\$0.660	\$0.700	\$0.700	\$0.800	\$2.86	9.00%	2.989	3.66%
MOS	\$200.15	\$12,381	\$0.025	\$0.025	\$0.025	\$0.050	\$0.13	7.00%	0.129	0.06%
MPC	\$53.76	\$49,117	\$0.400	\$0.460	\$0.460	\$0.460	\$1.78	20.50%	1.962	3.65%
MRK	\$62.22	\$194,464	\$0.480	\$0.480	\$0.480	\$0.480	\$1.92	7.92%	1.996	3.21%
MRO	\$32.20	\$15,896	\$0.050	\$0.050	\$0.050	\$0.050	\$0.20	5.00%	0.205	0.64%
MS	\$77.06	\$80,068	\$0.250	\$0.250	\$0.250	\$0.300	\$1.05	13.63%	1.122	1.46%
MSCI	\$71.38	\$13,084	\$0.380	\$0.380	\$0.380	\$0.580	\$1.72	13.10%	1.833	2.57%
MSFT	\$20.84	\$818,647	\$0.420	\$0.420	\$0.420	\$0.460	\$1.72	12.27%	1.825	8.76%
MSI	\$45.41	\$20,085	\$0.520	\$0.520	\$0.520	\$0.520	\$2.08	7.45%	2.157	4.75%
MTB	\$157.67	\$23,203	\$0.750	\$0.750	\$0.800	\$1.000	\$3.30	12.53%	3.507	2.22%
MTD	\$109.07	\$14,112	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.10%	-	0.00%
MU	\$122.65	\$45,506	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	-2.10%	-	0.00%
MYL	\$162.67	\$16,720	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	3.61%	-	0.00%
NBL	\$568.13	\$12,585	\$0.100	\$0.100	\$0.110	\$0.110	\$0.42	31.35%	0.486	0.09%
NCLH	\$40.81	\$10,276	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	20.32%	-	0.00%
NDAQ	\$33.19	\$14,312	\$0.380	\$0.820	\$0.000	\$0.440	\$1.64	9.32%	1.716	5.17%
NEE	\$29.45	\$81,475	\$0.983	\$1.110	\$1.110	\$1.110	\$4.31	8.25%	4.490	15.25%
NEM	\$49.97	\$17,077	\$0.075	\$0.140	\$0.140	\$0.140	\$0.50	-3.00%	0.488	0.98%
NFLX	\$83.31	\$138,405	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	41.07%	-	0.00%
NFX	\$171.35	\$4,700	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	17.71%	-	0.00%
NI	\$31.29	\$9,217	\$0.195	\$0.390	\$0.195	\$0.195	\$0.98	5.63%	1.002	3.20%
NKE	\$334.69	\$121,951	\$0.200	\$0.200	\$0.200	\$0.200	\$0.80	17.49%	0.870	0.26%
NKTR	\$24.52	\$7,018	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	-	-	0.00%
NLSN	\$25.20	\$9,505	\$0.340	\$0.340	\$0.350	\$0.350	\$1.38	12.00%	1.463	5.80%
NOC	\$76.62	\$47,424	\$1.000	\$1.100	\$1.200	\$1.200	\$4.50	15.27%	4.844	6.32%
NOV	\$46.26	\$13,997	\$0.050	\$0.050	\$0.050	\$0.050	\$0.20	14.30%	0.214	0.46%
NRG	\$26.44	\$11,248	\$0.030	\$0.030	\$0.030	\$0.030	\$0.12	46.66%	0.148	0.56%
NSC	\$298.65	\$45,847	\$0.610	\$0.720	\$0.720	\$0.800	\$2.85	10.53%	3.000	1.00%
NTAP	\$40.90	\$20,609	\$0.200	\$0.200	\$0.200	\$0.400	\$1.00	14.43%	1.072	2.62%
NTRS	\$36.66	\$20,867	\$0.420	\$0.420	\$0.420	\$0.550	\$1.81	14.28%	1.939	5.29%
NUE	\$170.83	\$18,984	\$0.380	\$0.380	\$0.380	\$0.380	\$1.52	6.25%	1.568	0.92%
NVDA	\$78.52	\$132,611	\$0.140	\$0.150	\$0.150	\$0.150	\$0.59	10.63%	0.621	0.79%
NWL	\$97.28	\$7,820	\$0.230	\$0.230	\$0.230	\$0.230	\$0.92	2.76%	0.933	0.96%
NWS	\$60.40	\$7,715	\$0.000	\$0.100	\$0.000	\$0.100	\$0.20	26.30%	0.226	0.37%
O	\$239.11	\$18,058	\$0.635	\$0.651	\$0.659	\$0.660	\$2.61	4.15%	2.659	1.11%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
OKE	\$17.61	\$26,660	\$0.745	\$0.770	\$0.795	\$0.825	\$3.14	25.37%	3.533	20.06%
OMC	\$13.32	\$16,741	\$0.600	\$0.600	\$0.600	\$0.600	\$2.40	6.64%	2.480	18.62%
ORCL	\$13.05	\$184,090	\$0.190	\$0.190	\$0.190	\$0.190	\$0.76	7.90%	0.790	6.05%
ORLY	\$58.24	\$25,760	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	15.47%	-	0.00%
OXY	\$66.35	\$52,269	\$0.770	\$0.770	\$0.770	\$0.780	\$3.09	14.30%	3.311	4.99%
PAYX	\$72.35	\$23,337	\$0.500	\$0.500	\$0.560	\$0.560	\$2.12	9.67%	2.222	3.07%
PBCT	\$48.32	\$5,936	\$0.173	\$0.173	\$0.175	\$0.175	\$0.70	2.00%	0.702	1.45%
PCAR	\$336.31	\$20,687	\$1.450	\$0.250	\$0.280	\$0.280	\$2.26	6.38%	2.332	0.69%
PCG	\$74.46	\$24,399	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	5.05%	-	0.00%
PEG	\$68.53	\$26,986	\$0.430	\$0.450	\$0.450	\$0.450	\$1.78	7.43%	1.846	2.69%
PEP	\$16.24	\$157,404	\$0.805	\$0.805	\$0.928	\$0.928	\$3.47	6.78%	3.583	22.06%
PFE	\$62.06	\$255,998	\$0.320	\$0.340	\$0.340	\$0.340	\$1.34	6.18%	1.381	2.23%
PFJ	\$47.49	\$13,634	\$0.490	\$0.510	\$0.520	\$0.530	\$2.05	6.50%	2.117	4.46%
PG	\$53.93	\$223,205	\$0.690	\$0.690	\$0.717	\$0.717	\$2.81	6.54%	2.906	5.39%
PGR	\$109.16	\$40,260	\$0.444	\$1.125	\$0.000	\$0.000	\$1.57	8.00%	1.631	1.49%
PH	\$43.95	\$21,100	\$0.660	\$0.660	\$0.760	\$0.760	\$2.84	9.52%	2.975	6.77%
PHM	\$53.97	\$6,926	\$0.090	\$0.090	\$0.090	\$0.090	\$0.36	21.15%	0.398	0.74%
PKG	\$84.39	\$9,059	\$0.630	\$0.630	\$0.790	\$0.790	\$2.84	10.00%	2.982	3.53%
PKI	\$69.63	\$9,058	\$0.070	\$0.070	\$0.070	\$0.070	\$0.28	16.46%	0.303	0.44%
PLD	\$164.51	\$40,767	\$0.440	\$0.480	\$0.480	\$0.480	\$1.88	6.91%	1.945	1.18%
PM	\$23.42	\$137,342	\$1.070	\$1.070	\$1.140	\$1.140	\$4.42	8.68%	4.612	19.69%
PNC	\$93.82	\$59,865	\$0.750	\$0.750	\$0.750	\$0.950	\$3.20	8.25%	3.332	3.55%
PNR	\$88.06	\$7,142	\$0.345	\$0.345	\$0.350	\$0.175	\$1.22	11.21%	1.283	1.46%
PNW	\$64.76	\$9,245	\$0.695	\$0.695	\$1.390	\$0.738	\$3.52	4.56%	3.598	5.56%
PPG	\$86.04	\$25,605	\$0.450	\$0.450	\$0.450	\$0.480	\$1.83	7.41%	1.898	2.21%
PPL	\$128.69	\$21,463	\$0.395	\$0.410	\$0.410	\$0.410	\$1.63	8.10%	1.691	1.31%
PRGO	\$40.32	\$9,929	\$0.160	\$0.190	\$0.190	\$0.190	\$0.73	4.00%	0.745	1.85%
PRU	\$82.61	\$39,565	\$0.750	\$0.900	\$0.900	\$0.900	\$3.45	6.00%	3.554	4.30%
PSA	\$102.62	\$35,938	\$2.000	\$2.000	\$2.000	\$2.000	\$8.00	4.56%	8.183	7.97%
PSX	\$30.42	\$47,265	\$0.700	\$0.700	\$0.800	\$0.800	\$3.00	5.50%	3.083	10.13%
PVH	\$71.19	\$9,652	\$0.038	\$0.038	\$0.075	\$0.038	\$0.19	10.98%	0.198	0.28%
PWR	\$97.96	\$4,991	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.50%	-	0.00%
PXD	\$200.15	\$25,489	\$0.000	\$0.160	\$0.000	\$0.160	\$0.32	27.13%	0.363	0.18%
PYPL	\$107.97	\$100,177	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	20.17%	-	0.00%
QCOM	\$126.82	\$93,597	\$0.570	\$0.570	\$0.620	\$0.620	\$2.38	10.06%	2.500	1.97%
QRVO	\$32.05	\$9,804	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.48%	-	0.00%
RCL	\$167.14	\$22,666	\$0.600	\$0.600	\$0.600	\$0.700	\$2.50	13.39%	2.667	1.60%
RE	\$82.36	\$8,933	\$1.300	\$1.300	\$1.300	\$1.300	\$5.20	10.00%	5.460	6.63%
REG	\$66.59	\$10,865	\$0.530	\$0.555	\$0.555	\$0.555	\$2.20	5.49%	2.255	3.39%
REGN	\$73.20	\$38,372	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	13.22%	-	0.00%
RF	\$116.30	\$18,974	\$0.090	\$0.090	\$0.090	\$0.140	\$0.41	19.79%	0.451	0.39%
RHI	\$217.12	\$7,525	\$0.240	\$0.280	\$0.280	\$0.280	\$1.08	15.67%	1.165	0.54%
RHT	\$63.37	\$30,436	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	18.93%	-	0.00%
RJF	\$376.22	\$11,507	\$0.250	\$0.250	\$0.300	\$0.300	\$1.10	14.95%	1.182	0.31%
RL	\$17.31	\$10,746	\$0.500	\$0.500	\$0.625	\$0.625	\$2.25	5.81%	2.315	13.37%
RMD	\$63.99	\$15,105	\$0.350	\$0.350	\$0.370	\$0.370	\$1.44	12.15%	1.527	2.39%
ROK	\$131.29	\$21,352	\$0.835	\$0.835	\$0.920	\$0.920	\$3.51	12.34%	3.727	2.84%
ROL	\$85.69	\$12,820	\$0.340	\$0.140	\$0.140	\$0.140	\$0.76	10.00%	0.798	0.93%
ROP	\$127.32	\$29,356	\$0.413	\$0.413	\$0.413	\$0.413	\$1.65	13.47%	1.761	1.38%
ROST	\$105.43	\$36,747	\$0.160	\$0.160	\$0.225	\$0.225	\$0.77	10.43%	0.810	0.77%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
RSG	\$172.12	\$23,356	\$0.345	\$0.345	\$0.345	\$0.375	\$1.41	11.85%	1.494	0.87%
RTN	\$57.69	\$51,460	\$0.798	\$0.868	\$0.868	\$0.868	\$3.40	14.71%	3.650	6.33%
SBAC	\$283.24	\$18,815	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	48.30%	-	0.00%
SBUX	\$96.63	\$79,098	\$0.300	\$0.300	\$0.360	\$0.360	\$1.32	14.16%	1.413	1.46%
SCG	\$71.45	\$5,712	\$0.613	\$0.613	\$0.124	\$0.124	\$1.47	-2.79%	1.452	2.03%
SCHW	\$192.02	\$62,676	\$0.080	\$0.100	\$0.100	\$0.130	\$0.41	21.22%	0.453	0.24%
SEE	\$154.45	\$5,320	\$0.160	\$0.160	\$0.160	\$0.160	\$0.64	3.38%	0.651	0.42%
SHW	\$57.40	\$37,250	\$0.850	\$0.860	\$0.860	\$0.860	\$3.43	11.28%	3.623	6.31%
SIVB	\$38.86	\$12,816	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	8.88%	-	0.00%
SJM	\$47.60	\$12,482	\$0.780	\$0.780	\$0.780	\$0.850	\$3.19	4.13%	3.256	6.84%
SLB	\$34.70	\$71,549	\$0.500	\$0.500	\$0.500	\$0.500	\$2.00	27.57%	2.276	6.56%
SLG	\$410.15	\$7,916	\$0.813	\$0.813	\$0.813	\$0.813	\$3.25	5.26%	3.335	0.81%
SNA	\$282.65	\$8,747	\$0.820	\$0.820	\$0.820	\$0.820	\$3.28	7.50%	3.403	1.20%
SNPS	\$104.72	\$13,394	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	-	-	0.00%
SO	\$57.94	\$45,535	\$0.580	\$0.580	\$0.600	\$0.600	\$2.36	4.00%	2.407	4.15%
SPG	\$92.93	\$56,182	\$1.850	\$1.950	\$1.950	\$2.000	\$7.75	6.22%	7.991	8.60%
SPGI	\$164.31	\$45,857	\$0.410	\$0.500	\$0.500	\$0.500	\$1.91	11.05%	2.016	1.23%
SRCL	\$90.24	\$4,600	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	8.91%	-	0.00%
SRE	\$44.38	\$29,934	\$0.820	\$0.900	\$0.890	\$0.890	\$3.50	20.29%	3.855	8.69%
STI	\$175.38	\$28,664	\$0.400	\$0.400	\$0.400	\$0.500	\$1.70	13.14%	1.812	1.03%
STT	\$185.75	\$26,552	\$0.420	\$0.420	\$0.420	\$0.470	\$1.73	10.94%	1.825	0.98%
STX	\$52.54	\$12,374	\$0.630	\$0.630	\$0.630	\$0.630	\$2.52	-1.31%	2.503	4.76%
STZ	\$114.58	\$38,016	\$0.520	\$0.520	\$0.740	\$0.740	\$2.52	11.30%	2.662	2.32%
SWK	\$63.15	\$18,653	\$0.630	\$0.630	\$0.630	\$0.660	\$2.55	10.77%	2.687	4.26%
SWKS	\$77.63	\$16,017	\$0.320	\$0.320	\$0.320	\$0.000	\$0.96	12.33%	1.019	1.31%
SYF	\$43.48	\$21,159	\$0.150	\$0.150	\$0.150	\$0.210	\$0.66	6.20%	0.680	1.56%
SYK	\$216.61	\$62,328	\$0.425	\$0.470	\$0.470	\$0.470	\$1.84	8.70%	1.915	0.88%
SYMC	\$127.05	\$11,965	\$0.075	\$0.075	\$0.075	\$0.075	\$0.30	8.50%	0.313	0.25%
YYY	\$86.58	\$37,380	\$0.360	\$0.360	\$0.360	\$0.360	\$1.44	11.37%	1.522	1.76%
T	\$30.02	\$221,662	\$0.500	\$0.500	\$0.500	\$0.500	\$2.00	4.85%	2.049	6.82%
TAP	\$169.98	\$14,267	\$0.410	\$0.410	\$0.410	\$0.410	\$1.64	2.55%	1.661	0.98%
TDG	\$19.60	\$18,188	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	14.28%	-	0.00%
TEL	\$71.15	\$26,918	\$0.400	\$0.400	\$0.440	\$0.440	\$1.68	9.23%	1.757	2.47%
TGT	\$32.21	\$44,335	\$0.620	\$0.620	\$0.620	\$0.640	\$2.50	7.15%	2.589	8.04%
TIF	\$60.20	\$14,118	\$0.500	\$0.500	\$0.500	\$0.550	\$2.05	10.53%	2.158	3.58%
TJX	\$340.22	\$68,151	\$0.156	\$0.156	\$0.195	\$0.195	\$0.70	11.10%	0.742	0.22%
TMK	\$79.82	\$9,583	\$0.150	\$0.160	\$0.160	\$0.160	\$0.63	13.70%	0.673	0.84%
TMO	\$84.42	\$94,117	\$0.150	\$0.170	\$0.170	\$0.170	\$0.66	11.00%	0.696	0.82%
TPR	\$114.02	\$12,437	\$0.338	\$0.338	\$0.338	\$0.338	\$1.35	10.96%	1.424	1.25%
TRIP	\$54.70	\$7,330	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.29%	-	0.00%
TROW	\$85.29	\$23,589	\$0.570	\$0.700	\$0.700	\$0.700	\$2.67	11.19%	2.819	3.31%
TRV	\$233.68	\$33,153	\$0.720	\$0.720	\$0.770	\$0.770	\$2.98	17.75%	3.245	1.39%
TSCO	\$44.43	\$11,257	\$0.270	\$0.270	\$0.310	\$0.310	\$1.16	14.41%	1.244	2.80%
TSN	\$48.46	\$24,809	\$0.713	\$0.570	\$0.570	\$0.000	\$1.85	5.90%	1.908	3.94%
TSS	\$101.71	\$16,750	\$0.130	\$0.130	\$0.130	\$0.130	\$0.52	14.15%	0.557	0.55%
TTWO	\$126.02	\$14,674	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.00%	-	0.00%
TWTR	\$88.59	\$26,354	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	45.93%	-	0.00%
TXN	\$61.26	\$94,886	\$0.620	\$0.620	\$0.620	\$0.620	\$2.48	10.58%	2.611	4.26%
TXT	\$93.66	\$13,365	\$0.020	\$0.020	\$0.020	\$0.020	\$0.08	14.11%	0.086	0.09%
UAA	\$126.02	\$9,846	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	26.74%	-	0.00%

