BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

IN THE MATTER OF THE APPLICATION OF DOMINION ENERGY UTAH TO INCREASE DISTRIBUTION RATES AND CHARGES AND MAKE TARIFF MODIFICATIONS	Docket No. 19-057-02

REBUTTAL TESTIMONY OF

ROBERT B. HEVERT

FOR DOMINION ENERGY UTAH

November 14, 2019

DEU Exhibit 2.0R

EXHIBIT 2.0R
WIT: DEU
DATE: 12-17-19
ADVANCED REPORTING SOLUTIONS

TABLE OF CONTENTS

GLOSSARY OF FREQUENTLY USED TERMS

TERM	DESCRIPTION
Beta Coefficient	A component of the CAPM that measures the risk of a given stock relative to the risk of the overall market.
Bond Yield Plus Risk Premium Approach	A risk premium model used to estimate the Cost of Equity. The Bond Yield Plus Risk Premium approach assumes that investors require a risk premium over the Cost of Debt as compensation for assuming the greater risk of common equity investment. The model is expressed as a bond yield plus equity risk premium.
Capital Asset Pricing Model ("CAPM")	A risk premium-based model used to estimate the Cost of Equity, assuming the stock is added to a well-diversified portfolio. The CAPM assumes that investors are compensated for the time value of money (represented by the Risk-Free Rate), and risk (represented by the combination of the Beta Coefficient and the Market Risk Premium).
Constant Growth DCF Model	A form of the DCF model that assumes cash flows will grow at a constant rate, in perpetuity. The model simplifies to a form that expresses the Cost of Equity as the sum of the expected dividend yield and the expected growth rate.
Cost of Debt	The contractually defined return to debt holders as the interest rate or yield on debt securities.
Cost of Equity	The return required by investors to invest in equity securities. The terms "Return on Equity" and "Cost of Equity" are used interchangeably.
Discounted Cash Flow ("DCF") Model	A model used to estimate the Cost of Equity based on expected cash flows. The Cost of Equity equals the discount rate that sets the current market price equal to the present value of expected cash flows.
Dividend Yield	For a given stock, the current annualized dividend divided by its current market price.
Empirical Capital Asset Pricing Model ("ECAPM")	Empirical CAPM is a variant of the CAPM model. ECAPM adjusts for the CAPM's tendency to under-estimate returns for companies that have Beta coefficients less than one, and over-estimate returns for relatively high-Beta coefficient stocks.
Expected Earnings	An analysis of actual expected earnings used to corroborate a reasonable ROE range.

TERM	**DESCRIPTION**
Flotation Costs	Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing, underwriting and other issuance costs of common stock.
Gross Domestic Product ("GDP")	The value of all finished goods and services produced within a country during a given period of time (usually measured annually). GDP includes public and private consumption, government expenditures, investments, and net exports (that is, exports minus imports).
Market Return	The expected return on the equity market, taken as a portfolio.
Market Risk Premium ("MRP")	The additional compensation required by investing in the equity market as a portfolio over the Risk-Free rate. The Market Risk Premium is a component of the CAPM.
Market-to-Book Ratio ("Market/Book")	The ratio of the current market value (*i.e.*, current market value of all outstanding shares) to the book value (*i.e.*, net assets) of a company. Also referred to as the "Price/Book" ratio.
Proxy Group	A group of publicly traded companies used as the "proxy" for the subject company (in this case, Dominion Energy Utah). Proxy companies are sometimes referred to as "Comparable Companies."
Return on Equity ("ROE")	The return required by investors to invest in equity securities. The terms "Return on Equity" and "Cost of Equity" are used interchangeably. Please note that the ROE in this context is distinct from the accounting measure sometimes referred to as the "Return on Average Common Equity".
Risk-Free Rate	The rate of return on an asset with no risk of default.
Risk Premium	The additional compensation required by investors for taking on additional increments of risk. Risk Premium-based approaches are used in addition to the DCF and CAPM to estimate the Cost of Equity.
Treasury Yield	The return on Treasury securities; the yield on long-term Treasury bonds is considered to be a measure of the Risk-Free Rate.

I. INTRODUCTION AND SUMMARY

Q. Please state your name, affiliation, and business address.

A. My name is Robert B. Hevert. I am a Partner at ScottMadden, Inc. and my business address is 1900 West Park Drive, Suite 250, Westborough, MA 01581.

Q. On whose behalf are you submitting this testimony?

A. I am submitting this rebuttal testimony ("Rebuttal Testimony") before the Public Service Commission of Utah ("Commission") on behalf of Dominion Energy Utah ("DEU" or the "Company").

Q. Are you the same Robert B. Hevert who filed Direct Testimony in this proceeding on July 1, 2019?

A. Yes, I am.

Q. What is the purpose of your Rebuttal Testimony?

A. The purpose of my Rebuttal Testimony is to respond to the direct testimony of the following witnesses (collectively, "Opposing Witnesses") as their testimonies relate to the Company's Return on Equity ("ROE") and capital structure:

- Mr. Casey J. Coleman, who testifies on behalf of the Utah Department of Commerce, Division of Public Utilities (the "Division");
- Mr. Daniel J. Lawton, who testifies on behalf of the Utah Office Consumer Services ("OCS");
- Mr. Michael P. Gorman, who testifies on behalf of Federal Executive Agencies ("FEA");
- Mr. Bruce R. Oliver, who testifies on behalf of the American Natural Gas Council ("ANGC"); and

- Mr. Kevin C. Higgins, who testifies on behalf of the Utah Association of Energy Users Intervention Group ("UAE").

Positions not addressed in my Rebuttal Testimony should not be construed to mean I agree with the points raised in the direct testimony of the Opposing Witnesses.

Q. Please provide a summary overview of the recommendations contained in your Rebuttal Testimony.

A. In my Direct Testimony, I concluded an ROE of 10.50 percent represents the Cost of Equity for the Company, within a range of 9.90 percent to 10.75 percent.[1] As my Direct Testimony discussed, my ROE recommendation considers a variety of factors, including capital market conditions in general and certain risks faced by the Company. Because the application of financial models and the interpretation of their results are often sources of disagreement among analysts in regulatory proceedings, I believe it is important to review and consider a variety of data points; doing so enables us to put in context both quantitative analyses and the associated recommendations.

Q. Have you updated the ROE analyses included in your Direct Testimony?

A. Yes, I have updated my Constant Growth Discounted Cash Flow ("DCF"), Capital Asset Pricing Model ("CAPM"), Empirical CAPM ("ECAPM"), Bond Yield Plus Risk Premium, and Expected Earnings analyses to reflect data as of September 30, 2019.[2]

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[1] Direct Testimony of Robert B. Hevert, at 2.
[2] *See*, DEU Exhibit 2.01R through DEU Exhibit 2.07R.

Q. Have you made any changes to the proxy group presented in your Direct Testimony?

A. Yes, I removed Chesapeake Utilities Corporation ("Chesapeake") because it no longer meets my screening criterion requiring proxy companies to derive at least 60.00 percent of consolidated operating income from regulated natural gas operations. I refer to the resulting proxy group as the "Updated Proxy Group".

Q. Have the conclusions presented in your Direct Testimony changed based on those updated analyses?

A. No, they have not. The analyses contained in my Rebuttal Testimony continue to support a range of 9.90 percent to 10.75 percent, with a specific ROE recommendation of 10.50 percent. I also continue to find the Company's proposed capital structure, which is within the range of those found at other natural gas utilities,[3] to be reasonable and appropriate.

Q. Please provide an overview of your response to the ROE recommendations provided by the Opposing Witnesses.

A. Table 1 (below) summarizes the Opposing Witnesses' ROE recommendations.

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3 *See*, DEU Exhibit 2.08R.

Table 1: Summary of ROE Recommendations

	ROE Range		
Witness	**Low**	**High**	**ROE Recommendation**
Mr. Coleman (Division)	8.09%	9.55%	9.25%[4]
Mr. Lawton (OCS)	8.55%	9.68%	9.10%[5]
Mr. Gorman (FEA)	8.70%	9.00%	9.00%[6]
Mr. Oliver (ANGC)	8.50%	9.50%	9.50%[7]
Mr. Higgins (UES)	NA	NA	NA[8]
Mr. Hevert (DEU)	9.90%	10.75%	10.50%

Given their common dependence on certain models and assumptions, it is not surprising that the Opposing Witnesses' recommendations generally fall within a narrow range. But the fact that their recommendations are similar does not mean their approaches and conclusions are reasonable. Even the highest of their recommendations (Mr. Oliver's 9.50 percent) is 20 basis points below the average authorized ROE for natural gas utilities in 2019.[9]

It is important to keep in mind that no one financial model is more reliable than others at all times and under all market conditions. The models used to estimate the Cost of Equity are general descriptions of investor behavior, not precise quantifications of it. Consequently, we should not take all model results as given, or assume they necessarily are reasonable measures of the Cost of Equity. Rather, we should use reasoned judgment

4 Direct Testimony of Casey J. Coleman, at 17.

5 Direct Rate of Return Testimony of Daniel J. Lawton, at 3.

6 Direct Testimony and Exhibits of Michael P. Gorman, at 68; low recommendation represents his Risk Premium-based and CAPM-based estimates, and the high recommendation represents his DCF-based recommendation. *See,* Mr. Gorman's Table 10.

7 Direct Testimony of Bruce R. Oliver, at 4.

8 Mr. Higgins does not perform an independent analysis of the Company's Cost of Equity.

9 Source: Regulatory Research Associates ("RRA"). *See,* DEU Exhibit 2.09R.

in applying those models and assessing the reasonableness of their results. As discussed throughout my Rebuttal Testimony, there are several areas in which I disagree with the Opposing Witnesses' analyses, and the conclusions they draw from them. On balance, I continue to find an ROE of 10.50 percent, within a range of 9.90 percent to 10.75 percent, represents a reasonable estimate of investors' required Cost of Equity for DEU.

Q. How is the remainder of your Rebuttal Testimony organized?

A. The balance of my Rebuttal Testimony is organized as follows:

- Section II – Responds to Division Witness Mr. Coleman;
- Section III – Responds to OCS Witness Mr. Lawton;
- Section IV – Responds to FEA Witness Mr. Gorman;
- Section V – Responds to ANGC Witness Mr. Oliver;
- Section VI – Responds to UAE Witness Mr. Higgins; and
- Section VII – Summarizes my updated analytical results and conclusions.

II. RESPONSE TO DIVISION WITNESS MR. COLEMAN

Q. Please provide a brief summary of Mr. Coleman's analyses and recommendations regarding the Company's Cost of Equity.

A. Mr. Coleman recommends an ROE of 9.25 percent, toward the upper end of his recommended range of 8.09 percent to 9.55 percent.[10] He establishes his recommended ROE based on his Constant Growth Discounted Cash Flow ("DCF"), Capital Asset Pricing Model ("CAPM"), and Bond Yield Risk Premium results, along with a review of authorized ROEs for natural gas utilities across the country since January 2017 and for

10 Direct Testimony of Casey J. Coleman, at 3.

other Dominion Energy, Inc. ("Dominion Energy") operating subsidiaries.[11] Mr. Coleman also accepts the Company's proposed capital structure consisting of 55.00 percent Common Equity and 45.00 percent Long-Term Debt, and recommends a Cost of Debt of 4.25 percent.[12] Table 2 below summarizes Mr. Coleman's analytical results.

Table 2: Summary of Mr. Coleman's Analytical Results and ROE Recommendation[13]

Method	ROE Estimate
Constant Growth DCF (Value Line)	10.33%[14]
Constant Growth DCF (Zacks, First Call, & Value Line)	8.82%[15]
CAPM	5.93% – 7.15%
Risk Premium	8.94%
Risk Premium/Financial Strength	9.52%
Mean	8.11%
Median	8.82%
Recommendation	9.25%

Q. What are the principal analytical areas in which you disagree with Mr. Coleman?

A. The principal areas of disagreement include: (1) Mr. Coleman's ROE recommendation, and the relevance of trends in authorized returns; (2) the composition of his proxy group; (3) the application of the Constant Growth DCF model, and interpretation of its results; (4) his application of the CAPM method; (5) the assumptions and methods underlying

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11 *Ibid.*, at 2-3.
12 *Ibid.*, at 3-4.
13 *See,* DPU Exhibit 3.02.
14 Mr. Coleman transposed his Constant Growth DCF model estimates for his two approaches in DPU Exhibit 3.02.
15 Mr. Coleman transposed his Constant Growth DCF model estimates for his two approaches in DPU Exhibit 3.02. As discussed below, Mr. Coleman's DPU Exhibit 3.04 contains several errors. The 8.82 percent DCF result presented in Table 2 is his uncorrected result reported in Exhibit DPU 3.02.

Mr. Coleman's Risk Premium analyses; and (6) his Value Line Financial Strength analysis. I also respond to Mr. Coleman's criticisms of my analyses including, (1) my application of the DCF model; (2) the Market Risk Premium ("MRP") applied in the CAPM and ECAPM analyses; and (3) the business risk factors I considered when determining my recommended range and ROE estimate.

A. ROE Recommendation

Q. Please briefly summarize the difference between Mr. Coleman's view of the Company's Cost of Equity and his ROE recommendation.

A. Mr. Coleman recommends an ROE of 9.25 percent, which is "on the high end" of the calculated range of 8.09 percent to 9.55 percent,[16] in part to reflect the principle of gradualism.[17] Mr. Coleman argues his 9.25 percent recommendation is "just and reasonable", and is "comparable with the 9.60 [percent] average authorized rate of return for natural gas companies in 2019."[18] Despite the 43-basis point difference between his median analytical estimate (8.82 percent) and his ROE recommendation (9.25 percent), Mr. Coleman does not explain how 9.25 percent best satisfies his objective of "gradualism", or why it is the most sensible measure of the Company's Cost of Equity. Nor does he reconcile how his 9.25 percent recommendation is "comparable" to the average authorized ROE for natural gas utilities in 2019. As shown in DEU Exhibit 2.09R (and discussed in more detail below), the average authorized ROE in 2019 (through September 30) has been 9.70 percent, with a median of 9.73 percent. Of the

16 Direct Testimony of Casey J. Coleman, at 17.
17 *Ibid.*, at 38.
18 *Ibid.*, at 17. Mr. Coleman's review of authorized ROEs in 2019 include rate cases completed through May 7, 2019. *See*, DPU Exhibit 3.10.

nine ROEs authorized in 2019, seven were equal to or greater than 9.70 percent. In my view, Mr. Coleman's 9.25 percent recommendation is fundamentally unsupported and is not comparable to the average authorized ROE for natural gas utilities in 2019.

Q. What is your response to Mr. Coleman's position that his 9.25 percent ROE recommendation meets a standard of "gradualism"?

A. Mr. Coleman's 43-basis point increase moderates his unreasonably low analytical results, but only to a degree. In my view, investors would not be satisfied with an unduly low ROE (9.25 percent) simply because it would have been even lower, but for "gradualism". Rather, the financial community would see Mr. Coleman's recommended ROE as a departure from regulatory practice.

To support his position that the Company has a lower risk profile than its peers, Mr. Coleman cites to Standard & Poor's ("S&P") January 2013 research report for Questar Gas Company, noting the Company's "constructive relationship" with the Commission and "supportive rate design".[19] It is difficult to reconcile how investors would view a 60-basis point decrease in the Company's authorized ROE as "supportive", particularly in the context of recently authorized ROEs for other natural gas utilities. In my view, the financial community would likely see Mr. Coleman's recommended ROE as a marked departure from regulatory practice; rationalizing that return on the basis of gradualism will not alleviate their concerns.

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19 Direct Testimony of Casey J. Coleman, at 39.

Q. What is the basis of your concern that an ROE in the range of Mr. Coleman's recommendation would introduce a degree of regulatory risk?

A. My basis simply is that the financial community focuses on the stability and predictability of regulation, and the level and predictability of future cash flows. Moody's Investors Service ("Moody's"), for example, notes that 32.50 percent of the weight it gives to various factors considered in its ratings determinations are focused on cash flow.[20] It does so because "[f]inancial strength, including the ability to service debt and provide a return to shareholders, is necessary for a utility to attract capital at a reasonable cost in order to invest in its generation, transmission and distribution assets, so that the utility can fulfill its service obligations at a reasonable cost to rate-payers."[21]

Standard & Poor's also makes clear that cash flow-based metrics are integral to its assessment of the "Financial Risk Profile" which, when combined with the "Business Risk Profile" forms the basis of its rating assessment.[22] Because both the authorized ROE and capital structure directly affect earnings, the Commission's decision would have a direct effect on the Company's cash flows and, therefore, on the credit metrics that both Moody's and S&P find critically important in their rating process.

As to the importance of stability and predictability, Moody's describes the circumstances that correspond to rating in the "A" category as follows:

> The issuer's interaction with the regulator has led to a strong, lengthy track record of predictable, consistent and favorable decisions. The

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20 Moody's Investors Service, *Rating Methodology; Regulated Electric and Gas Utilities*, June 23, 2017, at 6.

21 *Ibid.*, at 20.

22 Standard &Poor's Ratings Services, *Industry Report Card: The Outlook for U.S. Regulated Utilities Remains Stable on Increasing Capital Spending and Robust Financial Performance*, December 16, 2014, at 7.

> regulator is highly credit supportive of the issuer and utilities in general. We expect these conditions to continue.[23]

Similarly, S&P notes that the regulatory structure is one of the most important factors in its credit rating analyses:

> For a regulated utility company, the regulatory regime in which it operates will influence its performance in profound ways. As such, Standard & Poor's Ratings Services' regulatory advantage assessment - - which informs both our business and financial risk scores - - is one of the most important factors in our credit analysis of regulated utilities.
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> Our assessment of a utility's regulatory regime rests on four pillars: regulatory stability, efficiency of tariff-setting procedures, financial stability, and regulatory independence... We believe these factors strongly influence a utility's credit quality and its ability to recover its costs and earn a timely return.[24]

The loss of regulatory stability created by a significantly reduced rate of return, brought about by an ROE that substantially deviates from the Commission's past precedent,[25] almost certainly would be viewed as negative for the Company's credit profile.

Q. Do you have any observations regarding the trend in authorized ROEs for natural gas utilities?

A. Yes, I do. First, Mr. Coleman points to the average authorized ROE of 9.60 percent for six natural gas distribution rate cases completed in 2019, compared to 9.59 percent in 2018 and 9.72 percent in 2017.[26] However, Mr. Coleman's Exhibit DPU 3.10 only

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[23] Moody's Investors Service, *Rating Methodology; Regulated Electric and Gas Utilities*, June 23, 2017, at 30.

[24] Standard &Poor's Ratings Services, *How Regulatory Advantage Scores Can Affect Ratings on Regulated Utilities*, April 23, 2015, at 2.

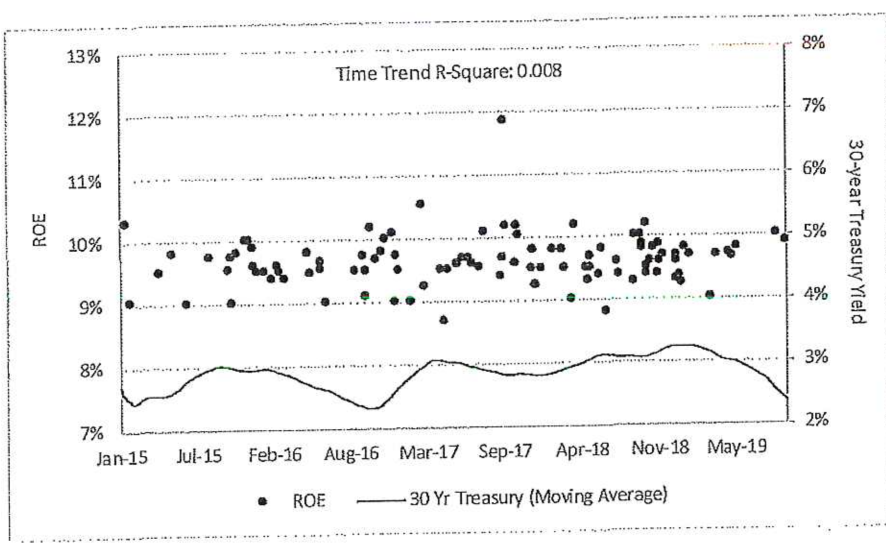
[25] The Commission's current authorized electric and natural gas ROEs include 9.80 percent for PacifiCorp and 9.85 percent for the Company. Source: Regulatory Research Associates.

[26] DPU Exhibit 3.10.

includes rate cases completed through May 7, 2019. Since May, there have been three more rate cases completed, ranging from 9.80 percent to 10.00 percent. Mr. Coleman's 9.25 percent recommendation, which reflects his application of "gradualism", is lower than all but one return authorized in 2019.[27]

Second, average annual data may not be reasonable measures of trends, simply because averages obscure variation in returns from case-to-case, and do not address the number of cases or the jurisdictions issuing orders within a given year. For example, one year may have relatively few cases decided, with a relatively large portion of those cases decided by a single jurisdiction. As shown in Chart 1 below, if all authorized ROEs since 2015 are charted, rather than annual averages, we see there is no meaningful trend. That is true even as the 30-year Treasury yield fluctuated; time explains less than 1.00 percent of the change in ROEs, and the trend is statistically insignificant.

Chart 1: Natural Gas Distribution Authorized Returns (2015-2019)[28]



27 DEU Exhibit 2.09R.

28 Source: Regulatory Research Associates. Excludes limited issue rate riders. 30-year Treasury yield is a 90-day moving average.

From a slightly different perspective, recent fluctuations around the annual average authorized return data are well within the standard deviation of authorized ROEs, as shown in Table 3, below.

Table 3: Mean and Standard Deviation of Authorized Returns (2015-2019)[29]

Year	Average	Standard Deviation
2015	9.60%	0.40%
2016	9.53%	0.33%
2017	9.73%	0.62%
2018	9.59%	0.30%
2019	9.70%	0.28%

From that perspective as well, there is no reason to conclude authorized returns have fallen since 2015.

B. Proxy Group Selection

Q. Please summarize Mr. Coleman's Proxy Group.

A. Mr. Coleman accepts my proxy group with one exception, he argues New Jersey Resources does not meet my operating income screening criterion.[30] Mr. Coleman is incorrect. As explained in my Direct Testimony, my proxy group includes companies with at least 60.00 percent of *operating income* derived from regulated natural gas utility operations. To ensure anomalous or transitory events did not affect that assessment in any one year, I calculated the average operating income over the three most recent years. I excluded companies if the three-year average regulated natural gas operating income

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29 Source: Regulatory Research Associates. Excludes limited issue rate riders. 2019 includes rate cases completed as of September 30, 2019.

30 Direct Testimony of Casey J. Coleman, at 24-25.

was less than 60.00 percent of the three-year average combined operating income. Mr. Coleman argues New Jersey Resources does not meet my operating income screening criterion because only 25.10 percent of its 2018 *operating revenue* came from natural gas distribution operations.[31] My screening criterion relates to *operating income*, not *operating revenue*. Because New Jersey Resources' operating income average is 72.47 percent of its combined operating income (from 2016 through 2018), it meets my screening criterion.[32]

Q. Please explain why income, rather than revenue, is the more appropriate screening criterion.

A. Measures of income are far more likely to be considered by the financial community in making credit assessments and investment decisions than are measures of revenue. From the perspective of credit markets, measures of financial strength and liquidity are focused on cash from operations, which falls directly from earnings. As part of its rating methodology, for example, Moody's assigns a 40.00 percent weight to measures of financial strength and liquidity, of which 22.50 percent specifically relates to the ability to cover debt obligations with cash from operations.[33]

Just as rating agencies focus on measures of cash from operations, equity analysts and investors rely on measures of income in assessing market valuations; common measures of relative value include the Price/Earnings ratio, and the ratio of Enterprise

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31 *Ibid.*, at 25.
32 Source: S&P Global Market Intelligence.
33 *See, Rating Methodology, Regulated Electric and Gas Utilities*, Moody's Global Infrastructure Finance, August 2009, at 13.

Value to EBITDA.[34] Revenue is several steps removed from the earnings and cash flows that form the basis of those metrics. Focusing on revenue therefore may mislead the analyst into assuming a given operating unit is the primary driver of expected growth, when the majority of earnings and cash flows are derived from other business segments. Here, we are considering whether the *operating utility* is the principal source of long-term corporate growth, and as such, focusing on revenue may obscure important elements of the analysis.

C. Discounted Cash Flow Analysis

Q. Please summarize Mr. Coleman's Constant Growth DCF Analysis.

A. Mr. Coleman performs two Constant Growth DCF analyses. His first analysis uses Value Line projected dividend and earnings growth rate estimates, and his second analysis uses the average projected earnings growth rates from of Zacks, Yahoo!,[35] and Value Line[36] (collectively "Consensus Earnings Growth Rates") and the projected dividend growth rate from Value Line. He calculates a dividend yield for each of his proxy companies using the average stock price over the 30-trading days as of October 1, 2019 reported by Yahoo! Finance divided by the annualized dividend reported by Value Line.[37] For the growth rate component, Mr. Coleman applies a 75.00 percent weight to the projected earnings growth rate(s) and 25.00 percent to the Value Line projected dividend growth

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[34] Earnings Before Interest, Taxes, Depreciation, and Amortization.

[35] Yahoo! Finance reports consensus earnings growth rate projections from First Call.

[36] Mr. Coleman's testimony at 26 states he calculated an average projected earnings growth rate from Value Line, Zacks, Reuters, and Yahoo!, however it appears from reviewing DPU Exhibit 3.04 that he used the Zacks and Yahoo! projected earnings growth rates provided in my DEU Exhibit 2.01 and updated Value Line projected earnings growth rates (with the exception of the Value Line projected earnings growth rate for Northwest Natural Holding Company). I do not see a reference to earnings growth rates from Reuters DPU Exhibit 3.04.

[37] Direct Testimony of Casey J. Coleman at 25.

rate. Adding his dividend yield and growth rate components produces mean and median DCF results of 10.33 percent and 10.51 percent, respectively, for his analysis relying on Value Line projected growth rates, and 8.82 percent and 8.89 percent, respectively, for his analysis relying on Consensus Earnings Growth Rates.[38]

Q. Do you have any concerns with Mr. Coleman's Constant Growth DCF Analyses?

A. Yes, I found several errors in Mr. Colemans analyses. My primary concern is that Mr. Coleman does not apply the same growth rate to calculate his expected dividend yield and the long-time growth component. Second, Mr. Coleman transposed the average stock price, annualized dividend, and Value Line projected growth rates for Southwest Gas Holdings, Inc. ("Southwest Gas") and Spire, Inc. Third, Mr. Coleman applied my Zacks and Yahoo! earnings growth rates filed in DEU Exhibit 2.01 from May 2019 with his more recent Value Line projected growth rates, stock prices, and annualized dividend data. Fourth, he excludes Northwest Natural Holding Company from one analysis, but not the other due to what he considers to be an outlier earnings growth rate. Lastly, I disagree with the application of a 25.00 percent weight to Value Line's projected dividend growth rates.

Q. What is your concern with Mr. Coleman's inconsistency in his growth rates?

A. As Mr. Coleman correctly explains at page 18 of his Direct Testimony, the Constant Growth DCF formula is:

$$k_e = \frac{D_0\,(1+g)}{P_0} + g \qquad [1]$$

Where: k_e is the cost of common equity,

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38 *Ibid.*; DPU Exhibit 3.04.

D_0 is the current dividend,

P_0 is the current stock price, and

g is the constant growth rate.

As shown in Equation [1] above, the growth rate used to calculate the expected dividend yield is the same growth rate that is added to the dividend yield to estimate the ROE. Mr. Coleman calculates his expected dividend yield component using Value Line's 3-5 year projected dividend growth rate. For his long-term growth rate component, however, he uses his weighted growth rate of 75.00 percent projected earnings growth and 25.00 percent projected dividend growth. The two growth rates should be the same and applied consistently. That is, the dividend yield should be adjusted by the same growth rate component as the perpetual, long-term growth rate. This inconsistency has the effect of biasing Mr. Coleman's results downward. Additionally, as noted earlier, Mr. Coleman erroneously transposed Southwest Gas and Spire, Inc.'s average stock price, annualized dividend, and Value Line projected growth rates.[39] Correcting these errors increase his mean and median ROE estimates in his analysis using only Value Line's growth rates to 10.37 percent and 10.54 percent respectively, and his mean and median ROE estimates in his analysis using Consensus Earnings Growth Rates to 8.84 percent and 9.17 percent, respectively.[40]

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[39] *See,* DPU Exhibit 3.01 lines 7-8, DPU Exhibit 3.04 rows 45-46 (hidden), and DPU Exhibit 3.12, row 33.

[40] *See,* DEU Exhibit 2.10R.

Q. Please discuss your concerns regarding Mr. Coleman's use of your consensus growth rates filed in DEU Exhibit 2.01.

A. Mr. Coleman's second Constant Growth DCF analysis calculates an average earnings growth rate using Value Line's 3-5 year projected earnings growth published August 30, 2019, and the Zacks and Yahoo! consensus growth rates from May 17, 2019 filed in DEU Exhibit 2.01. That is, two of his projected earnings growth rate sources are inconsistent with his more recent Value Line projected growth rates and with his average stock price and annualized dividend data.