Company Ticker	30 day avg Stock Price	Market Cap	Q3 2017 Dividend	Q4 2017 Dividend	Q1 2018 Dividend	Q2 2018 Dividend	D(0) Historical Dividend	Long- Term Growth Est (g)	D(1) = D(0) * (1+g/2)	Div Yld = D(1) / P0
UAL	\$29.71	\$24,000	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	16.62%	-	0.00%
UDR	\$99.46	\$10,534	\$0.310	\$0.323	\$0.323	\$0.323	\$1.28	5.38%	1.312	1.32%
UHS	\$62.29	\$11,527	\$0.100	\$0.100	\$0.100	\$0.100	\$0.40	10.21%	0.420	0.67%
ULTA	\$17.87	\$16,314	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	20.50%	-	0.00%
UNH	\$19.50	\$251,138	\$0.750	\$0.750	\$0.900	\$0.900	\$3.30	13.96%	3.530	18.10%
UNM	\$84.83	\$8,083	\$0.230	\$0.230	\$0.230	\$0.260	\$0.95	9.00%	0.993	1.17%
UNP	\$39.37	\$108,441	\$0.665	\$0.730	\$0.730	\$0.800	\$2.93	10.66%	3.081	7.83%
UPS	\$123.90	\$92,384	\$0.830	\$0.910	\$0.910	\$1.820	\$4.47	8.97%	4.670	3.77%
URI	\$274.76	\$10,195	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	23.52%	-	0.00%
USB	\$264.26	\$84,920	\$0.300	\$0.300	\$0.300	\$0.370	\$1.27	7.25%	1.316	0.50%
UTX	\$37.46	\$102,190	\$0.700	\$0.700	\$0.700	\$0.735	\$2.84	10.49%	2.984	7.96%
V	\$152.35	\$285,181	\$0.210	\$0.210	\$0.210	\$0.250	\$0.88	18.80%	0.963	0.63%
VAR	\$113.72	\$11,031	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	8.00%	-	0.00%
VFC	\$134.29	\$33,776	\$0.460	\$0.460	\$0.460	\$0.460	\$1.84	9.36%	1.926	1.43%
VIAB	\$52.19	\$13,396	\$0.200	\$0.200	\$0.200	\$0.000	\$0.60	6.68%	0.620	1.19%
VLO	\$130.86	\$39,539	\$0.700	\$0.800	\$0.800	\$0.800	\$3.10	16.36%	3.354	2.56%
VMC	\$140.60	\$13,568	\$0.250	\$0.280	\$0.280	\$0.280	\$1.09	16.49%	1.180	0.84%
VNO	\$109.32	\$12,962	\$0.600	\$0.630	\$0.630	\$0.630	\$2.49	4.68%	2.548	2.33%
VRSK	\$85.89	\$19,037	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	11.47%	-	0.00%
VRSN	\$32.14	\$17,021	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.50%	-	0.00%
VRTX	\$102.36	\$44,771	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	54.43%	-	0.00%
VTR	\$100.44	\$20,714	\$0.790	\$0.790	\$0.790	\$0.790	\$3.16	2.95%	3.207	3.19%
VZ	\$68.93	\$231,599	\$0.590	\$0.590	\$0.590	\$0.603	\$2.37	5.31%	2.435	3.53%
WAT	\$116.75	\$14,904	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	10.06%	-	0.00%
WBA	\$144.85	\$75,838	\$0.400	\$0.400	\$0.400	\$0.440	\$1.64	10.05%	1.722	1.19%
WCG	\$179.01	\$13,391	\$0.000	\$0.000	\$0.000	\$0.000	\$0.00	17.76%	-	0.00%
WDC	\$55.19	\$13,663	\$0.500	\$0.500	\$0.500	\$0.500	\$2.00	-3.39%	1.966	3.56%
WEC	\$55.17	\$21,418	\$0.520	\$0.553	\$0.553	\$0.553	\$2.18	4.92%	2.231	4.04%
WELL	\$185.93	\$25,356	\$0.870	\$0.870	\$0.870	\$0.870	\$3.48	7.20%	3.605	1.94%
WFC	\$75.35	\$252,353	\$0.390	\$0.390	\$0.390	\$0.430	\$1.60	13.41%	1.707	2.27%
WHR	\$304.47	\$7,281	\$1.100	\$1.100	\$1.150	\$1.150	\$4.50	9.94%	4.724	1.55%
WLTW	\$53.04	\$18,713	\$0.530	\$0.600	\$0.600	\$0.600	\$2.33	15.35%	2.509	4.73%
WM	\$68.81	\$37,557	\$0.425	\$0.465	\$0.465	\$0.465	\$1.82	11.51%	1.925	2.80%
WMB	\$64.05	\$31,171	\$0.300	\$0.340	\$0.340	\$0.340	\$1.32	-0.80%	1.315	2.05%
WMT	\$52.61	\$294,572	\$0.510	\$0.520	\$0.520	\$0.520	\$2.07	6.24%	2.135	4.06%
WRK	\$109.07	\$11,419	\$0.430	\$0.430	\$0.430	\$0.400	\$1.69	5.83%	1.739	1.59%
WU	\$140.18	\$8,002	\$0.175	\$0.190	\$0.190	\$0.190	\$0.75	4.20%	0.761	0.54%
WY	\$88.96	\$20,393	\$0.320	\$0.320	\$0.320	\$0.340	\$1.30	7.00%	1.346	1.51%
WYNN	\$26.40	\$12,237	\$0.500	\$0.500	\$0.750	\$0.750	\$2.50	18.30%	2.729	10.34%
XEC	\$96.69	\$7,711	\$0.080	\$0.160	\$0.160	\$0.180	\$0.58	72.57%	0.790	0.82%
XEL	\$44.74	\$24,906	\$0.360	\$0.380	\$0.380	\$0.380	\$1.50	5.84%	1.544	3.45%
XLNX	\$18.14	\$22,012	\$0.350	\$0.350	\$0.360	\$0.360	\$1.42	8.13%	1.478	8.15%
XOM	\$28.78	\$341,541	\$0.770	\$0.770	\$0.820	\$0.820	\$3.18	11.72%	3.366	11.70%
XRAY	\$112.41	\$7,835	\$0.088	\$0.088	\$0.088	\$0.000	\$0.26	6.40%	0.271	0.24%
XRX	\$90.60	\$6,796	\$0.250	\$0.250	\$0.250	\$0.250	\$1.00	0.60%	1.003	1.11%
XYL	\$48.50	\$12,355	\$0.180	\$0.210	\$0.210	\$0.210	\$0.81	15.30%	0.872	1.80%
YUM	\$78.08	\$27,541	\$0.300	\$0.360	\$0.360	\$0.360	\$1.38	12.83%	1.469	1.88%
ZBH	\$81.98	\$23,808	\$0.240	\$0.240	\$0.240	\$0.240	\$0.96	3.03%	0.975	1.19%
ZION	\$35.92	\$9,250	\$0.160	\$0.200	\$0.240	\$0.300	\$0.90	9.50%	0.943	2.62%
ZTS	\$26.79	\$45,282	\$0.126	\$0.126	\$0.126	\$0.000	\$0.38	16.41%	0.409	1.53%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
AGILENT TECHNOLOGIES INC	A	\$20,790	0.11%	0.92%	10.35%	11.27%	0.0120%
AMERICAN AIRLINES GROUP INC	AAL	\$16,751	0.09%	1.26%	14.86%	16.12%	0.0138%
ADVANCE AUTO PARTS INC	AAP	\$12,113	0.06%	0.16%	18.46%	18.62%	0.0115%
APPLE INC	AAPL	\$1,073,306	5.49%	1.29%	9.84%	11.13%	0.6114%
ABBVIE INC	ABBV	\$121,460	0.62%	4.27%	10.15%	14.42%	0.0896%
AMERISOURCEBERGEN CORP	ABC	\$19,671	0.10%	1.80%	9.39%	11.19%	0.0113%
ABBOTT LABORATORIES	ABT	\$123,207	0.63%	1.71%	12.23%	13.93%	0.0878%
ACCENTURE PLC-CL A	ACN	\$101,380	0.52%	2.60%	10.40%	13.00%	0.0674%
ANALOG DEVICES INC	ADI	\$32,707	0.17%	2.30%	9.53%	11.83%	0.0198%
ARCHER-DANIELS-MIDLAND CO	ADM	\$27,270	0.14%	2.85%	11.40%	14.25%	0.0199%
AUTOMATIC DATA PROCESSING	ADP	\$61,681	0.32%	1.97%	14.00%	15.97%	0.0504%
ALLIANCE DATA SYSTEMS CORP	ADS	\$11,402	0.06%	1.10%	13.23%	14.33%	0.0084%
AMEREN CORPORATION	AEE	\$15,704	0.08%	2.94%	8.32%	11.26%	0.0090%
AMERICAN ELECTRIC POWER	AEP	\$35,982	0.18%	3.52%	5.40%	8.91%	0.0164%
AES CORP	AES	\$9,753	0.05%	3.69%	8.59%	12.27%	0.0061%
AETNA INC	AET	\$65,526	0.34%	1.05%	10.98%	12.04%	0.0404%
AFLAC INC	AFL	\$32,636	0.17%	2.35%	8.45%	10.80%	0.0180%
ALLERGAN PLC	AGN	\$55,470	0.28%	1.61%	7.25%	8.87%	0.0252%
AMERICAN INTERNATIONAL GROUP	AIG	\$38,144	0.20%	2.82%	11.00%	13.82%	0.0270%
APARTMENT INVT & MGMT CO -A	AIV	\$6,766	0.03%	3.59%	6.20%	9.79%	0.0034%
ARTHUR J GALLAGHER & CO	AJG	\$13,700	0.07%	2.33%	10.91%	13.24%	0.0093%
ALBERMARLE	ALB	\$11,433	0.06%	1.44%	13.03%	14.46%	0.0085%
ALASKA AIR GROUP INC	ALK	\$7,859	0.04%	2.02%	3.22%	5.24%	0.0021%
ALLSTATE CORP	ALL	\$30,989	0.16%	1.89%	7.10%	8.99%	0.0143%
ALLEGION PLC	ALLE	\$8,309	0.04%	0.98%	11.03%	12.01%	0.0051%
APPLIED MATERIALS INC	AMAT	\$34,749	0.18%	1.84%	12.09%	13.93%	0.0248%
AMETEK INC	AME	\$16,611	0.08%	0.75%	12.05%	12.80%	0.0109%
AFFILIATED MANAGERS GROUP	AMG	\$6,229	0.03%	0.92%	8.34%	9.26%	0.0030%
AMGEN INC	AMGN	\$122,920	0.63%	2.66%	6.60%	9.27%	0.0583%
AMERIPRISE FINANCIAL INC	AMP	\$18,417	0.09%	2.67%	11.80%	14.47%	0.0136%
AMERICAN TOWER CORP	AMT	\$67,403	0.34%	2.20%	16.37%	18.57%	0.0640%
ANTHEM INC	ANTM	\$68,781	0.35%	1.14%	11.63%	12.78%	0.0450%
AON PLC	AON	\$37,499	0.19%	1.04%	9.77%	10.81%	0.0207%
A.O. SMITH CORP	AOS	\$8,204	0.04%	1.58%	10.33%	11.91%	0.0050%
APACHE CORP	APA	\$13,812	0.07%	2.22%	-8.42%	-6.20%	-0.0044%
ANADARKO PETROLEUM CORP	APC	\$27,665	0.14%	1.37%	20.39%	21.76%	0.0308%
AIR PRODUCTS & CHEMICALS INC	APD	\$34,068	0.17%	2.85%	12.97%	15.81%	0.0276%
AMPHENOL CORP-CL A	APH	\$27,074	0.14%	1.02%	11.87%	12.89%	0.0179%
APTIV PLC	APTIV	\$20,403	0.10%	1.30%	10.46%	11.76%	0.0123%
ALEXANDRIA REAL ESTATE EQUITIES	ARE	\$13,149	0.07%	3.08%	6.57%	9.64%	0.0065%
ARCONIC INC	ARNC	\$10,279	0.05%	1.21%	15.80%	17.01%	0.0089%
ACTIVISION BLIZZARD INC	ATVI	\$52,850	0.27%	0.98%	14.50%	15.48%	0.0419%
AVALONBAY COMMUNITIES INC	AVB	\$24,234	0.12%	3.40%	6.38%	9.78%	0.0121%
BROADCOM LTD	AVGO	\$95,043	0.49%	2.87%	12.62%	15.49%	0.0753%
AVERY DENNISON CORP	AVY	\$8,071	0.04%	2.04%	7.10%	9.14%	0.0038%
AMERICAN WATER WORKS CO INC	AWK	\$15,952	0.08%	2.03%	8.22%	10.25%	0.0084%
AMERICAN EXPRESS CO	AXP	\$88,877	0.45%	1.50%	17.30%	18.80%	0.0855%
BOEING CO/THE	BA	\$206,182	1.06%	1.93%	15.57%	17.49%	0.1846%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
BANK OF AMERICA CORP	BAC	\$272,933	1.40%	1.93%	14.10%	16.03%	0.2238%
BAXTER INTERNATIONAL INC	BAX	\$33,696	0.17%	1.05%	12.38%	13.43%	0.0232%
BB&T CORP	BBT	\$37,914	0.19%	3.32%	14.87%	18.19%	0.0353%
BEST BUY CO INC	BBY	\$20,065	0.10%	2.35%	13.94%	16.29%	0.0167%
BECTON DICKINSON AND CO	BDX	\$62,653	0.32%	1.34%	15.23%	16.57%	0.0531%
FRANKLIN RESOURCES INC	BEN	\$16,092	0.08%	13.82%	10.00%	23.82%	0.0196%
BROWN-FORMAN CORP-CLASS B	BF/B	\$22,754	0.12%	3.54%	9.44%	12.98%	0.0151%
BAKER HUGHES INC	BHGE	\$28,477	0.15%	2.36%	57.21%	59.57%	0.0868%
BANK OF NEW YORK MELLON CORP	BK	\$46,987	0.24%	2.11%	7.00%	9.11%	0.0219%
BLACKROCK INC	BLK	\$66,306	0.34%	2.80%	8.73%	11.53%	0.0391%
BALL CORP	BLL	\$16,377	0.08%	0.91%	5.63%	6.55%	0.0055%
BRISTOL-MYERS SQUIBB CO	BMJ	\$85,087	0.44%	3.00%	11.16%	14.16%	0.0617%
BORGWARNER INC	BWA	\$8,548	0.04%	1.34%	6.56%	7.90%	0.0035%
BOSTON PROPERTIES INC	BXP	\$18,520	0.09%	2.93%	6.03%	8.96%	0.0085%
CITIGROUP INC	C	\$160,766	0.82%	2.19%	13.11%	15.30%	0.1258%
CONAGRA BRANDS INC	CAG	\$17,297	0.09%	2.50%	7.85%	10.35%	0.0092%
CARDINAL HEALTH INC	CAH	\$15,776	0.08%	5.01%	23.18%	28.19%	0.0228%
CATERPILLAR INC	CAT	\$73,586	0.38%	3.40%	28.03%	31.43%	0.1183%
CHUBB LTD	CB	\$57,840	0.30%	2.36%	10.83%	13.20%	0.0391%
CBOE GLOBAL MARKETS INC	CBOE	\$12,356	0.06%	1.20%	12.92%	14.12%	0.0089%
CBS CORP-CLASS B NON VOTING	CBS	\$21,884	0.11%	1.40%	16.37%	17.76%	0.0199%
CROWN CASTLE INTL CORP	CCI	\$45,368	0.23%	4.34%	22.35%	26.69%	0.0620%
CARNIVAL CORP	CCL	\$39,985	0.20%	3.47%	12.90%	16.37%	0.0335%
CF INDUSTRIES HOLDINGS INC	CF	\$11,782	0.06%	2.56%	16.65%	19.21%	0.0116%
CITIZENS FINANCIAL GROUP	CFG	\$17,737	0.09%	2.59%	15.49%	18.08%	0.0164%
CHURCH & DWIGHT CO INC	CHD	\$15,973	0.08%	1.51%	9.40%	10.91%	0.0089%
C.H. ROBINSON WORLDWIDE INC	CHRW	\$12,594	0.06%	2.09%	10.18%	12.27%	0.0079%
CIGNA CORP	CI	\$52,672	0.27%	0.02%	14.40%	14.42%	0.0389%
COLGATE-PALMOLIVE CO	CL	\$52,109	0.27%	2.72%	6.99%	9.71%	0.0259%
CLOROX COMPANY	CLX	\$19,624	0.10%	2.55%	5.11%	7.66%	0.0077%
COMERICA INC	CMA	\$13,372	0.07%	1.98%	19.07%	21.05%	0.0144%
COMCAST CORP-CLASS A	CMCSA	\$172,654	0.88%	2.10%	5.26%	7.35%	0.0650%
CME GROUP INC	CME	\$62,587	0.32%	3.65%	9.30%	12.95%	0.0415%
CUMMINS INC	CMI	\$22,830	0.12%	3.22%	9.51%	12.73%	0.0149%
CMS ENERGY CORP	CMS	\$13,773	0.07%	2.92%	6.55%	9.47%	0.0067%
CENTERPOINT ENERGY INC	CNP	\$13,627	0.07%	4.14%	6.90%	11.05%	0.0077%
CAPITAL ONE FINANCIAL CORP	COF	\$42,298	0.22%	1.86%	12.25%	14.10%	0.0305%
CABOT OIL & GAS CORP	COG	\$10,499	0.05%	1.14%	32.98%	34.12%	0.0183%
ROCKWELL COLLINS INC	COL	\$21,425	0.11%	0.78%	11.60%	12.38%	0.0136%
COOPER COS INC/THE	COO	\$12,928	0.07%	0.04%	10.80%	10.84%	0.0072%
CONOCOPHILLIPS	COP	\$80,103	0.41%	1.58%	6.00%	7.58%	0.0311%
COSTCO WHOLESALE CORP	COST	\$100,613	0.51%	1.00%	11.18%	12.18%	0.0627%
COTY INC-CL A	COTY	\$8,214	0.04%	4.80%	13.15%	17.95%	0.0075%
CAMPBELL SOUP CO	CPB	\$11,407	0.06%	3.80%	3.46%	7.26%	0.0042%
CISCO SYSTEMS INC	CSCO	\$206,803	1.06%	2.79%	7.18%	9.97%	0.1055%
CSX CORP	CSX	\$58,763	0.30%	1.30%	12.28%	13.58%	0.0408%
CINTAS CORP	CTAS	\$19,324	0.10%	0.93%	12.02%	12.95%	0.0128%
CENTURYLINK INC	CTL	\$22,229	0.11%	7.11%	-15.59%	-8.48%	-0.0097%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
COGNIZANT TECH SOLUTIONS-A	CTSH	\$39,826	0.20%	1.10%	13.95%	15.05%	0.0307%
CVS HEALTH CORP	CVS	\$75,754	0.39%	2.81%	10.26%	13.07%	0.0507%
CHEVRON CORP	CVX	\$213,018	1.09%	3.89%	6.65%	10.54%	0.1149%
DOMINION RESOURCES INC/VA	D	\$45,979	0.24%	4.67%	5.69%	10.36%	0.0244%
DELTA AIR LINES INC	DAL	\$38,422	0.20%	2.56%	14.35%	16.91%	0.0332%
DEERE & CO	DE	\$45,243	0.23%	1.71%	7.33%	9.04%	0.0209%
DISCOVER FINANCIAL SERVICES	DFS	\$23,554	0.12%	2.06%	10.17%	12.23%	0.0147%
DOLLAR GENERAL CORP	DG	\$30,053	0.15%	1.09%	15.26%	16.35%	0.0251%
QUEST DIAGNOSTICS INC	DGX	\$12,736	0.07%	2.04%	8.78%	10.82%	0.0071%
DR HORTON INC	DHI	\$13,940	0.07%	1.45%	20.48%	21.93%	0.0156%
DANAHER CORP	DHR	\$70,444	0.36%	0.80%	8.82%	9.62%	0.0347%
WALT DISNEY CO/THE	DIS	\$172,669	0.88%	1.55%	12.98%	14.53%	0.1284%
DIGITAL REALTY TRUST INC	DLR	\$22,688	0.12%	13.20%	19.80%	33.00%	0.0383%
DOVER CORP	DOV	\$12,204	0.06%	2.41%	11.70%	14.11%	0.0088%
DUKE REALTY CORP	DRE	\$9,965	0.05%	0.96%	4.56%	5.52%	0.0028%