Additionally, I note Mr. Coleman excluded the result for Northwest Natural Holding Company from his analysis using only Value Line data, but included that company in his second analysis using Consensus Earnings Growth Rates. Correcting Mr. Coleman's analysis to use the September 30, 2019 Zacks and Yahoo! projected earnings growth rates applied in DEU Exhibit 2.01R, and excluding Northwest Natural Holding Company from both analyses, increases his mean and median estimates to 9.41 percent and 9.50 percent, respectively (*see* DEU Exhibit 2.10R). In aggregate, correcting the errors in Mr. Coleman's DCF analysis increase his average DCF result using Consensus Earnings Growth Estimates by approximately 60 basis points.

Q. What is your concern with Mr. Coleman's decision to give 25.00 percent weight to Value Line's 3-5-year projected dividend growth rate?

A. Earnings growth is the fundamental driver of the ability to pay dividends. As noted in my Direct Testimony, to reduce growth to a single measure we assume a fixed payout ratio, and a constant growth rate for Earnings Per Share ("EPS"), Dividends Per Share

("DPS"), and Book Value Per Share ("BVPS").[41] As DEU Exhibit 2.11R illustrates, under the Constant Growth DCF model's strict assumptions, earnings, dividends, book value, and stock prices all grow at the same, constant rate in perpetuity. Further, Value Line is the only service I am aware of that publishes dividend growth rate projections. To the extent Value Line's projections represent the views of a single analyst, such projections may be skewed. Consequently, projected earnings growth rates are the appropriate measure for estimating growth in the DCF model.

Lastly, I recognize the Commission's orders speak for themselves and I do not argue the Commission may have preferred that weighting approach in the past, however, I do not see any recent orders by the Commission expressing its preference for this weighting convention. I further understand that in the Company's 2002 rate case Mr. Coleman cites, the Commission used the weighted average approach to set the low end of the range, and applied a 100.00 percent weight to projected earnings growth rates to set the high end of the range.[42] The effect of applying only projected earnings growth rates to the analysis is shown in Mr. Coleman's DPU Exhibit 3.04 in the column labeled "Estimated COE EPS Growth".[43]

D. Capital Asset Pricing Model

Q. Please summarize Mr. Coleman's CAPM analysis.

A. Mr. Coleman calculates a range of CAPM-based ROE estimates of 5.16 percent to 7.15 percent, using a risk-free rate of 3.50 percent, two estimates of the Market Risk Premium

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41 Direct Testimony of Robert B. Hevert, at 47.

42 *In the Matter of the Application of Questar Gas Company for a General Increase in Rates and Charges*, Public Service Commission of Utah, Docket No. 02-057-02, Report and Order, December 30, 2002, at 33.

43 *See also*, DEU Exhibit 2.10R.

("MRP", which he refers to as the "Equity Risk Premium", or "ERP") of 5.20 percent and 5.50 percent, and Beta coefficients reported by Value Line, CFRA, Zacks, Yahoo!, and Ned Davis Research.[44] Mr. Coleman's CAPM estimates are approximately 210 to 410 basis points below his 9.25 percent recommendation, indicating he gives little weight to his CAPM estimates.

Q. What are the areas in which you disagree with Mr. Coleman?

A. I disagree with his Market Risk Premia estimates, and assumed Beta coefficients. Although Mr. Coleman suggests his low CAPM results are the result of low interest rates (as the risk-free rate),[45] the primary causes are his use of "raw" Beta coefficients, and his unreasonably low Market Risk Premia estimates.

Q. Turning first to his Beta coefficients, what is your concern with the Beta coefficients applied in Mr. Coleman's CAPM analysis?

A. Mr. Coleman calculates proxy group average Beta coefficients from five sources: (1) Value Line, (2) CFRA, (3) Zacks, (4) Yahoo!, and (5) Ned Davis Research.[46] Of those five sources, it appears only Value Line uses adjusted Beta coefficients. The other four sources calculate "raw" or unadjusted Beta coefficients.[47] Because Beta coefficients tend to regress to 1.00 over time, the use of "raw" Beta coefficients will understate the Beta coefficient for companies with Beta coefficients less than 1.00. Stated differently, Mr. Coleman's use of "raw" Beta coefficients biases his CAPM results downward.

44 Direct Testimony of Casey J. Coleman, at 27-28. DPU Exhibit 3.06.
45 Direct Testimony of Casey J. Coleman, at 42.
46 *Ibid.*, at 28.
47 *Ibid.*, at 27. Adjusted Beta coefficients are explained in more detail in my response to Mr. Gorman.

Moreover, Mr. Coleman has not provided any explanation as to how the sources calculate their Beta coefficients, the period over which they are calculated (two years, five years, etc.), the assumed holding period (daily, weekly, monthly, etc.), or the market index applied (S&P 500, New York Stock Exchange Index, etc.). Without knowing those important parameters, there is no way to know whether they will produce reasonable and meaningful results.

Q. Are Mr. Coleman's 5.20 percent and 5.50 percent MRP estimates reasonable?

A. No, they are not. First, Mr. Coleman's Market Risk Premia estimates cannot be reconciled with his eventual recommendation; his MRP estimates, together with his assumed risk-free rate produce expected market returns of 8.70 percent to 9.00 percent. Mr. Coleman's ROE recommendation, however, exceeds his expected market return. If Mr. Coleman believed his Market Risk Premia estimates produce meaningful estimates of investor-required returns – the subject of his testimony – his recommendation would be no higher than 9.00 percent.[48] In any event, as shown in Chart 7 below, MRPs of 5.20 percent and 5.50 percent historically have occurred quite infrequently. In my view, Mr. Coleman's CAPM estimates provide no reasonable basis for the Company's investor-required ROE and should be rejected.

E. Bond Yield Plus Risk Premium Approach

Q. Please summarize Mr. Coleman's Bond Yield Plus Risk Premium analysis.

A. Mr. Coleman calculates two Bond Yield Plus Risk Premium estimates. His first calculates an Equity Risk Premium of 5.09 percent, based on the difference between Duff & Phelps' 9.00 percent estimate of the total market return and a Baa Corporate Bond

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[48] Mr. Coleman's highest MRP plus his risk-free rate. 9.00% = 5.50% + 3.50%.

Yield of 3.91 percent. He adds that 5.09 percent estimate to DEU's current long-term borrowing rate of 4.00 percent to calculate an ROE estimate of 9.09 percent.[49] Mr. Coleman's second approach calculates a total market return of 8.70 percent based on Dr. Damodaran's 5.20 percent ERP and Duff & Phelps' normalized 3.50 percent risk-free rate. He then subtracts the Baa Corporate Bond Yield of 3.91 percent to produce an ERP of 4.79 percent. Adding DEU's current long-term borrowing rate of 4.00 percent to his 4.79 percent ERP produces an ROE estimate of 8.79 percent.[50] The average of his two Bond Yield Plus Risk Premium estimates is 8.94 percent.

Q. What are your concerns with Mr. Coleman's Bond Yield Plus Risk Premium analysis?

A. My principal concern is that his analysis does not reflect the well-known principle that the ERP is inversely related to the risk-free rate.[51] Further, Mr. Coleman does not explain why the Baa Corporate Bond yield is the appropriate risk-free rate for DEU, which is rated A3 by Moody's. Substituting the Moody's A-rated utility index bond yield of 3.33 percent as the risk-free rate[52] increases his results to 9.38 percent to 9.67 percent (average of 9.53 percent).

F. Value Line Financial Strength Analysis

Q. Please describe Mr. Coleman's Financial Strength Analysis.

A. Mr. Coleman's Financial Strength Analysis begins with estimating the expected return for the entire market, then adjusting that expected return by a risk-factor based on the

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49 Direct Testimony of Casey J. Coleman, at 30-31; DPU Exhibit 3.07.
50 *Ibid.*, at 31; DPU Exhibit 3.07.
51 Direct Testimony of Robert B. Hevert, at 63-64.
52 Source: Bloomberg Professional, 30-day average as of September 30, 2019.

average Value Line Financial Strength rating for the comparable companies.[53] The higher the rating, the lower the risks measured by that rating and, therefore, the lower the expected return.[54] Although not explained in his testimony, as shown on DPU Exhibit 3.02, Mr. Coleman reports a Financial Strength Analysis ROE estimate of 9.52 percent. That value, however, is not linked to DPU Exhibit 3.11, nor is 9.52 percent calculated anywhere within that exhibit. Mr. Coleman's testimony provides no explanation as to the inputs, assumptions, or calculations applied in arriving at his 9.52 percent estimate.

Q. Do you have any other observations regarding the Division's Financial Strength Analysis?

A. Yes, I do. First, the weighted average total market return of the Value Line companies included in the analysis (*i.e.*, 15.62 percent "Mean Return" and 14.43 percent "Accepted Median Return") support my expected market returns presented in DEU Exhibit 2.03 and updated in DEU Exhibit 2.03R. Second, Value Line's expected return for the least risky and highest rated A++ companies is approximately 10.00 percent,[55] considerably above his 9.25 percent recommendation. Third, DPU Exhibit 3.11 calculates a proxy group average Financial Strength rating between B++ and A (6.86 in numeric terms, which is closer to A than B++). Applying the 6.86 numeric value of the proxy group's average Financial Strength rating in the regression equation generated in DPU Exhibit 3.11 results in an expected return of approximately 11.35 percent. Again, it is unclear how Mr. Coleman determined a 9.52 percent ROE estimate from the analysis.

53 Direct Testimony of Casey J. Coleman, at 33.
54 *Ibid.*, at 34.
55 DPU Exhibit 3.11.

Q. What are Mr. Coleman's revised analytical results based on the corrections described above?

A. When corrected, Mr. Coleman's analytical estimates range from 9.41 percent to 11.35 percent, with mean and median results of 10.17 percent and 9.95 percent, respectively (*see* Table 4 below). Those revised results clearly support my recommended range of 9.90 percent to 10.75 percent.

Table 4: Summary of Mr. Coleman's Corrected Analytical Results and ROE Recommendation

Method	ROE Estimate
Constant Growth DCF (Value Line)	10.38%
Constant Growth DCF (Zacks, First Call, & Value Line)	9.41%
CAPM	NA
Risk Premium	9.53%
Risk Premium/Financial Strength	11.35%
Mean	10.17%
Median	9.95%

G. Response to Mr. Coleman's Criticisms of Company Analyses

Q. Please summarize Mr. Coleman's criticisms of your Cost of Equity analyses.

A. Mr. Coleman disagrees with my application of the Constant Growth DCF model, the MRP calculation applied in my CAPM and ECAPM analyses, and the business risk factors I considered when determining my recommended range and ROE estimate.

Q. What are Mr. Coleman's concerns regarding your Constant Growth DCF analysis?

A. Mr. Coleman notes four concerns with my Constant Growth DCF analysis. First, he criticizes the fact that I do not give 25.00 percent weight to projected dividend growth rates.[56] Second, he believes the Value Line earnings growth rate projection for Northwest Natural Holdings is an outlier that should be excluded.[57] Third, Mr. Coleman disagrees with the use of Retention Growth rates.[58] Lastly, Mr. Coleman erroneously asserts I have applied a "5 percent adder" in my analysis.[59]

Q. What is your response to Mr. Coleman on those points.

A. Regarding the 25.00 percent weight given to Value Line's projected dividend growth rate, for the reasons explained earlier, I disagree with that approach. As explained above, earnings growth is the fundamental driver of the ability to pay dividends, and as such, earnings growth rates are the appropriate growth rate for use in the DCF model.

As to his criticism of outlying growth rates, Mr. Coleman notes a growth rate he considers to be too high but did not evaluate whether any growth rates are unreasonably low. Although Mr. Coleman criticizes one high estimate, his Constant Growth DCF analyses include several results well below any reasonable estimate of the Company's investor-required Cost of Equity.[60] Further, and as noted earlier, although Mr. Coleman excludes Northwest Natural Holding from his Constant Growth DCF analysis using only Value Line growth rate projections, he does not exclude that company from his Constant Growth DCF analysis using Consensus Earnings Growth Rates.

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56 Direct Testimony of Casey J. Coleman, at 10-11.

57 Direct Testimony of Casey J. Coleman, at 12. Mr. Coleman mistakenly associates Value Line's 25.50 percent projected earnings growth rate with ONE Gas, Inc., not Northwest Natural Holdings. Mr. Coleman additionally states that he was "unable to find a Value Line source that matches" the growth rates provided in DEU Exhibit 2.01. Those growth rates were reported in the proxy company Value Line reports issued on March 1, 2019. The growth rates have been updated in DEU Exhibit 2.01R, and match Mr. Coleman's Value Line projected earnings growth rates provided in DPU Exhibit 3.01.

58 *Ibid.*, at 11.

59 *Ibid.*

60 Specifically, Value Line's percent projected dividend growth rate for Northwest Natural Holdings, and Zacks and Yahoo! projected earnings growth rates for Spire, Inc. provided in DPU Exhibit 3.04.

As shown in DEU Exhibit 2.10R, corrections to Mr. Coleman's DCF Analysis produce ROE estimates nearly 60 basis points higher than the results presented in DPU Exhibit 3.02.[61] The midpoint of the average of his two corrected Constant Growth DCF results is 9.89 percent, which is consistent with the low end of my recommended range.[62]

Turning to the Retention Growth estimates, for the reasons discussed in my Direct Testimony, I believe Retention Growth estimates are appropriate estimations of the proxy companies' expected earnings growth for inclusion in the Constant Growth DCF analysis. Although I disagree with Mr. Coleman's position regarding the Retention Growth estimates, as noted earlier, simple corrections to his Constant Growth DCF analyses (which do not apply Retention Growth estimates) produce results that, on average, are consistent with my recommended range.

Lastly, Mr. Coleman has erroneously asserted that my Constant Growth DCF analysis includes "a 5 percent adder."[63] To be clear, I do not apply a five percent "adder"; Mr. Coleman misstates the formulae applied in DEU Exhibit 2.01. As shown in DEU Exhibit 2.01, the formulae applied in columns [10] and [12] are:

> Col. [10]: Current Dividend Yield in Col. [3] x (1 + 0.5(Minimum Growth in Col. [5]-[8])) + Minimum Growth in Col [5]-[8]
>
> Col. [12]: Current Dividend Yield in Col. [3] x (1 + 0.5(Maximum Growth in Col. [5]-[8])) + Maximum Growth in Col [5]-[8]

That is, I apply the half-growth rate adjustment to the Current Dividend Yield to calculate the Expected Dividend Yield. As explained in my Direct Testimony at page 48, because companies tend to increase quarterly dividends at different times throughout the year, the

61 Including ROE estimates I consider to be unreasonably low.
62 *See,* DEU Exhibit 2.10R. Assumes Mr. Coleman's weighted growth rate.
63 Direct Testimony of Casey J. Coleman, at 11.

half-growth rate adjustment ensures the expected dividend yield is, on average, representative of the coming twelve month period and does not overstate the dividends to be paid during that time. The adjustment applies one-half (*i.e.,* 50.00 percent) of the long-term growth rate to the current dividend yield in Col. [3].

The half-growth adjustment also is applied to the Mean ROE formula calculated in Col. [11]. As shown in DEU Exhibit 2.01, Col. [4] calculates the Expected Dividend Yield using the half-growth rate assumption described above. Col. [4] then is added to the average of the four growth rate estimates in Col. [9] to calculate the Mean ROE in Col. [11]. Because Mr. Coleman appears to misunderstand the formula and my testimony, his position is incorrect.

Q. What is your response to Mr. Coleman's position that the Market Risk Premia applied in your CAPM and ECAPM analyses "over-estimate the market risk premium"[64]?

A. I disagree. As discussed in my response to Mr. Gorman and shown in Chart 7 below, the Market Risk Premia applied in my analyses are consistent with historical experience.

Mr. Coleman also asserts my approach "does not appear to [use] a generally accepted methodology that has been published and had the normal peer review that is common with most other financial theories."[65] Again, Mr. Coleman is incorrect. My approach is consistent with academic literature and published texts. For example, the approach is supported in Harris and Marston's study, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts,* a peer reviewed study published in <u>Financial</u>

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64 Direct Testimony of Casey J. Coleman, at 12.
65 *Ibid.*, at 11-12.

Management, as well as in Dr. Roger A. Morin's textbook, New Regulatory Finance. Further, the approach is discussed in the curriculum materials for the Chartered Financial Analyst ("CFA") Exam.[66] The CFA curriculum notes the DCF-based approach is "[p]robably the most frequently encountered forward-looking estimate of the equity risk premium."[67]

Q. Mr. Coleman asserts the Company's business risk is lower than "other utility companies or the market in general".[68] Do you agree?

A. The position that the Company and utilities in general are less risky than the market has never been in dispute. Mr. Coleman points to a 2013 Moody's Credit Opinion for the Company and a Morningstar Research report on utilities in general to support his position the Company is less risky than other utility companies.[69] Those reports, however, do not compare the Company's risk relative to other utilities.

Mr. Coleman further asserts the Company's Infrastructure Tracking mechanism and Conservation Enabling Tariff support his position DEU is less risky than its peers.[70] Yet, Mr. Coleman makes no assessment of the Company's adjustment mechanisms relative to the proxy group. As shown in DEU Exhibit 2.08, the majority of the proxy companies also have capital investment tracking mechanisms and energy efficiency cost recovery mechanisms in place in at least one jurisdiction. On that basis as well, the Company is no less risky than its peers.

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66 CFA Program Curriculum, Level II, Volume 4, at 118-119. The DCF approach is referred to as the "Gordon Growth Model".

67 *Ibid*, at 119.

68 Direct Testimony of Casey J. Coleman, at 40.

69 *Ibid.*, at 39-40.

70 *Ibid.*, at 40.

III. RESPONSE TO OCS WITNESS LAWTON

Q. Please provide a summary of Mr. Lawton's testimony and recommendations.

A. Mr. Lawton recommends an ROE estimate of 9.10 percent, based on the average midpoint of his model results."[71] He also accepts the Company's proposed capital structure.[72] Table 5, below, summarizes Mr. Lawton's analytical results, and his overall recommendation.

Table 5: Summary of Mr. Lawton's Analytical Results and ROE Recommendation[73]

Method	Range	Midpoint
Constant Growth DCF	8.98% – 9.28%	9.13%
Two-Stage DCF	8.55% – 9.25%	8.90%
CAPM	8.68% – 8.87%	8.78%
ECAPM	9.54% – 9.68%	9.61%
Bond Risk Premium	8.99% – 9.07%	9.03%
Recommendation		9.10%

Q. What are the principal areas of disagreement between you and Mr. Lawton?

A. First, I disagree that 9.10 percent is a reasonable estimate of the Company's Cost of Equity. As Mr. Lawton notes, the average authorized ROE for natural gas utilities in 2018 was 9.59 percent.[74] In 2019, the average has risen to 9.70 percent (*see* DEU Exhibit 2.09R). Mr. Lawton has not provided any evidence showing the Company is so much less risky than other natural gas utilities that investors would require a return 60 basis

71 Direct Rate of Return Testimony of Daniel J. Lawton, at 3.
72 *Ibid.*, at 32.
73 *Ibid.*, at 3, Table 1.
74 *Ibid.*, at 15.

points below the prevailing average. To that point, Mr. Lawton's proposed ROE ranks in the bottom 12th percentile of ROEs authorized over the past four years.[75]

There are several points on which I disagree with Mr. Lawton's analyses and conclusions, including: (1) the implications of capital market conditions for the Company's Cost of Equity; (2) Mr. Lawton's Two-Stage DCF model results; (3) Mr. Lawton's application of the CAPM and ECAPM methods, in particular the MRP component of both; (4) his Risk Premium analysis; and (5) Mr. Lawton's financial integrity assessment. I also respond to Mr. Lawton's criticisms of the analyses presented in my Direct Testimony.

A. Capital Market Conditions

Q. Does Mr. Lawton address current market conditions in his direct testimony?

A. Yes, Mr. Lawton argues monetary policy is expected to continue to be accommodative with low interest rates.[76] In his view, those low interest rates support his ROE recommendation.

Q. What is your response to Mr. Lawton on those points?

A. As shown in Chart 1 above, although interest rates currently are low relative to historical levels, authorized ROEs for natural gas utilities have not followed in lock-step. Even during 2016, when interest rates last fell to historically low levels, authorized returns remained steady. In large measure, that relationship is attributable to the inverse relationship between interest rates and the Equity Risk Premium discussed in more detail in my response to Mr. Gorman.

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75 Source: Regulatory Research Associates.
76 Direct Rate of Return Testimony of Daniel J. Lawton, at 10.

Further, even though the Federal Reserve recently has reduced the overnight lending rate (that is the Federal Funds rate), long-term Treasury yields have increased. Since August 15, 2019, the 30-year Treasury yield increased more than 40 basis points[77] even as the Federal Reserve reduced the Federal Funds target rate 50 basis points (from 2.00 percent – 2.25 percent to 1.50 percent – 1.75 percent).[78]

B. Mr. Lawton's Two-Stage DCF Model

Q. Please describe Mr. Lawton's application of the Two-Stage DCF model.

A. Mr. Lawton's Two-Stage DCF analysis, which he relies on to address circumstances in which "more than one growth rate estimate is appropriate,"[79] discounts dividends over two stages: (1) a four-year "first growth stage", in which Value Line's projected dividend growth rate is used; and (2) a 146-year second stage, during which the "bxr + sxv" sustainable growth rate is applied.[80]

Q. What general concerns do you have regarding Mr. Lawton's Two-Stage DCF model?

A. My principal concerns relate to the structure of the model, which includes only two stages, and the assumed timing of dividend payments.

Q. Turning to the model's structure, are there forms of the model that do not assume immediate transition from the first to the second stage?

A. Yes, a common form of the Multi-Stage DCF model is presented by Ibbotson,[81] a source on which Mr. Lawton relies for the purpose of his CAPM analysis.[82] Ibbotson's form of

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77 As of November 7, 2019.
78 Source: www.federalreserve.gov
79 Direct Rate of Return Testimony of Daniel J. Lawton, at 25.
80 *Ibid.*
81 Morningstar, Inc., 2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook, at 50.

the Multi-Stage DCF model focuses on cash flow growth rates over three distinct stages. As with the Constant Growth form of the DCF model, the Multi-Stage form defines the Cost of Equity as the discount rate that sets the current price equal to the discounted value of future cash flows. The model sets the subject company's stock price equal to the present value of future cash flows received over three "stages". In the first two stages, "cash flows" are defined as projected dividends. In the third stage, "cash flows" equal both dividends and the expected price at which the stock is sold at the end of the period (*i.e.*, the "terminal price"). The terminal price is based on the Gordon model, which defines the price as the expected dividend divided by the difference between the Cost of Equity (*i.e.*, the discount rate) and the long-term expected growth rate. In essence, the terminal price represents the present value of the remaining "cash flows" in perpetuity.

Q. How does Mr. Lawton's Two-Stage DCF Model compare to the three-stage form?

A. Mr. Lawton's model assumes a year-end cash flow convention and a constant payout ratio based on the current level of dividends for his proxy group, over the model's 150-year horizon. Mr. Lawton's model also assumes a terminal growth rate beginning in year five, based on an earnings growth rate projection that actually ends in the fifth year of his study period.

In addition, Mr. Lawton's model implicitly assumes payout ratios will remain unchanged over the remaining 146-year projection period (he does so by assuming there is no change in the dividend after the fifth year other than growth in earnings). As shown in DEU Exhibit 2.12R, the historical average payout ratio for the Value Line universe of natural gas utilities is 63.59 percent. That historical average is 9.59 percentage points

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82 Direct Rate of Return Testimony of Daniel J. Lawton, at 28-29.

higher than the Updated Proxy Group's average projected payout ratio for 2022-2024 of 54.00 percent. The effect of Mr. Lawton's assumption that the current low payout ratios (compared to the historical average) will continue in perpetuity is to reduce projected dividend payments, and therefore, reduce the calculated ROE.

Q. How does Mr. Lawton's assumption regarding the timing of the dividend payment affect his results?

A. Mr. Lawton's Two-Stage DCF analysis assumes the first dividend is paid one year in the future. Because his proxy group dividend payments are evenly distributed over the course of a given year, assuming (as Mr. Lawton has done) that the entire dividend is paid at the end of that year essentially defers the timing of those cash flows. A more reasoned approach would be to assume that the cash flow is received in the middle of the year, such that half the quarterly dividend payments occur prior to the assumed dividend payment date (*i.e.*, the "mid-year convention"). As DEU Exhibit 2.13R demonstrates, adjusting Mr. Lawton's Two-Stage DCF model for the mid-year convention increases his mean and median results by approximately 12 basis points, from 9.24 percent and 8.55 percent, to 9.37 percent and 8.66 percent, respectively. Even with that correction, however, Mr. Lawton's Two-Stage DCF model produces results below a reasonable estimate of the Company's Cost of Equity.

C. Capital Asset Pricing Model

Q. Please summarize the differences between you and Mr. Lawton in the application of your respective CAPM analyses.

A. The most significant difference in our approaches is the MRP.

Q. What MRP does Mr. Lawton assume in his CAPM analysis?

A. Although Mr. Lawton reviews two historical estimates of the MRP, he relies on a "more current" MRP of 9.85 percent, which is equal to the difference between the long-term historical return on the broader market (12.00 percent) and the current yield on 30-Year U.S. Treasury bonds (2.15 percent).[83]

Q. What is your concern with Mr. Lawton's "more current" MRP?

A. Mr. Lawton's "more current" MRP still relies on historical returns for large companies.[84] It is important to consider the implications of substantially relying on the historical return data, as Mr. Lawton has done, on the reasonableness of the CAPM results.

The MRP represents the additional return required by equity investors to assume the risks of owning the "market portfolio" of equity relative to long-term Treasury securities. As with other elements of Cost of Equity analyses, the MRP is meant to be forward-looking. Simply relying on the historical MRP may produce results that are inconsistent with investor sentiment and current conditions in capital markets. As Morningstar observes:

> It is important to note that the expected equity risk premium, as it is used in discount rates and cost of capital analysis, is a forward-looking concept. That is, the equity risk premium that is used in the discount rate should be reflective of what investors think the risk premium will be going forward.[85]

The historical MRP may not necessarily reflect investors' expectations or, for that matter, the relationship between market risk and returns. The relevant analytical issue in applying the CAPM is to ensure that all three components of the model (*i.e.*, the risk-free

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83 Direct Rate of Return Testimony of Daniel J. Lawton, at 29. Exhibit (OCS-3.9).

84 *Ibid.*

85 Morningstar, Inc., Ibbotson Stocks, Bonds, Bills and Inflation 2013 Valuation Yearbook at 53.

rate, Beta, and the MRP) are consistent with market conditions and investor expectations. The *ex-ante* MRP estimates used in my analyses, as described in my Direct Testimony, specifically address that concern and therefore are the more appropriate input in the CAPM and ECAPM analyses.[86]

D. Risk Premium Analysis

Q. Please describe Mr. Lawton's Risk Premium analysis.

A. Mr. Lawton's analysis compares authorized returns for natural gas utilities to the 30-year Treasury yield from 1981 to 2018.[87] Using the spot yield and a three-month average 30-year Treasury yield, Mr. Lawton's Risk Premium-based ROE estimates range from 8.99 percent to 9.07 percent.[88]

Q. What is your concern with Mr. Lawton's Risk Premium analysis?

A. My concern is with Mr. Lawton's use of historical Treasury yields in his Risk Premium analysis. As discussed throughout my Direct Testimony, the Cost of Equity is inherently forward-looking.[89] Consequently, the Risk Premium analysis should include forward-looking parameters. *Blue Chip Financial Forecasts'* long-term average projection of the 30-year Treasury yield is approximately 3.70 percent.[90] Using the 3.70 percent average long-term forecast of the 30-year Treasury yield, Mr. Lawton's Risk Premium analysis would produce an ROE estimate of 9.92 percent.[91]

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86 Direct Testimony of Robert B. Hevert, at 56.

87 Direct Rate of Return Testimony of Daniel J. Lawton, at 27; Exhibit (OCS-3.10).

88 *Ibid.*

89 *See, for example,* Direct Testimony of Robert B. Hevert, at 39.

90 *Blue Chip Financial Forecast,* Vol. 38, No. 6, June 1, 2019, at 14.

91 5.13% + (-0.402) x (3.70% - 6.40%) + 3.70% = 9.92%. *See,* Exhibit (OCS-3.10) for Mr. Lawton's Risk Premium method.

E. Financial Integrity

Q. Please briefly summarize Mr. Lawton's assessment of his recommendation as it affects measures of DEU's financial integrity.

A. Mr. Lawton evaluates the reasonableness of his ROE recommendation by calculating the *pro forma* effect his recommended ROE would have on three financial ratios to assess whether those ratios would support an investment grade bond rating.[92] Mr. Lawton's *pro forma* analysis develops three ratios: (1) Cash Flow as a percentage of Debt; (2) Cash Flow less Dividends as a percentage of Debt and (3) the Debt Leverage Ratio.[93]

Q. Do you have any general observations regarding Mr. Lawton's approach to assessing his recommendation by reference to *pro forma* credit metrics?