DARDEN RESTAURANTS INC	DRI	\$13,014	0.07%	10.03%	10.62%	20.65%	0.0138%
DTE ENERGY COMPANY	DTE	\$20,392	0.10%	3.39%	5.87%	9.25%	0.0097%
DUKE ENERGY CORP	DUK	\$58,171	0.30%	3.29%	5.04%	8.34%	0.0248%
DEVON ENERGY CORP	DVN	\$16,719	0.09%	0.46%	14.36%	14.82%	0.0127%
DOWDUPONT INC	DWDP	\$134,451	0.69%	4.39%	7.80%	12.19%	0.0839%
DXC TECHNOLOGY CO	DXC	\$20,125	0.10%	1.31%	6.36%	7.66%	0.0079%
ECOLAB INC	ECL	\$44,120	0.23%	5.73%	13.00%	18.73%	0.0423%
CONSOLIDATED EDISON INC	ED	\$23,553	0.12%	1.92%	3.60%	5.52%	0.0067%
EQUIFAX INC	EFX	\$12,629	0.06%	2.10%	6.60%	8.70%	0.0056%
EDISON INTERNATIONAL	EIX	\$22,217	0.11%	2.10%	5.44%	7.54%	0.0086%
ESTEE LAUDER COMPANIES-CL A	EL	\$51,503	0.26%	2.32%	11.28%	13.60%	0.0358%
EASTMAN CHEMICAL CO	EMN	\$11,439	0.06%	1.76%	7.40%	9.16%	0.0054%
EMERSON ELECTRIC CO	EMR	\$43,961	0.22%	2.43%	11.20%	13.62%	0.0306%
EOG RESOURCES INC	EOG	\$61,986	0.32%	1.11%	11.32%	12.43%	0.0394%
EQUINIX INC	EQIX	\$30,745	0.16%	8.16%	19.45%	27.61%	0.0434%
EQUITY RESIDENTIAL	EQR	\$23,882	0.12%	0.54%	5.73%	6.27%	0.0077%
EQT CORP	EQT	\$8,874	0.05%	0.20%	17.50%	17.70%	0.0080%
EVERSOURCE ENERGY	ES	\$19,866	0.10%	4.85%	5.80%	10.65%	0.0108%
ESSEX PROPERTY TRUST INC	ESS	\$16,691	0.09%	7.89%	4.92%	12.80%	0.0109%
EATON CORP PLC	ETN	\$31,963	0.16%	5.39%	8.80%	14.19%	0.0232%
ENTERGY CORP	ETR	\$15,013	0.08%	4.45%	0.87%	5.32%	0.0041%
EVERGY INC	EVERG	\$15,244	0.08%	1.51%	8.19%	9.70%	0.0076%
EXELON CORP	EXC	\$42,162	0.22%	0.95%	4.19%	5.14%	0.0111%
EXPEDITORS INTL WASH INC	EXPD	\$12,029	0.06%	2.11%	11.60%	13.71%	0.0084%
EXPEDIA INC	EXPE	\$19,012	0.10%	1.91%	14.15%	16.06%	0.0156%
EXTRA SPACE STORAGE INC	EXR	\$11,434	0.06%	2.77%	5.46%	8.23%	0.0048%
FORD MOTOR CO	F	\$36,955	0.19%	0.80%	-9.16%	-8.36%	-0.0158%
FASTENAL CO	FAST	\$14,872	0.08%	17.76%	17.50%	35.26%	0.0268%
FORTUNE BRANDS HOME & SECURI	FBHS	\$6,684	0.03%	0.55%	11.63%	12.18%	0.0042%
FREEMPORT-MCMORAN INC	FCX	\$17,794	0.09%	0.30%	-5.82%	-5.51%	-0.0050%
FEDEX CORP	FDX	\$59,038	0.30%	22.07%	15.80%	37.87%	0.1144%
FIRSTENERGY CORP	FE	\$19,010	0.10%	0.80%	-0.35%	0.45%	0.0004%
FIDELITY NATIONAL INFO SERV	FIS	\$34,042	0.17%	0.74%	4.63%	5.37%	0.0094%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
FIFTH THIRD BANCORP	FITB	\$17,923	0.09%	0.88%	4.35%	5.23%	0.0048%
FOOT LOCKER INC	FL	\$5,508	0.03%	4.96%	4.91%	9.87%	0.0028%
FLUOR CORP	FLR	\$6,306	0.03%	1.70%	26.17%	27.87%	0.0090%
FLOWERVE CORP	FLS	\$6,099	0.03%	1.68%	19.90%	21.57%	0.0067%
FMC CORP	FMC	\$10,976	0.06%	0.36%	23.10%	23.46%	0.0132%
TWENTY-FIRST CENTURY FOX INC	FOX	\$86,083	0.44%	0.91%	9.95%	10.86%	0.0478%
FEDERAL REALTY INVS TRUST	FRT	\$9,180	0.05%	9.09%	5.17%	14.26%	0.0067%
FORTIVE CORP	FTV	\$24,984	0.13%	1.03%	14.07%	15.10%	0.0193%
GENERAL DYNAMICS CORP	GD	\$52,833	0.27%	4.63%	11.18%	15.80%	0.0427%
GENERAL ELECTRIC CO	GE	\$83,328	0.43%	0.61%	1.63%	2.25%	0.0096%
GILEAD SCIENCES INC	GILD	\$90,981	0.47%	1.20%	5.55%	6.76%	0.0315%
GENERAL MILLS INC	GIS	\$26,425	0.14%	16.69%	6.43%	23.12%	0.0313%
CORNING INC	GLW	\$26,493	0.14%	0.99%	10.36%	11.35%	0.0154%
GENERAL MOTORS CO	GM	\$51,474	0.26%	3.66%	11.08%	14.74%	0.0388%
GENUINE PARTS CO	GPC	\$14,357	0.07%	8.51%	-2.36%	6.15%	0.0045%
GAP INC/THE	GPS	\$10,491	0.05%	0.09%	10.22%	10.31%	0.0055%
GARMIN LTD	GRMN	\$13,354	0.07%	2.20%	6.03%	8.22%	0.0056%
GOLDMAN SACHS GROUP INC	GS	\$89,008	0.46%	2.81%	12.07%	14.88%	0.0678%
WW GRAINGER INC	GWV	\$16,137	0.08%	8.76%	14.77%	23.53%	0.0194%
HALLIBURTON CO	HAL	\$30,460	0.16%	0.42%	59.96%	60.38%	0.0941%
HASBRO INC	HAS	\$12,341	0.06%	11.95%	7.97%	19.91%	0.0126%
HUNTINGTON BANCSHARES INC	HBAN	\$15,265	0.08%	0.16%	13.13%	13.29%	0.0104%
HANESBRANDS INC	HBI	\$5,851	0.03%	1.60%	4.75%	6.35%	0.0019%
HCA HOLDINGS INC	HCA	\$46,955	0.24%	0.38%	13.58%	13.96%	0.0335%
HCP INC	HCP	\$13,219	0.07%	10.40%	3.20%	13.60%	0.0092%
HOME DEPOT INC	HD	\$206,471	1.06%	25.07%	13.27%	38.35%	0.4051%
HESS CORP	HES	\$17,334	0.09%	0.72%	-7.63%	-6.91%	-0.0061%
HOLLYFRONTIER CORP	HFC	\$11,654	0.06%	5.25%	7.38%	12.63%	0.0075%
HARTFORD FINANCIAL SVCS GRP	HIG	\$16,430	0.08%	0.59%	9.50%	10.09%	0.0085%
HUNTINGTON INGALLS INC	HII	\$9,702	0.05%	5.04%	27.50%	32.54%	0.0162%
HILTON HOTELS CORP	HLT	\$21,546	0.11%	0.96%	11.20%	12.16%	0.0134%
HARLEY-DAVIDSON INC	HOG	\$6,544	0.03%	3.26%	8.15%	11.41%	0.0038%
HONEYWELL INTERNATIONAL INC	HON	\$106,935	0.55%	4.42%	14.68%	19.10%	0.1045%
HELMERICH & PAYNE INC	HP	\$6,775	0.03%	8.38%	122.95%	131.33%	0.0455%
HEWLETT PACKARD ENTERPRIS	HPE	\$23,252	0.12%	0.98%	9.09%	10.06%	0.0120%
HP INC	HPQ	\$38,753	0.20%	0.58%	9.08%	9.66%	0.0192%
H&R BLOCK INC	HRB	\$5,438	0.03%	1.54%	10.00%	11.54%	0.0032%
HORMEL FOODS CORP	HRL	\$23,175	0.12%	4.83%	5.00%	9.83%	0.0117%
HOST HOTELS & RESORTS INC	HST	\$14,337	0.07%	2.30%	2.97%	5.26%	0.0039%
HERSHEY CO/THE	HSY	\$22,521	0.12%	2.09%	8.83%	10.92%	0.0126%
HUMANA INC	HUM	\$44,204	0.23%	2.41%	14.00%	16.41%	0.0371%
INTL BUSINESS MACHINES CORP	IBM	\$106,174	0.54%	32.20%	4.05%	36.25%	0.1969%
INTERCONTINENTAL EXCHANGE IN	ICE	\$43,209	0.22%	0.92%	8.82%	9.73%	0.0215%
INTL FLAVORS & FRAGRANCES	IFF	\$15,593	0.08%	2.17%	10.80%	12.97%	0.0103%
INTEL CORP	INTC	\$220,076	1.13%	0.52%	10.60%	11.12%	0.1252%
INTUIT INC	INTU	\$54,932	0.28%	2.60%	16.11%	18.71%	0.0526%
INTERNATIONAL PAPER CO	IP	\$18,841	0.10%	3.79%	8.25%	12.04%	0.0116%
INTERPUBLIC GROUP OF COS INC	IPG	\$8,921	0.05%	1.84%	8.53%	10.37%	0.0047%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
INGERSOLL-RAND PLC	IR	\$24,185	0.12%	11.14%	12.37%	23.51%	0.0291%
IRON MOUNTAIN INC	IRM	\$9,042	0.05%	1.77%	8.70%	10.47%	0.0048%
ILLINOIS TOOL WORKS	ITW	\$42,958	0.22%	10.12%	9.71%	19.83%	0.0436%
INVESCO LTD	IVZ	\$9,041	0.05%	0.23%	5.32%	5.55%	0.0026%
HUNT (JB) TRANSPRT SVCS INC	JBHT	\$12,108	0.06%	0.69%	16.92%	17.61%	0.0109%
JOHNSON CONTROLS INTERNATIONAL	JCI	\$30,837	0.16%	0.83%	10.30%	11.13%	0.0176%
JOHNSON & JOHNSON	JNJ	\$377,676	1.93%	10.75%	7.80%	18.55%	0.3585%
JUNIPER NETWORKS INC	JNPR	\$10,220	0.05%	0.90%	11.15%	12.05%	0.0063%
JPMORGAN CHASE & CO	JPM	\$362,403	1.85%	12.10%	9.10%	21.20%	0.3931%
NORDSTROM INC	JWN	\$11,039	0.06%	1.12%	8.43%	9.54%	0.0054%
KELLOGG CO	K	\$22,209	0.11%	7.89%	7.01%	14.89%	0.0169%
KEYCORP	KEY	\$19,025	0.10%	0.50%	17.93%	18.43%	0.0179%
KRAFT HEINZ CO/THE	KHC	\$68,517	0.35%	3.70%	5.27%	8.97%	0.0314%
KIMCO REALTY CORP	KIM	\$6,683	0.03%	6.10%	5.30%	11.40%	0.0039%
KLA-TENCOR CORP	KLAC	\$14,530	0.07%	4.45%	5.04%	9.48%	0.0071%
KIMBERLY-CLARK CORP	KMB	\$36,718	0.19%	7.33%	5.68%	13.01%	0.0245%
KINDER MORGAN INC	KMI	\$37,872	0.19%	4.94%	12.00%	16.94%	0.0328%
COCA-COLA CO/THE	KO	\$203,206	1.04%	1.47%	7.50%	8.97%	0.0932%
KROGER CO	KR	\$23,388	0.12%	0.76%	7.01%	7.77%	0.0093%
KOHL'S CORP	KSS	\$12,607	0.06%	5.21%	7.23%	12.44%	0.0080%
KANSAS CITY SOUTHERN	KSU	\$10,485	0.05%	2.40%	5.07%	7.47%	0.0040%
L BRANDS INC	LB	\$9,204	0.05%	3.44%	9.33%	12.77%	0.0060%
LENNAR CORP-A	LEN	\$14,264	0.07%	0.37%	19.95%	20.31%	0.0148%
L-3 COMMUNICATIONS HOLDINGS	LLL	\$15,003	0.08%	2.01%	13.24%	15.25%	0.0117%
ELI LILLY & CO	LLY	\$115,840	0.59%	1.46%	11.44%	12.90%	0.0765%
LOCKHEED MARTIN CORP	LMT	\$85,163	0.44%	31.16%	21.72%	52.87%	0.2304%
ALLIANT ENERGY CORP	LNT	\$10,200	0.05%	1.23%	5.78%	7.01%	0.0037%
LOWE'S COS INC	LOW	\$78,758	0.40%	0.56%	15.22%	15.79%	0.0636%
LAM RESEARCH CORP	LRCX	\$23,566	0.12%	5.16%	7.07%	12.22%	0.0147%
SOUTHWEST AIRLINES CO	LUV	\$28,650	0.15%	1.36%	7.23%	8.59%	0.0126%
LYONDELLBASELL INDU-CL A	LYB	\$35,500	0.18%	3.94%	8.20%	12.14%	0.0221%
MACY'S INC	M	\$10,618	0.05%	1.05%	0.50%	1.55%	0.0008%
MASTERCARD INC - A	MA	\$206,259	1.06%	1.89%	20.48%	22.37%	0.2361%
MACERICH CO/THE	MAC	\$7,349	0.04%	9.22%	6.76%	15.97%	0.0060%
MARRIOTT INTERNATIONAL -CL A	MAR	\$42,017	0.22%	0.77%	14.35%	15.13%	0.0325%
MASCO CORP	MAS	\$9,590	0.05%	0.46%	15.71%	16.17%	0.0079%
MCDONALD'S CORP	MCD	\$134,817	0.69%	3.60%	8.69%	12.29%	0.0848%
MICROCHIP TECHNOLOGY INC	MCHP	\$16,576	0.08%	4.82%	14.05%	18.87%	0.0160%
MCKESSON CORP	MCK	\$25,221	0.13%	10.16%	5.87%	16.04%	0.0207%
MOODY'S CORP	MCO	\$28,729	0.15%	1.04%	8.00%	9.04%	0.0133%
MONDELEZ INTERNATIONAL INC-A	MDLZ	\$61,599	0.32%	1.41%	9.15%	10.57%	0.0333%
MEDTRONIC PLC	MDT	\$123,639	0.63%	1.51%	8.00%	9.51%	0.0602%
METLIFE INC	MET	\$41,724	0.21%	1.12%	13.58%	14.70%	0.0314%
MGM RESORTS INTERNATIONAL	MGM	\$14,841	0.08%	1.17%	2.87%	4.04%	0.0031%
MCCORMICK & CO-NON VTG SHRS	MK	\$19,107	0.10%	4.83%	8.90%	13.73%	0.0134%
MARTIN MARIETTA MATERIALS	MLM	\$11,045	0.06%	7.30%	13.95%	21.25%	0.0120%
MARSH & MCLENNAN COS	MMC	\$42,604	0.22%	1.63%	15.72%	17.35%	0.0378%
3M CO	MMM	\$111,927	0.57%	3.98%	8.65%	12.63%	0.0723%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
ALTRIA GROUP INC	MO	\$119,639	0.61%	3.66%	9.00%	12.66%	0.0775%
MOSAIC CO/THE	MOS	\$12,381	0.06%	0.06%	7.00%	7.06%	0.0045%
MARATHON PETROLEUM CORP	MPC	\$49,117	0.25%	3.65%	20.50%	24.15%	0.0607%
MERCK & CO. INC.	MRK	\$194,464	1.00%	3.21%	7.92%	11.13%	0.1108%
MARATHON OIL CORP	MRO	\$15,896	0.08%	0.64%	5.00%	5.64%	0.0046%
MORGAN STANLEY	MS	\$80,068	0.41%	1.46%	13.63%	15.08%	0.0618%
MSCI INC	MSCI	\$13,084	0.07%	2.57%	13.10%	15.67%	0.0105%
MICROSOFT CORP	MSFT	\$818,647	4.19%	8.76%	12.27%	21.02%	0.8807%
MOTOROLA SOLUTIONS INC	MSI	\$20,085	0.10%	4.75%	7.45%	12.20%	0.0125%
M & T BANK CORP	MTB	\$23,203	0.12%	2.22%	12.53%	14.76%	0.0175%
NOBLE ENERGY INC	NBL	\$12,585	0.06%	0.09%	31.35%	31.44%	0.0202%
NASDAQ INC	NDAQ	\$14,312	0.07%	5.17%	9.32%	14.49%	0.0106%
NEXTERA ENERGY INC	NEE	\$81,475	0.42%	15.25%	8.25%	23.50%	0.0980%
NEWMONT MINING CORP	NEM	\$17,077	0.09%	0.98%	-3.00%	-2.02%	-0.0018%
NISOURCE INC	NI	\$9,217	0.05%	3.20%	5.63%	8.83%	0.0042%
NIKE INC -CL B	NKE	\$121,951	0.62%	0.26%	17.49%	17.75%	0.1107%
NIELSEN HOLDINGS PLC	NLSN	\$9,505	0.05%	5.80%	12.00%	17.80%	0.0087%
NORTHROP GRUMMAN CORP	NOC	\$47,424	0.24%	6.32%	15.27%	21.59%	0.0524%
NATIONAL-OILWELL VARCO INC	NOV	\$13,997	0.07%	0.46%	14.30%	14.76%	0.0106%
NRG ENERGY INC	NRG	\$11,248	0.06%	0.56%	46.66%	47.22%	0.0272%
NORFOLK SOUTHERN CORP	NSC	\$45,847	0.23%	1.00%	10.53%	11.53%	0.0270%
NETAPP INC	NTAP	\$20,609	0.11%	2.62%	14.43%	17.05%	0.0180%
NORTHERN TRUST CORP	NTRS	\$20,867	0.11%	5.29%	14.28%	19.57%	0.0209%
NUCOR CORP	NUE	\$18,984	0.10%	0.92%	6.25%	7.17%	0.0070%
NVIDIA CORP	NVDA	\$132,611	0.68%	0.79%	10.63%	11.42%	0.0775%
NEWELL BRANDS INC	NWL	\$7,820	0.04%	0.96%	2.76%	3.71%	0.0015%
NEWS CORP - CLASS B	NWS	\$7,715	0.04%	0.37%	26.30%	26.67%	0.0105%
REALTY INCOME CORP	O	\$18,058	0.09%	1.11%	4.15%	5.26%	0.0049%
ONEOK INC	OKE	\$26,660	0.14%	20.06%	25.37%	45.44%	0.0620%
OMNICOM GROUP	OMC	\$16,741	0.09%	18.62%	6.64%	25.25%	0.0216%
ORACLE CORP	ORCL	\$184,090	0.94%	6.05%	7.90%	13.95%	0.1315%
OCCIDENTAL PETROLEUM CORP	OXY	\$52,269	0.27%	4.99%	14.30%	19.29%	0.0516%
PAYCHEX INC	PAYX	\$23,337	0.12%	3.07%	9.67%	12.74%	0.0152%
PEOPLE'S UNITED FINANCIAL	PBCT	\$5,936	0.03%	1.45%	2.00%	3.45%	0.0010%
PACCAR INC	PCAR	\$20,687	0.11%	0.69%	6.38%	7.07%	0.0075%
PUBLIC SERVICE ENTERPRISE GP	PEG	\$26,986	0.14%	2.69%	7.43%	10.12%	0.0140%
PEPSICO INC	PEP	\$157,404	0.81%	22.06%	6.78%	28.84%	0.2323%
PFIZER INC	PFE	\$255,998	1.31%	2.23%	6.18%	8.40%	0.1100%
PRINCIPAL FINANCIAL GROUP	PFG	\$13,634	0.07%	4.46%	6.50%	10.96%	0.0076%
PROCTER & GAMBLE CO/THE	PG	\$223,205	1.14%	5.39%	6.54%	11.93%	0.1363%
PROGRESSIVE CORP	PGR	\$40,260	0.21%	1.49%	8.00%	9.49%	0.0196%
PARKER HANNIFIN CORP	PH	\$21,100	0.11%	6.77%	9.52%	16.29%	0.0176%
PULTEGROUP INC	PHM	\$6,926	0.04%	0.74%	21.15%	21.89%	0.0078%
PACKAGING CORP OF AMERICA	PKG	\$9,059	0.05%	3.53%	10.00%	13.53%	0.0063%
PERKINELMER INC	PKI	\$9,058	0.05%	0.44%	16.46%	16.90%	0.0078%
PROLOGIS INC	PLD	\$40,767	0.21%	1.18%	6.91%	8.09%	0.0169%
PHILIP MORRIS INTERNATIONAL	PM	\$137,342	0.70%	19.69%	8.68%	28.37%	0.1994%
PNC FINANCIAL SERVICES GROUP	PNC	\$59,865	0.31%	3.55%	8.25%	11.80%	0.0362%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

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PENTAIR PLC	PNR	\$7,142	0.04%	1.46%	11.21%	12.67%	0.0046%
PINNACLE WEST CAPITAL	PNW	\$9,245	0.05%	5.56%	4.56%	10.11%	0.0048%
PPG INDUSTRIES INC	PPG	\$25,605	0.13%	2.21%	7.41%	9.62%	0.0126%
PPL CORP	PPL	\$21,463	0.11%	1.31%	8.10%	9.41%	0.0103%
PERRIGO CO PLC	PRGO	\$9,929	0.05%	1.85%	4.00%	5.85%	0.0030%
PRUDENTIAL FINANCIAL INC	PRU	\$39,565	0.20%	4.30%	6.00%	10.30%	0.0209%
PUBLIC STORAGE	PSA	\$35,938	0.18%	7.97%	4.56%	12.54%	0.0231%
PHILLIPS 66	PSX	\$47,265	0.24%	10.13%	5.50%	15.63%	0.0378%
PVH CORP	PVH	\$9,652	0.05%	0.28%	10.98%	11.26%	0.0056%
PIONEER NATURAL RESOURCES CO	PXD	\$25,489	0.13%	0.18%	27.13%	27.31%	0.0356%
QUALCOMM INC	QCOM	\$93,597	0.48%	1.97%	10.06%	12.03%	0.0576%
ROYAL CARIBBEAN CRUISES LTD	RCL	\$22,666	0.12%	1.60%	13.39%	14.99%	0.0174%
EVEREST RE GROUP LTD	RE	\$8,933	0.05%	6.63%	10.00%	16.63%	0.0076%
REGENCY CENTERS CORP	REG	\$10,865	0.06%	3.39%	5.49%	8.87%	0.0049%
REGIONS FINANCIAL CORP	RF	\$18,974	0.10%	0.39%	19.79%	20.17%	0.0196%
ROBERT HALF INTERNAT INC	RHI	\$7,525	0.04%	0.54%	15.67%	16.20%	0.0062%
RAYMOND JAMES FINANCIAL INC	RJF	\$11,507	0.06%	0.31%	14.95%	15.26%	0.0090%
RALPH LAUREN CORP	RL	\$10,746	0.05%	13.37%	5.81%	19.19%	0.0105%
RESMED INC	RMD	\$15,105	0.08%	2.39%	12.15%	14.54%	0.0112%
ROCKWELL AUTOMATION INC	ROK	\$21,352	0.11%	2.84%	12.34%	15.18%	0.0166%
ROLLINS INC	ROL	\$12,820	0.07%	0.93%	10.00%	10.93%	0.0072%
ROPER TECHNOLOGIES INC	ROP	\$29,356	0.15%	1.38%	13.47%	14.85%	0.0223%
ROSS STORES INC	ROST	\$36,747	0.19%	0.77%	10.43%	11.19%	0.0210%
REPUBLIC SERVICES INC	RSG	\$23,356	0.12%	0.87%	11.85%	12.72%	0.0152%
RAYTHEON COMPANY	RTN	\$51,460	0.26%	6.33%	14.71%	21.04%	0.0554%
STARBUCKS CORP	SBUX	\$79,098	0.40%	1.46%	14.16%	15.62%	0.0632%
SCANA CORP	SCG	\$5,712	0.03%	2.03%	-2.79%	-0.75%	-0.0002%
SCHWAB (CHARLES) CORP	SCHW	\$62,676	0.32%	0.24%	21.22%	21.45%	0.0688%
SEALED AIR CORP	SEE	\$5,320	0.03%	0.42%	3.38%	3.80%	0.0010%
SHERWIN-WILLIAMS CO/THE	SHW	\$37,250	0.19%	6.31%	11.28%	17.59%	0.0335%
JM SMUCKER CO/THE	SJM	\$12,482	0.06%	6.84%	4.13%	10.97%	0.0070%
SCHLUMBERGER LTD	SLB	\$71,549	0.37%	6.56%	27.57%	34.13%	0.1250%
SL GREEN REALTY CORP	SLG	\$7,916	0.04%	0.81%	5.26%	6.07%	0.0025%
SNAP-ON INC	SNA	\$8,747	0.04%	1.20%	7.50%	8.70%	0.0039%
SOUTHERN CO/THE	SO	\$45,535	0.23%	4.15%	4.00%	8.15%	0.0190%
SIMON PROPERTY GROUP INC	SPG	\$56,182	0.29%	8.60%	6.22%	14.82%	0.0426%
S&P GLOBAL INC	SPGI	\$45,857	0.23%	1.23%	11.05%	12.28%	0.0288%
SEMPRA ENERGY	SRE	\$29,934	0.15%	8.69%	20.29%	28.98%	0.0444%
SUNTRUST BANKS INC	STI	\$28,664	0.15%	1.03%	13.14%	14.17%	0.0208%
STATE STREET CORP	STT	\$26,552	0.14%	0.98%	10.94%	11.93%	0.0162%
SEAGATE TECHNOLOGY	STX	\$12,374	0.06%	4.76%	-1.31%	3.45%	0.0022%
CONSTELLATION BRANDS INC-A	STZ	\$38,016	0.19%	2.32%	11.30%	13.62%	0.0265%
STANLEY BLACK & DECKER INC	SWK	\$18,653	0.10%	4.26%	10.77%	15.02%	0.0143%
SKYWORKS SOLUTIONS INC	SWKS	\$16,017	0.08%	1.31%	12.33%	13.64%	0.0112%
SYNCHRONY FINANCIAL	SYF	\$21,159	0.11%	1.56%	6.20%	7.76%	0.0084%
STRYKER CORP	SYK	\$62,328	0.32%	0.88%	8.70%	9.58%	0.0306%
SYMANTEC CORP	SYMC	\$11,965	0.06%	0.25%	8.50%	8.75%	0.0054%
SYSCO CORP	SYY	\$37,380	0.19%	1.76%	11.37%	13.13%	0.0251%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
AT&T INC	T	\$221,662	1.13%	6.82%	4.85%	11.67%	0.1324%
MOLSON COORS BREWING CO -B	TAP	\$14,267	0.07%	0.98%	2.55%	3.53%	0.0026%
TE CONNECTIVITY LTD	TEL	\$26,918	0.14%	2.47%	9.23%	11.70%	0.0161%
TARGET CORP	TGT	\$44,335	0.23%	8.04%	7.15%	15.19%	0.0345%
TIFFANY & CO	TIF	\$14,118	0.07%	3.58%	10.53%	14.11%	0.0102%
TJX COMPANIES INC	TJX	\$68,151	0.35%	0.22%	11.10%	11.32%	0.0395%
TORCHMARK CORP	TMK	\$9,583	0.05%	0.84%	13.70%	14.54%	0.0071%
THERMO FISHER SCIENTIFIC INC	TMO	\$94,117	0.48%	0.82%	11.00%	11.82%	0.0569%
TAPESTRY INC	TPR	\$12,437	0.06%	1.25%	10.96%	12.21%	0.0078%
T ROWE PRICE GROUP INC	TROW	\$23,589	0.12%	3.31%	11.19%	14.50%	0.0175%
TRAVELERS COS INC/THE	TRV	\$33,153	0.17%	1.39%	17.75%	19.14%	0.0325%
TRACTOR SUPPLY COMPANY	TSCO	\$11,257	0.06%	2.80%	14.41%	17.21%	0.0099%
TYSON FOODS INC-CL A	TSN	\$24,809	0.13%	3.94%	5.90%	9.84%	0.0125%
TOTAL SYSTEM SERVICES INC	TSS	\$16,750	0.09%	0.55%	14.15%	14.70%	0.0126%
TEXAS INSTRUMENTS INC	TXN	\$94,886	0.49%	4.26%	10.58%	14.84%	0.0720%
TEXTRON INC	TXT	\$13,365	0.07%	0.09%	14.11%	14.20%	0.0097%
UDR INC	UDR	\$10,534	0.05%	1.32%	5.38%	6.70%	0.0036%
UNIVERSAL HEALTH SERVICES-B	UHS	\$11,527	0.06%	0.67%	10.21%	10.89%	0.0064%
UNITEDHEALTH GROUP INC	UNH	\$251,138	1.29%	18.10%	13.96%	32.06%	0.4121%
UNUM GROUP	UNM	\$8,083	0.04%	1.17%	9.00%	10.17%	0.0042%
UNION PACIFIC CORP	UNP	\$108,441	0.55%	7.83%	10.66%	18.49%	0.1026%
UNITED PARCEL SERVICE-CL B	UPS	\$92,384	0.47%	3.77%	8.97%	12.74%	0.0602%
US BANCORP	USB	\$84,920	0.43%	0.50%	7.25%	7.75%	0.0337%
UNITED TECHNOLOGIES CORP	UTX	\$102,190	0.52%	7.96%	10.49%	18.45%	0.0965%
VISA INC-CLASS A SHARES	V	\$285,181	1.46%	0.63%	18.80%	19.43%	0.2835%
VF CORP	VFC	\$33,776	0.17%	1.43%	9.36%	10.80%	0.0187%
VIACOM INC-CLASS B	VIAB	\$13,396	0.07%	1.19%	6.68%	7.87%	0.0054%
VALERO ENERGY CORP	VLO	\$39,539	0.20%	2.56%	16.36%	18.92%	0.0383%
VULCAN MATERIALS CO	VMC	\$13,568	0.07%	0.84%	16.49%	17.32%	0.0120%
VORNADO REALTY TRUST	VNO	\$12,962	0.07%	2.33%	4.68%	7.01%	0.0047%
VENTAS INC	VTR	\$20,714	0.11%	3.19%	2.95%	6.15%	0.0065%
VERIZON COMMUNICATIONS INC	VZ	\$231,599	1.19%	3.53%	5.31%	8.84%	0.1048%
WALGREENS BOOTS ALLIANCE INC	WBA	\$75,838	0.39%	1.19%	10.05%	11.24%	0.0436%
WESTERN DIGITAL CORP	WDC	\$13,663	0.07%	3.56%	-3.39%	0.17%	0.0001%
WEC ENERGY GROUP INC	WEC	\$21,418	0.11%	4.04%	4.92%	8.97%	0.0098%
WELLTOWER INC	WELL	\$25,356	0.13%	1.94%	7.20%	9.14%	0.0119%
WELLS FARGO & CO	WFC	\$252,353	1.29%	2.27%	13.41%	15.68%	0.2024%
WHIRLPOOL CORP	WHR	\$7,281	0.04%	1.55%	9.94%	11.49%	0.0043%
WILLIS TOWERS WATSON PLC	WLTW	\$18,713	0.10%	4.73%	15.35%	20.08%	0.0192%
WASTE MANAGEMENT INC	WM	\$37,557	0.19%	2.80%	11.51%	14.31%	0.0275%
WILLIAMS COS INC	WMB	\$31,171	0.16%	2.05%	-0.80%	1.25%	0.0020%
WAL-MART STORES INC	WMT	\$294,572	1.51%	4.06%	6.24%	10.30%	0.1552%
WESTROCK CO	WRK	\$11,419	0.06%	1.59%	5.83%	7.43%	0.0043%
WESTERN UNION CO	WU	\$8,002	0.04%	0.54%	4.20%	4.74%	0.0019%
WEYERHAEUSER CO	WY	\$20,393	0.10%	1.51%	7.00%	8.51%	0.0089%
WYNN RESORTS LTD	WYNN	\$12,237	0.06%	10.34%	18.30%	28.64%	0.0179%
CIMAREX ENERGY CO	XEC	\$7,711	0.04%	0.82%	72.57%	73.39%	0.0290%
XCEL ENERGY INC	XEL	\$24,906	0.13%	3.45%	5.84%	9.29%	0.0118%