A. Yes, I do. Before discussing Mr. Lawton's testimony relative to credit metrics, it is helpful to review rating agencies' perspectives (beginning with S&P) regarding their use of credit metrics in rating determinations. On November 30, 2007, S&P released a statement announcing that electric, gas, and water utility ratings would be "categorized under the business/financial risk matrix used by the Corporate Ratings group".[94] S&P also provided matrices of business and financial risk, based on "Financial Risk Indicative Ratios": FFO/Debt; FFO/Interest; and Total Debt/Capital. In that announcement, S&P noted:

92 Direct Rate of Return Testimony of Daniel J. Lawton, at 34-35.
93 Exhibit (OCS-3.11).
94 Standard & Poor's Ratings Services, *U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix*, Nov. 30, 2007, at 2 – 3.

> …even after we assign a company business risk and financial risk, the committee does not arrive by rote at a rating based on the matrix. The matrix is a guide - - it is not intended to convey precision in the ratings process or reduce the decision to plotting intersections on a graph. Many small positives and negatives that affect credit quality can lead a committee to a different conclusion than what is indicated in the matrix.

On May 27, 2009, S&P once again expanded its matrix, and noted the relative significance of credit metrics to the rating process:

> The rating matrix indicative outcomes are what we typically observe - - but are not meant to be precise indications of guarantees of future rating opinions. Positive and negative nuances in our analysis may lead to a notch higher or lower than the outcomes indicated in the various cells of the matrix… Still, it is essential to realize that the financial benchmarks are guidelines, neither gospel nor guarantees…
>
> Moreover, our assessment of financial risk is not as simplistic as looking at a few ratios.[95]

Later, on September 18, 2012, S&P further expanded its matrix, confirming "[s]till, it is essential to realize that the financial benchmarks are guidelines, neither gospel nor guarantees."[96]

It is clear, therefore, that credit metrics are not relied on in a rote fashion, nor are individual metrics reviewed in isolation, to the exclusion of other information. Rather, those reviews encompass broad assessments of business and financial risk, including factors that are often based on qualitative, not quantitative, discussions with management.

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95 Standard & Poor's Ratings Services, *Criteria Methodology: Business Risk/Financial Risk Matrix Expanded*, May 27, 2009.

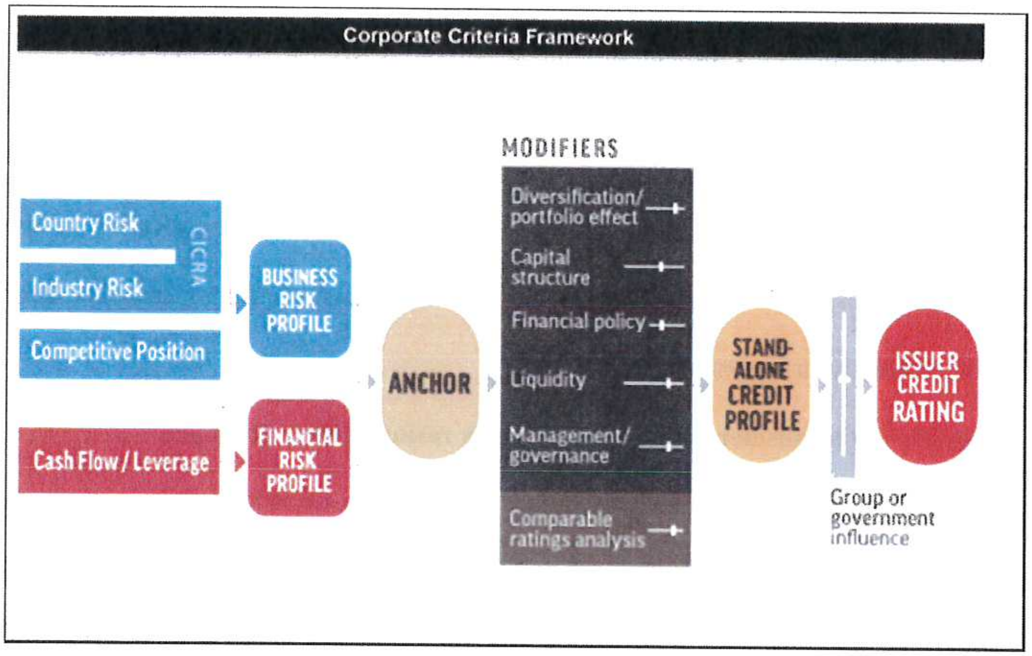
96 Standard & Poor's Ratings Services, *Methodology: Business Risk/Financial Risk Matrix Expanded*, September 18, 2012.

Metrics such as FFO interest coverage and Debt to EBITDA are derived from financial statements, including the Income Statement, Balance Sheet and Cash Flow Statements. For regulated utilities, those ratios are influenced by the overall rate of return allowed by regulatory commissions, which is reflected in the revenue requirement. The metrics therefore are a result of the regulatory process, *i.e.*, the overall rate of return, which in turn is a function of the capital structure (debt and equity ratios), debt cost rate, and the allowed ROE. It is not the other way around. To set a component of the overall rate of return, such as the equity ratio or ROE, based on *pro forma* credit metrics is a circular exercise and one that, in my experience, is atypical of the regulatory process.

Q. Are credit ratings determined largely by the types of *pro forma* metrics that Mr. Lawton calculates in his Exhibit (OCS-3.11)?

A. No, they are not. S&P's ratings process considers a range of both quantitative and qualitative data. As Chart 2 (below) demonstrates, Cash Flow/Leverage considerations are but one element of a broad set of criteria. The principal metrics Mr. Lawton used to assess his recommendation therefore represent only a portion of the factors considered by S&P. Again, a *pro forma* assessment of certain ratios does not address the complex assessments considered by either debt or equity investors.

Chart 2: Standard & Poor's Corporate Criteria Framework[97]



Moreover, S&P's assessment does not look to a single period or assume static relationships among variables, as does Mr. Lawton's *pro forma* analysis. Rather, S&P reviews credit ratios "on a time series basis with a clear forward-looking bias."[98] S&P explains that the length of the time period depends on a number of qualitative factors, but generally includes two years of historical data, and three years of projections. Further, the ratios depend on "base case" projections considering "current and near-term economic conditions, industry assumptions, and financial policies." S&P discusses further aspects of its projections and weight given to historical and forecast data, including whether the subject company is undergoing a "transformational event".

S&P notes it is the regulatory regime which is one of the most important factors in its bond/credit rating analyses. S&P states:

97 Standard & Poor's Ratings Services, *Corporate Methodology*, November 19, 2013, at 5.
98 *Ibid.* at 33.

> For a regulated utility company, the regulatory regime in which it operates will influence its performance in profound ways. As such, Standard & Poor's Ratings Services' regulatory advantage assessment -- which informs both our business and financial risk scores - - is one of the most important factors in our credit analysis of regulated utilities.[99]

Consequently, even if we were to assume credit determinations are distilled to two *pro forma* metrics, the actual assessment of those metrics is far more complex than Mr. Lawton's analysis suggests.

Q. Does Moody's consider similar factors in its ratings determinations?

A. Yes, it does. Moody's also considers a broad range of factors, many of which are qualitative in nature. Of the four general categories considered, the nature of regulation (including the Regulatory Framework, and the Ability to Recover Costs) accounts for about one-half of the weight Moody's applies in its rating determinations. The three financial metrics calculated in Mr. Lawton's *pro forma* analyses, on the other hand, account for 22.50 percent of the weight applied (*see* Chart 3, below).

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99 *Ibid.*

Chart 3: Moody's Rating Factors and Associated Weights[100]

Factor / Sub-Factor Weighting - Regulated Utilities

Broad Rating Factors	Broad Rating Factor Weighting	Rating Sub-Factor	Sub-Factor Weighting
Regulatory Framework	25%	Legislative and Judicial Underpinnings of the Regulatory Framework	12.5%
		Consistency and Predictability of Regulation	12.5%
Ability to Recover Costs and Earn Returns	25%	Timeliness of Recovery of Operating and Capital Costs	12.5%
		Sufficiency of Rates and Returns	12.5%
Diversification	10%	Market Position	5%*
		Generation and Fuel Diversity	5%**
Financial Strength, Key Financial Metrics	40%		
		CFO pre-WC + Interest/ Interest	7.5%
		CFO pre-WC / Debt	15.0%
		CFO pre-WC – Dividends / Debt	10.0%
		Debt/Capitalization	7.5%
Total	100%		100%
Notching Adjustment			
Holding Company Structural Subordination			0 to -3

*10% weight for issuers that lack generation; **0% weight for issuers that lack generation

Moody's ratings process is not mechanical and does not rely on *pro forma* assessments of three (or four) financial metrics. As Moody's explains, "…the four rating factors and the notching factor in the grid do not constitute an exhaustive treatment of all of the considerations that are important for ratings of companies in the regulated electric and gas utility sector."[101] More generally, Moody's notes that its rating grid:

> …provides summarized guidance for the factors that are generally most important in assigning ratings to companies in the regulated electric and gas utility industry. However, the grid is a summary that does not include every rating consideration. The weights shown for each factor in the grid represent an approximation of their importance for rating decisions but actual importance may vary substantially. In addition, the grid in this document uses historical results while ratings are based on our forward-looking expectations. As a result, the grid-

[100] Moody's Investors Service, *Rating Methodology, Regulated Electric and Gas Utilities*, June 23, 2017, at 4. The three metrics corresponding to Mr. Lawton's pro forma calculations include CFO pre-WC + Interest/Interest, CFO pre-WC/Debt, and Debt/Capitalization.

[101] *Ibid.* at 24.

> indicated rating is not expected to match the actual rating of each company.[102]

Both Moody's and S&P therefore consider a broad range of factors, of which *pro forma* metrics are only one. In the case of both agencies, the assessment of credit metrics is forward-looking, and consider factors not reflected in Mr. Lawton's analysis.

Q. Do you agree with Mr. Lawton's analysis and conclusion?

A. No, I do not. As Mr. Lawton's Exhibit (OCS-3.11) demonstrates, my 10.50 percent recommendation also produces financial metrics within Moody's Guidelines for A-rated Bonds.[103] In particular, I examined the robustness of using his *pro forma* credit metrics as a threshold benchmark by recreating the results in his Exhibit (OCS-3.11). As shown in Table 6 below, and DEU Exhibit 2.14R, Mr. Lawton's *pro forma* analysis suggest ROEs as low as 7.85 percent would be sufficient to achieve the CFO/Interest, and Cash Flow/Debt ratios in the A-rated financial risk range identified in Mr. Lawton's analysis. Clearly, 7.85 percent, which is 93 basis points lower than the midpoint of any of Mr. Lawton's model results and 125 basis points below his 9.10 percent recommendation, is an unrealistic estimate of the Company's Cost of Equity.[104]

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102 *Ibid.* at 1.

103 *See also*, DEU Exhibit 2.14R.

104 Assumes the Company's proposed capital structure of 55.00% common equity and 45.00% long-term debt.

Table 6: Mr. Lawton's Financial Integrity Test Using Alternate Assumptions[105]

	CFO/ Debt	CFO-Dividend/ Debt	
"A" Rating Category	19% - 27%	15% - 23%	
Scenario	**CFO/ Debt**	**CFO-Dividend/ Debt**	**Implied Financial Bond Rating**
Mr. Lawton's recommendation (9.10% ROE and 55.00% Equity Ratio)	22.29%	15.61%	A
10.50% ROE and 55.00% Equity Ratio	24.00%	16.30%	A
7.85% ROE and 55.00% Equity Ratio	20.76%	15.00%	A

As shown in Table 6 (above), my recommended 10.50 percent ROE produces *pro forma* coverage ratios safely within the "A" range. Mr. Lawton's recommendation, however, produces a *pro forma* CFO-Dividends/Debt ratio barely within the lower bound of S&P's range for an "A" rating. Because credit quality maintenance is an important consideration, Mr. Lawton's recommendation is counterproductive.

Lastly, Mr. Lawton's analysis assumes the Company actually will earn its authorized return, and that its Funds From Operations will not be diluted by regulatory lag, additional capital spending, or any of the other factors that dilute earnings and cash flow. That is the case even though Mr. Lawton's recommendation falls at the low end of the returns available to other natural gas utilities.

F. Response to Mr. Lawton's Criticisms of Company Analyses

Q. Please summarize Mr. Lawton's criticisms of your Cost of Equity analyses.

A. Mr. Lawton argues my estimated ROE is overstated because in his view, (1) my analyses include "unreasonable" and "theoretically impossible" results;[106] (2) my Risk Premium-

105 Analysis based on Exhibit (OCS-3.11), Page 1. *See also*, DEU Exhibit 2.14R.

based analyses reflect "out of date interest rate levels and unreliable projections of future interest rate levels";[107] (3) my "reliance"[108] on the *ex-ante* MRP calculation produces overstated CAPM and ECAPM results; and (4) my testimony "provides no support" regarding DEU's business risks.[109]

Q. Do you agree with Mr. Lawton's position that your recommendation is "unreliable" because you do not exclude what he views as "unreasonable" estimates?[110]

A. No, I do not. As to my DCF analysis, Mr. Lawton's concern appears to be that I did not "screen" each individual proxy company's low, mean, and high DCF result for some measure of reasonableness.[111] Despite the care taken to ensure risk comparability when developing the proxy group, market expectations with respect to future risks and growth opportunities will vary from company to company. Therefore, even within a group of similarly situated companies, it is common for analytical results to reflect a seemingly wide range. At issue is how to estimate the Cost of Equity from within that range. Rather than screen each individual estimate for a measure of reasonableness, I instead provide the full range of my results and base my recommended range on the totality of the quantitative and qualitative analyses discussed in my Direct and Rebuttal Testimony.

Mr. Lawton and I agree that determining the investor-required Cost of Equity is not a wholly mathematical exercise and requires a certain level of judgement. Mr. Lawton applied his judgment when determining that results lower than 7.50 percent and greater than 12.50 percent were unreasonable estimates of the Company's Cost of

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106 Direct Rate of Return Testimony of Daniel J. Lawton, at 36.
107 *Ibid.*
108 *Ibid.*
109 *Ibid*,. at 40.
110 *Ibid.*, at 36-37.
111 *Ibid.*

Equity.[112] As shown in DEU Exhibit 2.15R, looking to the 30-day average stock price DCF results provided in DEU Exhibit 2.01, if Mr. Lawton's low and high outlier screens are applied to the individual proxy company Low, Mean, and High ROE estimates, the midpoints of the mean and median results are 9.83 percent and 10.03 percent, respectively, with an average of 9.93 percent. Those results are within my recommended range. Consequently, Mr. Lawton's concerns are misplaced, and do not support his 9.10 percent recommendation.

Q. Mr. Lawton argues "averaging unreasonable results with reasonable estimates produces an unreasonable average of all results".[113] What is your response to Mr. Lawton on that point?

A. Mr. Lawton's concern appears to apply to his analyses. The lowest ROE authorized for a natural gas utility since 1980 is 8.70 percent.[114] Mr. Lawton, however, excludes results below 7.50 percent. There is no evidence to support the position that results of 7.50 percent to 8.69 percent are reasonable estimates of the Company's investor-required Cost of Equity. Yet, Mr. Lawton does not exclude these results from his analysis, effectively lowering his overall Constant Growth DCF range. When these unreasonable results are excluded from Mr. Lawton's DCF results, his Constant Growth DCF range increases to 9.35 percent to 9.69 percent (with a midpoint of 9.52 percent).[115] Applying the same low outlier screen to his Two-Stage Growth DCF analysis revises that range to 10.28 percent

112 *Ibid.*, at 24-25.
113 *Ibid.*, at 36.
114 Source: Regulatory Research Associates.
115 *See*, DEU Exhibit 2.16R.

to 10.32 percent (with a midpoint of 10.30 percent).[116] Again, those results do not support his 9.10 percent recommendation.

Q. What is your response to Mr. Lawton's position that your CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses apply "overstated" interest rates?[117]

A. I disagree. Mr. Lawton's position is that the analyses presented in my Direct Testimony do not capture the recent decline in interest rates. However, I provide updated CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses that apply more recent estimates of the risk-free rate in DEU Exhibits 2.05R and 2.06R. Those updated analyses continue to support my recommended range of 9.90 percent to 10.75 percent. Mr. Lawton's concerns are again misplaced.

Q. Please summarize Mr. Lawton's concerns with the *ex-ante* MRP applied in your CAPM and ECAPM analyses.

A. Mr. Lawton criticizes my *ex-ante* MRP estimates because I did not evaluate the DCF-based estimates of the 500 individual companies for a measure of reasonableness. He asserts that because the analysis produces individual results that are too low (*i.e.*, negative) and too high (*i.e.*, exceeding 40.00 percent), that the results are "illogical" and cannot be relied on.[118]

Q. What is your response to Mr. Lawton on those points?

A. The analytical objective is to estimate the expected return on *the market as a whole*. At any point, the market will include companies that are expected to grow rapidly, and others that will decline in value. By investing in a market index such as the S&P 500,

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116 *Ibid.*
117 Direct Rate of Return Testimony of Daniel J. Lawton, at 36.
118 *Ibid.*, at 38.

investors recognize that is the case, and base their expected returns on the cumulative growth of the eleven sectors within the index, and the many companies within those sectors. Judging whether a given company's growth rate is too high or low based on a subjective criterion is antithetical to market index investing, which is an inherently passive strategy. As discussed in my response to Mr. Gorman, FERC has made similar findings. Therefore, I disagree with Mr. Lawton's position that certain individual company results that he views as "illogical" deem the analysis as unreliable.

Q. What is your response to Mr. Lawton's "corrected" CAPM and ECAPM analyses?

A. Mr. Lawton attempts to "correct" my CAPM and ECAPM analyses by "employing [my] 'Expected Earnings Analysis' for the MRP calculation" combined with his current 2.00 percent 30-year Treasury yield, producing a result of "about 8.80 percent."[119] Because he provides no support or documentation for his calculation, the Commission should reject his "corrected" analysis.

Q. Mr. Lawton asserts your business risk assessment is "overstated".[120] Do you agree?

No, I do not. As Mr. Lawton recognizes,[121] I do not make an explicit adjustment to account for the Company's business risks. Rather, my review of the Company's business risks supports my recommended range. That aside, I disagree with Mr. Lawton's assessment of Moody's view of the Company's "carbon transition risk".[122] Moody's assessment of the Company's risk is based on its purchased gas cost recovery mechanism and its decoupling mechanism. It is not necessarily based on the threat of electrification,

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119 *Ibid.*, at 38.
120 *Ibid.*, at 39.
121 *Ibid.*
122 *Ibid.*

in which there would be little need for natural gas utilities if such policies prevail and become widespread.[123] In such a scenario, decoupling mechanisms would do little to protect natural gas utilities from ceasing to operate. As shown in DEU Exhibit 2.08, all the proxy companies recover their gas commodity costs through an adjustment mechanism, and 22 of 26 operating companies have a full or partial decoupling mechanism in at least one jurisdiction. As such, the Company is no less risky than its peers. The Company's cost recovery mechanisms may be credit supportive, as Moody's notes, but are not necessarily credit enhancing. Mr. Lawton has not considered those important factors.

IV. RESPONSE TO FEA WITNESS MR. GORMAN

Q. Please summarize Mr. Gorman's recommendation regarding the Company's Cost of Equity.

A. Mr. Gorman recommends an ROE of "no higher" than 9.00 percent.[124] He establishes his recommended ROE by reference to: (1) his constant growth DCF model using both consensus analyst growth rates and a Sustainable Growth rate (with results ranging from 8.28 percent to 10.77 percent);[125] (2) his Multi-Stage DCF method (with mean and median results of 7.07 percent and 7.09 percent, respectively);[126] (3) his Risk Premium study (ranging from 8.60 percent to 8.70 percent);[127] and (4) his CAPM analyses (ranging from 6.90 percent to 8.73 percent).[128] Mr. Gorman's recommendation reflects his Risk

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[123] Direct Testimony of Robert B. Hevert, at 25.
[124] Direct Testimony and Exhibits of Michael P. Gorman, at 3.
[125] *Ibid.*, at 51.
[126] *Ibid.*
[127] *Ibid.*, at 59.
[128] *Ibid.*, at 67.

Premium-based and CAPM-based estimates of 8.70 percent and his DCF-based estimate of 9.00 percent.[129] His 9.00 percent recommendation falls at the high end of his model estimates. Lastly, Mr. Gorman recommends a capital structure consisting of 52.00 percent common equity and 48.00 percent long-term debt.[130]

Q. What are the principal analytical areas in which you disagree with Mr. Gorman?

A. First, Mr. Gorman's position that the Company's investor-required Cost of Equity is "no higher" than 9.00 percent is unsupported and should be rejected. Mr. Gorman's recommendation falls in the bottom 2nd percentile of ROEs authorized for natural gas utilities since 2015.[131] All authorized ROEs of 9.00 percent or lower between January 2015 and September 2019 were authorized by the New York Public Service Commission. No other jurisdiction authorized ROEs in the range of Mr. Gorman's model-based estimates or recommendation. As noted earlier, the average authorized ROE for natural gas utilities in 2019 (*including New York*) is 9.70 percent, significantly above Mr. Gorman's recommendation.

That aside, the principal areas in which I disagree with Mr. Gorman include: (1) the effect of market conditions and utility risk profiles on the Company's Cost of Equity; (2) the application of the Constant Growth DCF model, and interpretation of its results; (3) the MRP component of his CAPM analysis, in particular the expected market return from which the MRP is calculated; and (4) the assumptions and methods underlying Mr. Gorman's Risk Premium analyses. I also respond to Mr. Gorman's criticisms of my analyses including: (1) the relevance of the ECAPM analysis; (2) the Expected Earnings

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129 *Ibid.*, at 68.
130 *Ibid.*, at 3.
131 *See*, DEU Exhibit 2.09R.

approach; and (3) the consideration of flotation costs. Lastly, I respond to Mr. Gorman's analysis regarding the effect of his recommendation on the Company's financial integrity and his recommended capital structure.

A. Market Conditions and Utility Risk Profiles

Q. What is your response to Mr. Gorman's observation that utilities represent "moderate- to low-risk"[132] investments?

A. If Mr. Gorman's point is that utilities are less risky than the broad market, I agree. The fact that utilities tend to have Beta coefficients less than 1.00 shows that to be the case. At the same time, the average historical Beta coefficient for Mr. Gorman's proxy group is 0.73,[133] suggesting a meaningful degree of risk. For example, in 2008, when the market lost about 40.00 percent of its value, the SNL Gas Utility index lost about 32.00 percent of its value.[134] In fact, from September through December 2008, when the overall market lost about 28.00 percent of its value, the correlation between the SNL Gas Company Index and the S&P 500 averaged approximately 79.00 percent.[135] That is, when the capital markets became increasingly distressed, much like the overall market utility valuations also decreased, although not to the same extent.

Q. Mr. Gorman refers to several recent reports by S&P, Moody's, and Fitch, concluding that regulated utilities' credit ratings have improved over the last few

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132 Direct Testimony and Exhibits of Michael P. Gorman, at 11.
133 *Ibid.*, at 62-63, FEA Exhibit 1.17.
134 Source: S&P Global Market Intelligence.
135 Source: S&P Global Market Intelligence. Based on daily returns. Correlations calculated over rolling three-month periods.

years and that "utilities have strong access to capital at attractive pricing"[136] do you have a response to Mr. Gorman on that point?

A. Yes. I recognize that Mr. Gorman referred to certain rating agency reports that discuss the implications of tax reform on the utility sector, concluding they suggest the utility sector is stable. In actuality, those reports discuss the uncertainties surrounding the implications of tax reform and Mr. Gorman himself noted that Moody's recently placed the regulated utility industry on "Negative" outlook due to Tax Cuts and Jobs Act ("TCJA") cash flow impacts and capital spending.[137]

Q. What are some of the potential implications of rating agency comments regarding utility capital expenditures?

A. Mr. Gorman's Figure 2 demonstrates utility capital investment has "increased considerably" and is expected to "remain high" in the 2019-2021 forecast period relative to the prior ten-year historical period.[138] All three rating agencies observed the negative effects of the TCJA on utilities' cash flow and the potential consequences for their credit profiles.[139] It therefore is clear that efficient access to external capital at reasonable rates will be important to fund capital expenditures. As Mr. Gorman's FEA Exhibit 1.02, page 15 observes, natural gas utilities' cash flow is not projected to cover planned capital spending. It also is clear that the markets in which that capital will be raised reflect greater volatility than those experienced even over the past two years.[140]

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136 Direct Testimony and Exhibits of Michael P. Gorman, at 12.

137 *Ibid.*, at 13-15.

138 *Ibid.*, at 9-10.

139 *Ibid.*, at 12-15.

140 The median value of the VIX, which measures expected market volatility over the coming 30 days, was 10.85 in 2017, and 15.42 in 2019, indicating a significant increase in volatility. By December 2020, the VIX is expected to increase to 19.32. Source: cboe.com, accessed November 11, 2019.

B. Constant Growth DCF Model

Q. As a preliminary matter, does Mr. Gorman give his DCF results any weight in arriving at his 9.00 percent ROE recommendation?

A. As noted earlier, Mr. Gorman's 9.00 percent recommendation represents the high end of his 8.70 percent to 9.00 percent analytical model estimates. His DCF-based recommendation of 9.00 percent is the approximate midpoint of his DCF-based recommended range of 8.30 percent to 9.60 percent.[141] In determining his DCF-based recommendation of 9.00 percent, Mr. Gorman gives primary weight to his Constant Growth DCF model results (ranging from of 8.28 percent to 10.77 percent), although he "also considers the results of [his] other DCF models."[142] Because Mr. Gorman appears to give little weight to his Multi-Stage DCF results, I do not comment on his application of that model.

Q. Do you have any concerns with Mr. Gorman's DCF analysis?

A. Yes, I do. My primary concern is Mr. Gorman's judgment to place "minimal emphasis" on his sustainable growth DCF estimates ranging from 10.27 percent to 10.77 percent.[143] In Mr. Gorman's view, the sustainable growth rates "are altered" by external growth projections from equity sales of approximately 220 basis points.[144]

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141 Direct Testimony and Exhibits of Michael P. Gorman, at 51.
142 *Ibid.*, at 51. Clarification added.
143 *Ibid.*, at 41.
144 *Ibid.*, at 41.

Q. Do you agree with Mr. Gorman's position that the sustainable growth rates are "altered" by expected growth in equity shares?

A. No, I do not. First, as Mr. Gorman notes in his review of credit rating agencies' reports, growth in equity sales is not surprising, given the effect of the TCJA on utilities' cash flow. Mr. Gorman cites to Moody's which noted that issuing equity was one approach for mitigating the rising financial risk associated with the TCJA.[145]

That aside, Mr. Gorman's FEA Exhibit 1.07, page 2 shows the 2.20 percent projected growth in common equity shares primarily is driven by Atmos Energy Corporation ("Atmos"). Even if Atmos's 15.90 percent Sustainable Growth ROE result is excluded, Mr. Gorman's average Sustainable Growth DCF result is 9.92 percent, which is within my recommended range. Mr. Gorman has not demonstrated that the entire analysis should be discarded on the basis of one company's expected growth in common equity shares.

C. Capital Asset Pricing Model

Q. Please briefly summarize Mr. Gorman's CAPM analysis and results.

A. Mr. Gorman's CAPM estimates (6.90 percent and 8.73 percent) reflect two measures of principally historical MRP estimates, *Blue Chip Financial Forecasts*' projected 30-year Treasury yield of 2.50 percent as the risk-free rate, and an average Beta coefficient of 0.73 as reported by Value Line.[146] Based on his assessment of risk premiums in the current market Mr. Gorman relies on the higher CAPM result, 8.73 percent.[147] Mr. Gorman's analyses assume MRP estimates of 8.50 percent (based on the long-term

145 *Ibid.*, at 14.
146 *Ibid.*, at 67 and FEA Exhibit 1.17.
147 *Ibid.*

historical arithmetic average real market return from 1926 through 2018 as reported by Duff & Phelps, adjusted for current inflation forecasts) and 6.00 percent (based on the historical difference between the average return on the S&P 500 and the average total return on long-term government bonds).[148] Combining those MRP estimates with his projected long-term risk-free rate, Mr. Gorman develops expected market returns in the range of 8.50 percent to 10.98 percent.[149]

Q. Turning first to the expected total market return, do you agree with Mr. Gorman's 8.50 percent and 10.98 percent estimates?

A. No, I do not. Mr. Gorman's 8.50 percent expected total market return estimate, which is 340 basis points below the long-term average market return, falls outside the range of average returns during the period 1976-2018 using 50-year annual averages; his higher 10.98 percent estimate falls in the 13th percentile of the average return over the last fifty years.[150] A helpful perspective on the historical market return is the rolling 50-year average annual market return. As Mr. Gorman points out, from 1926 through 2018 the arithmetic average market return was 11.90 percent.[151] Over time, the rolling fifty-year mean return has been quite consistent, in the range of approximately 12.00 percent.[152] Taken from that perspective, Mr. Gorman's 8.50 percent expected market return is well below the long-term market experience and, therefore, is not reasonable.

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148 *Ibid.*, at 64 and FEA Exhibit 1.17.

149 *Ibid.*, Mr. Gorman's low Market Risk Premium of 6.00 percent plus his projected risk-free rate of 2.50 percent equals an estimated market return of 8.50 percent.

150 On a rolling average basis.

151 Direct Testimony and Exhibits of Michael P. Gorman, at 64.

152 Source: Duff & Phelps 2019 SBBI Yearbook, Appendix A-1.

Q. Do you agree with Mr. Gorman's use of the historical average MRP?

A. No, I do not. The MRP represents the additional return required by equity investors to assume the risks of owning the "market portfolio" of equity relative to long-term Treasury securities. As with other elements of Cost of Equity analyses, the MRP is meant to be a forward-looking parameter. Relying on a MRP calculated using historical returns may produce results that are inconsistent with investor sentiment and current conditions in capital markets. The fundamental analytical issue in applying the CAPM is to ensure that all three components of the model (*i.e.*, the risk-free rate, Beta, and the MRP) are consistent with market conditions and investor expectations. As Morningstar observes:

> It is important to note that the expected equity risk premium, as it is used in discount rates and cost of capital analysis, is a forward-looking concept. That is, the equity risk premium that is used in the discount rate should be reflective of what investors think the risk premium will be going forward.[153]

Longstanding financial research has shown the MRP varies over time and with market conditions. French, Schwert, and Stambaugh, for example, found the MRP to be positively related to predictable market volatility.[154] Using forward-looking measures of the expected market return, Harris and Marston found "…strong evidence…that market risk premia change over time and, as a result, use of a constant historical average risk premium is not likely to mirror changes in investor return requirements."[155] Among their findings is that the MRP is inversely related to Government bond yields. That is, as

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153 Morningstar, Inc., <u>2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook</u>, at 53.

154 Kenneth R. French, G. William Schwert, Robert F. Stambaugh, *Expected Stock Returns and Volatility*, <u>Journal of Financial Economics</u> 19 (1987), at 27.

155 *See,* Robert S. Harris, Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, <u>Financial Management</u>, Summer 1992, at 69.

interest rates fall, the MRP increases. Financial researchers therefore have found the MRP to be time-varying, and a function of economic parameters including interest rates.[156]

D. Risk Premium Method

Q. Please briefly describe Mr. Gorman's Risk Premium analyses.

A. Mr. Gorman defines the "Risk Premium" as the difference between average annual authorized equity returns for natural gas utilities and a measure of long-term interest rates each year from 1986 through June 2019.[157] Mr. Gorman's first approach calculates the annual risk premium by reference to the 30-year Treasury yield, and his second approach considers the average A-rated utility bond yield.[158] In each case, Mr. Gorman establishes his risk premium estimate by reference to five-year and ten-year rolling averages. The lower and upper bounds of Mr. Gorman's Risk Premium range are defined by the lowest and highest five-year rolling average, respectively, regardless of the year in which those observations occurred.[159]

Regarding the period over which he gathers and analyzes his data, Mr. Gorman argues his 34-year horizon is "appropriate"[160] for developing an Equity Risk Premium estimate. At pages 54-55 of his Direct Testimony, Mr. Gorman argues "it is reasonable to assume that averages of annual achieved returns over long time periods will generally converge on the investors' expected returns" and concludes his risk premium study is based on "investor expectations, not actual investment returns, and, thus, need not

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156 As explained in my Direct Testimony at 63-64, there is a similar negative relationship between interest rates and the Equity Risk Premium.
157 Direct Testimony and Exhibits of Michael P. Gorman, at 52.
158 *Ibid.*, FEA Exhibit 1.12 and FEA Exhibit 1.13.
159 *Ibid.*, at 53, FEA Exhibit 1.12 and FEA Exhibit 1.13.
160 *Ibid.*, at 54.

encompass a very long historical time period."[161] Based on those assumptions, Mr. Gorman calculates a range of risk premium estimates of 4.17 percent to 6.75 percent using his Treasury bond analysis, and 2.80 percent to 5.54 percent using his A-rated utility bond analysis.[162]

Combined with a 2.50 percent projected Treasury yield and a 3.82 percent Baa-rated utility bond yield estimate, Mr. Gorman's Risk Premium analysis produces results ranging from 6.62 percent to 9.36 percent.[163] To calculate his Risk Premium-based ROE recommended range, Mr. Gorman gives 75.00 percent weight to the high end of his risk premium estimates and 25.00 percent weight to the low end.[164] The 8.60 percent low end of his Risk Premium-based range reflects his weighted risk premium estimates using the projected Treasury bond yield of 2.50 percent.[165] Applying the same 75.00 percent and 25.00 percent weighting to his high and low Baa-rated utility bond yield estimates, respectively, Mr. Gorman produces the upper bound of his range of 8.70 percent.[166] Mr. Gorman then concludes that the high end of his range (8.70 percent) is the appropriate Risk Premium-based ROE estimate.[167]

Q. Do you have any general observations regarding Mr. Gorman's Risk Premium estimates and how they weigh in his overall ROE recommendation?

A. Yes, I do. In determining his 9.00 percent DCF-based recommendation, Mr. Gorman relied on results ranging from 8.28 percent to 10.77 percent, effectively discarding

161 *Ibid.*, at 55.
162 *Ibid.*, at 53. FEA Exhibit 1.12 and FEA Exhibit 1.13. Mr. Gorman's five-year rolling average risk premia.
163 2.50% + 4.17% = 6.67%; 2.50% + 6.75% = 9.25%; 3.82% + 2.80% = 6.62%; 3.82% + 5.54% = 9.36%.
164 Direct Testimony and Exhibits of Michael P. Gorman, at 59.
165 8.60% = (0.25 x 6.67%) + (0.75 x 9.25%)
166 8.70% = (0.25 x 6.62%) + (0.75 x 9.36%).
167 Direct Testimony and Exhibits of Michael P. Gorman, at 59.

several other results ranging from 7.07 percent to 7.09 percent.[168] In a similar fashion, Mr. Gorman relied on his high end CAPM result, discarding a 6.90 percent estimate.[169] In his Risk Premium analysis, however, Mr. Gorman retained risk premiums that produced ROE estimates below the range of the DCF and CAPM estimates he discarded. Despite their low levels, Mr. Gorman gave those risk premium estimates (producing ROE results of 6.62 percent and 6.67 percent) weights of 25.00 percent in aggregate. Mr. Gorman does not explain why he would exclude DCF results of 7.09 percent and lower, but include Risk Premium results of 6.62 percent and 6.67 percent.

Q. What are your specific concerns with Mr. Gorman's Risk Premium analysis?

A. I have four concerns with his analysis: (1) Mr. Gorman's analysis does not include the most recent data; (2) his method understates the required risk premium in the current market because it fails to reasonably reflect the inverse relationship between the Equity Risk Premium and interest rates (whether measured by Treasury or utility bond yields); (3) the low end of Mr. Gorman's Risk Premium results is far lower than authorized ROEs, calling into question its usefulness in determining the Company's ROE; and (4) Mr. Gorman suggests a Market/Book ratio of 1.00 is a relevant benchmark for assessing authorized ROEs.[170]

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168 *Ibid.*, at 51.
169 *Ibid.*, at 67.
170 *Ibid.*, at 52.

Q. Turning first to the issue of Market/Book ratios, do you agree with Mr. Gorman that Market/Book ratios should be used to assess the reasonableness of ROE recommendations?

A. No. Although Mr. Gorman frames his discussions in the context of authorized returns "sufficient to support market prices that at least exceeded book value,"[171] he does not suggest whether the Market/Book ratio should exceed some level or even explain the relationship between authorized returns and Market/Book ratios.

Regarding their fundamental relationship, book value per share is an accounting construct that reflects historical costs, whereas market value per share (*i.e.*, the stock price) is forward-looking, and a function of many variables, including (but not limited to): expected earnings and cash flow growth, expected payout ratios, measures of "earnings quality," regulatory climate, equity ratio, expected capital expenditures, and earned return on common equity. It therefore follows that the Market/Book ratio likewise is a function of factors beyond the historical or expected earned Return on Average Common Equity.

Lastly, any inferences drawn regarding the relationship between market and book values rely on the explicit acceptance of the Constant Growth DCF model, including its underlying assumptions.[172] Investors, however, use multiple methods in establishing their return requirements (as does Mr. Gorman). That is one reason the Market/Book ratio typically is used as a measure or relative valuation (when comparing one stock to

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171 *Ibid.*

172 Under its strict assumptions, the Constant Growth DCF model can be rewritten as: (M/B) = (ROACE-g)/(k-g), where ROACE = Return on Average Common Equity, g = growth, and k = the Cost of Equity. Under that structure, when ROACE = k, M/B = 1.00.

another) rather than a measure of absolute valuation. Investors do this because there is no single, universally accepted method. Consequently, I do not believe Market/Book ratios should be used to assess the adequacy of authorized returns.

Q. What would be the result if regulatory commissions used Market/Book ratios to set a utility's ROE?

A. Looking to Mr. Gorman's data for the natural gas utility sector, the average capital loss for equity investors would be more than 52.00 percent.[173] That loss would not simply affect investors, it also would substantially diminish utilities' ability to attract external capital. If regulatory commissions were to set rates based on Market/Book ratios, that practice likely would impede the ability of a utility to attract the capital required to support its operations, especially in markets during which the Market/Book ratio for the overall market is significantly greater than 100.00 percent.

Q. What did your review of Mr. Gorman's Risk Premium analyses indicate?

A. Because Mr. Gorman did not reasonably reflect the inverse relationship between interest rates and the Equity Risk Premium, and because he uses data only through June 2019, his Risk Premium ROE estimates are biased downward.

Regarding his application of outdated data, using the average authorized ROE and Treasury and utility bond yields updated through September 30, 2019 to calculate the Risk Premium, combined with his 2.50 percent and 3.82 percent risk-free rates, produces

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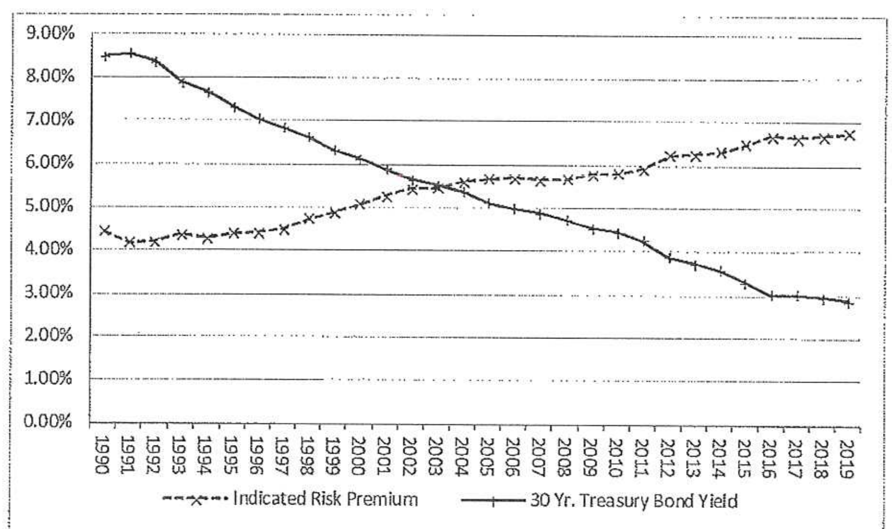
173 Based on Mr. Gorman's natural gas utility sector average M/B ratio of 2.09. (2.09 - 1.00) / 2.09 = 52.15%. M/B ratios from FEA Exhibit 1.02, at 11.

ROE estimates of 9.51 percent and 9.63 percent,[174] well above Mr. Gorman's 8.60 percent to 8.70 percent estimates.

With respect to the inverse relationship between the Equity Risk Premium and interest rates, considering first the Treasury yield-based analysis, I plotted the yields and Risk Premia over the 1986 to 2019 period included in Mr. Gorman's analysis. Chart 4 (below) clearly indicates the inverse relationship between interest rates and the Equity Risk Premium, based on Mr. Gorman's data.

Chart 4: Mr. Gorman's Treasury Yield-Based Risk Premium Data[175]



There are several other points made clear in Chart 4. First, the low end of Mr. Gorman's Risk Premium range, 4.17 percent, was observed in the five-year period ending 1991. There is little question that Risk Premium estimates associated with economic environments 28 years ago have little to do with the current market environment. For

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174 Calculated on an Indicated Risk Premium basis. 30-year Treasury: (9.70% - 2.69%) + 2.50% = 9.51%; Utility bond yield: (9.70% - 3.89%) + 3.82% = 9.63%. Average authorized ROE through September 30, 2019 is presented in DEU Exhibit 2.09R.

175 FEA Exhibit 1.12; based on five-year rolling average. *See also*, DEU Exhibit 2.17R.

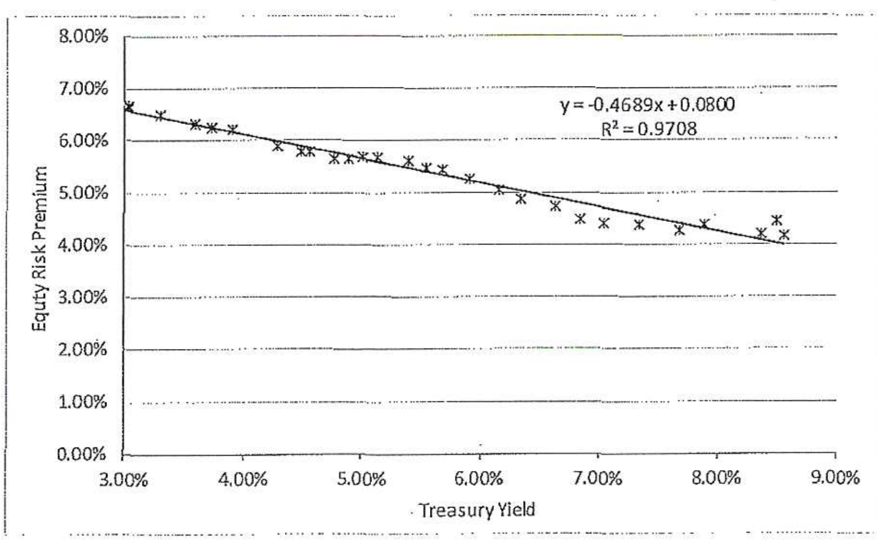
example, prior to 2003, Treasury yields exceeded the Risk Premium (on a five-year average basis). As Chart 4 (*see also* DEU Exhibit 2.17R) demonstrates, since then the opposite has been true – the Risk Premium has consistently exceeded Treasury yields.

Q. Has the Risk Premium increased as Treasury yields decreased?

A. Yes, the relationship between the five-year average Equity Risk Premium and Treasury yields is very clear. A simple linear regression demonstrates the two are highly related, with a Coefficient of Determination (R-Square) of approximately 97.08 percent (*see* Chart 5, below).[176]

Chart 5: Treasury Yield vs. Equity Risk Premium

(Five-Year Rolling Average)[177]



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176 Those findings are supported in academic studies. For example, Dr. Roger Morin notes that: "… [p]ublished studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates - rising when rates fell and declining when interest rates rose." Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc. 2006 at 128 [Clarification added].

177 *See*, DEU Exhibit 2.17R. Source: FEA Exhibit 1.12.

Turning back to Mr. Gorman's data, a simple linear regression using annual (rather than the rolling-average data) demonstrates that for every 100-basis point decrease in Treasury yields, the Equity Risk Premium increases by approximately 45 basis points (*see* DEU Exhibit 2.18R).[178] Similarly, the Equity Risk Premium increases approximately 47 basis points for every 100-basis point decrease in utility bond yields. Those results are consistent with those reported by Maddox, Pippert, and Sullivan, who determined that the Risk Premium would increase by 37 basis points for every 100-basis point change in the 30-year Treasury yield.[179]

Lastly, contrary to Mr. Gorman's position, accounting for additional factors, such as credit spreads (taken from Mr. Gorman's exhibits), does not meaningfully change the sign, statistical significance, or magnitude of the slope coefficient.[180]

Q. What are your conclusions regarding Mr. Gorman's Risk Premium analysis?

A. Although he argues more variables are at play, Mr. Gorman's data strongly supports the finding that the Equity Risk Premium is inversely related to interest rates. Taking that finding into account leads to ROE estimates of approximately 9.33 percent, 63 basis points above his high Risk Premium estimate and 33 basis points higher than his 9.00 percent recommendation.[181]

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178 Serial correlation is not present at the 1.00% significance level.

179 *See,* Farris M. Maddox, Donna T. Pippert, and Rodney N. Sullivan, An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry, Financial Management, Vol. 24, No. 3, Autumn 1995 at 93.

180 *See,* DEU Exhibit 2.18R.

181 *See,* for example DEU Exhibit 2.17R, which presents a range of results from 9.32 percent to 9.33 percent, for an average of 9.33 percent.

E. Response to Mr. Gorman's Criticisms of Company Analyses

Q. Please summarize Mr. Gorman's criticisms of your Cost of Equity analyses.

A. Mr. Gorman argues my estimated ROE is overstated and should be rejected because: (1) the Constant Growth DCF results are based on growth rates he considers unsustainably high; (2) the CAPM results assume Market Risk Premia estimates he also believes are too high; (3) the ECAPM estimates are based on a flawed method; and (4) the Bond Yield Plus Risk Premium is based on an Equity Risk Premium that, again, he finds too high.[182] Mr. Gorman further argues the Expected Earnings approach should be rejected and that a flotation cost adjustment is not appropriate.[183]

Q. Does Mr. Gorman have any concerns with your proxy group?

A. He raises only one concern. Mr. Gorman adopts the proxy group used in my Direct Testimony, with the exception of Chesapeake.[184] As discussed above in Section I, I also have excluded Chesapeake in my Updated Proxy Group.

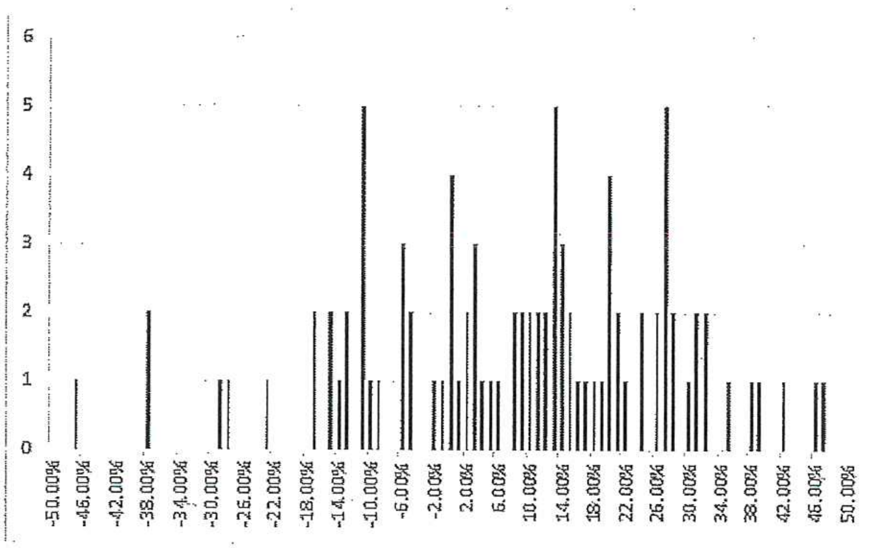
Q. Are the growth rates used in your Constant Growth DCF analysis "unsustainably high"?[185]

A. No, they are not. A capital appreciation rate of 7.02 percent (*i.e.*, the average growth rate in the Constant Growth DCF analysis in my Direct Testimony) and higher has occurred quite often (*see* Chart 6 below).[186] That is, Chart 6 provides the frequency with which historical observations have been in certain ranges. The growth rates Mr. Gorman asserts

182 Direct Testimony and Exhibits of Michael P. Gorman, at 74.
183 *Ibid.*, at 91-94.
184 *Ibid.*, at 33.
185 *Ibid.*, at 74.
186 Under the Constant Growth DCF model's assumptions, the growth rate equals the rate of capital appreciation.

are "unsustainably high"[187] by historical standards represent approximately the 44th to 49th percentile of the actual capital appreciation rates observed from 1926 to 2018. That is, observed capital appreciation rates of 9.63 percent and lower have occurred more than half the time. Consequently, the growth rates applied in my DCF analysis are consistent with actual capital appreciation rates and, therefore, are not too high.

Chart 6: Frequency Distribution of Capital Appreciation Returns, 1926-2018[188]



Q. Mr. Gorman criticizes your decision to not perform a Multi-Stage DCF analysis in this proceeding.[189] What is your response?

A. Simply, the multi-stage model did not provide additional information relative to the analyses I performed. Although Mr. Gorman's position is that his Multi-Stage DCF model is "appropriate"[190] in this proceeding, his average and median Multi-Stage DCF

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187 Direct Testimony and Exhibits of Michael P. Gorman, at 74, 76.
188 Duff & Phelps, 2019 SBBI Yearbook, at A-3.
189 Direct Testimony and Exhibits of Michael P. Gorman, at 76-77.
190 *Ibid.*, at 77.

results of 7.07 percent and 7.09 percent are well below his recommendation of 9.00 percent. It is clear Mr. Gorman did not give his Multi-Stage DCF results much weight when determining the Company's ROE.

Q. Please summarize Mr. Gorman's concerns with your CAPM analysis.

A. Mr. Gorman's concerns lie primarily with my MRP estimates.[191] In particular, Mr. Gorman argues the expected market returns applied in my analysis are "inflated."[192]

Q. What is your response to Mr. Gorman?

A. I disagree. The market return estimates presented in my Direct Testimony, which Mr. Gorman asserts are "inflated,"[193] represent the approximately 50^{th} and 52^{nd} percentile of actual returns observed from 1926 to 2018. Moreover, because market returns historically have been volatile, my market return estimates are statistically indistinguishable from the long-term arithmetic average market data on which Mr. Gorman relies.[194]

Mr. Gorman also asserts the Market Risk Premia estimated from my projected market returns are "overstated."[195] I therefore gathered the annual Market Risk Premia reported by Duff & Phelps and produced a histogram of the observations (recall that Mr. Gorman includes historical data among the methods he uses to estimate the MRP). The results of that analysis, which are presented in Chart 7 below and DEU Exhibit 2.19R, demonstrate Market Risk Premia of at least 12.02 percent (the high end of the range of

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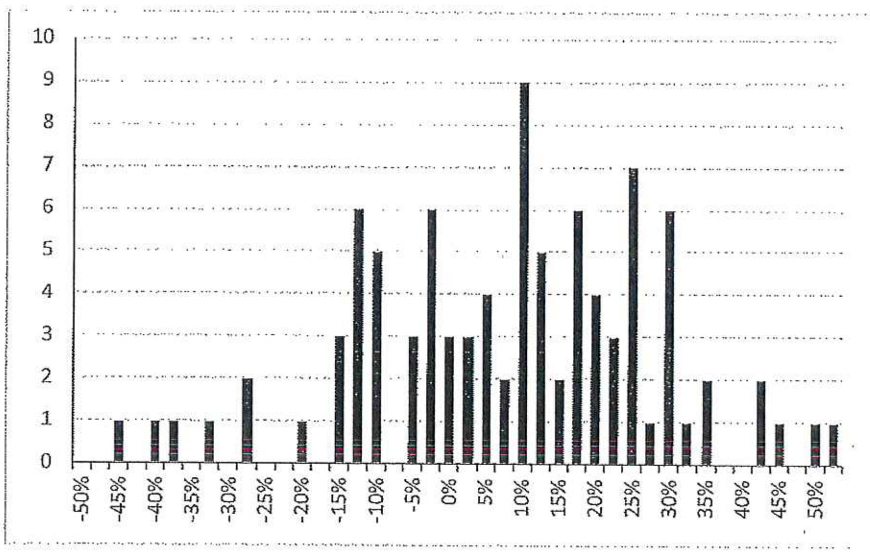
191 Direct Testimony and Exhibits of Michael P. Gorman, at 78.
192 *Ibid.*, at 79.
193 *Ibid.*
194 Source: Duff & Phelps, 2019 SBBI Yearbook Appendix A-1. Even if we were to look at the standard error, my estimates are within two standard errors of the long-term average.
195 Direct Testimony and Exhibits of Michael P. Gorman, at 78.

the MRP estimates in my Direct Testimony) occur approximately 42.00 percent of the time.

Chart 7: Frequency Distribution of Observed Market Risk Premia, 1926 – 2018[196]



Q. Please summarize Mr. Gorman's concerns with your ECAPM analysis.

A. Mr. Gorman's primary concern with my ECAPM analysis is the use of adjusted Beta coefficients published by Value Line and Bloomberg estimates.[197] As explained in my Direct Testimony, the use of adjusted Beta coefficients in the ECAPM is entirely consistent with academic research.[198] Because the ECAPM and adjusted Beta coefficients address two different aspects of security pricing it is entirely appropriate to apply both.

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196 DEU Exhibit 2.19R.
197 Direct Testimony and Exhibits of Michael P. Gorman, at 82.
198 Direct Testimony of Robert B. Hevert, at 60.

Q. As a preliminary matter, please explain what adjusted Beta coefficients are.

A. Beta coefficients are measured using an Ordinary Least Squares regression, in which the dependent variable is the return of the subject security, and the independent variable is the return on the market as measured by a given index (Value Line, for example, uses the New York Stock Exchange Index). The Beta coefficient is represented by the slope term of the regression estimates; that term is the same as Equation [8] in my Direct Testimony. Intuitively, the Beta coefficient measures the change in the subject company's returns relative to the change in the market return.

The resulting Beta coefficient is considered "raw", or unadjusted. Blume studied the stability of Beta coefficients over time, and found that "[n]o economic variable including the beta coefficient is constant over time."[199] Consistent with that finding, Blume observed a tendency of raw Beta coefficients to change gradually over time. Blume then proposed a correction for this tendency, also known as "regression bias", which is inherent in the calculation of all Beta coefficients. Based on Blume's results, a typical adjustment to Beta coefficients is given by the following formula:

$$\beta_{adjusted} = 0.33 + 0.67\,\beta_{unadjusted} \qquad [2]$$ [200]

Commercial providers of Beta coefficients, including Value Line and Bloomberg, provide adjusted Beta coefficients, consistent with the Blume adjustment.[201]

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199 Marshall E. Blume, *On the Assessment of Risk*, The Journal of Finance, Vol. XXVI, No. 1, March 1971.
200 *See, e.g.*, Bloomberg Professional, "BETA, HRA, and CORR Calculation FAQs," at 2.
201 *See*, http://www.valueline.com/Tools/Educational_Articles/Stocks/Using_Beta.aspx

Q. Are you aware of other studies that conclude it is appropriate to use adjusted Beta coefficients in the ECAPM?

A. Yes, I am. A 1980 study by Litzenberger, *et al.* concluded that the CAPM underestimates the Cost of Equity for companies with Beta coefficients less than 1.00, such as public utilities.[202] In that study, the authors applied adjusted Beta coefficients and still found the CAPM to underestimate the Cost of Equity for low-Beta companies. Similarly, in *Risk and Return for Regulated Industries*, the Brattle Group's Bente Villadsen, *et a.l* (2017) support the use of adjusted Beta coefficients in the ECAPM:

> Note that the ECAPM and the Blume adjustment are attempting to correct for different empirical phenomena and therefore both may be applicable. It is not inconsistent to use both, as illustrated by the fact that the Litzenberger et.al (1980) study relied on Blume adjusted betas and estimated an alpha of 2% points in a short-term version of the ECAPM. This issue sometimes arises in regulatory proceedings.[203]

Dr. Villadsen's observation is consistent with the conclusion that the Blume adjustment should not be conflated with the empirical effects addressed by the ECAPM. My Direct Testimony included a citation to Dr. Morin regarding this specific issue:

> Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than

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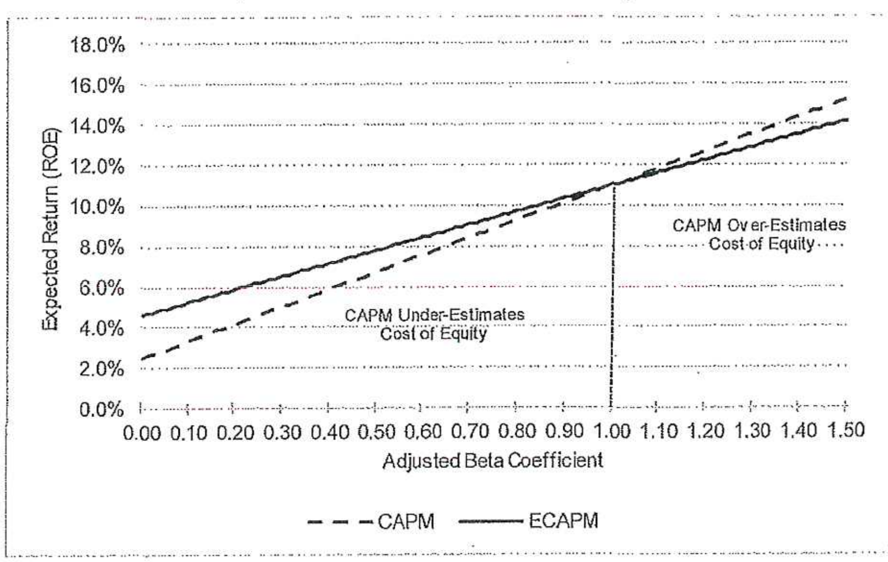
202 Robert Litzenberger, Krishna Ramaswamy and Howard Sosin, *On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital*, The Journal of Finance, Vol. XXXV, No. 2, May 1980.