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	15.30%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	11.92%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
XILINX INC	XLNX	\$22,012	0.11%	8.15%	8.13%	16.28%	0.0183%
EXXON MOBIL CORP	XOM	\$341,541	1.75%	11.70%	11.72%	23.41%	0.4092%
DENTSPLY SIRONA INC	XRAY	\$7,835	0.04%	0.24%	6.40%	6.64%	0.0027%
XEROX CORP	XRX	\$6,796	0.03%	1.11%	0.60%	1.71%	0.0006%
XYLEM INC	XYL	\$12,355	0.06%	1.80%	15.30%	17.10%	0.0108%
YUM! BRANDS INC	YUM	\$27,541	0.14%	1.88%	12.83%	14.71%	0.0207%
ZIMMER BIOMET HOLDINGS INC	ZBH	\$23,808	0.12%	1.19%	3.03%	4.22%	0.0051%
ZIONS BANCORPORATION	ZION	\$9,250	0.05%	2.62%	9.50%	12.12%	0.0057%
ZOETIS INC	ZTS	\$45,282	0.23%	1.53%	16.41%	17.93%	0.0416%
Total Market Capitalization:		\$19,542,425	100.00%			Weighted Total:	15.30%

Source: Bloomberg

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	11.14%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	7.76%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
AGILENT TECHNOLOGIES INC	A	\$20,790	0.18%	0.92%	10.35%	11.27%	0.0207%
APPLE INC	AAPL	\$1,073,306	9.49%	1.29%	9.84%	11.13%	1.0561%
ABBVIE INC	ABBV	\$121,460	1.07%	4.27%	10.15%	14.42%	0.1549%
AMERISOURCEBERGEN CORP	ABC	\$19,671	0.17%	1.80%	9.39%	11.19%	0.0195%
ABBOTT LABORATORIES	ABT	\$123,207	1.09%	1.71%	12.23%	13.93%	0.1517%
ACCENTURE PLC-CL A	ACN	\$101,380	0.90%	2.60%	10.40%	13.00%	0.1165%
ANALOG DEVICES INC	ADI	\$32,707	0.29%	2.30%	9.53%	11.83%	0.0342%
ARCHER-DANIELS-MIDLAND CO	ADM	\$27,270	0.24%	2.85%	11.40%	14.25%	0.0343%
ALLIANCE DATA SYSTEMS CORP	ADS	\$11,402	0.10%	1.10%	13.23%	14.33%	0.0144%
AMEREN CORPORATION	AEE	\$15,704	0.14%	2.94%	8.32%	11.26%	0.0156%
AMERICAN ELECTRIC POWER	AEP	\$35,982	0.32%	3.52%	5.40%	8.91%	0.0283%
AES CORP	AES	\$9,753	0.09%	3.69%	8.59%	12.27%	0.0106%
AETNA INC	AET	\$65,526	0.58%	1.05%	10.98%	12.04%	0.0697%
AFLAC INC	AFL	\$32,636	0.29%	2.35%	8.45%	10.80%	0.0311%
ALLERGAN PLC	AGN	\$55,470	0.49%	1.61%	7.25%	8.87%	0.0435%
AMERICAN INTERNATIONAL GROUP	AIG	\$38,144	0.34%	2.82%	11.00%	13.82%	0.0466%
APARTMENT INVT & MGMT CO -A	AIV	\$6,766	0.06%	3.59%	6.20%	9.79%	0.0059%
ARTHUR J GALLAGHER & CO	AJG	\$13,700	0.12%	2.33%	10.91%	13.24%	0.0160%
ALBERMARLE	ALB	\$11,433	0.10%	1.44%	13.03%	14.46%	0.0146%
ALASKA AIR GROUP INC	ALK	\$7,859	0.07%	2.02%	3.22%	5.24%	0.0036%
ALLSTATE CORP	ALL	\$30,989	0.27%	1.89%	7.10%	8.99%	0.0246%
ALLEGION PLC	ALLE	\$8,309	0.07%	0.98%	11.03%	12.01%	0.0088%
APPLIED MATERIALS INC	AMAT	\$34,749	0.31%	1.84%	12.09%	13.93%	0.0428%
AMETEK INC	AME	\$16,611	0.15%	0.75%	12.05%	12.80%	0.0188%
AFFILIATED MANAGERS GROUP	AMG	\$6,229	0.06%	0.92%	8.34%	9.26%	0.0051%
AMGEN INC	AMGN	\$122,920	1.09%	2.66%	6.60%	9.27%	0.1007%
AMERIPRISE FINANCIAL INC	AMP	\$18,417	0.16%	2.67%	11.80%	14.47%	0.0236%
ANTHEM INC	ANTM	\$68,781	0.61%	1.14%	11.63%	12.78%	0.0777%
AON PLC	AON	\$37,499	0.33%	1.04%	9.77%	10.81%	0.0358%
A.O. SMITH CORP	AOS	\$8,204	0.07%	1.58%	10.33%	11.91%	0.0086%
AMPHENOL CORP-CL A	APH	\$27,074	0.24%	1.02%	11.87%	12.89%	0.0309%
APTIV PLC	APTIV	\$20,403	0.18%	1.30%	10.46%	11.76%	0.0212%
ALEXANDRIA REAL ESTATE EQUITIES	ARE	\$13,149	0.12%	3.08%	6.57%	9.64%	0.0112%
AVALONBAY COMMUNITIES INC	AVB	\$24,234	0.21%	3.40%	6.38%	9.78%	0.0210%
AVERY DENNISON CORP	AVY	\$8,071	0.07%	2.04%	7.10%	9.14%	0.0065%
AMERICAN WATER WORKS CO INC	AWK	\$15,952	0.14%	2.03%	8.22%	10.25%	0.0144%
BAXTER INTERNATIONAL INC	BAX	\$33,696	0.30%	1.05%	12.38%	13.43%	0.0400%
BROWN-FORMAN CORP-CLASS B	BF/B	\$22,754	0.20%	3.54%	9.44%	12.98%	0.0261%
BANK OF NEW YORK MELLON CORP	BK	\$46,987	0.42%	2.11%	7.00%	9.11%	0.0379%
BLACKROCK INC	BLK	\$66,306	0.59%	2.80%	8.73%	11.53%	0.0676%
BALL CORP	BLL	\$16,377	0.14%	0.91%	5.63%	6.55%	0.0095%
BRISTOL-MYERS SQUIBB CO	BMJ	\$85,087	0.75%	3.00%	11.16%	14.16%	0.1065%
BORGWARNER INC	BWA	\$8,548	0.08%	1.34%	6.56%	7.90%	0.0060%
BOSTON PROPERTIES INC	BXP	\$18,520	0.16%	2.93%	6.03%	8.96%	0.0147%
CONAGRA BRANDS INC	CAG	\$17,297	0.15%	2.50%	7.85%	10.35%	0.0158%
CHUBB LTD	CB	\$57,840	0.51%	2.36%	10.83%	13.20%	0.0675%
CBOE GLOBAL MARKETS INC	CBOE	\$12,356	0.11%	1.20%	12.92%	14.12%	0.0154%
CHURCH & DWIGHT CO INC	CHD	\$15,973	0.14%	1.51%	9.40%	10.91%	0.0154%

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	11.14%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	7.76%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
C.H. ROBINSON WORLDWIDE INC	CHRW	\$12,594	0.11%	2.09%	10.18%	12.27%	0.0137%
CIGNA CORP	CI	\$52,672	0.47%	0.02%	14.40%	14.42%	0.0671%
COLGATE-PALMOLIVE CO	CL	\$52,109	0.46%	2.72%	6.99%	9.71%	0.0447%
CLOROX COMPANY	CLX	\$19,624	0.17%	2.55%	5.11%	7.66%	0.0133%
COMCAST CORP-CLASS A	CMCSA	\$172,654	1.53%	2.10%	5.26%	7.35%	0.1122%
CME GROUP INC	CME	\$62,587	0.55%	3.65%	9.30%	12.95%	0.0716%
CUMMINS INC	CMI	\$22,830	0.20%	3.22%	9.51%	12.73%	0.0257%
CMS ENERGY CORP	CMS	\$13,773	0.12%	2.92%	6.55%	9.47%	0.0115%
CENTERPOINT ENERGY INC	CNP	\$13,627	0.12%	4.14%	6.90%	11.05%	0.0133%
CAPITAL ONE FINANCIAL CORP	COF	\$42,298	0.37%	1.86%	12.25%	14.10%	0.0527%
ROCKWELL COLLINS INC	COL	\$21,425	0.19%	0.78%	11.60%	12.38%	0.0235%
COOPER COS INC/THE	COO	\$12,928	0.11%	0.04%	10.80%	10.84%	0.0124%
CONOCOPHILLIPS	COP	\$80,103	0.71%	1.58%	6.00%	7.58%	0.0536%
COSTCO WHOLESALE CORP	COST	\$100,613	0.89%	1.00%	11.18%	12.18%	0.1083%
CAMPBELL SOUP CO	CPB	\$11,407	0.10%	3.80%	3.46%	7.26%	0.0073%
CISCO SYSTEMS INC	CSCO	\$206,803	1.83%	2.79%	7.18%	9.97%	0.1822%
CSX CORP	CSX	\$58,763	0.52%	1.30%	12.28%	13.58%	0.0705%
CINTAS CORP	CTAS	\$19,324	0.17%	0.93%	12.02%	12.95%	0.0221%
CVS HEALTH CORP	CVS	\$75,754	0.67%	2.81%	10.26%	13.07%	0.0875%
CHEVRON CORP	CVX	\$213,018	1.88%	3.89%	6.65%	10.54%	0.1984%
DOMINION RESOURCES INC/VA	D	\$45,979	0.41%	4.67%	5.69%	10.36%	0.0421%
DEERE & CO	DE	\$45,243	0.40%	1.71%	7.33%	9.04%	0.0362%
DISCOVER FINANCIAL SERVICES	DFS	\$23,554	0.21%	2.06%	10.17%	12.23%	0.0255%
QUEST DIAGNOSTICS INC	DGX	\$12,736	0.11%	2.04%	8.78%	10.82%	0.0122%
DANAHER CORP	DHR	\$70,444	0.62%	0.80%	8.82%	9.62%	0.0599%
WALT DISNEY CO/THE	DIS	\$172,669	1.53%	1.55%	12.98%	14.53%	0.2218%
DOVER CORP	DOV	\$12,204	0.11%	2.41%	11.70%	14.11%	0.0152%
DUKE REALTY CORP	DRE	\$9,965	0.09%	0.96%	4.56%	5.52%	0.0049%
DTE ENERGY COMPANY	DTE	\$20,392	0.18%	3.39%	5.87%	9.25%	0.0167%
DUKE ENERGY CORP	DUK	\$58,171	0.51%	3.29%	5.04%	8.34%	0.0429%
DEVON ENERGY CORP	DVN	\$16,719	0.15%	0.46%	14.36%	14.82%	0.0219%
DOWDUPONT INC	DWDP	\$134,451	1.19%	4.39%	7.80%	12.19%	0.1449%
DXC TECHNOLOGY CO	DXC	\$20,125	0.18%	1.31%	6.36%	7.66%	0.0136%
CONSOLIDATED EDISON INC	ED	\$23,553	0.21%	1.92%	3.60%	5.52%	0.0115%
EQUIFAX INC	EFX	\$12,629	0.11%	2.10%	6.60%	8.70%	0.0097%
EDISON INTERNATIONAL	EIX	\$22,217	0.20%	2.10%	5.44%	7.54%	0.0148%
ESTEE LAUDER COMPANIES-CL A	EL	\$51,503	0.46%	2.32%	11.28%	13.60%	0.0619%
EASTMAN CHEMICAL CO	EMN	\$11,439	0.10%	1.76%	7.40%	9.16%	0.0093%
EMERSON ELECTRIC CO	EMR	\$43,961	0.39%	2.43%	11.20%	13.62%	0.0529%
EOG RESOURCES INC	EOG	\$61,986	0.55%	1.11%	11.32%	12.43%	0.0681%
EQUITY RESIDENTIAL	EQR	\$23,882	0.21%	0.54%	5.73%	6.27%	0.0132%
EVERSOURCE ENERGY	ES	\$19,866	0.18%	4.85%	5.80%	10.65%	0.0187%
ESSEX PROPERTY TRUST INC	ESS	\$16,691	0.15%	7.89%	4.92%	12.80%	0.0189%
EATON CORP PLC	ETN	\$31,963	0.28%	5.39%	8.80%	14.19%	0.0401%
ENTERGY CORP	ETR	\$15,013	0.13%	4.45%	0.87%	5.32%	0.0071%
EVERGY INC	EVRG	\$15,244	0.13%	1.51%	8.19%	9.70%	0.0131%
EXELON CORP	EXC	\$42,162	0.37%	0.95%	4.19%	5.14%	0.0192%
EXPEDITORS INTL WASH INC	EXPD	\$12,029	0.11%	2.11%	11.60%	13.71%	0.0146%

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	11.14%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	7.76%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
EXTRA SPACE STORAGE INC	EXR	\$11,434	0.10%	2.77%	5.46%	8.23%	0.0083%
FORTUNE BRANDS HOME & SECURI	FBHS	\$6,684	0.06%	0.55%	11.63%	12.18%	0.0072%
FIDELITY NATIONAL INFO SERV	FIS	\$34,042	0.30%	0.74%	4.63%	5.37%	0.0162%
FIFTH THIRD BANCORP	FITB	\$17,923	0.16%	0.88%	4.35%	5.23%	0.0083%
FOOT LOCKER INC	FL	\$5,508	0.05%	4.96%	4.91%	9.87%	0.0048%
TWENTY-FIRST CENTURY FOX INC	FOX	\$86,083	0.76%	0.91%	9.95%	10.86%	0.0826%
FEDERAL REALTY INVS TRUST	FRT	\$9,180	0.08%	9.09%	5.17%	14.26%	0.0116%
GILEAD SCIENCES INC	GILD	\$90,981	0.80%	1.20%	5.55%	6.76%	0.0544%
CORNING INC	GLW	\$26,493	0.23%	0.99%	10.36%	11.35%	0.0266%
GENERAL MOTORS CO	GM	\$51,474	0.46%	3.66%	11.08%	14.74%	0.0671%
GENUINE PARTS CO	GPC	\$14,357	0.13%	8.51%	-2.36%	6.15%	0.0078%
GAP INC/THE	GPS	\$10,491	0.09%	0.09%	10.22%	10.31%	0.0096%
GARMIN LTD	GRMN	\$13,354	0.12%	2.20%	6.03%	8.22%	0.0097%
GOLDMAN SACHS GROUP INC	GS	\$89,008	0.79%	2.81%	12.07%	14.88%	0.1170%
HUNTINGTON BANCSHARES INC	HBAN	\$15,265	0.13%	0.16%	13.13%	13.29%	0.0179%
HANESBRANDS INC	HBI	\$5,851	0.05%	1.60%	4.75%	6.35%	0.0033%
HCA HOLDINGS INC	HCA	\$46,955	0.42%	0.38%	13.58%	13.96%	0.0579%
HCP INC	HCP	\$13,219	0.12%	10.40%	3.20%	13.60%	0.0159%
HOLLYFRONTIER CORP	HFC	\$11,654	0.10%	5.25%	7.38%	12.63%	0.0130%
HARTFORD FINANCIAL SVCS GRP	HIG	\$16,430	0.15%	0.59%	9.50%	10.09%	0.0146%
HILTON HOTELS CORP	HLT	\$21,546	0.19%	0.96%	11.20%	12.16%	0.0232%
HARLEY-DAVIDSON INC	HOG	\$6,544	0.06%	3.26%	8.15%	11.41%	0.0066%
HEWLETT PACKARD ENTERPRIS	HPE	\$23,252	0.21%	0.98%	9.09%	10.06%	0.0207%
HP INC	HPQ	\$38,753	0.34%	0.58%	9.08%	9.66%	0.0331%
H&R BLOCK INC	HRB	\$5,438	0.05%	1.54%	10.00%	11.54%	0.0055%
HORMEL FOODS CORP	HRL	\$23,175	0.20%	4.83%	5.00%	9.83%	0.0201%
HOST HOTELS & RESORTS INC	HST	\$14,337	0.13%	2.30%	2.97%	5.26%	0.0067%
HERSHEY CO/THE	HSY	\$22,521	0.20%	2.09%	8.83%	10.92%	0.0217%
INTERCONTINENTAL EXCHANGE IN	ICE	\$43,209	0.38%	0.92%	8.82%	9.73%	0.0372%
INTL FLAVORS & FRAGRANCES	IFF	\$15,593	0.14%	2.17%	10.80%	12.97%	0.0179%
INTEL CORP	INTC	\$220,076	1.95%	0.52%	10.60%	11.12%	0.2163%
INTERNATIONAL PAPER CO	IP	\$18,841	0.17%	3.79%	8.25%	12.04%	0.0201%
INTERPUBLIC GROUP OF COS INC	IPG	\$8,921	0.08%	1.84%	8.53%	10.37%	0.0082%
IRON MOUNTAIN INC	IRM	\$9,042	0.08%	1.77%	8.70%	10.47%	0.0084%
INVESCO LTD	IVZ	\$9,041	0.08%	0.23%	5.32%	5.55%	0.0044%
JOHNSON CONTROLS INTERNATIONAL	JCI	\$30,837	0.27%	0.83%	10.30%	11.13%	0.0303%
JUNIPER NETWORKS INC	JNPR	\$10,220	0.09%	0.90%	11.15%	12.05%	0.0109%
NORDSTROM INC	JWN	\$11,039	0.10%	1.12%	8.43%	9.54%	0.0093%
KELLOGG CO	K	\$22,209	0.20%	7.89%	7.01%	14.89%	0.0292%
KRAFT HEINZ CO/THE	KHC	\$68,517	0.61%	3.70%	5.27%	8.97%	0.0543%
KIMCO REALTY CORP	KIM	\$6,683	0.06%	6.10%	5.30%	11.40%	0.0067%
KLA-TENCOR CORP	KLAC	\$14,530	0.13%	4.45%	5.04%	9.48%	0.0122%
KIMBERLY-CLARK CORP	KMB	\$36,718	0.32%	7.33%	5.68%	13.01%	0.0422%
COCA-COLA CO/THE	KO	\$203,206	1.80%	1.47%	7.50%	8.97%	0.1611%
KROGER CO	KR	\$23,388	0.21%	0.76%	7.01%	7.77%	0.0161%
KOHL'S CORP	KSS	\$12,607	0.11%	5.21%	7.23%	12.44%	0.0139%
KANSAS CITY SOUTHERN	KSU	\$10,485	0.09%	2.40%	5.07%	7.47%	0.0069%
L BRANDS INC	LB	\$9,204	0.08%	3.44%	9.33%	12.77%	0.0104%