203 Bente Villadsen, et.al, *Risk and Return for Regulated Industries* (2017), at 95, endnote 147 of Chapter 4.

> predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary.[204]

The relationship between expected returns under the CAPM and ECAPM can be seen in the "Security Market Line" ("SML") provided in Chart 8, below.[205] As Chart 8 demonstrates, and as Dr. Morin explained, the ECAPM increases the SML's vertical intercept, and decreases its slope. Those effects are distinct from the regression bias addressed by the Blume adjustment.

Chart 8: CAPM and ECAPM Expected Returns[206]



204 Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006 at 191. Figure 6-1 refers to a figure in Dr. Morin's textbook. Direct Testimony of Robert B. Hevert, at 60.

205 Assumes Mr. Gorman's assumed risk-free rate and projected MRP.

206 DEU Exhibit 2.20R. Source: FEA Exhibit 1.17. The finding that the ECAPM is not an adjustment to the Beta coefficient also is clear in the equation $(k_e = R_f + \alpha + \beta(MRP - \alpha))$, in which the alpha coefficient increases the intercept (the expected return when the Beta coefficient equals zero), and reduces the Market Risk Premium. Please note that the use of Mr. Gorman's CAPM estimates in Chart 8 is for illustrative purposes only.

Q. What is your response to Mr. Gorman's position that it is improper to include adjusted Beta coefficients in the ECAPM.

A Mr. Gorman's position is that the 0.75 and 0.25 weighting factors in the ECAPM are "mathematically the same as adjusting beta".[207] He further observes the SML of the CAPM using adjusted Beta coefficients is "the most similar" to the ECAPM using "raw" Beta coefficients and concludes that the ECAPM using adjusted Beta coefficients is therefore, less "accurate".[208] Mr. Gorman's position, however, assumes the CAPM and the resulting SML is properly specified in the first instance. As discussed in my Direct Testimony and Rebuttal Testimony, I disagree. Evidence has shown that the CAPM understates the required return for companies whose Beta coefficient is less than 1.00 and overstates the return for companies whose Beta coefficient is greater than 1.00. The ECAPM mitigates that tendency. Consequently, I disagree that because the slope of the ECAPM using adjusted Beta coefficients is different than the CAPM, it somehow "proves" it is not accurate.

As to Mr. Gorman's position that the Blume adjustment and ECAPM factors are "mathematically the same", algebraic equivalency is not the same as empirical equivalency, and it should not be considered as such. As Drs. Morin and Villadsen point out, the ECAPM addresses security pricing issues outside the regression bias addressed by the Blume adjustment. It does so by applying econometrically derived alpha factors,[209] distinct from those applied in Bloomberg's and Value Line's adjustment. There is no

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207 Direct Testimony and Exhibits of Michael P. Gorman, at 82.

208 *Ibid.*, at 85.

209 *See*, Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006 at 189.

empirical or theoretical reason the ECAPM and Blume adjustment factors should be the same; Mr. Gorman has provided none.

Q. Mr. Gorman suggests only "raw", or unadjusted Beta coefficients should be applied in the ECAPM.[210] Have you considered the effect of doing so on the model's results?

A. Yes, I have. Using the adjustment factors noted in Equation 2 above (0.33 and 0.67), I calculated "raw" Beta coefficients,[211] which I then applied in the ECAPM (based on the 0.25 and 0.75 factors discussed in my Direct Testimony). As Chart 9 (below) demonstrates, doing so decreases the SML's intercept, and increases its slope. In short, not only does that approach negate the ECAPM's intended effect, it magnifies the CAPM's tendency to underestimate the Cost of Equity for relatively low-Beta coefficient firms.

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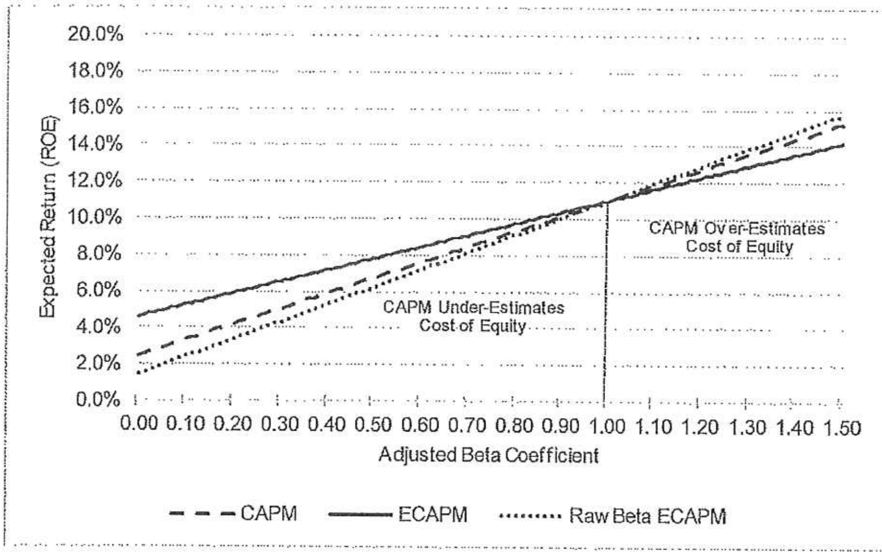
210 Direct Testimony and Exhibits of Michael P. Gorman., at 85.

211 $\beta_r = (\beta_a - 0.33)/0.67$

Chart 9: CAPM, ECAPM, and Adjusted CAPM Expected Returns[212]



Q. What are your conclusions regarding the use of adjusted Beta coefficients in the ECAPM?

A. Because the ECAPM and the Blume adjustment address different empirical issues, there is no concern with applying adjusted Beta coefficients in the ECAPM structure. Mr. Gorman's mathematical equivalency requires us to assume the two are fundamentally similar, but they are not. His proposed solution, applying unadjusted Beta coefficients in the ECAPM, has the counterproductive effect of further decreasing expected returns for low Beta coefficient companies relative to the CAPM, and increasing expected returns for relatively high Beta coefficient companies. Mr. Gorman's arguments have not changed my position regarding the use of adjusted Beta coefficients in the ECAPM.

212 DEU Exhibit 2.20R. Source: FEA Exhibit 1.17.

Q. Please summarize Mr. Gorman's criticisms of your Bond Yield Plus Risk Premium analysis.

A. Mr. Gorman's concern with my Bond Yield Plus Risk Premium analysis is my "contention" of a "simplistic inverse relationship" between the Equity Risk Premium and interest rates, which he suggests is not supported by academic research.[213] He argues the relevant factor explaining changes in the Equity Risk Premiums is the change to equity risk relative to debt risk, not changes in interest rates alone. Lastly, Mr. Gorman suggests that authorized returns reflect commission policy and "are not directly adjusted by market forces."[214]

Q. What is your response to Mr. Gorman's position that authorized returns used in the Bond Yield Plus Risk Premium do not directly reflect "market forces".

A. I disagree. Authorized returns and their associated proceedings reflect the same type of market-based analyses at issue in this proceeding. Because authorized returns are publicly available (the proxy companies disclose authorized returns, by jurisdiction, in their 2018 SEC Form 10-Ks),[215] it therefore is reasonable to conclude that data is reflected, at least to some degree, in investors' return expectations and requirements. From that perspective, ROE recommendations such as Mr. Gorman's, that are far removed from prevailing levels should be reconciled to differences in risk. I do not believe Mr. Gorman's recommendation does so.

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[213] Direct Testimony and Exhibits of Michael P. Gorman, at 86-87.

[214] *Ibid.*, at 88.

[215] *See, for example,* Atmos Energy Corporation., SEC Form 10-K for the fiscal year ended September 30, 2018, at 7; Southwest Gas Holdings, Inc., SEC Form 10-K for the fiscal year ended December 31, 2018, at 10-12; South Jersey Industries, SEC Form 10-K for the fiscal year ended December 31, 2018, at 108-114.

Lastly, although there is no disagreement that every case has its unique set of issues and circumstances, reviewing over 1,100 cases over many economic cycles and using that data to develop the relationship between the Equity Risk Premium and interest rates mitigates that concern. As such, Mr. Gorman's concerns that authorized returns may be influenced by factors other than objective market drivers is unfounded.

Q. Did you perform any additional analyses to address Mr. Gorman's concern regarding the effect of expected market volatility and interest rate environments on your results?

A. Yes, I did. Although I continue to believe the Risk Premium is properly specified, I performed an additional analysis to specifically include the effect of equity market volatility and credit spreads (*see* DEU Exhibit 2.21R). As with my original Bond Yield Plus Risk Premium analysis, I defined the Risk Premium as the dependent variable and the prevailing 30-year Treasury yield as an independent variable. I then included two additional explanatory variables: (1) the VIX (the Chicago Board Options Exchange's one-month volatility index, which is a common measure of volatility); and (2) the credit spread between the 30-year Treasury yield and the Moody's A Utility Index (as a measure of incremental risk).[216] In both instances, the statistically significant inverse relationship between Treasury yields and the Equity Risk Premium remains, and the resulting ROE estimates are generally consistent with those of my original and updated Bond Yield Plus Risk Premium analysis.[217] Applying Mr. Gorman's projected 2.50 percent 30-year Treasury yield to the alternative Bond Yield Plus Risk Premium Analysis

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216 Mr. Gorman notes on page 33 of his testimony and FEA Exhibit 1.03 that his proxy group has an average Moody's credit rating of A3; DEU Exhibit 2.21R.

217 *See,* DEU Exhibit 2.06 and DEU Exhibit 2.06R.

discussed above produces an ROE estimate of 9.73 percent relative to Mr. Gorman's 9.00 percent recommendation (*see* DEU Exhibit 2.21R).[218]

Q. What are Mr. Gorman's concerns regarding your Expected Earnings analysis?

A. In Mr. Gorman's view, the "approach does not measure the market required return…[r]ather, it measures the book accounting return."[219] Although I agree economic and financial factors, and the market-based models that depend on them are important, I do not agree those factors invalidate the Expected Earnings approach. As discussed in my Direct Testimony, no single method best captures investor expectations at all times and under all conditions.[220] Market-based models necessarily require us to draw inferences from market data based on the assumptions and construction of methods such as the DCF and CAPM approaches. The simplicity of the Expected Earnings approach is a benefit, not a detriment.

In addition, the standard revenue requirements formula applied by the Commission explicitly recognizes the validity of the book value of equity by choosing to measure capital structures based on book values, rather than market value. Moreover, although many factors affect stock returns and market to book ratios, the accounting-based ROE is one of them and therefore cannot be ignored.[221] As a practical matter, the Economic Value Added consulting practices[222] (Stern Stewart & Company) and related

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218 Mr. Gorman assumes a 2.50 percent projected Treasury yield in his Risk Premium analysis; Direct Testimony and Exhibits of Michael P. Gorman, at 59.

219 Direct Testimony and Exhibits of Michael P. Gorman, at 91.

220 Direct Testimony of Robert B. Hevert, at 13, 18.

221 I am not suggesting the Market-to-Book ratio necessarily will equal 1.00 when the accounting-based ROE equals the Cost of Equity.

222 *See*, G. Bennett Stewart, The Quest for Value, HarperCollins Publishers, Inc., 1990.

value-based-management systems[223] encourage financial managers to focus on elements of the Return on Net Assets, and Return on Invested Capital.

Dr. Morin summarizes the issue by noting that the method "is easily understood, and is firmly anchored in regulatory tradition," and concluding "because the investment base for ratemaking purposes is expressed in book value terms, a rate of return on book value, as is the case with [Expected] Earnings, is highly meaningful."[224] The Expected Earnings approach provides a direct measure of the expected opportunity cost of book equity. Further, because the approach looks to the expected earnings of comparable risk companies, it is consistent with the *Hope* and *Bluefield* "comparable return" standard. In my view, Mr. Gorman's argument that the Expected Earnings approach rejects the long-standing practice of setting authorized returns is without merit.[225]

Lastly, although Mr. Gorman suggests I use the Expected Earnings approach to "place"[226] my recommendation within my recommended range, I used the approach to corroborate my recommended range.[227] Again, Mr. Gorman's concerns are misplaced.

Q. Please summarize Mr. Gorman's testimony as it relates to flotation costs.

A. Mr. Gorman argues a flotation cost adjustment is unreasonable because it is "not based on the recovery of prudent and verifiable actual flotation costs incurred by DEU."[228]

223 *See*, Institute of Management Accountants, *Measuring and Managing Shareholder Value Creation*, 1997.
224 Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006 at 392, 395. [clarification added].
225 Direct Testimony and Exhibits of Michael P. Gorman, at 92.
226 *Ibid.*, at 72-73.
227 *See*, Direct Testimony of Robert B. Hevert, at 3, 18.
228 Direct Testimony and Exhibits of Michael P. Gorman, at 94.

Q. What is your response to Mr. Gorman regarding the need to recover flotation costs?

A. As explained in my Direct Testimony, flotation costs are not current expenses and are not reflected on the income statement. Rather they are part of the invested costs of the utility and are reflected on the balance sheet under "paid in capital."[229] Whether paid directly or via an underwriting discount, the cost results in net proceeds that are less than the gross proceeds. Because flotation costs permanently reduce the equity portion of the balance sheet, an adjustment must be made to the ROE to ensure that the authorized return enables investors to realize their required return.

I have provided an illustrative example of the effect of flotation costs on the ROE in DEU Exhibit 2.22R.[230] As shown in that exhibit, due to the effect of flotation costs, an authorized return of 10.62 percent would be required to realize an ROE of 10.50 percent (*i.e.,* a 12-basis point flotation cost adjustment). If flotation costs are not recovered, the growth rate falls and the ROE decreases to 10.38 percent (*i.e.,* below the required return).[231]

F. Mr. Gorman's Financial Integrity Analyses

Q. Please briefly summarize Mr. Gorman's assessment of his recommendation as it affects measures of DEU's financial integrity.

A. Mr. Gorman evaluates the reasonableness of his ROE recommendation by calculating two *pro forma* ratios – Debt to EBITDA, and Funds From Operations ("FFO") to Total Debt – to determine whether they would fall within S&P's guideline ranges for an

229 Direct Testimony of Robert B. Hevert, at 31.

230 This example is based on an analysis performed by Dr. Roger Morin. *See,* Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 330–332.

231 DEU Exhibit 2.22R is provided for illustrative purposes only. I have not relied on the results of the analysis in determining my recommended ROE or range.

investment grade rating.[232] In FEA Exhibit 1.18, Mr. Gorman develops those ratios, based on DEU's retail cost of service, his recommended ROE of 9.00 percent, and his proposed capital structure of 52.00 percent common equity and 48.00 percent long-term debt. Based on his *pro forma* analysis, Mr. Gorman argues his recommended ROE and capital structure support DEU's investment grade bond rating.[233] As with Mr. Lawton's *pro forma* assessment, Mr. Gorman's analysis assumes DEU actually will earn the entirety of its authorized ROE on a going-forward basis.

Q. **Are credit ratings determined principally by the types of pro forma metrics Mr. Gorman calculates in FEA Exhibit 1.18?**

A. No, as discussed in my response to Mr. Lawton, S&P's ratings process considers a range of both quantitative and qualitative data. Cash Flow/Leverage considerations are one element of a broad set of criteria.[234] Unlike Mr. Gorman's *pro forma* analysis, S&P's assessment does not look to a single period or assume static relationships among variables. Consequently, even if we assume credit determinations fundamentally are driven by two *pro forma* metrics, the actual assessment of those metrics is far more complex than Mr. Gorman's analysis suggests.

Q. **Did Mr. Gorman use the correct credit metric benchmarks reported by S&P in his analysis?**

A. It does not appear so. In FEA Exhibit 1.18, Mr. Gorman notes he applied S&P's "Medial Volatility" benchmarks. However, Mr. Gorman appears to have used S&P's "Standard Volatility" benchmarks for his Debt to EBITDA ratio, and the "Medial Volatility"

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232 *See*, Direct Testimony and Exhibits of Michael P. Gorman, at 70.
233 *Ibid.*, at 71-72.
234 Standard & Poor's Ratings Services, *Corporate Methodology*, November 19, 2013 at 5.

benchmark for the FFO to Total Debt ratio. That is, he did not apply S&P's benchmarks consistently when evaluating his *pro forma* metrics. S&P's benchmarks for the ratios Mr. Gorman used in his analysis are shown in Table 7 below.

Table 7: S&P's Credit Metric Benchmarks[235]

	Standard Volatility		**Medial Volatility**	
S&P Benchmark Ranges	**Debt / EBITDA**	**FFO/ DEBT**	**Debt / EBITDA**	**FFO/ DEBT**
"Intermediate"	2.0x – 3.0x	30% - 45%	2.5x – 3.5x	23% – 35%
"Significant"	3.0x – 4.0x	20% - 30%	3.5x – 4.5x	13% - 23%
"Aggressive"	4.0x – 5.0x	12% - 20%	4.5x – 5.5x	9% - 13%

Q. Do you agree with the premise of Mr. Gorman's analysis and conclusions he draws from it?

A. No, I do not. Simply maintaining an "investment grade" rating is an inappropriate standard. According to S&P, only two of 252 utilities currently have below investment grade long-term issuer ratings.[236] Because the Company must compete for capital within the utility sector in the first instance, and with companies beyond utilities in the second, the Company must have a strong financial profile. Such a profile enables the Company to acquire capital even during constrained markets.

Second, relying on *pro forma* credit metrics to assess the credit implications of any specific ROE or equity ratio is a partial analysis that may lead to incorrect conclusions. That concern arises not only because the credit rating process is complex, but also because a wide range of assumed ROEs and equity ratios produce *pro forma*

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235 Standard & Poor's RatingsDirect, *Corporate Methodology,* November 19, 2013, at 33.

236 S&P Global Ratings RatingsDirect, Issuer Ranking: North American Electric, Gas, And Water Regulated Utilities – Strongest to Weakest, January 29, 2018.

metrics within the benchmark ranges for a given credit rating. As shown in Table 8 (below, and DEU Exhibit 2.23R), for example, Mr. Gorman's *pro forma* analysis suggests an ROE as low as 7.39 percent, and as high as 12.09 percent, would produce *pro forma* Debt to EBITDA and FFO to Total Debt ratios in the "Significant" financial risk range identified in his analysis (using the "Medial Volatility" benchmarks noted in Table 7 above).

That is, even if we assume an unreasonably low ROE in Mr. Gorman's analysis, the *pro forma* Debt to EBITDA ratios remain in the "Significant" financial risk range. Clearly, a return as low as 7.39 percent, which is 224 basis points below the average 2019 authorized return value of 9.63 percent cited by Mr. Gorman[237] is an unrealistic estimate of the Company's Cost of Equity, just as 12.09 percent is unreasonably high.

Table 8: Mr. Gorman's Financial Integrity Test Using Alternate Assumptions[238]

	Debt / EBITDA	**FFO/ Debt**	
S&P Benchmark Ranges ("Medial Volatility")			
"Significant"	3.5x – 4.5x	13% - 23%	
SCENARIO	**Debt / EBITDA**	**FFO/ DEBT**	**Implied Financial Risk Rating**
Mr. Gorman as Filed (9.00% ROE)	4.07x	17%	Significant
7.39% ROE	4.45x	16%	Significant
12.09% ROE	3.50x	21%	Significant
10.50% ROE	3.77x	20%	Significant

237 *See,* Direct Testimony and Exhibits of Michael P. Gorman, at 6, Figure 1; FEA Exhibit 1.12. Rate cases completed through June 2019. As shown in DEU Exhibit 2.09R, when updated to include distribution rate cases through September 2019, the average authorized ROE is 9.70 percent.

238 *See,* DEU Exhibit 2.23R.

G. Capital Structure

Q. What is Mr. Gorman's proposal with respect to the Company's capital structure?

A. Mr. Gorman recommends a capital structure of 52.00 percent common equity and 48.00 percent long-term debt.[239] Mr. Gorman asserts his recommendation is appropriate because it is "reasonably consistent" with authorized common equity ratios for natural gas utilities and supports the Company's credit rating and financial integrity.[240] For the reasons discussed earlier, I do not agree Mr. Gorman's Financial Integrity analyses demonstrate the reasonableness of his ROE and capital structure recommendation.

Q. Do you agree with Mr. Gorman's position that his recommended capital structure is "consistent" with those authorized for natural gas utilities?

A. No, I do not. In his Table 5, Mr. Gorman provides authorized capital structure for natural gas and electric utilities over the years 2013 to 2018, as reported by RRA. However, Mr. Gorman does not include common equity ratios authorized in 2019. Through September 30, 2019, the average authorized common equity ratio in natural gas distribution proceedings was 54.34 percent, with a median of 53.43 percent.[241] That is, in 2019, the average and median authorized common equity ratio increased more than 200 basis points over the 2018 authorized common equity ratios reported by Mr. Gorman. That result is not surprising given the reduced cash flow as a result of the TCJA. From that perspective, the Company's proposed common equity ratio is consistent with common equity ratios authorized in 2019 for natural gas utilities in other jurisdictions.

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239 Direct Testimony and Exhibits of Michael P. Gorman, at 28.
240 *Ibid.*, at 27-28, 26.
241 Excluding rate cases in Arkansas, Florida, Indiana, and Michigan consistent with Mr. Gorman's approach.

V. RESPONSE TO ANGC WITNESS MR. OLIVER

Q. Please provide a summary of Mr. Oliver's testimony as it relates to the Company's Cost of Equity.

A. Mr. Oliver calculates an ROE of 9.00 percent, based on his Constant Growth DCF, CAPM, ECAPM, and Bond Yield Plus Risk Premium methods after applying a 20 basis point downward "adjustment" to account for his view of DEU's reduced risk relative to the proxy group.[242] Despite those results, he recommends an ROE of 9.50 percent, reflecting his application of "gradualism".[243]

In applying his DCF analyses, which produce an average result of 8.46 percent, Mr. Oliver relies on earnings growth projections from Zacks, CNN, and Yahoo! Finance.[244] His CAPM and ECAPM analyses, for which he reports estimates between 8.61 percent and 10.10 percent,[245] assume risk-free rates of 2.16 percent and 2.45 percent, the average Beta coefficients from Bloomberg presented in DEU Exhibit 2.04, and an MRP based on the difference between the Bloomberg expected market return presented in DEU Exhibit 2.03 and his 2.16 percent risk-free rate.[246] Although he devotes several pages of his testimony criticizing my Bond Yield Plus Risk Premium

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[242] Direct Testimony of Bruce R. Oliver, at 4, 38 (*see also,* ANGC Exhibit 1.04, page 1).
[243] *Ibid.*, at 4.
[244] ANGC Exhibit 1.04, page 1.
[245] Mr. Oliver's Near-Term ECAPM estimate shown on ANGC Exhibit 1.04, page 1 is a hardcoded value and does not contains the correct ECAPM calculation. When corrected, his near-term ECAPM estimate on ANGC Exhibit 1.04, page 1 increases from 9.86 percent to 10.10 percent. This correction increases his average CAPM and ECAPM results from 9.30 percent to 9.36 percent.
[246] ANGC Exhibit 1.04, page 1.

analysis,[247] Mr. Oliver performs a similar analysis using a shortened set of my data to develop a Risk Premium-based ROE estimate of 9.78 percent.[248]

The reported average of Mr. Oliver's three methods (*i.e.*, DCF, CAPM/ECAPM, and the Bond Yield Plus Risk Premium) is 9.00 percent,[249] which he appears to consider a reasonable estimate of the Company's Cost of Equity.[250] Rather than recommend that return, however, for the sake of "gradualism" Mr. Oliver assumes a 35-basis point downward adjustment from the Company's currently authorized ROE of 9.85 percent,[251] arriving at his recommended ROE of 9.50 percent.

As discussed below, Mr. Oliver's view that 9.00 percent is a reasonable estimate of the Cost of Equity rests on fundamentally flawed analyses and fails to reconcile itself with the authorized returns available to other natural gas utilities. For the reasons discussed in my response to Mr. Coleman, I disagree that Mr. Oliver's 9.50 percent recommendation for the sake of gradualism mitigates those concerns.

Q. What are the principal areas in which you disagree with Mr. Oliver's ROE analyses?

A. There are several areas in which I disagree with Mr. Oliver, specifically: (1) his view that my ROE recommendation is overstated; (2) the Company's relative risk; (3) the application of the DCF method; (4) the application of the CAPM, in particular his application of my MRP estimates filed in my Direct Testimony with his more recent risk-free rates; (5) his broad assertions regarding my DCF and CAPM analyses; and (6) the

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247 Direct Testimony of Bruce R. Oliver, at 28-31.
248 ANGC Exhibit 1.04, page 1 and page 3.
249 9.10 percent when corrected for Mr. Oliver's Near-Term ECAPM calculation.
250 Direct Testimony of Bruce R. Oliver, at 40. Reflects his 20-basis point downward adjustment.
251 *Ibid.* at 4.

effect of certain risks on the Company's ROE, including the need to consider flotation costs when estimating the Company's Cost of Equity. Lastly, I respond to Mr. Oliver's recommended capital structure.

A. Overstated Return of Equity Recommendation

Q. What is your response to Mr. Oliver's belief that your ROE recommendation is overstated?[252]

A. Mr. Oliver's concern is misplaced. I have presented results using five common and widely accepted ROE estimation methods, including the DCF, CAPM, ECAPM, Bond Yield Plus Risk Premium, and Expected Earnings approaches. As discussed in my Direct Testimony, I provide well-documented and supported criteria for my application of those methods. Any suggestion on his part that I somehow have systematically overstated my estimates is wrong, has no merit, and should be given no weight.

To that point, Mr. Oliver argues that I have "overstated" my ROE recommendation by an average of 78 basis points compared to the ROEs authorized by regulatory commissions in the last three years.[253] Although Mr. Oliver asserts his presentation of the "Regulators' Adjustment Factor" simply is an "illustration"[254] of the difference between my recommendations and ROEs authorized by regulatory commissions, he has provided no compelling argument or method by which that data may be used. If regulatory commissions did set the ROE simply by subtracting a set number of basis points from the requested return, it could create a dynamic in which petitioning companies would increase their request, simply to receive the result that they believe

[252] *Ibid.*, at 11-12.
[253] *Ibid.*
[254] *Ibid.*, at 12.

represents the investor-required return. That is not, and has not been my practice. Rather, my practice is to propose a return I view as representing investors' return requirements, and to respond to opposing witnesses on methodological points on which we disagree. That is what I have done, and what I do in more detail, below.

Q. Please summarize Mr. Oliver's position that your use of Value Line data "introduces a significant upward bias".[255]

A. In several instances, Mr. Oliver criticizes the Value Line data applied in my analyses. In particular, he argues that the Value Line earnings growth projections "differ significantly" from analysts' consensus growth rate projections from Zacks or Yahoo! and affects the range of my DCF results.[256] For similar reasons, he also rejects my Sustainable Growth (or Retention Growth) estimates because they are calculated using Value Line Data.[257] Lastly, he argues Value Line's projected earnings growth rates affect my Expected Earnings analysis.[258]

Q. What is your response to Mr. Oliver on those points?

A. Although Mr. Oliver may disagree with Value Line's data, the relevant question is whether investors rely on Value Line's data. Value Line is a leading, independent provider of financial data covering over 6,000 stocks, 18,000 mutual funds, 200,000 options, and other securities. In my experience, Value Line is a common data source used in regulatory proceedings and is widely relied on by investors. Mr. Oliver has not provided any evidence to the contrary. His position should be rejected.

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255 *Ibid.*, at 7.
256 *Ibid.*, at 17.
257 *Ibid.*, at 22.
258 *Ibid.*, at 32.

B. Relative Risk

Q. Mr. Oliver suggests your Cost of Equity analyses do not reflect the risk and return requirements of DEU's distribution utility operations because the analyses are based on holding companies.[259] What is your response?

A. Mr. Oliver relies on the same group of comparable companies I used in my Direct Testimony.[260] As Mr. Oliver acknowledges, it is not possible to select a proxy group of comparable publicly traded natural gas distribution utilities.[261] However, by carefully choosing screening criteria, the proxy group developed in my Direct Testimony generally is comparable in terms of business and financial risk to the Company. For that reason, it is my view that those companies can be used to estimate the Cost of Equity for DEU in this proceeding. For example, DEU's credit rating is similar to its peers' (*see* Table 9 below). Although not a full measure of equity risk, credit ratings suggest that the Company's business risk is not dissimilar to its peers.