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	11.14%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	7.76%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
ELI LILLY & CO	LLY	\$115,840	1.02%	1.46%	11.44%	12.90%	0.1321%
ALLIANT ENERGY CORP	LNT	\$10,200	0.09%	1.23%	5.78%	7.01%	0.0063%
LAM RESEARCH CORP	LRCX	\$23,566	0.21%	5.16%	7.07%	12.22%	0.0255%
SOUTHWEST AIRLINES CO	LUV	\$28,650	0.25%	1.36%	7.23%	8.59%	0.0218%
LYONDELLBASELL INDU-CL A	LYB	\$35,500	0.31%	3.94%	8.20%	12.14%	0.0381%
MCDONALD'S CORP	MCD	\$134,817	1.19%	3.60%	8.69%	12.29%	0.1464%
MOODY'S CORP	MCO	\$28,729	0.25%	1.04%	8.00%	9.04%	0.0230%
MONDELEZ INTERNATIONAL INC-A	MDLZ	\$61,599	0.54%	1.41%	9.15%	10.57%	0.0575%
MEDTRONIC PLC	MDT	\$123,639	1.09%	1.51%	8.00%	9.51%	0.1039%
METLIFE INC	MET	\$41,724	0.37%	1.12%	13.58%	14.70%	0.0542%
MCCORMICK & CO-NON VTG SHRS	MKC	\$19,107	0.17%	4.83%	8.90%	13.73%	0.0232%
3M CO	MMM	\$111,927	0.99%	3.98%	8.65%	12.63%	0.1250%
ALTRIA GROUP INC	MO	\$119,639	1.06%	3.66%	9.00%	12.66%	0.1338%
MOSAIC CO/THE	MOS	\$12,381	0.11%	0.06%	7.00%	7.06%	0.0077%
MERCK & CO. INC.	MRK	\$194,464	1.72%	3.21%	7.92%	11.13%	0.1913%
MARATHON OIL CORP	MRO	\$15,896	0.14%	0.64%	5.00%	5.64%	0.0079%
MOTOROLA SOLUTIONS INC	MSI	\$20,085	0.18%	4.75%	7.45%	12.20%	0.0217%
M & T BANK CORP	MTB	\$23,203	0.21%	2.22%	12.53%	14.76%	0.0303%
NASDAQ INC	NDAQ	\$14,312	0.13%	5.17%	9.32%	14.49%	0.0183%
NISOURCE INC	NI	\$9,217	0.08%	3.20%	5.63%	8.83%	0.0072%
NATIONAL-OILWELL VARCO INC	NOV	\$13,997	0.12%	0.46%	14.30%	14.76%	0.0183%
NORFOLK SOUTHERN CORP	NSC	\$45,847	0.41%	1.00%	10.53%	11.53%	0.0467%
NUCOR CORP	NUE	\$18,984	0.17%	0.92%	6.25%	7.17%	0.0120%
NVIDIA CORP	NVDA	\$132,611	1.17%	0.79%	10.63%	11.42%	0.1339%
REALTY INCOME CORP	O	\$18,058	0.16%	1.11%	4.15%	5.26%	0.0084%
ORACLE CORP	ORCL	\$184,090	1.63%	6.05%	7.90%	13.95%	0.2271%
PAYCHEX INC	PAYX	\$23,337	0.21%	3.07%	9.67%	12.74%	0.0263%
PACCAR INC	PCAR	\$20,687	0.18%	0.69%	6.38%	7.07%	0.0129%
PUBLIC SERVICE ENTERPRISE GP	PEG	\$26,986	0.24%	2.69%	7.43%	10.12%	0.0241%
PFIZER INC	PFE	\$255,998	2.26%	2.23%	6.18%	8.40%	0.1901%
PRINCIPAL FINANCIAL GROUP	PFG	\$13,634	0.12%	4.46%	6.50%	10.96%	0.0132%
PROCTER & GAMBLE CO/THE	PG	\$223,205	1.97%	5.39%	6.54%	11.93%	0.2354%
PROGRESSIVE CORP	PGR	\$40,260	0.36%	1.49%	8.00%	9.49%	0.0338%
PACKAGING CORP OF AMERICA	PKG	\$9,059	0.08%	3.53%	10.00%	13.53%	0.0108%
PROLOGIS INC	PLD	\$40,767	0.36%	1.18%	6.91%	8.09%	0.0291%
PNC FINANCIAL SERVICES GROUP	PNC	\$59,865	0.53%	3.55%	8.25%	11.80%	0.0625%
PENTAIR PLC	PNR	\$7,142	0.06%	1.46%	11.21%	12.67%	0.0080%
PINNACLE WEST CAPITAL	PNW	\$9,245	0.08%	5.56%	4.56%	10.11%	0.0083%
PPG INDUSTRIES INC	PPG	\$25,605	0.23%	2.21%	7.41%	9.62%	0.0218%
PPL CORP	PPL	\$21,463	0.19%	1.31%	8.10%	9.41%	0.0179%
PERRIGO CO PLC	PRGO	\$9,929	0.09%	1.85%	4.00%	5.85%	0.0051%
PRUDENTIAL FINANCIAL INC	PRU	\$39,565	0.35%	4.30%	6.00%	10.30%	0.0360%
PUBLIC STORAGE	PSA	\$35,938	0.32%	7.97%	4.56%	12.54%	0.0398%
PVH CORP	PVH	\$9,652	0.09%	0.28%	10.98%	11.26%	0.0096%
QUALCOMM INC	QCOM	\$93,597	0.83%	1.97%	10.06%	12.03%	0.0995%
ROYAL CARIBBEAN CRUISES LTD	RCL	\$22,666	0.20%	1.60%	13.39%	14.99%	0.0300%
REGENCY CENTERS CORP	REG	\$10,865	0.10%	3.39%	5.49%	8.87%	0.0085%
RESMED INC	RMD	\$15,105	0.13%	2.39%	12.15%	14.54%	0.0194%

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	11.14%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	7.76%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
ROLLINS INC	ROL	\$12,820	0.11%	0.93%	10.00%	10.93%	0.0124%
ROPER TECHNOLOGIES INC	ROP	\$29,356	0.26%	1.38%	13.47%	14.85%	0.0385%
ROSS STORES INC	ROST	\$36,747	0.32%	0.77%	10.43%	11.19%	0.0364%
REPUBLIC SERVICES INC	RSG	\$23,356	0.21%	0.87%	11.85%	12.72%	0.0263%
JM SMUCKER CO/THE	SJM	\$12,482	0.11%	6.84%	4.13%	10.97%	0.0121%
SL GREEN REALTY CORP	SLG	\$7,916	0.07%	0.81%	5.26%	6.07%	0.0042%
SNAP-ON INC	SNA	\$8,747	0.08%	1.20%	7.50%	8.70%	0.0067%
SOUTHERN CO/THE	SO	\$45,535	0.40%	4.15%	4.00%	8.15%	0.0328%
SIMON PROPERTY GROUP INC	SPG	\$56,182	0.50%	8.60%	6.22%	14.82%	0.0736%
S&P GLOBAL INC	SPGI	\$45,857	0.41%	1.23%	11.05%	12.28%	0.0498%
SUNTRUST BANKS INC	STI	\$28,664	0.25%	1.03%	13.14%	14.17%	0.0359%
STATE STREET CORP	STT	\$26,552	0.23%	0.98%	10.94%	11.93%	0.0280%
CONSTELLATION BRANDS INC-A	STZ	\$38,016	0.34%	2.32%	11.30%	13.62%	0.0458%
SKYWORKS SOLUTIONS INC	SWKS	\$16,017	0.14%	1.31%	12.33%	13.64%	0.0193%
SYNCHRONY FINANCIAL	SYF	\$21,159	0.19%	1.56%	6.20%	7.76%	0.0145%
STRYKER CORP	SYK	\$62,328	0.55%	0.88%	8.70%	9.58%	0.0528%
SYMANTEC CORP	SYMC	\$11,965	0.11%	0.25%	8.50%	8.75%	0.0093%
SYSCO CORP	SYU	\$37,380	0.33%	1.76%	11.37%	13.13%	0.0434%
AT&T INC	T	\$221,662	1.96%	6.82%	4.85%	11.67%	0.2287%
TE CONNECTIVITY LTD	TEL	\$26,918	0.24%	2.47%	9.23%	11.70%	0.0278%
TIFFANY & CO	TIF	\$14,118	0.12%	3.58%	10.53%	14.11%	0.0176%
TJX COMPANIES INC	TJX	\$68,151	0.60%	0.22%	11.10%	11.32%	0.0682%
TORCHMARK CORP	TMK	\$9,583	0.08%	0.84%	13.70%	14.54%	0.0123%
THERMO FISHER SCIENTIFIC INC	TMO	\$94,117	0.83%	0.82%	11.00%	11.82%	0.0984%
TAPESTRY INC	TPR	\$12,437	0.11%	1.25%	10.96%	12.21%	0.0134%
T ROWE PRICE GROUP INC	TROW	\$23,589	0.21%	3.31%	11.19%	14.50%	0.0302%
TYSON FOODS INC-CL A	TSN	\$24,809	0.22%	3.94%	5.90%	9.84%	0.0216%
TOTAL SYSTEM SERVICES INC	TSS	\$16,750	0.15%	0.55%	14.15%	14.70%	0.0218%
TEXAS INSTRUMENTS INC	TXN	\$94,886	0.84%	4.26%	10.58%	14.84%	0.1244%
TEXTRON INC	TXT	\$13,365	0.12%	0.09%	14.11%	14.20%	0.0168%
UDR INC	UDR	\$10,534	0.09%	1.32%	5.38%	6.70%	0.0062%
UNIVERSAL HEALTH SERVICES-B	UHS	\$11,527	0.10%	0.67%	10.21%	10.89%	0.0111%
UNUM GROUP	UNM	\$8,083	0.07%	1.17%	9.00%	10.17%	0.0073%
UNITED PARCEL SERVICE-CL B	UPS	\$92,384	0.82%	3.77%	8.97%	12.74%	0.1040%
US BANCORP	USB	\$84,920	0.75%	0.50%	7.25%	7.75%	0.0582%
VF CORP	VFC	\$33,776	0.30%	1.43%	9.36%	10.80%	0.0322%
VIACOM INC-CLASS B	VIAB	\$13,396	0.12%	1.19%	6.68%	7.87%	0.0093%
VORNADO REALTY TRUST	VNO	\$12,962	0.11%	2.33%	4.68%	7.01%	0.0080%
VENTAS INC	VTR	\$20,714	0.18%	3.19%	2.95%	6.15%	0.0113%
VERIZON COMMUNICATIONS INC	VZ	\$231,599	2.05%	3.53%	5.31%	8.84%	0.1810%
WALGREENS BOOTS ALLIANCE INC	WBA	\$75,838	0.67%	1.19%	10.05%	11.24%	0.0754%
WEC ENERGY GROUP INC	WEC	\$21,418	0.19%	4.04%	4.92%	8.97%	0.0170%
WELLTOWER INC	WELL	\$25,356	0.22%	1.94%	7.20%	9.14%	0.0205%
WHIRLPOOL CORP	WHR	\$7,281	0.06%	1.55%	9.94%	11.49%	0.0074%
WASTE MANAGEMENT INC	WM	\$37,557	0.33%	2.80%	11.51%	14.31%	0.0475%
WAL-MART STORES INC	WMT	\$294,572	2.60%	4.06%	6.24%	10.30%	0.2681%
WESTROCK CO	WRK	\$11,419	0.10%	1.59%	5.83%	7.43%	0.0075%
WEYERHAEUSER CO	WY	\$20,393	0.18%	1.51%	7.00%	8.51%	0.0153%

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Equity Risk Premium Analysis

Estimated Required Return on Market (S&P 500)	11.14%
30-Year Treasury Rate - Current	3.38%
Observed Equity Risk Premium	7.76%

Company Name	Ticker	Market Capitalization	Company Weight in Index	Dividend Yield D(1)/P(0)	Long-Term Growth Estimate	Implied Cost of Equity (ROE)	Weighted Implied ROE
XCEL ENERGY INC	XEL	\$24,906	0.22%	3.45%	5.84%	9.29%	0.0204%
DENTSPLY SIRONA INC	XRAY	\$7,835	0.07%	0.24%	6.40%	6.64%	0.0046%
YUM! BRANDS INC	YUM	\$27,541	0.24%	1.88%	12.83%	14.71%	0.0358%
ZIONS BANCORPORATION	ZION	\$9,250	0.08%	2.62%	9.50%	12.12%	0.0099%
Total Market Capitalization:		\$11,312,893	100.00%			Weighted Total:	11.14%

Source: Bloomberg

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.5
As of November 1, 2018**

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	8.72%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	9.35%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.1

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.6
As of November 1, 2018**

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	13.39%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	12.55%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.2

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.7
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	11.92%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	11.55%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.3

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.8
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	7.76%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	8.69%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.4

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.9
As of November 1, 2018**

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	8.72%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	9.81%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.1

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.10
As of November 1, 2018**

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	13.39%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	13.01%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.2

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.11
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	11.92%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	12.01%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.3

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Value Line Betas**

**Schedule B.12
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	7.76%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	9.15%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.4

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.13
As of November 1, 2018**

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	8.72%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	9.11%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.1

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.14
As of November 1, 2018**

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	13.39%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	12.18%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.2

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.15
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	11.92%
Ke = Rf + (Beta x ERP)	
CAPM Cost of Equity (k_e)	11.22%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.3

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.16
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	7.76%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	8.48%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.4

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.17
As of November 1, 2018**

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	8.72%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	9.57%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.1

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.18
As of November 1, 2018**

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	13.39%
Ke = Rf + (Beta x ERP)	
CAPM Cost of Equity (k_e)	12.64%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.2

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.19
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	11.92%
$K_e = R_f + (\text{Beta} \times \text{ERP})$	
CAPM Cost of Equity (k_e)	11.68%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.3

**Northeast Ohio Natural Gas
Capital Asset Pricing Model - Bloomberg Betas**

**Schedule B.20
As of November 1, 2018**

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Capital Asset Pricing Model (CAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	7.76%
Ke = Rf + (Beta x ERP)	
CAPM Cost of Equity (k_e)	8.94%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.4

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.1
As of November 1, 2018

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	8.72%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.18%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	4.48%
Beta -Adjusted Equity Risk Premium	6.66%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	10.04%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.1

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.2
As of November 1, 2018

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	13.39%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	3.35%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	6.88%
Beta -Adjusted Equity Risk Premium	10.23%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	13.61%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.2

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.3
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	11.92%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.98%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	6.13%
Beta -Adjusted Equity Risk Premium	9.11%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	12.49%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.3

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.4
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	7.76%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	1.94%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	3.98%
Beta -Adjusted Equity Risk Premium	5.92%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	9.30%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.4

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.5
As of November 1, 2018

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	8.72%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.18%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	4.48%
Beta -Adjusted Equity Risk Premium	6.66%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	10.50%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.1

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.6
As of November 1, 2018

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	13.39%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	3.35%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	6.88%
Beta -Adjusted Equity Risk Premium	10.23%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	14.07%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.2

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.7
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	11.92%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.98%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	6.13%
Beta -Adjusted Equity Risk Premium	9.11%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	12.95%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.3

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Value Line Betas

Schedule C.8
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Value Line Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.70
NiSource	NI	0.55
New Jersey Resources	NJR	0.70
Northwest Natural Gas	NWN	0.65
One Gas	OGS	0.65
South Jersey Industries	SJI	0.75
Spire	SR	0.65
Southwest Gas	SWX	0.75
UGI	UGI	0.85

Mean 0.69

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.69
(3) Equity Risk Premium [ERP]	7.76%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	1.94%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.69
Weighted Risk Premium	3.98%
Beta -Adjusted Equity Risk Premium	5.92%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	9.76%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.4

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.9
As of November 1, 2018

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	8.72%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.18%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	4.30%
Beta -Adjusted Equity Risk Premium	6.48%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	9.86%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.1

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.10
As of November 1, 2018

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	13.39%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	3.35%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	6.60%
Beta -Adjusted Equity Risk Premium	9.95%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	13.33%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.2

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.11
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	11.92%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.98%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	5.88%
Beta -Adjusted Equity Risk Premium	8.86%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	12.24%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.3

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.12
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.38%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	7.76%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	1.94%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	3.82%
Beta -Adjusted Equity Risk Premium	5.76%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	9.14%

Notes:

- (1) 30-Year United States Treasury rate as of November 1, 2018
- (2) Average beta of comparable companies
- (3) See Schedule B.4

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.13
As of November 1, 2018

Market Risk Premium, Current Rf

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	8.72%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.18%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	4.30%
Beta -Adjusted Equity Risk Premium	6.48%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	10.32%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.1

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.14
As of November 1, 2018

Market Risk Premium, All Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	13.39%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	3.35%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	6.60%
Beta -Adjusted Equity Risk Premium	9.95%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	13.79%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.2

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.15
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	11.92%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	2.98%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	5.88%
Beta -Adjusted Equity Risk Premium	8.86%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	12.70%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.3

Northeast Ohio Natural Gas
Empirical Capital Asset Pricing Model - Bloomberg Betas

Schedule C.16
As of November 1, 2018

Market Risk Premium, All Dividend Paying Stocks in S&P 500 with ROE between 5% and 15%

Company Name	Ticker Symbol	Bloomberg Beta
Atmos Energy	ATO	0.60
Chesapeake Utilities	CPK	0.64
NiSource	NI	0.67
New Jersey Resources	NJR	0.71
Northwest Natural Gas	NWN	0.61
One Gas	OGS	0.68
South Jersey Industries	SJI	0.71
Spire	SR	0.58
Southwest Gas	SWX	0.66
UGI	UGI	0.73

Mean 0.66

Empirical Capital Asset Pricing Model (ECAPM) Calculations	
(1) Risk-free rate [Rf]	3.84%
(2) Beta	0.66
(3) Equity Risk Premium [ERP]	7.76%
<u>Unadjusted Risk Premium</u>	
Weight	25.00%
Weighted Risk Premium	1.94%
<u>Adjusted Risk Premium</u>	
Weight	75.00%
Beta	0.66
Weighted Risk Premium	3.82%
Beta -Adjusted Equity Risk Premium	5.76%
Ke = Rf + Beta Adjusted Risk Premium	
ECAPM Cost of Equity (k_e)	9.60%

Notes:

- (1) Forecasted 30-Year United States Treasury rate, see Schedule A.2
- (2) Average beta of comparable companies
- (3) See Schedule B.4

		(1)	(4)	(2)		(3)		(5)
		Stock	Annual	Est Next	Dividend	Value Line	Calculated	
Company	Ticker	Price (P0)	Div (D0)	Year's	Yield	Earnings	ROE =	Selected
				Div (D1)	D1/P0	Growth (G)	D1/P0 + G	ROE's
Atmos Energy	ATO	\$94.66	\$1.94	\$2.01	2.13%	7.50%	9.63%	9.63%
Chesapeake Utilities	CPK	\$82.10	\$1.35	\$1.40	1.71%	8.50%	10.21%	10.21%
NiSource	NI	\$25.20	\$0.76	\$0.83	3.29%	18.00%	21.29%	
New Jersey Resources	NJR	\$45.88	\$1.09	\$1.14	2.49%	9.50%	11.99%	11.99%
Northwest Natural Gas	NWN	\$68.18	\$1.89	\$2.18	3.20%	30.50%	33.70%	
One Gas	OGS	\$81.66	\$1.80	\$1.89	2.32%	10.50%	12.82%	12.82%
South Jersey Industries	SJI	\$33.56	\$1.11	\$1.17	3.47%	9.50%	12.97%	12.97%
Spire	SR	\$73.51	\$2.21	\$2.30	3.12%	7.50%	10.62%	10.62%
Southwest Gas	SWX	\$79.57	\$2.03	\$2.12	2.67%	9.00%	11.67%	11.67%
UGI	UGI	\$54.59	\$1.01	\$1.05	1.92%	8.00%	9.92%	9.92%
GROUP AVERAGE								11.23%

Notes:

(1) Source: Bloomberg, Last 30 Day Average Trading Price

(2) $D(1) = D(0) * (1+g/2)$

(3) Estimated '15-'17 to '21 - '23 annual earnings growth rate (Source: Value Line)

(4) Trailing 4 Quarters Dividend from Value Line

(5) Outliers Excluded

Summary of Assumptions and Conclusions								
Company Name	Ticker	Stock Price	Cash Flows			Price	Calculated IRR	Selected IRR
			Year 1 Div	Year 2 Div	Year 3 Div			
Atmos Energy	ATO	(\$94.66)	\$2.01	\$2.26	\$2.50	\$117	9.50%	9.50%
Chesapeake Utilities	CPK	(\$82.10)	\$1.40	\$1.70	\$2.00	\$121	15.62%	15.62%
NiSource	NI	(\$25.20)	\$0.83	\$1.01	\$1.20	\$39	19.51%	19.51%
New Jersey Resources	NJR	(\$45.88)	\$1.14	\$1.19	\$1.24	\$59	10.96%	10.96%
Northwest Natural Gas	NWN	(\$68.18)	\$2.18	\$2.19	\$2.20	\$97	15.46%	15.46%
One Gas	OGS	(\$81.66)	\$1.89	\$2.20	\$2.50	\$111	13.24%	13.24%
South Jersey Industries	SJI	(\$33.56)	\$1.17	\$1.26	\$1.35	\$51	18.27%	18.27%
Spire	SR	(\$73.51)	\$2.30	\$2.40	\$2.50	\$99	13.21%	13.21%
Southwest Gas	SWX	(\$79.57)	\$2.12	\$2.36	\$2.60	\$109	13.57%	13.57%
UGI	UGI	(\$54.59)	\$1.05	\$1.09	\$1.12	\$66	8.55%	8.55%
Mean								13.79%

* Outliers excluded

* Price in final year equals ValueLine P/E ratio x Forecast EPS

* Year 1 Dividend = VL Trailing 4 Quarters Dividend * (1+ VL Growth Rate/2), Schedule D.1

* Last Year's Dividend = VL 2021 - 2023 Forecast Dividend

Source: Value Line estimates, Bloomberg

Summary of Assumptions and Conclusions									
Company Name	Ticker	Stock Price	Cash Flows				Calculated IRR	Selected IRR	
			Year 1 Div	Year 2 Div	Year 3 Div	Year 4 Div			
Atmos Energy	ATO	(\$94.66)	\$2.01	\$2.18	\$2.34	\$2.50	\$117	7.61%	7.61%
Chesapeake Utilities	CPK	(\$82.10)	\$1.40	\$1.60	\$1.80	\$2.00	\$121	11.97%	11.97%
NiSource	NI	(\$25.20)	\$0.83	\$0.95	\$1.08	\$1.20	\$39	15.21%	15.21%
New Jersey Resources	NJR	(\$45.88)	\$1.14	\$1.18	\$1.21	\$1.24	\$59	8.73%	8.73%
Northwest Natural Gas	NWN	(\$68.18)	\$2.18	\$2.19	\$2.19	\$2.20	\$97	12.13%	12.13%
One Gas	OGS	(\$81.66)	\$1.89	\$2.10	\$2.30	\$2.50	\$111	10.40%	10.40%
South Jersey Industries	SJI	(\$33.56)	\$1.17	\$1.23	\$1.29	\$1.35	\$51	14.27%	14.27%
Spire	SR	(\$73.51)	\$2.30	\$2.36	\$2.43	\$2.50	\$99	10.52%	10.52%
Southwest Gas	SWX	(\$79.57)	\$2.12	\$2.28	\$2.44	\$2.60	\$109	10.71%	10.71%
UGI	UGI	(\$54.59)	\$1.05	\$1.07	\$1.10	\$1.12	\$66	6.83%	6.83%
							Mean		10.84%

* Outliers excluded

* Price in final year equals ValueLine P/E ratio x Forecast EPS

* Year 1 Dividend = VL Trailing 4 Quarters Dividend * (1+ VL Growth Rate/2), Schedule D.1

* Last Year's Dividend = VL 2021 - 2023 Forecast Dividend

Source: Value Line estimates, Bloomberg

Summary of Assumptions and Conclusions										
Company Name	Ticker	Stock Price	Cash Flows					Calculated IRR	Selected IRR	
			Year 1 Div	Year 2 Div	Year 3 Div	Year 4 Div	Year 5 Div			
Atmos Energy	ATO	(\$94.66)	\$2.01	\$2.13	\$2.26	\$2.38	\$2.50	\$117	6.50%	6.50%
Chesapeake Utilities	CPK	(\$82.10)	\$1.40	\$1.55	\$1.70	\$1.85	\$2.00	\$121	9.83%	9.83%
NiSource	NI	(\$25.20)	\$0.83	\$0.92	\$1.01	\$1.11	\$1.20	\$39	12.70%	12.70%
New Jersey Resources	NJR	(\$45.88)	\$1.14	\$1.17	\$1.19	\$1.22	\$1.24	\$59	7.41%	7.41%
Northwest Natural Gas	NWN	(\$68.18)	\$2.18	\$2.18	\$2.19	\$2.19	\$2.20	\$97	10.18%	10.18%
One Gas	OGS	(\$81.66)	\$1.89	\$2.05	\$2.20	\$2.35	\$2.50	\$111	8.73%	8.73%
South Jersey Industries	SJI	(\$33.56)	\$1.17	\$1.21	\$1.26	\$1.30	\$1.35	\$51	11.93%	11.93%
Spire	SR	(\$73.51)	\$2.30	\$2.35	\$2.40	\$2.45	\$2.50	\$99	8.94%	8.94%
Southwest Gas	SWX	(\$79.57)	\$2.12	\$2.24	\$2.36	\$2.48	\$2.60	\$109	9.02%	9.02%
UGI	UGI	(\$54.59)	\$1.05	\$1.07	\$1.09	\$1.10	\$1.12	\$66	5.80%	5.80%
Mean									9.10%	

* Outliers excluded

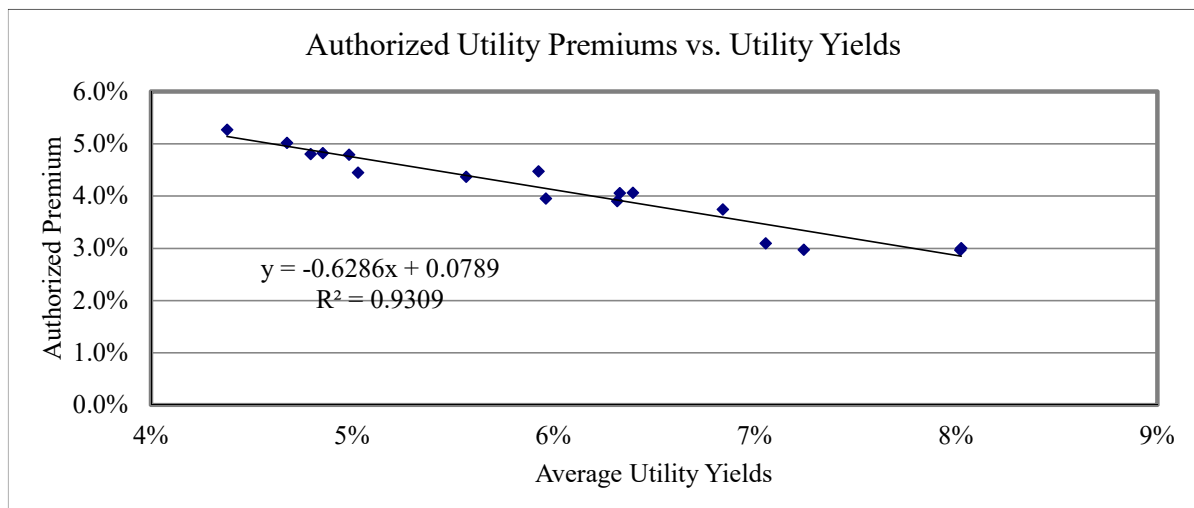
* Price in final year equals ValueLine P/E ratio x Forecast EPS

* Year 1 Dividend = VL Trailing 4 Quarters Dividend * (1+ VL Growth Rate/2), Schedule D.1

* Last Year's Dividend = VL 2021 - 2023 Forecast Dividend

Source: Value Line estimates, Bloomberg

Moody's Average Public Utility		Authorized Gas Utility		
Year	Bond Yields (1)	Year	Equity Returns	Premiums (2)
2001	8.03%	2002	11.03%	3.00%
2002	8.02%	2003	10.99%	2.97%
2003	6.84%	2004	10.59%	3.75%
2004	6.40%	2005	10.46%	4.07%
2005	5.93%	2006	10.40%	4.48%
2006	6.32%	2007	10.22%	3.90%
2007	6.33%	2008	10.39%	4.06%
2008	7.24%	2009	10.22%	2.98%
2009	7.05%	2010	10.15%	3.10%
2010	5.96%	2011	9.92%	3.96%
2011	5.57%	2012	9.94%	4.37%
2012	4.85%	2013	9.68%	4.83%
2013	4.98%	2014	9.78%	4.80%
2014	4.79%	2015	9.60%	4.81%
2015	5.03%	2016	9.48%	4.45%
2016	4.68%	2017	9.70%	5.02%
2017	4.38%	2018	9.65%	5.27%



November 1, 2018

Indicated Cost of Equity

Utility Bond Yield

Baa Utility

4.99%

Indicated Equity Premium

Intercept

0.0789

Variable

-0.6286

Equity Premium Indicated

4.75%

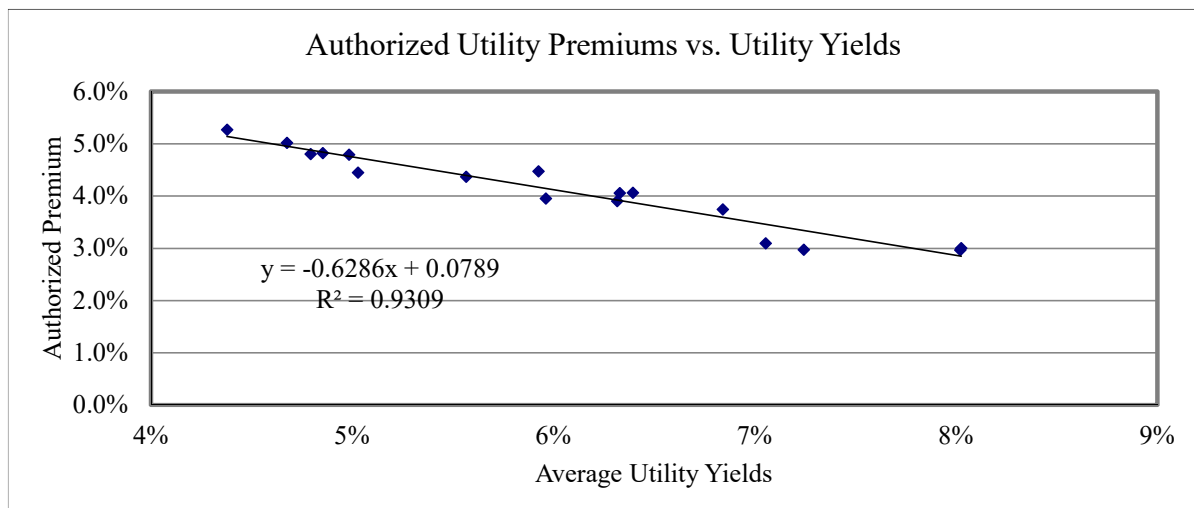
Indicated Equity Return

9.74%

(1) 12 Mo. Avg Yield From Bloomberg Professional Service - Adjusted for 12 Mo. Reg. Lag
2002 Authorized Returns Compared with 2001 Utility Bond Yields

(2) Returns over Utility Bond Yields, Regulatory Research Associates' Regulatory Focus

Moody's Average Public Utility		Authorized Gas Utility		
Year	Bond Yields (1)	Year	Equity Returns	Premiums (2)
2001	8.03%	2002	11.03%	3.00%
2002	8.02%	2003	10.99%	2.97%
2003	6.84%	2004	10.59%	3.75%
2004	6.40%	2005	10.46%	4.07%
2005	5.93%	2006	10.40%	4.48%
2006	6.32%	2007	10.22%	3.90%
2007	6.33%	2008	10.39%	4.06%
2008	7.24%	2009	10.22%	2.98%
2009	7.05%	2010	10.15%	3.10%
2010	5.96%	2011	9.92%	3.96%
2011	5.57%	2012	9.94%	4.37%
2012	4.85%	2013	9.68%	4.83%
2013	4.98%	2014	9.78%	4.80%
2014	4.79%	2015	9.60%	4.81%
2015	5.03%	2016	9.48%	4.45%
2016	4.68%	2017	9.70%	5.02%
2017	4.38%	2018	9.65%	5.27%



Indicated Cost of Equity

Utility Bond Yield - Forecasted (Schedule E.5)