Table 9: Credit Rating Comparison[262]

	S&P	Moody's
DEU (Questar Gas Co.)	BBB+	A3
Proxy Group Weighted Average (Operating Company)	BBB+	A2
Proxy Group Weighted Average (Holding Company)	A-	A3

259 *Ibid.*, at 37-38.
260 *Ibid.*, at 37.
261 *Ibid.*, at 16, 37.
262 As reported by S&P Global Market Intelligence, accessed November 4, 2019.

Q. Do you agree with Mr. Oliver's 20-basis point downward adjustment to his DCF and CAPM analyses?[263]

A. No, I do not. Mr. Oliver has not provided any empirical evidence to support a deduction of any amount is required, particularly in light of the proxy group's similarity in credit ratings discussed above. Nor has he provided evidence that 20-basis points reflects the investors' risk perception of DEU relative to the proxy group. As much as Mr. Oliver criticizes my "judgment" in analytical approaches, he is willing to apply his own, without any empirical basis.

C. Constant Growth Discounted Cash Flow Model

Q. What is your response to Mr. Oliver's suggestion that stock prices averaged over an annual period is "more common" in a DCF analysis than your 30-, 90-, and 180-trading day averaging periods?[264]

A. Mr. Oliver asserts his approach is "more common", but he provides no support for that assertion. As discussed in my Direct Testimony, I used multiple averaging periods to ensure short-term anomalous events do not affect the model's results.[265] The 180-trading day averaging period in my Direct Testimony includes over eight months of data from August 29, 2018 through May 17, 2019. Mr. Oliver provides no evidence to demonstrate his average of the annual high and low stock prices is "more commonly used

263 Direct Testimony of Bruce R. Oliver, at 38-39.
264 *Ibid.*, at 24.
265 Direct Testimony of Robert B. Hevert, at 48.

by investors"[266] than my eight-and-one-half-month averaging period (*i.e.*, 180-trading days).

Although Mr. Oliver believes his annual stock price averaging period is "more traditional" and my approach is inconsistent with industry practice, he is the only witness in this proceeding that relied on an annual stock price averaging period.[267] Division Witness Mr. Coleman relied on a 30-trading day average stock price,[268] OCS Witness Mr. Lawton relied on a three-month average,[269] and FEA Witness Mr. Gorman relied on a 13-week averaging period.[270] Simply, Mr. Oliver's suggestion that the averaging periods I relied on in my DCF analysis are "untraditional" is unsupported and inconsistent with every other ROE witness in this proceeding.

D. Capital Asset Pricing Model and Empirical CAPM

Q. Please summarize Mr. Oliver's application of the CAPM.

A. Mr. Oliver's CAPM and ECAPM analyses assume risk-free rates of 2.16 percent and 2.45 percent, my proxy group average Bloomberg coefficient of 0.573 filed in DEU Exhibit 2.04, and an MRP based on the difference between the Bloomberg expected market return presented in DEU Exhibit 2.03 and his 2.16 percent risk-free rate.[271] He applies those inputs to derive Cost of Equity estimates of 8.61 percent and 10.10

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266 Direct Testimony of Bruce R. Oliver, at 24.

267 Mr. Lawton reviews an annual high and low stock price average as one of his methods, but relies on the three-month average stock price. Direct Rate of Return Testimony of Daniel J. Lawton, at 21.

268 Direct Testimony of Casey J. Coleman, at 25.

269 Direct Rate of Return Testimony of Daniel J. Lawton, at 21.

270 Direct Testimony and Exhibits of Michael P. Gorman, at 35.

271 ANGC Exhibit 1.04, page 1.

percent.[272] Mr. Oliver ultimately calculates the average of his CAPM and ECAPM results percent of 9.36 percent (before his 20-basis point risk adjustment).[273]

Q. What is your concern with Mr. Oliver's CAPM and ECAPM analyses?

A. My concern is that Mr. Oliver applies a Beta coefficient and MRP based on data from May 2019 with a more recent average risk-free rate from the month of September 2019. That is, in calculating his 11.26 percent MRP, Mr. Oliver subtracted the average 30-year Treasury yield over the month of September 2019 from the Bloomberg expected total market return of 13.42 percent as of May 17, 2019 presented in DEU Exhibit 2.03. If his CAPM and ECAPM analyses were corrected to apply more recent data for the Bloomberg MRP and Beta coefficient shown in DEU Exhibits 2.03R and 2.04R, respectively, his average CAPM and ECAPM-based result would be 9.85 percent (*see* DEU Exhibit 2.24R).[274]

E. Relevance of Bond Yield Plus Risk Premium Analysis

Q. Please briefly summarize Mr. Oliver's observations regarding your Bond Yield Plus Risk Premium Analysis.

A. Mr. Oliver argues my analysis does not "account for changes in risk profiles of the utilities for which ROE determinations are rendered."[275]

Q. What is your response to Mr. Oliver's criticisms?

A. I disagree. As my Direct Testimony explains, the Equity Risk Premium is not stable, but moves inversely to interest rates.[276] That relationship, or change in the Equity Risk

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272 *Ibid.* Reflects Mr. Oliver's corrected Near-Term ECAPM calculation.
273 *Ibid.*
274 Additionally, DEU Exhibit 2.24R applies Blue Chip Financial Forecast's near-term projection of the 30-year Treasury yield as of October 1, 2019.
275 Direct Testimony of Bruce R. Oliver, at 30.

Premium, is captured in the regression analysis contained in DEU Exhibit 2.06 to my Direct Testimony and updated in DEU Exhibit 2.06R to my Rebuttal Testimony. Further, as discussed in my response to Mr. Gorman above, authorized returns and their associated proceedings reflect the same type of market-based analyses at issue in this proceeding. That is, changes in risk profiles are indeed captured in authorized returns over time as commissions set returns based on their assessment of utilities' risk-adjusted required return.

Although not discussed in his testimony, it appears Mr. Oliver performed a similar analysis using a subset of my data from the last ten years, producing ROE estimates of 9.65 percent and 9.90 percent.[277] The average of those results (9.78 percent) represent one-third of his of overall model-based ROE estimate.

Q. Do you agree with Mr. Oliver's application of a shortened data set?

A. No, I do not. Mr. Oliver has not provided any evidence to support his shortened data set, nor has he demonstrated that the relationship between Treasury yields and the Equity Risk Premium prior to 2009 is inconsistent with the structure of the model. The data used in my analyses cover several capital market and macroeconomic cycles and captures the relationship between the Equity Risk Premium and interest rates over those cycles. By ignoring those observations, Mr. Oliver's analysis unnecessarily makes the model less robust.

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276 Direct Testimony of Robert B. Hevert, at 63-64.
277 ANGC Exhibit 1.04, page 1.

F. Asserted Shortcomings in the DCF and CAPM Analyses

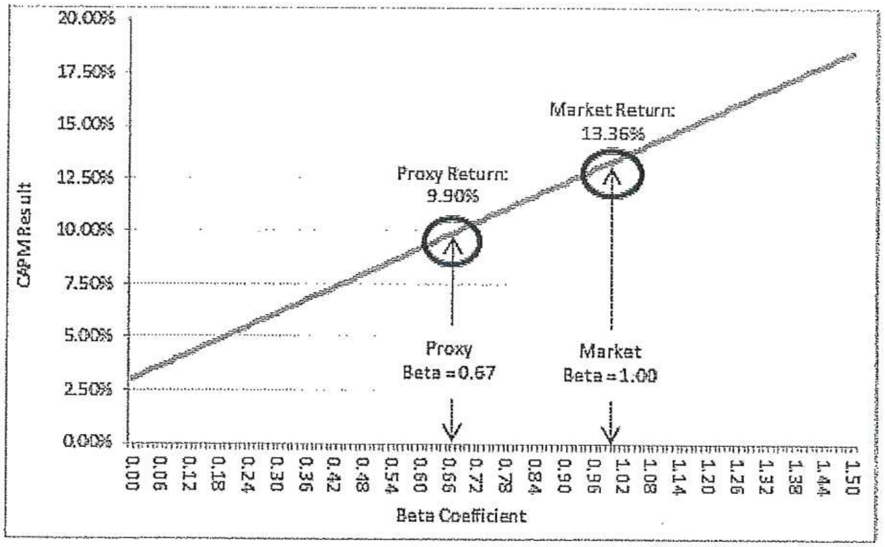
Q. What shortcomings does Mr. Oliver suggest in your analyses?

A. First, Mr. Oliver observes that I adjust the MRP for the S&P 500 by Beta coefficients, and asserts that calculation has two shortcomings. First, he argues the Beta coefficient only addresses the risk related to the volatility of company's stock price relative to the broader market, and does not address "other forms of financial risk, operating risk, and market risk that a company may face".[278] Second, he argues "there are numerous alternative methods for computing Beta coefficients, and some of those alternatives can noticeably alter the ROE estimates that are derived from CAPM and ECAPM models".[279] Mr. Oliver's assertions are fundamentally incorrect and entirely misplaced.

Regarding Mr. Oliver's first point, the CAPM assumes investors are compensated for the non-diversifiable or "systematic" risk of a security.[280] Systematic risk is represented by the Beta coefficient, which is a measure of the subject company's risk relative to the overall market. Equation [8] to my Direct Testimony demonstrate that the Beta coefficient relates the subject company's systematic risk to that of the overall market. The relationship among the Cost of Equity, Beta coefficients, and the risk-free rate can be shown on the "Security Market Line", which falls from Modern Portfolio Theory.

278 Direct Testimony of Bruce R. Oliver, at 28.
279 *Ibid.*
280 *See,* Direct Testimony of Robert B. Hevert, at 21, 53.

Chart 10: Security Market Line[281]



As explained below, Mr. Oliver appears to be critical of my CAPM analyses because they are based on the underlying principles of Modern Portfolio Theory.

Q. What is your response to Mr. Oliver's argument that there are other risks not addressed by Beta coefficients?

A. Here too, Mr. Oliver's arguments are misplaced. Mr. Oliver states:

> …the Commission should recognize that Beta have been developed as measures of the volatility of a company's stock price relative to the volatility of the broader market. However, that focus on relative stock price volatility only addresses one element of a company's risk. Other forms of financial risk, operating risk, and market risk that a company may face in the production and marketing of its products and services are not addressed.[282]

If Mr. Oliver's point is that his perceived shortcomings in Beta coefficients renders the CAPM inapplicable, I disagree. As explained in my Direct Testimony, under the CAPM (and Modern Portfolio Theory), investors are concerned with "non-

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281 For illustrative purposes only.

282 Direct Testimony of Bruce R. Oliver, at 28.

diversifiable" risk.[283] Whereas DCF models focus on expected cash flows, Risk Premium-based models such as the CAPM focus on the additional return that investors require for taking on additional risk.

Mr. Oliver seems to argue that the CAPM is mis-specified, that it should capture "other forms of risk" that may be diversifiable. But that is not the intent of the CAPM. The point of applying different methods is to capture different perspectives on security pricing. The information captured by the CAPM is important to investors, regardless of Mr. Oliver's view regarding its specification. Moreover, if Mr. Oliver felt other variables reflecting diversifiable risk should be added, he could have applied Arbitrage Pricing Theory, but he did not.

Equally concerning is Mr. Oliver's statement that Beta coefficients do not reflect "financial risk". Here again, he simply is incorrect. As Copeland, Koller, and Murrin explain, "Beta is a measure of the systematic risk of the levered equity of the comparison companies".[284] That is, Beta coefficients reflect the effect of financial risk to equity investors. In fact, the authors discuss a method to remove the effect of financial leverage by "unlevering" the Beta coefficient. Mr. Oliver's assertion that Beta coefficients do not reflect financial risk is fundamentally incorrect.

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283 Direct Testimony of Robert B. Hevert, at 28, 53.

284 Copeland, Koller, Murrin, Valuation, Measuring and Managing the Value of Companies, 2nd Ed., at 343.

Q. Does Mr. Oliver provide any support for his position that alternative Beta coefficient calculations "can noticeably alter the ROE estimates that are derived from CAPM and ECAPM models"[285]?

A. No, he does not. Mr. Oliver provides no explanation as to what "alternative methods for computing Beta coefficients" he refers, nor does he provide any support to his position that these alternatives "can noticeably alter the ROE estimates that are derived from CAPM and ECAPM models."[286] Despite his concern regarding my Beta coefficients, Mr. Oliver appears to accept them as he applies my Bloomberg-based proxy group average Beta coefficient in his CAPM and ECAPM analyses.[287]

G. Other Business Risks and Considerations

Q. Please provide a brief summary of Mr. Oliver's recommendation as it relates to flotation costs.

A. Mr. Oliver does not recommend adjusting the ROE to reflect flotation costs because: (1) after DEU's merger with Dominion Energy, the Company no longer directly incurs flotation costs; and (2) he argues the flotation cost is small and within the margin of error in my analysis.[288]

Q. Is the need to consider flotation costs eliminated because DEU is a wholly-owned subsidiary of Dominion Energy?

A. No. The acquisition of DEU by Dominion Energy does not negate the need to recover flotation costs. Any issuance of equity by Dominion Energy will incur issuance costs.

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285 Direct Testimony of Bruce R. Oliver, at 28.
286 *Ibid.*
287 *Ibid.*, at 39; ANGC Exhibit 1.04, page 1.
288 *See*, Direct Testimony of Bruce R. Oliver, at 35-36.

Dominion Energy's net proceeds will then be allocated to its subsidiaries, including DEU. This allocation to the Company reflects the net proceeds received by Dominion Energy such that DEU indirectly incurs these costs.

Q. Do you believe the flotation cost is small and within the margin of error in my analysis?

A. No. None of the methods I applied directly reflect flotation costs.[289] I believe flotation costs are a distinct measure of value that should be reflected in a company's awarded ROE so that the company has a reasonable opportunity to earn a fair return.

Q: What is Mr. Oliver's position as it relates to electrification?

A. Mr. Oliver acknowledges that electrification (or "deep decarbonization") is a risk factor, but does not believe it is a risk factor for DEU because its system is young compared to other natural gas distribution systems.[290] In my view, a younger system might be at a higher risk relative to older systems because the risk of stranded assets is higher relative to older systems in which more of the assets are depreciated should electrification efforts prevail.

H. Capital Structure

Q. What is Mr. Oliver's proposal with respect to the Company's capital structure?

A. Mr. Oliver recommends a capital structure of 50.00 percent common equity and 50.00 percent long-term debt.[291] Mr. Oliver disagrees with the capital structure analysis I presented in DEU Exhibit 2.10 because he believes they are at the holding company level

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289 Direct Testimony of Robert B. Hevert, at 32.
290 Direct Testimony of Bruce Oliver, at 33.
291 *Ibid.*, at 47.

and in his view do not represent regulated distribution utility operations.[292] Lastly, Mr. Oliver suggests DEU's parent company Dominion Energy is inappropriately leveraging its regulated utility capital structure raising costs to utility ratepayers.[293] As discussed below, I disagree with Mr. Oliver's characterization.

Q. What is your response to Mr. Oliver's argument that your proxy group capital structure analysis is not informative because it is at the holding company level?

A. I disagree. First, the data is only available at the holding company level as not every proxy company reports capital structure data at the regulated operating company level. For the proxy companies that do report capital structure data at the regulated operating company level, however, the average common equity ratio in place at those regulated operating subsidiaries has been 57.59 percent (*see*, Table 10 below). From that perspective, the Company's proposed capital structure consisting of 55.00 percent common equity is reasonable.

Table 10: Proxy Group Regulated Operating Company Common Equity Ratios [294]

Company	Parent Ticker	Q2 2019	Q1 2019	Q4 2018	Q3 2018	Average
North Jersey Natural Gas Company	NJR	61.04%	62.20%	60.65%	58.80%	60.67%
Northwest Natural Gas Company	NWN	48.73%	50.41%	49.36%	47.67%	49.05%
ONE Gas, Inc	OGS	61.44%	61.38%	61.38%	62.81%	61.75%
South Jersey Gas Company	SJI	54.41%	54.37%	53.01%	54.70%	54.12%
Southwest Gas Corporation	SWX	49.20%	50.93%	49.50%	48.61%	49.56%
Spire Alabama Inc	SR	67.20%	67.05%	71.53%	71.48%	69.32%
Spire Missouri Inc	SR	59.81%	58.50%	57.20%	59.03%	58.64%
Average		57.41%	57.84%	57.52%	57.59%	57.59%

292 *Ibid.*, at 41.
293 *Ibid.*, at 44-45.
294 Sources: Company SEC Form 10-K and 10-Q, S&P Global Market Intelligence. Atmos Energy Corporation and Chesapeake Utilities does not report regulated natural gas operations separately. ONE Gas, Inc. consists of 100.00 percent rate-regulated natural gas operations.

Q. Mr. Oliver observes DEU's parent Dominion Energy had "substantially less Common Equity and noticeably more Long-Term Debt" and asserts that "[u]tility holding companies often seek higher equity ratios in the capital structures of their <u>regulated utilities</u> to enable the holding company to finance non-utility activities at lower costs."[295] What is your response?

A. Mr. Oliver's position appears to suggest the Company is engaging in double leverage, to the detriment of customers.[296] I have several concerns with that position. First, in my experience utilities typically apply the prudent financing principle of maturity, or duration, matching. Under that principle, long-lived assets are financed with correspondingly long-lived securities. As discussed earlier, due to its perpetual life common equity has a long duration. Adding equity to the capital structure therefore extends the capital structure's weighted average duration, more closely aligning it with the assets that form the rate base.

Mr. Oliver's position also runs counter to the to the widely accepted "stand-alone" regulatory principle, which treats each utility subsidiary as its own company. Under the stand-alone approach, the cost of capital is determined using the subsidiary's capital structure and cost of debt and equity; the Cost of Equity is generally estimated by reference to a proxy group of firms of comparable risk.

Consistent with the stand-alone principle, the ownership structure does not affect the operating utility's capital structure or cost of capital. Parent entities, like other investors, have capital constraints and must consider the attractiveness of the expected

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295 Direct Testimony of Bruce R. Oliver, at 44. Emphasis included in original quotation.
296 *Ibid.*, at 44-45.

risk-adjusted return of each investment alternative as part of their capital budgeting process. This opportunity cost concept applies regardless of the source of the funding. When funding is provided by a parent entity, the return on that financing must still be sufficient to provide an incentive to the parent entity to allocate equity capital to the subsidiary or business unit rather than other internal or external investment opportunities. That is, the regulated subsidiary must compete for capital with its affiliates and with other, similarly situated utility companies.

From an external investor's perspective, the combined company must provide a return reflecting the risks of the company's constituent parts. Investors therefore value combined entities on a sum-of-the-parts basis, expecting each operating segment to provide its appropriate risk-adjusted return. That practical financial principle is consistent with the regulatory principle of treating utilities as stand-alone entities. From both perspectives, it is the utility's operating risk that defines the capital structure and cost of capital, not investors' sources of funds.

Contrary to those basic principles, Mr. Oliver's double leverage argument assumes the required return depends on the source of financing, not on the risks of the underlying utility operations. The position that a company would have a different cost rate depending on how its investors fund their equity investments violates the widely acknowledged economic "law of one price", which states that in an efficient market, identical assets would have the same value. In other words, two utilities, identical in all respects but for their form of ownership, should have the same common equity cost rates.

Moreover, if the common equity of a subsidiary were held by both the parent and an external investor, the equity held by the parent would have one required return, and the equity held by outside investors would have another. To the extent the required returns differ, so would the value of the equity. But in an efficient market, identical assets must have the same price (value). If not, the difference quickly would be arbitraged away. As Dr. Roger A. Morin in New Regulatory Finance (at page 523) notes:

> Carrying the double leverage standard to its logical conclusion leads to even more unreasonable prescriptions. If the common shares of a subsidiary were held by both the parent and by individual investors, the equity contributed by the parent would have one cost under the double leverage computation while the equity contributed by the public would have another.

The double leverage argument also requires every affiliate within the corporate family to have the same cost of capital, regardless of differences in risk. Dominion Energy reports five operating segments: Power Delivery; Gas Infrastructure; Southeast Energy; and Corporate and Other.[297] Because they are separately reported, we reasonably can assume those segments face different risks. And because they face different risks, we reasonably may assume they require different returns. Dr. Morin further noted:

> Just as individual investors require different returns from different assets in managing their personal affairs, why should regulation cause parent companies making investment decisions on behalf of their shareholders to act any differently? A parent company normally invests money in many operating companies of varying sizes and varying risks. These operating subsidiaries pay different rates for the use of investor capital, such as long-term debt capital, because investors recognize the differences in capital structure, risk, and prospects between the subsidiaries. Yet, the double leverage calculation would assign the same return to each activity, based on the parent's cost of capital. Investors recognize that different subsidiaries are exposed to different risks, as evidenced by the different bond ratings and cost rates of operating subsidiaries. The same argument carries over to common equity. If the cost rate for debt is different

[297] *See*, Dominion Energy, Inc. SEC Form 10-K for the year ended December 31, 2018, at 12.

> because the risk is different, the cost rate for common equity is also different, and the double leverage adjustment shouldn't obscure this fact.[298]

Longstanding academic literature has thoroughly discussed the flaws associated with the double leverage approach. For example:

1. Pettway and Jordan (1983), and Beranek and Miles (1988) point out the flaws in the double leverage argument, particularly the excess return argument, and also demonstrate that the "stand-alone" method is the superior approach.
2. Rozef (1983) discusses the ratepayer cross-subsidies of one subsidiary by another when employing double leverage.
3. Lerner (1973) concludes that the returns granted to equity investors must be based on the risks to which the investors' capital is exposed and not the investors' source of funds.

Basic finance texts reach the same conclusions. In Principles of Corporate Finance, 8th edition, Brealey, Myers, and Allen state (at page 234):

> In principle, each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put. If we wish to estimate the cost of capital for a particular project, it is project risk that counts.

Likewise, in Modern Corporate Finance, 1st edition, Shapiro states (at page 276):

> Each project has its own required return, reflecting three basic elements: (1) the real or inflation-adjusted risk-free interest rate; (2) an inflation premium approximately equal to the amount of expected inflation; and (3) a premium for risk. The first two cost elements are shared by all projects and reflect the time value of money, whereas the third component varies according to the risks borne by investors in the different projects. For a project to be acceptable to the firm's shareholders, its return must be sufficient to compensate them for all

298 Roger A. Morin, PhD, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 524-525.

> three cost components. This minimum or required return is the project's cost of capital and is sometimes referred to as a hurdle rate.
>
> The preceding paragraph bears a crucial message: The cost of capital for a project depends on the riskiness of the assets being financed, not on the identity of the firm undertaking the project.

Simply, the notion of double leverage runs counter to both financial and regulatory principles.

Lastly, double leverage arguments have been rejected by several regulatory commissions, including the Maryland Public Service Commission:

> We reject People's Counsel's proposed capital structure [reflecting a double leverage adjustment] because it suffers from numerous flaws. First, it assumes that the rate of return depends on the source of capital rather than the risks faced by the capital.[299]

In 2016, the Federal Energy Regulatory Commission ("FERC") reiterated its previous position on "double leveraging,"[300] stating that "the motivations of a parent company are irrelevant"[301] so long as the operating company passes the Commission's three-part test: (1) it issues its own debt without guarantees; (2) it has its own bond rating; and (3) it has a capital structure within the range of capital structures approved by the commission.[302] Under FERC guidance, the capital structure of Dominion Energy is not applicable to DEU.

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299 Maryland Public Service Commission, Order No. 81517, Case No. 9092, *In the Matter of the Application of Potomac Electric Power Company for Authority to Revise its Rate and Charges for Electric Service and for Certain Rate Design Changes*, July 19, 2007 at 73. [clarification added].

300 *See, Transcontinental Gas Pipe Line Corp,* 80 FERC ¶ 61,157, 61,657 (1997) ("Opinion No. 414").

301 154 FERC ¶ 61,004 Docket No. ER15-945-001, at 15.

302 *Ibid., See also, Transcontinental Gas Pipe Line Corp,* 80 FERC ¶ 61,157, 61,657 (1997) ("Opinion No. 414").

The Washington Utilities and Transportation Commission ("WUTC") has cited to FERC's position on the use of double leverage in support of its decision in Docket No. UE 050684:

> The FERC does not embrace the concept of double leverage. For purposes of calculating rate of return for wholly owned subsidiaries, FERC uses the stand-alone capital structure and return on equity of the subsidiary so long as the subsidiary issues its own debt, maintains its own credit ratings and meets other standards related to equity ratio. The courts have upheld this policy. *See Missouri Pub. Serv. Comm'n v. Federal Energy Reg Comm'n, 215 F.3d 1, 342 U. S. App. DC. 1* (D.C. Cir. June 27, 2000).[303]

In that same Order, the WUTC considered the effects of ring fencing in protecting ratepayers against financial leverage at the parent level:

> The ring fencing provisions required by our final order in Docket UE-051090 insulate PacifiCorp and its customers from risks and financial distress at the MEHC level. Nonetheless, after having insulated PacifiCorp and its customers from the risks of leveraged financing at the parent, Staff and Public Counsel seek to secure for customers the cost and tax benefits of that financing. The Company's expert witness argues this may violate the familiar principle in utility law that financial benefits should follow burden of risks. We agree. If the risks and costs of activities at the parent-level are born exclusively by shareholders—because customers are insulated from them by the ring fence—then it is fair and appropriate for the shareholders, and not the customers, to receive the benefits that result from those activities.[304]

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[303] Washington Utilities Transportation Commission, Docket No. UE 050684, Order No. 4, at 117.
[304] *Ibid.*, at 54.

VI. RESPONSE TO UAE WITNESS MR. HIGGINS

Q. Please summarize Mr. Higgins' testimony regarding the Company's ROE?

A. Mr. Higgins opposes the Company's proposed ROE based on his review of authorized ROEs nationwide over the past twelve months.[305] Although Mr. Higgins did not undertake an independent, market-based analysis of the Company's Cost of Equity, his review of ROEs nationwide is intended to supplement the Cost of Capital analyses submitted in this proceeding.[306]

Q. Mr. Higgins observes the median ROE authorized for natural gas utilities over the last twelve months is 9.70 percent. Do you have any additional observations?

A. Yes, I do. Although Mr. Higgins does not provide the underlying data supporting his 9.70 percent median, as shown in DEU Exhibit 2.09R, his calculation is consistent with the average and median authorized ROE in 2019 through September 30, 2019, compared to the median authorized ROE of 9.60 percent in 2017 and 2018.[307] Further, the authorized ROE was equal to or greater than 9.70 percent seven out of nine natural gas distribution rate cases so far in 2019.

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305 Direct Testimony of Kevin C. Higgins, at 23.
306 *Ibid.*
307 *See*, DEU Exhibit 2.09R.

VII. CONCLUSIONS AND RECOMMENDATION

Q. What is your conclusion regarding the Company's Cost of Equity and capital structure?

A. Based on the analyses discussed throughout my Direct and Rebuttal Testimony, I continue to believe the reasonable range of ROE estimates is from 9.90 percent to 10.75 percent, and within that range, 10.50 percent is a reasonable and appropriate estimate of DEU's Cost of Equity. The results of my updated Constant Growth DCF, CAPM, ECAPM, and Bond Yield Plus Risk Premium analyses, along with the Expected Earnings results, support the reasonableness of my range of ROE estimates and my recommendation.[308] As to the Company's proposed capital structure, I continue to believe a capital structure consisting of 55.00 percent common equity and 45.00 percent long-term debt is reasonable and appropriate. My updated results are provided in Table 11, below.

[308] DEU Exhibit 2.01R through DEU Exhibit 2.07R.

Table 11: Summary of Updated Analytical Results[309]

Discounted Cash Flow	**Mean Low**	**Mean**	**Mean High**
30-day Constant Growth DCF	7.51%	9.95%	13.98%
90-day Constant Growth DCF	7.51%	9.94%	13.97%
180-day Constant Growth DCF	7.58%	10.01%	14.05%
CAPM Results		**Bloomberg Derived Market Risk Premium**	**Value Line Derived Market Risk Premium**
Average Bloomberg Beta Coefficient			
Current 30-Year Treasury (2.11%)		9.14%	9.30%
Near Term Projected 30-Year Treasury (2.28%)		9.31%	9.47%
Average Value Line Beta Coefficient			
Current 30-Year Treasury (2.11%)		10.22%	10.41%
Near Term Projected 30-Year Treasury (2.28%)		10.40%	10.58%
Empirical CAPM Results		**Bloomberg Derived Market Risk Premium**	**Value Line Derived Market Risk Premium**
Average Bloomberg Beta Coefficient			
Current 30-Year Treasury (2.11%)		10.40%	10.59%
Near Term Projected 30-Year Treasury (2.28%)		10.57%	10.76%
Average Value Line Beta Coefficient			
Current 30-Year Treasury (2.11%)		11.22%	11.43%
Near Term Projected 30-Year Treasury (2.28%)		11.39%	11.60%
	Low	**Mid**	**High**
Bond Yield Risk Premium	9.96%	9.91%	10.01%
		Mean	**Median**
Expected Earnings		10.73%	10.24%

Q. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

309 DEU Exhibit 2.01R through DEU Exhibit 2.07R.

Commonwealth of Massachusetts)

) ss.