Forecasted

Baa Utility

5.45%

Indicated Equity Premium

Intercept

0.0789

Variable

-0.6286

Equity Premium Indicated

4.46%

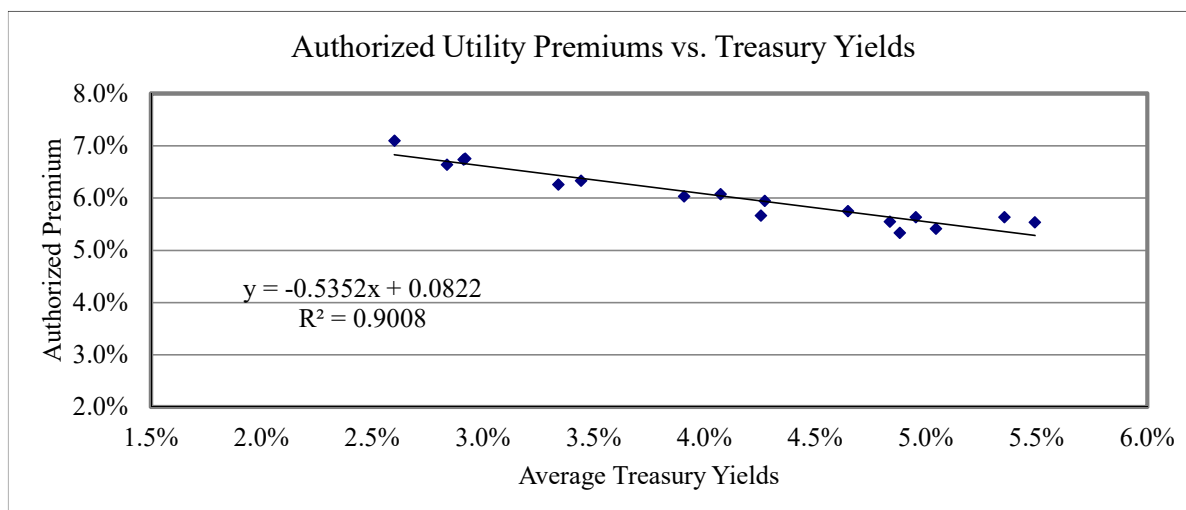
Indicated Equity Return

9.91%

(1) 12 Mo. Avg Yield From Bloomberg Professional Service - Adjusted for 12 Mo. Reg. Lag
2002 Authorized Returns Compared with 2001 Utility Bond Yields

(2) Returns over Utility Bond Yields, Regulatory Research Associates' Regulatory Focus

Year	Avg of Quarterly 30 Year Treasury Bond Yields (1)	Authorized Gas Utility	
		Year	Premiums (2)
2001	5.49%	2002	11.03%
2002	5.36%	2003	10.99%
2003	4.96%	2004	10.59%
2004	5.05%	2005	10.46%
2005	4.65%	2006	10.40%
2006	4.88%	2007	10.22%
2007	4.84%	2008	10.39%
2008	4.27%	2009	10.22%
2009	4.07%	2010	10.15%
2010	4.26%	2011	9.92%
2011	3.91%	2012	9.94%
2012	2.92%	2013	9.68%
2013	3.44%	2014	9.78%
2014	3.34%	2015	9.60%
2015	2.84%	2016	9.48%
2016	2.60%	2017	9.70%
2017	2.91%	2018	9.65%



November 1, 2018

Indicated Cost of Equity

Treasury Bond Yield

30 Year

3.38%

Indicated Equity Return

Intercept

0.0822

Variable

-0.5352

Equity Premium Indicated

6.41%

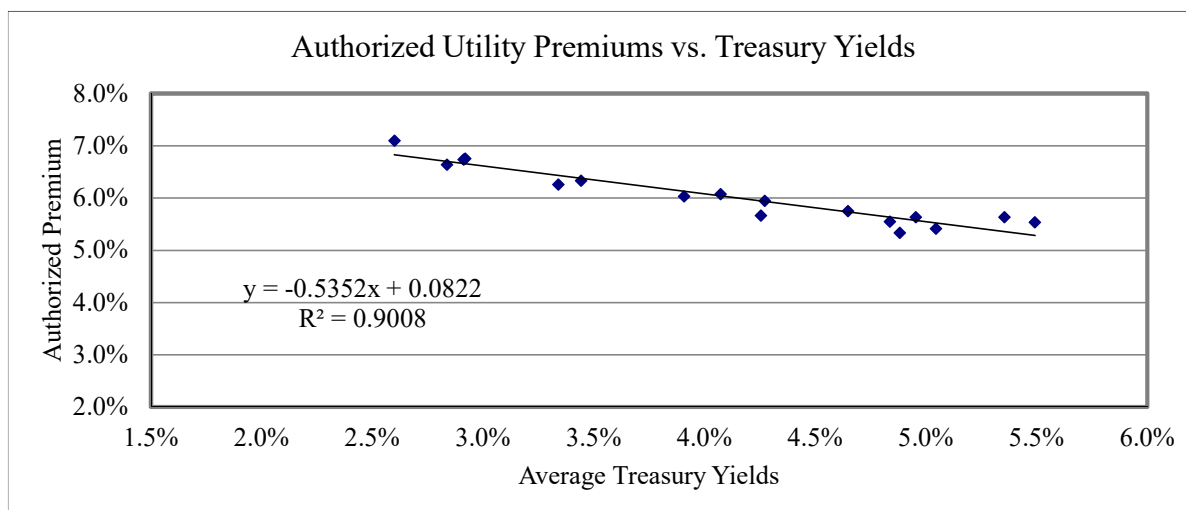
Indicated Equity Return

9.79%

(1) Average Quarterly Yields of Long-Term Government Bonds from Bloomberg- Adjusted for 12 Mo. Reg. Lag
2002 Authorized Returns Compared with 2001 Average Bond Yields

(2) Returns over Treasury Bond Yields, Regulatory Research Associates' Regulatory Focus

Year	Avg of Quarterly 30 Year Treasury Bond Yields (1)	Authorized Gas Utility	
		Year	Premiums (2)
2001	5.49%	2002	11.03%
2002	5.36%	2003	10.99%
2003	4.96%	2004	10.59%
2004	5.05%	2005	10.46%
2005	4.65%	2006	10.40%
2006	4.88%	2007	10.22%
2007	4.84%	2008	10.39%
2008	4.27%	2009	10.22%
2009	4.07%	2010	10.15%
2010	4.26%	2011	9.92%
2011	3.91%	2012	9.94%
2012	2.92%	2013	9.68%
2013	3.44%	2014	9.78%
2014	3.34%	2015	9.60%
2015	2.84%	2016	9.48%
2016	2.60%	2017	9.70%
2017	2.91%	2018	9.65%



Indicated Cost of Equity

Treasury Bond Yield - Forecasted (Schedule A.2)

Forecasted
30 Year
3.84%

Indicated Equity Return

Intercept

0.0822

Variable

-0.5352

Equity Premium Indicated

6.16%

Indicated Equity Return

10.00%

(1) Average Quarterly Yields of Long-Term Government Bonds from Bloomberg- Adjusted for 12 Mo. Reg. Lag
2002 Authorized Returns Compared with 2001 Average Bond Yields

(2) Returns over Treasury Bond Yields, Regulatory Research Associates' Regulatory Focus

Calculation of Forecasted Utility Bond Yield

Calculation of Forecasted Utility Yield	
Moody's Utility Bond Yield - November 1, 2018 (1)	4.99%
30 Year Treasury Yield - November 1, 2018	3.38%
Utility Yield Spread	<hr/> 1.61%
30 Year Treasury Yield - Forecasted (2)	3.84%
plus: Utility Yield Spread	1.61%
Forecasted Utility Bond Yield	5.45%

Notes:

(1) Bloomberg

(2) See Schedule A.2

Company	Ticker	(1) Forecast 2018 Earnings per Share	Forecast 2018 Book Value per Share	Forecast 2019 Book Value per Share	(2) Avg Book Value per Share	Calculated ROE	(3) Selected ROE
Atmos Energy	ATO	\$3.95	\$42.90	\$41.40	\$42.15	9.37%	9.37%
Chesapeake Utilities	CPK	\$3.15	\$31.80	\$34.95	\$33.38	9.44%	9.44%
NiSource	NI	\$1.35	\$14.15	\$14.90	\$14.53	9.29%	9.29%
New Jersey Resources	NJR	\$2.65	\$15.95	\$17.60	\$16.78	15.80%	15.80%
Northwest Natural Gas	NWN	\$2.25	\$26.35	\$27.30	\$26.83	8.39%	8.39%
One Gas	OGS	\$3.35	\$40.25	\$39.20	\$39.73	8.43%	8.43%
South Jersey Industries	SJI	\$1.70	\$15.85	\$17.85	\$16.85	10.09%	10.09%
Spire	SR	\$4.50	\$41.60	\$43.40	\$42.50	10.59%	10.59%
Southwest Gas	SWX	\$3.90	\$40.80	\$43.50	\$42.15	9.25%	9.25%
UGI	UGI	\$2.77	\$19.90	\$21.85	\$20.88	13.27%	13.27%
GROUP AVERAGE							10.39%

Notes:

(1) Source: Value Line

(2) Average of 2018 and 2019 Book Values Per Share (Source: Value Line)

(3) Outliers Excluded

Northeast Ohio Natural Gas
ROE Based on Expected Earnings - 2021 - 2023 Estimates

Schedule F.2
As of November 1, 2018

Company	Ticker	(1)	(2)	2021-2023 Calculated ROE	(3)
		2021-2023 Forecast Earnings per Share	2021-2023 Forecast Book Value per Share		2021-2023 Selected ROE
Atmos Energy	ATO	\$5.15	\$46.55	11.06%	11.06%
Chesapeake Utilities	CPK	\$4.50	\$45.50	9.89%	9.89%
NiSource	NI	\$1.80	\$15.00	12.00%	12.00%
New Jersey Resources	NJR	\$2.95	\$22.70	13.00%	13.00%
Northwest Natural Gas	NWN	\$3.50	\$29.40	11.90%	11.90%
One Gas	OGS	\$4.75	\$43.40	10.94%	10.94%
South Jersey Industries	SJI	\$2.30	\$22.65	10.15%	10.15%
Spire	SR	\$5.00	\$48.10	10.40%	10.40%
Southwest Gas	SWX	\$5.40	\$52.85	10.22%	10.22%
UGI	UGI	\$3.40	\$28.45	11.95%	11.95%
GROUP AVERAGE					11.15%

Notes:

(1) Source: Value Line

(2) Source: Value Line

(3) Outliers Excluded

**Northeast Ohio Natural Gas
D&P Small Stock Risk Premium (SSRP) Table**

Schedule G.1

Market Capitalization Deciles	Market Cap Range (\$millions)			Size Premium
	Low		High	
1-Largest	\$25,143	-	\$790,050	0.00%
2	\$12,068	-	\$25,096	0.56%
3	\$6,558	-	\$11,979	0.87%
4	\$4,098	-	\$6,546	0.90%
5	\$2,764	-	\$4,092	1.38%
6	\$1,816	-	\$2,760	1.60%
7	\$1,175	-	\$1,815	1.58%
8	\$658	-	\$1,170	1.88%
9	\$299	-	\$657	2.50%
10-Smallest	\$3	-	\$299	5.37%

Source: Duff & Phelps 2018 Cost of Capital Navigator

Company Name	Ticker Symbol	(1) Shares Out (000's)	(2) Share Price	Market Cap (\$Millions)	(3) SSRP	(4) Market to Book Ratio
Atmos Energy	ATO	111,201	\$94.66	\$10,526	0.87%	2.21
Chesapeake Utilities	CPK	16,379	\$82.10	\$1,345	1.58%	2.65
NiSource	NI	363,037	\$25.20	\$9,148	0.87%	1.95
New Jersey Resources	NJR	88,277	\$45.88	\$4,050	1.38%	2.79
Northwest Natural Gas	NWN	28,800	\$68.18	\$1,963	1.60%	2.66
One Gas	OGS	52,518	\$81.66	\$4,288	0.90%	2.13
South Jersey Industries	SJI	85,506	\$33.56	\$2,870	1.38%	2.32
Spire	SR	50,669	\$73.51	\$3,725	1.38%	1.61
Southwest Gas	SWX	49,134	\$79.57	\$3,909	1.38%	2.02
UGI	UGI	173,862	\$54.59	\$9,492	0.87%	2.56
				\$51,317		
Average					1.22%	2.29
Median					1.38%	
		<u>Book Value</u>	<u>Avg Market</u>	<u>Est Market Cap</u>	<u>Indicated</u>	
		<u>(\$Millions)</u>	<u>to Book Ratio</u>	<u>(\$Millions)</u>	<u>SSRP</u>	
Northeast Ohio Natural Gas		\$19.74	2.29	\$45.23	5.37%	
Small Company Differential						
10th Decile SSRP of 5.37% for Northeast Ohio Natural Gas						
vs Comparable Group Mean of	1.22%	results in additional risk premium of			4.15%	
Additional Risk Indicators						
				<u>Low</u>	<u>High</u>	
Private Equity Liquidity Effects				3.0%	3.0%	
Chicago Booth Study				4.0%	5.0%	
Concluded Business Risk Adjustment Range				1.00%	2.00%	

(1) Source: Value Line

(2) Source: Bloomberg 30 day average

(3) Schedule G.1

(4) Source: S&P Capital IQ (book values provided on Schedule H)

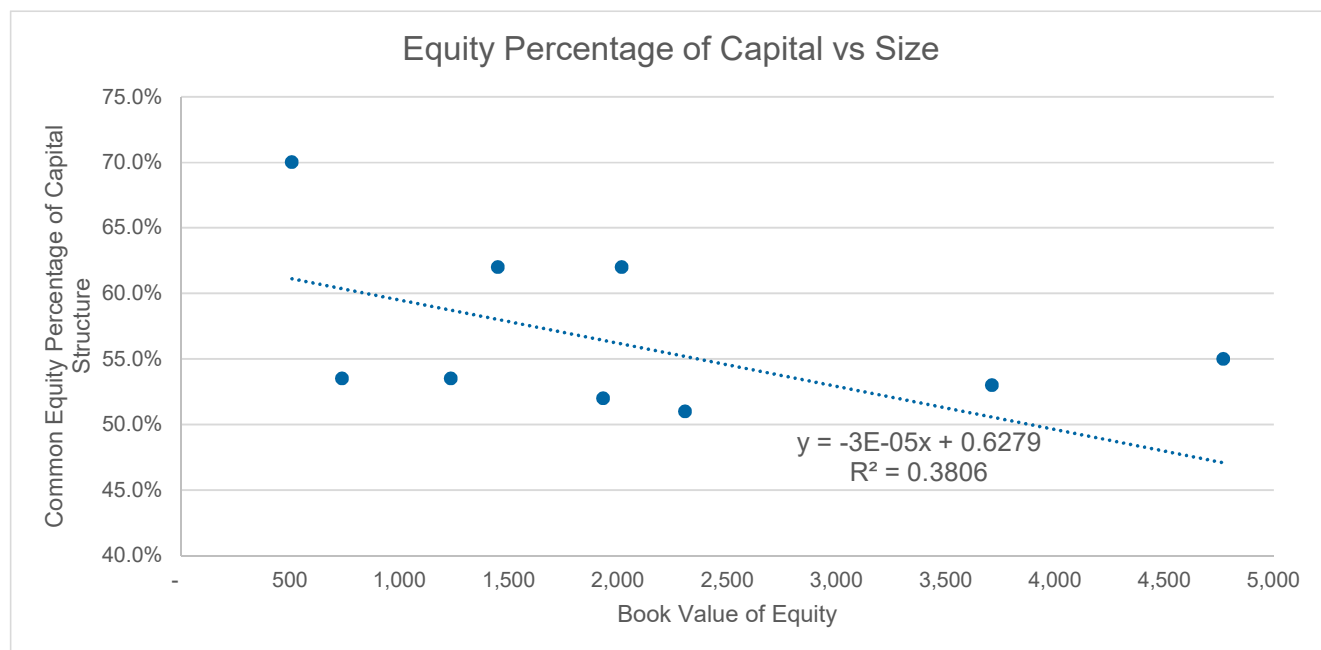
**Northeast Ohio Natural Gas
Comparable Utility Capital Structures**

**Schedule H.1
As of November 1, 2018**

Company Name	Ticker	Book Value of Equity \$M	Common Equity	Long-Term Debt	Other
Atmos Energy	ATO	4,770	55.0%	45.0%	0.0%
Chesapeake Utilities	CPK	508	70.0%	30.0%	0.0%
NiSource	NI	4,680	39.0%	61.0%	0.0%
New Jersey Resources	NJR	1,450	62.0%	38.0%	0.0%
Northwest Natural Gas	NWN	738	53.5%	46.5%	0.0%
One Gas	OGS	2,017	62.0%	38.0%	0.0%
South Jersey Industries	SJI	1,235	53.5%	46.5%	0.0%
Spire	SR	2,308	51.0%	49.0%	0.0%
Southwest Gas	SWX	1,933	52.0%	48.0%	0.0%
UGI	UGI	3,711	53.0%	47.0%	0.0%
Mean			55.1%	44.9%	0.0%
Median			53.5%	46.5%	0.0%

(1) S&P Capital IQ

(2) Value Line



Regression Formula

Book Value of Equity - \$M

\$35.83

Coefficient

-0.003%

-0.118%

Intercept

62.8%

Regression Formula Result

Common Equity %

62.7%

Requested Equity %

64.5%

Delta

1.79%

Standard Error

6.89%

Delta % of Standard Error

26%

REGRESSION DETAILS

<i>Regression Statistics</i>	
Multiple R	0.61692
R Square	0.38059
Adjusted R Square	0.303164
Standard Error	0.068859
Observations	10

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept - Equity Capital Percentage	0.627933	0.04096619	15.32807003	3.25802E-07
Book Value of Equity	-3.3E-05	1.48615E-05	-2.217096778	0.05744165

	Book Value	% of Capital Structure
Long-Term Debt	\$19,743,460	35.53%
Common Equity	\$35,831,416	64.47%
Total	\$55,574,876	100.00%

	% of Capital Structure	Cost	Weighted Cost
Long-Term Debt	35.53%	4.72%	1.68%
Common Equity	64.47%	10.83%	6.98%
Total	100.00%		8.66%

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Case No(s). 18-1720-GA-AIR, 18-1721-GA-ATA, 18-1722-GA-ALT

Summary: Testimony Direct Testimony of Gregory E. Scheig electronically filed by Mr. Trevor Alexander on behalf of Northeast Ohio Natural Gas Corp. and Brainard Gas Corp. and Spelman Pipeline Holdings, LLC and Orwell Natural Gas Company