County of Worcester)

I, Robert B. Hevert, being first duly sworn on oath, state that the answers in the foregoing written testimony are true and correct to the best of my knowledge, information and belief. Except as stated in the testimony, the exhibits attached to the testimony were prepared by me or under my direction and supervision, and they are true and correct to the best of my knowledge, information and belief. Any exhibits not prepared by me or under my direction and supervision are true and correct copies of the documents they purport to be.

Robert B. Hevert

SUBSCRIBED AND SWORN TO this November 14, 2019.

Notary Public

KIMBERLY H. DAO
MY COMM. EXPIRES MARCH 11, 2022
NOTARY PUBLIC
COMMONWEALTH OF MASSACHUSETTS

Constant Growth Discounted Cash Flow Model
30 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Retention Growth Estimate	[9] Average Earnings Growth	[10] Low ROE	[11] Mean ROE	[12] High ROE
Atmos Energy Corporation	ATO	$2.10	$110.89	1.89%	1.97%	7.00%	7.00%	7.50%	10.53%	8.01%	8.96%	9.98%	12.52%
New Jersey Resources Corporation	NJR	$1.25	$44.98	2.78%	2.86%	8.00%	6.00%	3.50%	5.86%	5.84%	6.33%	8.70%	10.89%
Northwest Natural Holding Company	NWN	$1.90	$71.16	2.67%	2.81%	5.00%	4.00%	27.00%	6.19%	10.55%	6.72%	13.36%	30.03%
ONE Gas, Inc.	OGS	$2.00	$92.05	2.17%	2.24%	6.10%	5.00%	8.00%	5.37%	6.12%	7.23%	8.36%	10.26%
South Jersey Industries, Inc.	SJI	$1.15	$32.30	3.56%	3.69%	8.50%	4.60%	10.50%	6.33%	7.48%	8.24%	11.18%	14.25%
Spire Inc.	SR	$2.37	$85.00	2.79%	2.86%	5.50%	3.23%	5.50%	5.47%	4.92%	6.06%	7.78%	8.36%
Southwest Gas Holdings, Inc.	SWX	$2.18	$90.28	2.41%	2.51%	7.30%	8.20%	9.00%	6.55%	7.76%	9.05%	10.27%	11.52%
Proxy Group Mean				2.61%	2.71%	6.77%	5.43%	10.14%	6.61%	7.24%	7.51%	9.95%	13.98%
Proxy Group Median				2.67%	2.81%	7.00%	5.00%	8.00%	6.19%	7.48%	7.23%	9.98%	11.52%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of September 30, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [9])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Source: Schedule RBH-2, Value Line
[9] Equals Average([5], [6], [7], [8])
[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
[11] Equals [4] + [9]
[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model
90 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	$2.10	$107.80	1.95%	2.03%	7.00%	7.00%	7.50%	10.53%	8.01%	9.02%	10.03%	12.58%
New Jersey Resources Corporation	NJR	$1.25	$47.54	2.63%	2.71%	8.00%	6.00%	3.50%	5.86%	5.84%	6.18%	8.55%	10.73%
Northwest Natural Holding Company	NWN	$1.90	$70.28	2.70%	2.85%	5.00%	4.00%	27.00%	6.19%	10.55%	6.76%	13.39%	30.07%
ONE Gas, Inc.	OGS	$2.00	$90.84	2.20%	2.27%	6.10%	5.00%	8.00%	5.37%	6.12%	7.26%	8.39%	10.29%
South Jersey Industries, Inc.	SJI	$1.15	$32.66	3.52%	3.65%	8.50%	4.60%	10.50%	6.33%	7.48%	8.20%	11.13%	14.21%
Spire Inc.	SR	$2.37	$84.31	2.81%	2.88%	5.50%	3.23%	5.50%	5.47%	4.92%	6.09%	7.81%	8.39%
Southwest Gas Holdings, Inc.	SWX	$2.18	$89.28	2.44%	2.54%	7.30%	8.20%	9.00%	6.55%	7.76%	9.08%	10.30%	11.55%
Proxy Group Mean				2.61%	2.70%	6.77%	5.43%	10.14%	6.61%	7.24%	7.51%	9.94%	13.97%
Proxy Group Median				2.63%	2.71%	7.00%	5.00%	8.00%	6.19%	7.48%	7.26%	10.03%	11.55%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of September 30, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [9])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Source: Schedule RBH-2, Value Line
[9] Equals Average([5], [6], [7], [8])
[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
[11] Equals [4] + [9]
[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model
180 Day Average Stock Price

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	$2.10	$103.68	2.03%	2.11%	7.00%	7.00%	7.50%	10.53%	8.01%	9.10%	10.11%	12.66%
New Jersey Resources Corporation	NJR	$1.25	$48.05	2.60%	2.68%	8.00%	6.00%	3.50%	5.86%	5.84%	6.15%	8.52%	10.71%
Northwest Natural Gas Company	NWN	$1.90	$67.51	2.81%	2.96%	5.00%	4.00%	27.00%	6.19%	10.55%	6.87%	13.51%	30.19%
ONE Gas, Inc.	OGS	$2.00	$88.45	2.26%	2.33%	6.10%	5.00%	8.00%	5.37%	6.12%	7.32%	8.45%	10.35%
South Jersey Industries, Inc.	SJI	$1.15	$31.93	3.60%	3.74%	8.50%	4.60%	10.50%	6.33%	7.48%	8.28%	11.22%	14.29%
Spire Inc.	SR	$2.37	$82.44	2.87%	2.95%	5.50%	3.23%	5.50%	5.47%	4.92%	6.15%	7.87%	8.45%
Southwest Gas Holdings, Inc.	SWX	$2.18	$85.42	2.55%	2.65%	7.30%	8.20%	9.00%	6.55%	7.76%	9.19%	10.41%	11.67%
Proxy Group Mean				2.68%	2.77%	6.77%	5.43%	10.14%	6.61%	7.24%	7.58%	10.01%	14.05%
Proxy Group Median				2.60%	2.68%	7.00%	5.00%	8.00%	6.19%	7.48%	7.32%	10.11%	11.67%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of September 30, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [9])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Source: Schedule RBH-2, Value Line
[9] Equals Average([5], [6], [7], [8])
[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
[11] Equals [4] + [9]
[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Retention Growth Estimate

Company	Ticker	[1] Projected Earnings per share 2022-2024	[2] Projected Dividend Declared per share 2022-24	[3] Retention Ratio (B)	[4] Projected Book Value per Share 2022-24	[5] Return on Book Value (R)	[6] B x R	[7] Projected Common Shares Outstanding 2019	[8] Projected Common Shares Outstanding 2022-24	[9] Common Shares Growth Rate	[10] 2019 High Price	[11] 2019 Low Price	[12] 2019 Price Midpoint	[13] Projected Book Value per Share 2019	[14] Market/ Book Ratio	[15] "S"	[16] "V"	[17] S x V	[18] BR + SV
Atmos Energy Corporation	ATO	5.60	2.70	51.79%	56.05	9.99%	5.17%	120.00	145.00	4.84%	$ 111.40	$ 89.20	$ 100.30	47.65	2.10	10.20%	52.49%	5.35%	10.53%
New Jersey Resources Corporation	NJR	2.50	1.33	46.80%	21.85	11.44%	5.35%	88.00	89.00	0.28%	$ 51.20	$ 43.90	$ 47.55	17.05	2.79	0.79%	64.14%	0.51%	5.86%
Northwest Natural Holding Company	NWN	3.50	2.20	37.14%	29.40	11.90%	4.42%	30.50	32.00	1.21%	$ 73.50	$ 57.20	$ 65.35	26.55	2.46	2.97%	59.37%	1.76%	6.19%
ONE Gas, Inc.	OGS	4.75	2.65	44.21%	47.90	9.92%	4.38%	53.00	55.00	0.93%	$ 93.00	$ 75.80	$ 84.40	41.05	2.06	1.91%	51.36%	0.98%	5.37%
South Jersey Industries, Inc.	SJI	2.40	1.40	41.67%	20.00	12.00%	5.00%	94.00	100.00	1.56%	$ 34.50	$ 26.60	$ 30.55	16.50	1.85	2.89%	45.99%	1.33%	6.33%
Spire Inc.	SR	5.00	2.67	46.60%	54.20	9.23%	4.30%	51.00	55.00	1.91%	$ 87.10	$ 71.70	$ 79.40	49.20	1.61	3.08%	38.04%	1.17%	5.47%
Southwest Gas Holdings, Inc.	SWX	5.8	2.60	55.17%	58.60	9.90%	5.46%	55.00	58.00	1.34%	$ 91.90	$ 73.30	$ 82.60	45.45	1.82	2.43%	44.98%	1.09%	6.55%
																		Average	6.61%

Notes:
[1] Source: Value Line
[2] Source: Value Line
[3] Equals 1 - [2] / [1]
[4] Source: Value Line
[5] Equals [1] / [4]
[6] Equals [3] x [5]
[7] Source: Value Line
[8] Source: Value Line
[9] Equals ([8] / [7]) ^ 0.25 - 1
[10] Source: Value Line
[11] Source: Value Line
[12] Equals Average ([10], [11])
[13] Source: Value Line
[14] Equals [12] / [13]
[15] Equals [9] x [14]
[16] Equals 1 - (1 / [14])
[17] Equals [15] x [16]
[18] Equals [6] + [17]

Ex-Ante Market Risk Premium
Market DCF Method Based - Bloomberg

[1] S&P 500 Est. Required Market Return	[2] Current 30-Year Treasury (30-day average)	[3] Implied Market Risk Premium
14.20%	2.11%	12.08%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	23,714.51	0.09%	0.86%	13.53%	14.45%	0.0130%
American Airlines Group Inc	AAL	12,008.95	0.05%	1.78%	6.37%	8.21%	0.0037%
Advance Auto Parts Inc	AAP	11,807.41	0.04%	0.15%	15.31%	15.47%	0.0069%
Apple Inc	AAPL	1,012,160.74	3.85%	1.34%	10.50%	11.91%	0.4584%
AbbVie Inc	ABBV	111,972.73	0.43%	5.69%	6.05%	11.91%	0.0507%
AmerisourceBergen Corp	ABC	17,151.44	0.07%	1.95%	14.01%	16.10%	0.0105%
ABIOMED Inc	ABMD	8,072.06	0.03%	0.00%	24.00%	24.00%	0.0074%
Abbott Laboratories	ABT	147,878.16	0.56%	1.49%	9.58%	11.15%	0.0627%
Accenture PLC	ACN	122,738.69	0.47%	1.67%	10.03%	11.79%	0.0550%
Adobe Inc	ADBE	133,726.72	0.51%	0.00%	16.00%	16.00%	0.0814%
Analog Devices Inc	ADI	41,273.75	0.16%	1.86%	9.72%	11.67%	0.0183%
Archer-Daniels-Midland Co	ADM	22,874.92	0.09%	3.44%	0.10%	3.54%	0.0031%
Automatic Data Processing Inc	ADP	70,007.71	0.27%	1.95%	12.55%	14.62%	0.0389%
Alliance Data Systems Corp	ADS	6,547.14	0.02%	1.93%	9.13%	11.15%	0.0028%
Autodesk Inc	ADSK	32,433.09	0.12%	0.00%	47.95%	47.95%	0.0591%
Ameren Corp	AEE	20,280.87	0.08%	2.44%	4.99%	7.49%	0.0058%
American Electric Power Co Inc	AEP	46,263.66	0.18%	2.89%	5.78%	8.75%	0.0154%
AES Corp/VA	AES	10,847.30	0.04%	3.37%	8.12%	11.63%	0.0048%
Aflac Inc	AFL	38,736.86	0.15%	2.07%	4.52%	6.64%	0.0098%
Allergan PLC	AGN	55,215.44	0.21%	1.75%	8.00%	9.82%	0.0206%
American International Group Inc	AIG	48,453.89	0.18%	2.32%	11.00%	13.45%	0.0248%
Apartment Investment & Management Co	AIV	7,762.82	0.03%	3.80%	3.37%	7.23%	0.0021%
Assurant Inc	AIZ	7,691.49	0.03%	1.96%	0.00%	1.96%	0.0006%
Arthur J Gallagher & Co	AJG	16,666.29	0.06%	1.80%	9.83%	11.71%	0.0074%
Akamai Technologies Inc	AKAM	15,076.10	0.06%	0.00%	12.80%	12.80%	0.0073%
Albemarle Corp	ALB	7,368.17	0.03%	2.05%	8.92%	11.05%	0.0031%
Align Technology Inc	ALGN	14,450.24	0.05%	0.00%	20.51%	20.51%	0.0113%
Alaska Air Group Inc	ALK	8,001.60	0.03%	2.13%	21.55%	23.91%	0.0073%
Allstate Corp/The	ALL	35,776.56	0.14%	1.78%	6.23%	8.07%	0.0110%
Allegion PLC	ALLE	9,678.46	0.04%	1.04%	10.23%	11.32%	0.0042%
Alexion Pharmaceuticals Inc	ALXN	21,960.78	0.08%	0.00%	14.70%	14.70%	0.0123%
Applied Materials Inc	AMAT	46,095.31	0.18%	1.67%	5.55%	7.26%	0.0127%
Amcor PLC	AMCR	15,745.84	0.06%	5.23%	6.55%	11.95%	0.0072%
Advanced Micro Devices Inc	AMD	31,469.99	0.12%	0.00%	20.03%	20.03%	0.0240%
AMETEK Inc	AME	20,966.71	0.08%	0.62%	9.84%	10.49%	0.0084%
Affiliated Managers Group Inc	AMG	4,220.81	0.02%	1.54%	5.86%	7.44%	0.0012%
Amgen Inc	AMGN	116,048.18	0.44%	2.99%	6.47%	9.55%	0.0422%
Ameriprise Financial Inc	AMP	19,251.03	0.07%	2.59%	3.20%	5.83%	0.0043%
American Tower Corp	AMT	97,890.96	0.37%	1.70%	19.95%	21.82%	0.0812%
Amazon.com Inc	AMZN	858,678.32	3.27%	0.00%	44.33%	44.33%	1.4477%
Arista Networks Inc	ANET	18,311.86	0.07%	0.00%	21.39%	21.39%	0.0149%
ANSYS Inc	ANSS	18,616.55	0.07%	0.00%	11.50%	11.50%	0.0081%
Anthem Inc	ANTM	61,421.71	0.23%	1.14%	14.13%	15.36%	0.0359%
Aon PLC	AON	45,651.91	0.17%	0.89%	10.90%	11.83%	0.0205%
AO Smith Corp	AOS	7,843.69	0.03%	1.91%	8.00%	9.98%	0.0030%
Apache Corp	APA	9,624.55	0.04%	3.90%	-8.57%	-4.83%	-0.0018%
Air Products & Chemicals Inc	APD	48,887.99	0.19%	2.05%	12.71%	14.89%	0.0277%
Amphenol Corp	APH	28,703.75	0.11%	0.95%	8.67%	9.67%	0.0106%
Aptiv PLC	APTV	22,396.37	0.09%	1.03%	6.00%	7.05%	0.0060%
Alexandria Real Estate Equities Inc	ARE	17,470.83	0.07%	2.58%	4.77%	7.41%	0.0049%
Arconic Inc	ARNC	11,444.90	0.04%	0.41%	10.90%	11.33%	0.0049%
Atmos Energy Corp	ATO	13,461.88	0.05%	1.84%	7.50%	9.41%	0.0048%
Activision Blizzard Inc	ATVI	40,591.01	0.15%	0.69%	7.10%	7.81%	0.0121%
AvalonBay Communities Inc	AVB	30,072.33	0.11%	2.82%	6.68%	9.59%	0.0110%
Broadcom Inc	AVGO	109,508.90	0.42%	3.76%	13.48%	17.49%	0.0729%
Avery Dennison Corp	AVY	9,561.79	0.04%	1.96%	4.95%	6.96%	0.0025%
American Water Works Co Inc	AWK	22,442.48	0.09%	1.59%	8.75%	10.41%	0.0089%
American Express Co	AXP	98,133.80	0.37%	1.38%	9.36%	10.80%	0.0403%
AutoZone Inc	AZO	26,604.32	0.10%	0.00%	11.26%	11.26%	0.0114%
Boeing Co/The	BA	214,094.28	0.81%	2.12%	7.93%	10.13%	0.0825%
Bank of America Corp	BAC	271,523.13	1.03%	2.26%	8.80%	11.16%	0.1153%
Baxter International Inc	BAX	44,658.32	0.17%	0.95%	11.96%	12.97%	0.0220%
BB&T Corp	BBT	40,890.17	0.16%	3.19%	7.24%	10.55%	0.0164%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Best Buy Co Inc	BBY	18,183.92	0.07%	2.90%	6.60%	9.60%	0.0066%
Becton Dickinson and Co	BDX	68,287.60	0.26%	1.36%	12.19%	13.63%	0.0354%
Franklin Resources Inc	BEN	14,535.82	0.06%	3.60%	10.00%	13.78%	0.0076%
Brown-Forman Corp	BF/B	29,467.72	0.11%	1.11%	6.44%	7.58%	0.0085%
Baker Hughes a GE Co	BHGE	23,816.38	0.09%	2.95%	32.29%	35.72%	0.0323%
Biogen Inc	BIIB	42,943.00	0.16%	0.00%	3.33%	3.33%	0.0054%
Bank of New York Mellon Corp/The	BK	42,617.75	0.16%	2.61%	6.47%	9.16%	0.0148%
Booking Holdings Inc	BKNG	83,434.29	0.32%	0.00%	19.03%	19.03%	0.0604%
BlackRock Inc	BLK	69,315.04	0.26%	2.99%	8.82%	11.94%	0.0315%
Ball Corp	BLL	24,173.23	0.09%	0.69%	6.70%	7.41%	0.0068%
Bristol-Myers Squibb Co	BMY	82,949.72	0.32%	3.25%	7.96%	11.34%	0.0358%
Broadridge Financial Solutions Inc	BR	14,220.20	0.05%	1.72%	7.80%	9.59%	0.0052%
Berkshire Hathaway Inc	BRK/B	509,730.09	1.94%	0.00%	61.80%	61.80%	1.1979%
Boston Scientific Corp	BSX	56,680.09	0.22%	0.00%	8.88%	8.88%	0.0191%
BorgWarner Inc	BWA	7,574.96	0.03%	1.86%	1.93%	3.81%	0.0011%
Boston Properties Inc	BXP	20,041.25	0.08%	2.99%	2.18%	5.20%	0.0040%
Citigroup Inc	C	156,055.62	0.59%	2.78%	11.65%	14.58%	0.0866%
Conagra Brands Inc	CAG	14,928.97	0.06%	2.80%	7.60%	10.50%	0.0060%
Cardinal Health Inc	CAH	13,798.55	0.05%	4.27%	2.49%	6.81%	0.0036%
Caterpillar Inc	CAT	71,060.64	0.27%	2.97%	13.15%	16.32%	0.0441%
Chubb Ltd	CB	73,576.20	0.28%	1.87%	10.73%	12.70%	0.0355%
Cboe Global Markets Inc	CBOE	12,833.40	0.05%	1.17%	10.00%	11.22%	0.0055%
CBRE Group Inc	CBRE	17,829.15	0.07%	0.00%	7.80%	7.80%	0.0053%
CBS Corp	CBS	15,193.25	0.06%	1.86%	7.63%	9.56%	0.0055%
Crown Castle International Corp	CCI	57,794.14	0.22%	3.30%	17.07%	20.64%	0.0454%
Carnival Corp	CCL	29,650.59	0.11%	4.59%	8.47%	13.25%	0.0149%
Cadence Design Systems Inc	CDNS	18,512.51	0.07%	0.00%	10.64%	10.64%	0.0075%
CDW Corp/DE	CDW	17,834.62	0.07%	1.01%	13.55%	14.63%	0.0099%
Celanese Corp	CE	15,132.21	0.06%	1.97%	6.13%	8.17%	0.0047%
Celgene Corp	CELG	70,378.01	0.27%	0.00%	16.10%	16.10%	0.0431%
Cerner Corp	CERN	21,704.92	0.08%	0.28%	13.55%	13.85%	0.0114%
CF Industries Holdings Inc	CF	10,741.63	0.04%	2.44%	19.80%	22.48%	0.0092%
Citizens Financial Group Inc	CFG	15,813.45	0.06%	3.83%	5.42%	9.36%	0.0056%
Church & Dwight Co Inc	CHD	18,591.53	0.07%	1.22%	8.22%	9.49%	0.0067%
CH Robinson Worldwide Inc	CHRW	11,477.34	0.04%	2.38%	8.63%	11.11%	0.0049%
Charter Communications Inc	CHTR	101,912.10	0.39%	0.02%	29.71%	29.73%	0.1152%
Cigna Corp	CI	57,317.31	0.22%	0.04%	11.24%	11.28%	0.0246%
Cincinnati Financial Corp	CINF	19,056.44	0.07%	2.06%	0.00%	2.06%	0.0015%
Colgate-Palmolive Co	CL	63,072.05	0.24%	2.36%	4.52%	6.94%	0.0166%
Clorox Co/The	CLX	19,054.70	0.07%	2.68%	3.91%	6.64%	0.0048%
Comerica Inc	CMA	9,856.34	0.04%	4.13%	12.93%	17.32%	0.0065%
Comcast Corp	CMCSA	204,887.94	0.78%	1.85%	9.93%	11.87%	0.0925%
CME Group Inc	CME	75,679.93	0.29%	2.59%	8.26%	10.95%	0.0315%
Chipotle Mexican Grill Inc	CMG	23,300.19	0.09%	0.00%	21.87%	21.87%	0.0194%
Cummins Inc	CMI	25,667.10	0.10%	2.93%	6.70%	9.72%	0.0095%
CMS Energy Corp	CMS	18,148.18	0.07%	2.39%	7.20%	9.68%	0.0067%
Centene Corp	CNC	17,892.57	0.07%	0.00%	15.00%	15.00%	0.0102%
CenterPoint Energy Inc	CNP	15,125.64	0.06%	3.81%	5.90%	9.82%	0.0057%
Capital One Financial Corp	COF	42,790.90	0.16%	1.76%	5.13%	6.94%	0.0113%
Cabot Oil & Gas Corp	COG	7,351.12	0.03%	1.92%	34.52%	36.78%	0.0103%
Cooper Cos Inc/The	COO	14,723.36	0.06%	0.03%	6.82%	6.85%	0.0038%
ConocoPhillips	COP	63,255.87	0.24%	2.16%	3.45%	5.66%	0.0136%
Costco Wholesale Corp	COST	126,707.66	0.48%	0.84%	10.51%	11.40%	0.0549%
Coty Inc	COTY	7,927.24	0.03%	4.02%	5.55%	9.67%	0.0029%
Campbell Soup Co	CPB	14,131.68	0.05%	3.07%	7.04%	10.22%	0.0055%
Capri Holdings Ltd	CPRI	5,026.37	0.02%	0.00%	5.52%	5.52%	0.0011%
Copart Inc	CPRT	18,404.64	0.07%	0.00%	0.00%	0.00%	0.0000%
salesforce.com Inc	CRM	130,181.88	0.50%	0.00%	21.63%	21.63%	0.1071%
Cisco Systems Inc	CSCO	209,759.79	0.80%	2.92%	6.48%	9.50%	0.0757%
CSX Corp	CSX	55,289.64	0.21%	1.34%	12.17%	13.59%	0.0286%
Cintas Corp	CTAS	28,104.14	0.11%	0.84%	11.07%	11.95%	0.0128%
CenturyLink Inc	CTL	13,612.80	0.05%	8.01%	5.06%	13.27%	0.0069%
Cognizant Technology Solutions Corp	CTSH	33,283.82	0.13%	1.42%	11.05%	12.55%	0.0159%
Corteva Inc	CTVA	20,966.82	0.08%	1.49%	95.20%	97.40%	0.0777%
Citrix Systems Inc	CTXS	12,634.67	0.05%	1.45%	9.00%	10.52%	0.0051%
CVS Health Corp	CVS	82,022.33	0.31%	3.16%	6.23%	9.49%	0.0296%
Chevron Corp	CVX	225,152.43	0.86%	4.00%	1.60%	5.63%	0.0482%
Concho Resources Inc	CXO	13,653.25	0.05%	0.74%	13.81%	14.60%	0.0076%
Dominion Energy Inc	D	65,106.48	0.25%	4.51%	4.53%	9.14%	0.0226%
Delta Air Lines Inc	DAL	37,451.56	0.14%	2.60%	13.83%	16.61%	0.0237%
DuPont de Nemours Inc	DD	53,160.35	0.20%	1.56%	6.55%	8.16%	0.0165%
Deere & Co	DE	53,112.75	0.20%	1.77%	6.51%	8.33%	0.0168%
Discover Financial Services	DFS	25,806.17	0.10%	2.07%	8.70%	10.86%	0.0107%
Dollar General Corp	DG	40,858.43	0.16%	0.81%	10.68%	11.52%	0.0179%
Quest Diagnostics Inc	DGX	14,413.74	0.05%	1.96%	7.86%	9.89%	0.0054%
DR Horton Inc	DHI	19,493.21	0.07%	1.14%	12.60%	13.81%	0.0102%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Danaher Corp	DHR	103,609.40	0.39%	0.46%	14.95%	15.44%	0.0608%
Walt Disney Co/The	DIS	234,755.72	0.89%	1.36%	2.85%	4.23%	0.0377%
Discovery Inc	DISCA	18,917.00	0.07%	0.00%	12.57%	12.57%	0.0090%
DISH Network Corp	DISH	16,793.14	0.06%	0.00%	-8.61%	-8.61%	-0.0055%
Digital Realty Trust Inc	DLR	28,274.76	0.11%	3.32%	17.20%	20.81%	0.0224%
Dollar Tree Inc	DLTR	27,013.08	0.10%	0.00%	8.39%	8.39%	0.0086%
Dover Corp	DOV	14,479.78	0.06%	1.98%	10.97%	13.06%	0.0072%
Dow Inc	DOW	35,414.05	0.13%	5.37%	14.41%	20.17%	0.0272%
Duke Realty Corp	DRE	12,278.25	0.05%	2.56%	4.74%	7.36%	0.0034%
Darden Restaurants Inc	DRI	14,519.27	0.06%	2.99%	9.31%	12.44%	0.0069%
DTE Energy Co	DTE	24,371.80	0.09%	2.87%	5.53%	8.47%	0.0078%
Duke Energy Corp	DUK	69,843.70	0.27%	3.94%	5.01%	9.05%	0.0240%
DaVita Inc	DVA	7,894.54	0.03%	0.00%	18.24%	18.24%	0.0055%
Devon Energy Corp	DVN	9,725.05	0.04%	1.41%	6.63%	8.09%	0.0030%
DXC Technology Co	DXC	7,727.89	0.03%	2.79%	3.77%	6.61%	0.0019%
Electronic Arts Inc	EA	28,828.29	0.11%	0.00%	8.54%	8.54%	0.0094%
eBay Inc	EBAY	32,695.01	0.12%	1.43%	12.07%	13.59%	0.0169%
Ecolab Inc	ECL	56,986.38	0.22%	0.94%	13.13%	14.13%	0.0306%
Consolidated Edison Inc	ED	31,377.66	0.12%	3.13%	3.88%	7.07%	0.0084%
Equifax Inc	EFX	17,004.80	0.06%	1.11%	8.74%	9.90%	0.0064%
Edison International	EIX	27,007.11	0.10%	3.26%	4.81%	8.14%	0.0084%
Estee Lauder Cos Inc/The	EL	71,845.55	0.27%	0.93%	11.15%	12.13%	0.0331%
Eastman Chemical Co	EMN	10,114.28	0.04%	3.23%	5.44%	8.76%	0.0034%
Emerson Electric Co	EMR	41,125.68	0.16%	2.94%	8.06%	11.12%	0.0174%
EOG Resources Inc	EOG	43,096.81	0.16%	1.38%	6.50%	7.92%	0.0130%
Equinix Inc	EQIX	48,923.72	0.19%	1.71%	19.24%	21.11%	0.0393%
Equity Residential	EQR	31,989.76	0.12%	2.63%	8.52%	11.26%	0.0137%
Eversource Energy	ES	27,658.27	0.11%	2.50%	6.42%	9.00%	0.0095%
Essex Property Trust Inc	ESS	21,469.99	0.08%	2.38%	8.33%	10.81%	0.0088%
E*TRADE Financial Corp	ETFC	10,477.47	0.04%	1.14%	6.07%	7.24%	0.0029%
Eaton Corp PLC	ETN	34,923.00	0.13%	3.43%	8.60%	12.17%	0.0162%
Entergy Corp	ETR	23,334.66	0.09%	3.12%	0.08%	3.20%	0.0028%
Evergy Inc	EVRG	15,672.72	0.06%	2.89%	7.62%	10.62%	0.0063%
Edwards Lifesciences Corp	EW	45,734.51	0.17%	0.00%	14.75%	14.75%	0.0257%
Exelon Corp	EXC	46,858.39	0.18%	3.00%	2.73%	5.76%	0.0103%
Expeditors International of Washington I	EXPD	12,682.80	0.05%	1.32%	9.73%	11.11%	0.0054%
Expedia Group Inc	EXPE	20,669.83	0.08%	0.94%	21.16%	22.20%	0.0175%
Extra Space Storage Inc	EXR	15,113.93	0.06%	3.04%	4.72%	7.83%	0.0045%
Ford Motor Co	F	36,546.96	0.14%	6.55%	2.58%	9.22%	0.0128%
Diamondback Energy Inc	FANG	14,659.24	0.06%	0.75%	17.36%	18.17%	0.0101%
Fastenal Co	FAST	18,733.97	0.07%	2.66%	7.15%	9.90%	0.0071%
Facebook Inc	FB	508,053.42	1.93%	0.00%	19.37%	19.37%	0.3742%
Fortune Brands Home & Security Inc	FBHS	7,659.05	0.03%	1.59%	9.61%	11.27%	0.0033%
Freeport-McMoRan Inc	FCX	13,885.02	0.05%	2.09%	3.81%	5.94%	0.0031%
FedEx Corp	FDX	37,980.71	0.14%	1.82%	20.72%	22.73%	0.0328%
FirstEnergy Corp	FE	26,043.57	0.10%	3.15%	0.49%	3.64%	0.0036%
F5 Networks Inc	FFIV	8,443.46	0.03%	0.00%	10.29%	10.29%	0.0033%
Fidelity National Information Services I	FIS	81,440.86	0.31%	1.05%	8.97%	10.07%	0.0312%
Fiserv Inc	FISV	70,393.75	0.27%	0.00%	14.00%	14.00%	0.0375%
Fifth Third Bancorp	FITB	20,000.70	0.08%	3.49%	4.65%	8.22%	0.0063%
FLIR Systems Inc	FLIR	7,131.52	0.03%	1.29%	13.10%	14.47%	0.0039%
Flowserve Corp	FLS	6,126.96	0.02%	1.66%	15.19%	16.98%	0.0040%
FleetCor Technologies Inc	FLT	24,825.95	0.09%	0.00%	15.58%	15.58%	0.0147%
FMC Corp	FMC	11,436.33	0.04%	1.82%	9.00%	10.91%	0.0047%
Fox Corp	FOXA	19,572.93	0.07%	1.17%	3.57%	4.76%	0.0035%
First Republic Bank/CA	FRC	15,946.02	0.06%	0.78%	6.99%	7.79%	0.0047%
Federal Realty Investment Trust	FRT	10,204.30	0.04%	3.05%	5.71%	8.84%	0.0034%
TechnipFMC PLC	FTI	10,778.07	0.04%	2.33%	23.04%	25.64%	0.0105%
Fortinet Inc	FTNT	13,125.30	0.05%	0.00%	16.50%	16.50%	0.0082%
Fortive Corp	FTV	23,004.16	0.09%	0.45%	9.23%	9.70%	0.0085%
General Dynamics Corp	GD	52,780.49	0.20%	2.20%	8.54%	10.83%	0.0217%
General Electric Co	GE	78,020.02	0.30%	0.47%	5.70%	6.18%	0.0183%
Gilead Sciences Inc	GILD	80,267.95	0.31%	3.96%	7.60%	11.71%	0.0357%
General Mills Inc	GIS	33,314.18	0.13%	3.59%	6.50%	10.21%	0.0129%
Globe Life Inc	GL	10,447.61	0.04%	0.71%	7.60%	8.34%	0.0033%
Corning Inc	GLW	22,270.30	0.08%	2.85%	9.34%	12.32%	0.0104%
General Motors Co	GM	53,511.29	0.20%	4.09%	10.46%	14.76%	0.0300%
Alphabet Inc	GOOGL	845,943.37	3.22%	0.00%	12.87%	12.87%	0.4140%
Genuine Parts Co	GPC	14,547.94	0.06%	3.04%	4.77%	7.88%	0.0044%
Global Payments Inc	GPN	47,708.91	0.18%	0.03%	17.13%	17.16%	0.0311%
Gap Inc/The	GPS	6,523.67	0.02%	5.62%	5.03%	10.79%	0.0027%
Garmin Ltd	GRMN	16,099.74	0.06%	2.74%	6.66%	9.49%	0.0058%
Goldman Sachs Group Inc/The	GS	77,538.20	0.29%	2.02%	0.64%	2.67%	0.0079%
WW Grainger Inc	GWW	16,215.81	0.06%	1.91%	10.90%	12.91%	0.0080%
Halliburton Co	HAL	16,511.32	0.06%	3.82%	5.55%	9.48%	0.0059%
Hasbro Inc	HAS	14,978.78	0.06%	2.28%	9.30%	11.69%	0.0067%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Huntington Bancshares Inc/OH	HBAN	14,809.99	0.06%	4.06%	4.99%	9.15%	0.0052%
Hanesbrands Inc	HBI	5,538.84	0.02%	4.07%	5.08%	9.25%	0.0019%
HCA Healthcare Inc	HCA	41,061.15	0.16%	1.33%	10.20%	11.60%	0.0181%
HCP Inc	HCP	17,498.26	0.07%	4.15%	2.94%	7.15%	0.0048%
Home Depot Inc/The	HD	254,097.42	0.97%	2.33%	9.37%	11.82%	0.1142%
Hess Corp	HES	18,414.99	0.07%	1.74%	-5.43%	-3.74%	-0.0026%
HollyFrontier Corp	HFC	8,827.97	0.03%	2.49%	-0.31%	2.18%	0.0007%
Hartford Financial Services Group Inc/Th	HIG	21,915.45	0.08%	2.04%	9.50%	11.64%	0.0097%
Huntington Ingalls Industries Inc	HII	8,754.24	0.03%	1.63%	40.00%	41.95%	0.0140%
Hilton Worldwide Holdings Inc	HLT	26,709.03	0.10%	0.65%	12.28%	12.97%	0.0132%
Harley-Davidson Inc	HOG	5,637.64	0.02%	4.20%	5.90%	10.22%	0.0022%
Hologic Inc	HOLX	13,496.29	0.05%	0.00%	8.95%	8.95%	0.0046%
Honeywell International Inc	HON	121,740.76	0.46%	1.97%	7.70%	9.75%	0.0451%
Helmerich & Payne Inc	HP	4,385.01	0.02%	7.11%	6.57%	13.91%	0.0023%
Hewlett Packard Enterprise Co	HPE	19,805.97	0.08%	2.99%	6.07%	9.15%	0.0069%
HP Inc	HPQ	28,037.81	0.11%	3.36%	1.66%	5.04%	0.0054%
H&R Block Inc	HRB	4,741.01	0.02%	4.37%	10.00%	14.59%	0.0026%
Hormel Foods Corp	HRL	23,350.51	0.09%	1.92%	5.70%	7.68%	0.0068%
Henry Schein Inc	HSIC	9,414.46	0.04%	0.00%	1.27%	1.27%	0.0005%
Host Hotels & Resorts Inc	HST	12,620.03	0.05%	4.90%	19.82%	25.21%	0.0121%
Hershey Co/The	HSY	32,482.64	0.12%	1.92%	7.07%	9.06%	0.0112%
Humana Inc	HUM	34,538.28	0.13%	0.85%	12.83%	13.74%	0.0180%
International Business Machines Corp	IBM	128,823.97	0.49%	4.44%	1.92%	6.41%	0.0314%
Intercontinental Exchange Inc	ICE	51,709.47	0.20%	1.18%	8.59%	9.82%	0.0193%
IDEXX Laboratories Inc	IDXX	23,410.47	0.09%	0.00%	18.85%	18.85%	0.0168%
IDEX Corp	IEX	12,429.83	0.05%	1.17%	11.20%	12.44%	0.0059%
International Flavors & Fragrances Inc	IFF	13,100.22	0.05%	2.38%	12.65%	15.18%	0.0076%
Illumina Inc	ILMN	44,720.34	0.17%	0.00%	16.14%	16.14%	0.0275%
Incyte Corp	INCY	15,964.40	0.06%	0.00%	43.15%	43.15%	0.0262%
IHS Markit Ltd	INFO	26,818.08	0.10%	0.00%	12.73%	12.73%	0.0130%
Intel Corp	INTC	228,277.90	0.87%	2.42%	5.98%	8.47%	0.0736%
Intuit Inc	INTU	69,163.98	0.26%	0.77%	15.69%	16.52%	0.0434%
International Paper Co	IP	16,428.42	0.06%	4.81%	4.55%	9.47%	0.0059%
Interpublic Group of Cos Inc/The	IPG	8,348.53	0.03%	4.36%	5.85%	10.34%	0.0033%
IPG Photonics Corp	IPGP	7,213.97	0.03%	0.00%	6.13%	6.13%	0.0017%
IQVIA Holdings Inc	IQV	29,262.72	0.11%	0.00%	17.75%	17.75%	0.0198%
Ingersoll-Rand PLC	IR	29,764.66	0.11%	1.74%	9.48%	11.30%	0.0128%
Iron Mountain Inc	IRM	9,299.39	0.04%	7.58%	3.81%	11.54%	0.0041%
Intuitive Surgical Inc	ISRG	62,228.79	0.24%	0.00%	13.48%	13.48%	0.0319%
Gartner Inc	IT	12,888.72	0.05%	0.00%	13.08%	13.08%	0.0064%
Illinois Tool Works Inc	ITW	50,621.10	0.19%	2.59%	6.52%	9.20%	0.0177%
Invesco Ltd	IVZ	7,958.31	0.03%	7.31%	7.00%	14.57%	0.0044%
JB Hunt Transport Services Inc	JBHT	11,813.90	0.04%	0.93%	12.03%	13.02%	0.0059%
Johnson Controls International plc	JCI	34,923.56	0.13%	2.44%	7.57%	10.10%	0.0134%
Jacobs Engineering Group Inc	JEC	12,398.08	0.05%	0.68%	15.62%	16.34%	0.0077%
Jack Henry & Associates Inc	JKHY	11,239.73	0.04%	1.09%	9.20%	10.34%	0.0044%
Johnson & Johnson	JNJ	341,455.24	1.30%	2.90%	6.09%	9.08%	0.1179%
Juniper Networks Inc	JNPR	8,558.94	0.03%	3.05%	7.74%	10.91%	0.0036%
JPMorgan Chase & Co	JPM	376,312.01	1.43%	2.88%	4.65%	7.60%	0.1088%
Nordstrom Inc	JWN	5,215.98	0.02%	4.51%	5.83%	10.48%	0.0021%
Kellogg Co	K	21,919.66	0.08%	3.56%	2.09%	5.69%	0.0047%
KeyCorp	KEY	17,898.14	0.07%	3.98%	4.69%	8.76%	0.0060%
Keysight Technologies Inc	KEYS	18,241.96	0.07%	0.00%	0.00%	0.00%	0.0000%
Kraft Heinz Co/The	KHC	34,080.46	0.13%	5.73%	-3.31%	2.32%	0.0030%
Kimco Realty Corp	KIM	8,815.90	0.03%	5.43%	3.99%	9.53%	0.0032%
KLA Corp	KLAC	25,266.89	0.10%	2.07%	13.97%	16.18%	0.0155%
Kimberly-Clark Corp	KMB	48,884.56	0.19%	2.89%	4.78%	7.74%	0.0144%
Kinder Morgan Inc/DE	KMI	46,657.02	0.18%	4.83%	11.90%	17.02%	0.0302%
CarMax Inc	KMX	14,509.94	0.06%	0.00%	10.68%	10.68%	0.0059%
Coca-Cola Co/The	KO	232,786.93	0.89%	2.96%	6.96%	10.02%	0.0887%
Kroger Co/The	KR	20,665.80	0.08%	2.35%	4.75%	7.15%	0.0056%
Kohl's Corp	KSS	7,902.23	0.03%	5.39%	6.17%	11.73%	0.0035%
Kansas City Southern	KSU	13,289.54	0.05%	1.12%	12.73%	13.93%	0.0070%
Loews Corp	L	15,566.52	0.06%	0.49%	0.00%	0.49%	0.0003%
L Brands Inc	LB	5,414.51	0.02%	6.13%	9.23%	15.64%	0.0032%
Leidos Holdings Inc	LDOS	12,350.22	0.05%	1.56%	10.00%	11.64%	0.0055%
Leggett & Platt Inc	LEG	5,382.39	0.02%	3.86%	0.00%	3.86%	0.0008%
Lennar Corp	LEN	17,558.58	0.07%	0.29%	9.42%	9.71%	0.0065%
Laboratory Corp of America Holdings	LH	16,413.60	0.06%	0.00%	7.36%	7.36%	0.0046%
L3Harris Technologies Inc	LHX	46,438.02	0.18%	1.50%	0.00%	1.50%	0.0026%
Linde PLC	LIN	104,723.38	0.40%	1.86%	13.95%	15.94%	0.0635%
LKQ Corp	LKQ	9,693.05	0.04%	0.00%	13.50%	13.50%	0.0050%
Eli Lilly & Co	LLY	107,964.37	0.41%	2.26%	9.93%	12.30%	0.0505%
Lockheed Martin Corp	LMT	110,151.97	0.42%	2.30%	10.10%	12.52%	0.0524%
Lincoln National Corp	LNC	12,075.62	0.05%	2.50%	9.00%	11.61%	0.0053%
Alliant Energy Corp	LNT	12,809.51	0.05%	2.64%	5.63%	8.34%	0.0041%

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Lowe's Cos Inc	LOW	84,866.98	0.32%	1.90%	14.56%	16.60%	0.0536%
Lam Research Corp	LRCX	33,472.60	0.13%	1.92%	16.30%	18.38%	0.0234%
Southwest Airlines Co	LUV	29,031.30	0.11%	1.33%	8.42%	9.81%	0.0108%
Lamb Weston Holdings Inc	LW	10,593.43	0.04%	1.15%	7.50%	8.69%	0.0035%
LyondellBasell Industries NV	LYB	29,994.43	0.11%	4.78%	7.10%	12.05%	0.0137%
Macy's Inc	M	4,800.54	0.02%	9.72%	3.50%	13.39%	0.0024%
Mastercard Inc	MA	275,523.91	1.05%	0.46%	17.14%	17.64%	0.1848%
Mid-America Apartment Communities Inc	MAA	14,826.92	0.06%	2.96%	0.00%	2.96%	0.0017%
Macerich Co/The	MAC	4,462.57	0.02%	9.50%	-0.31%	9.17%	0.0016%
Marriott International Inc/MD	MAR	40,962.36	0.16%	1.49%	8.50%	10.05%	0.0157%
Masco Corp	MAS	12,064.53	0.05%	1.14%	9.19%	10.38%	0.0048%
McDonald's Corp	MCD	163,060.26	0.62%	2.17%	8.67%	10.93%	0.0678%
Microchip Technology Inc	MCHP	22,116.63	0.08%	1.49%	7.65%	9.20%	0.0077%
McKesson Corp	MCK	25,269.00	0.10%	1.22%	2.39%	3.62%	0.0035%
Moody's Corp	MCO	38,753.84	0.15%	1.01%	11.70%	12.77%	0.0188%
Mondelez International Inc	MDLZ	79,779.77	0.30%	1.95%	8.55%	10.58%	0.0321%
Medtronic PLC	MDT	145,732.14	0.55%	1.94%	7.26%	9.27%	0.0514%
MetLife Inc	MET	44,162.87	0.17%	3.68%	9.69%	13.55%	0.0228%
MGM Resorts International	MGM	14,453.95	0.05%	1.87%	13.81%	15.81%	0.0087%
Mohawk Industries Inc	MHK	8,951.96	0.03%	0.00%	5.28%	5.28%	0.0018%
McCormick & Co Inc/MD	MKC	20,713.37	0.08%	1.43%	6.20%	7.67%	0.0060%
MarketAxess Holdings Inc	MKTX	12,365.31	0.05%	0.62%	0.00%	0.62%	0.0003%
Martin Marietta Materials Inc	MLM	17,114.67	0.07%	0.73%	15.99%	16.78%	0.0109%
Marsh & McLennan Cos Inc	MMC	50,656.43	0.19%	1.75%	12.58%	14.44%	0.0278%
3M Co	MMM	94,575.88	0.36%	3.44%	6.95%	10.51%	0.0378%
Monster Beverage Corp	MNST	31,635.69	0.12%	0.00%	14.30%	14.30%	0.0172%
Altria Group Inc	MO	76,405.12	0.29%	8.08%	7.10%	15.47%	0.0449%
Mosaic Co/The	MOS	7,910.28	0.03%	0.95%	12.87%	13.87%	0.0042%
Marathon Petroleum Corp	MPC	39,992.90	0.15%	3.51%	10.23%	13.93%	0.0212%
Merck & Co Inc	MRK	215,532.34	0.82%	2.62%	11.52%	14.28%	0.1171%
Marathon Oil Corp	MRO	9,865.60	0.04%	1.63%	1.55%	3.19%	0.0012%
Morgan Stanley	MS	70,523.61	0.27%	3.07%	8.26%	11.46%	0.0307%
MSCI Inc	MSCI	18,443.13	0.07%	1.15%	11.43%	12.65%	0.0089%
Microsoft Corp	MSFT	1,061,550.97	4.04%	1.42%	10.51%	12.00%	0.4845%
Motorola Solutions Inc	MSI	28,382.76	0.11%	1.35%	7.05%	8.45%	0.0091%
M&T Bank Corp	MTB	21,115.33	0.08%	2.68%	5.33%	8.09%	0.0065%
Mettler-Toledo International Inc	MTD	17,334.74	0.07%	0.00%	13.47%	13.47%	0.0089%
Micron Technology Inc	MU	47,297.97	0.18%	0.00%	4.02%	4.02%	0.0072%
Maxim Integrated Products Inc	MXIM	15,699.16	0.06%	3.16%	6.95%	10.22%	0.0061%
Mylan NV	MYL	10,203.91	0.04%	0.00%	-5.72%	-5.72%	-0.0022%
Noble Energy Inc	NBL	10,741.57	0.04%	2.07%	16.58%	18.82%	0.0077%
Norwegian Cruise Line Holdings Ltd	NCLH	11,161.47	0.04%	0.14%	8.27%	8.42%	0.0036%
Nasdaq Inc	NDAQ	16,361.73	0.06%	1.86%	13.17%	15.15%	0.0094%
NextEra Energy Inc	NEE	113,874.15	0.43%	2.14%	5.46%	7.66%	0.0332%
Newmont Goldcorp Corp	NEM	31,090.37	0.12%	1.48%	5.75%	7.27%	0.0086%
Netflix Inc	NFLX	117,173.37	0.45%	0.00%	42.80%	42.80%	0.1907%
NiSource Inc	NI	11,170.55	0.04%	2.69%	5.28%	8.04%	0.0034%
NIKE Inc	NKE	147,162.16	0.56%	0.98%	13.82%	14.87%	0.0832%
Nektar Therapeutics	NKTR	3,192.62	0.01%	0.00%	-8.60%	-8.60%	-0.0010%
Nielsen Holdings PLC	NLSN	7,558.06	0.03%	6.64%	12.00%	19.03%	0.0055%
Northrop Grumman Corp	NOC	63,413.78	0.24%	1.39%	6.84%	8.27%	0.0200%
National Oilwell Varco Inc	NOV	8,181.00	0.03%	0.94%	67.95%	69.21%	0.0215%
NRG Energy Inc	NRG	10,018.32	0.04%	0.30%	35.23%	35.59%	0.0136%
Norfolk Southern Corp	NSC	47,323.66	0.18%	1.96%	13.68%	15.78%	0.0284%
NetApp Inc	NTAP	12,492.79	0.05%	3.64%	5.24%	8.98%	0.0043%
Northern Trust Corp	NTRS	20,053.60	0.08%	2.77%	7.25%	10.12%	0.0077%
Nucor Corp	NUE	15,433.72	0.06%	3.15%	0.35%	3.50%	0.0021%
NVIDIA Corp	NVDA	106,008.63	0.40%	0.37%	11.15%	11.55%	0.0465%
NVR Inc	NVR	13,587.91	0.05%	0.00%	10.66%	10.66%	0.0055%
Newell Brands Inc	NWL	7,926.05	0.03%	4.91%	-3.42%	1.41%	0.0004%
News Corp	NWSA	8,221.90	0.03%	1.39%	-14.23%	-12.94%	-0.0040%
Realty Income Corp	O	24,401.71	0.09%	3.55%	5.01%	8.64%	0.0080%
ONEOK Inc	OKE	30,431.63	0.12%	4.81%	13.11%	18.24%	0.0211%
Omnicom Group Inc	OMC	17,032.11	0.06%	3.32%	3.58%	6.95%	0.0045%
Oracle Corp	ORCL	180,636.92	0.69%	1.70%	8.38%	10.16%	0.0698%
O'Reilly Automotive Inc	ORLY	30,491.12	0.12%	0.00%	13.64%	13.64%	0.0158%
Occidental Petroleum Corp	OXY	39,777.52	0.15%	7.02%	6.30%	13.54%	0.0205%
Paychex Inc	PAYX	29,643.20	0.11%	3.00%	7.25%	10.35%	0.0117%
People's United Financial Inc	PBCT	6,234.46	0.02%	4.52%	2.00%	6.56%	0.0016%
PACCAR Inc	PCAR	24,249.30	0.09%	4.86%	4.90%	9.88%	0.0091%
Public Service Enterprise Group Inc	PEG	31,389.91	0.12%	3.03%	5.46%	8.57%	0.0102%
PepsiCo Inc	PEP	191,689.04	0.73%	2.76%	5.59%	8.43%	0.0614%
Pfizer Inc	PFE	198,730.57	0.76%	3.98%	3.88%	7.93%	0.0600%
Principal Financial Group Inc	PFG	15,930.42	0.06%	3.85%	6.87%	10.85%	0.0066%
Procter & Gamble Co/The	PG	311,277.51	1.18%	2.42%	7.42%	9.92%	0.1174%
Progressive Corp/The	PGR	45,160.35	0.17%	3.51%	6.23%	9.85%	0.0169%

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Parker-Hannifin Corp	PH	23,208.17	0.09%	1.87%	8.24%	10.19%	0.0090%
PulteGroup Inc	PHM	10,022.69	0.04%	1.21%	8.25%	9.52%	0.0036%
Packaging Corp of America	PKG	10,043.73	0.04%	3.01%	10.00%	13.16%	0.0050%
PerkinElmer Inc	PKI	9,460.36	0.04%	0.33%	16.84%	17.20%	0.0062%
Prologis Inc	PLD	53,748.27	0.20%	2.49%	7.36%	9.94%	0.0203%
Philip Morris International Inc	PM	118,134.92	0.45%	6.10%	7.81%	14.14%	0.0635%
PNC Financial Services Group Inc/The	PNC	62,407.21	0.24%	3.00%	7.64%	10.75%	0.0255%
Pentair PLC	PNR	6,352.26	0.02%	1.90%	6.57%	8.54%	0.0021%
Pinnacle West Capital Corp	PNW	10,901.34	0.04%	3.10%	5.35%	8.54%	0.0035%
PPG Industries Inc	PPG	28,003.07	0.11%	1.67%	6.82%	8.55%	0.0091%
PPL Corp	PPL	22,730.74	0.09%	5.26%	1.35%	6.64%	0.0057%
Perrigo Co PLC	PRGO	7,604.09	0.03%	1.38%	-1.60%	-0.23%	-0.0001%
Prudential Financial Inc	PRU	36,159.90	0.14%	4.45%	10.67%	15.35%	0.0211%
Public Storage	PSA	42,823.59	0.16%	3.28%	4.11%	7.46%	0.0121%
Phillips 66	PSX	45,930.67	0.17%	3.39%	2.20%	5.63%	0.0098%
PVH Corp	PVH	6,541.71	0.02%	0.17%	6.52%	6.69%	0.0017%
Quanta Services Inc	PWR	5,392.86	0.02%	0.32%	0.00%	0.32%	0.0001%
Pioneer Natural Resources Co	PXD	21,021.65	0.08%	0.73%	23.85%	24.67%	0.0197%
PayPal Holdings Inc	PYPL	121,891.81	0.46%	0.00%	19.58%	19.58%	0.0908%
QUALCOMM Inc	QCOM	92,730.37	0.35%	3.26%	14.37%	17.87%	0.0630%
Qorvo Inc	QRVO	8,732.55	0.03%	0.27%	10.76%	11.05%	0.0037%
Royal Caribbean Cruises Ltd	RCL	22,701.75	0.09%	2.66%	11.00%	13.81%	0.0119%
Everest Re Group Ltd	RE	10,840.56	0.04%	2.14%	10.00%	12.25%	0.0050%
Regency Centers Corp	REG	11,655.06	0.04%	3.37%	4.62%	8.06%	0.0036%
Regeneron Pharmaceuticals Inc	REGN	30,467.50	0.12%	0.00%	12.58%	12.58%	0.0146%
Regions Financial Corp	RF	15,784.76	0.06%	3.79%	8.21%	12.15%	0.0073%
Robert Half International Inc	RHI	6,543.45	0.02%	2.20%	-1.79%	0.39%	0.0001%
Raymond James Financial Inc	RJF	11,449.01	0.04%	1.58%	17.00%	18.71%	0.0081%
Ralph Lauren Corp	RL	7,372.34	0.03%	2.85%	6.35%	9.29%	0.0026%
ResMed Inc	RMD	19,411.40	0.07%	1.23%	11.37%	12.67%	0.0094%
Rockwell Automation Inc	ROK	19,282.86	0.07%	2.32%	11.50%	13.95%	0.0102%
Rollins Inc	ROL	11,157.46	0.04%	1.67%	0.00%	1.67%	0.0007%
Roper Technologies Inc	ROP	37,087.05	0.14%	0.54%	13.03%	13.61%	0.0192%
Ross Stores Inc	ROST	39,736.09	0.15%	0.93%	9.38%	10.35%	0.0156%
Republic Services Inc	RSG	27,761.02	0.11%	1.81%	12.96%	14.88%	0.0157%
Raytheon Co	RTN	54,637.64	0.21%	1.92%	8.83%	10.83%	0.0225%
SBA Communications Corp	SBAC	27,275.41	0.10%	0.28%	46.90%	47.24%	0.0490%
Starbucks Corp	SBUX	105,838.74	0.40%	1.68%	13.17%	14.96%	0.0602%
Charles Schwab Corp/The	SCHW	54,679.47	0.21%	1.61%	3.94%	5.58%	0.0116%
Sealed Air Corp	SEE	6,414.38	0.02%	1.59%	5.72%	7.35%	0.0018%
Sherwin-Williams Co/The	SHW	50,729.00	0.19%	0.80%	11.33%	12.18%	0.0235%
SVB Financial Group	SIVB	10,768.98	0.04%	0.00%	11.00%	11.00%	0.0045%
JM Smucker Co/The	SJM	12,547.53	0.05%	3.18%	2.97%	6.20%	0.0030%
Schlumberger Ltd	SLB	47,257.28	0.18%	5.85%	28.00%	34.67%	0.0623%
SL Green Realty Corp	SLG	6,821.17	0.03%	4.18%	6.80%	11.12%	0.0029%
Snap-on Inc	SNA	8,642.61	0.03%	2.43%	6.91%	9.42%	0.0031%
Synopsys Inc	SNPS	20,626.83	0.08%	0.00%	14.38%	14.38%	0.0113%
Southern Co/The	SO	64,841.92	0.25%	3.99%	3.18%	7.23%	0.0178%
Simon Property Group Inc	SPG	47,943.55	0.18%	5.33%	5.08%	10.55%	0.0192%
S&P Global Inc	SPGI	60,338.57	0.23%	0.92%	10.47%	11.44%	0.0262%
Sempra Energy	SRE	40,506.16	0.15%	2.63%	9.80%	12.56%	0.0193%
SunTrust Banks Inc	STI	30,542.94	0.12%	3.09%	2.37%	5.49%	0.0064%
State Street Corp	STT	22,052.98	0.08%	3.34%	3.98%	7.39%	0.0062%
Seagate Technology PLC	STX	14,208.35	0.05%	4.76%	1.26%	6.04%	0.0033%
Constellation Brands Inc	STZ	39,714.26	0.15%	1.45%	7.83%	9.34%	0.0141%
Stanley Black & Decker Inc	SWK	21,913.25	0.08%	1.88%	8.88%	10.84%	0.0090%
Skyworks Solutions Inc	SWKS	13,607.47	0.05%	1.99%	12.93%	15.05%	0.0078%
Synchrony Financial	SYF	22,616.67	0.09%	2.56%	6.57%	9.21%	0.0079%
Stryker Corp	SYK	80,918.61	0.31%	0.97%	9.46%	10.47%	0.0322%
Symantec Corp	SYMC	14,604.09	0.06%	1.28%	3.35%	4.65%	0.0026%
Sysco Corp	SYY	40,746.25	0.15%	2.10%	11.13%	13.35%	0.0207%
AT&T Inc	T	276,496.88	1.05%	5.41%	5.62%	11.17%	0.1175%
Molson Coors Brewing Co	TAP	12,489.21	0.05%	3.44%	-2.40%	1.00%	0.0005%
TransDigm Group Inc	TDG	27,790.63	0.11%	0.00%	14.40%	14.40%	0.0152%
TE Connectivity Ltd	TEL	31,302.45	0.12%	1.92%	9.21%	11.21%	0.0133%
Teleflex Inc	TFX	15,707.61	0.06%	0.40%	13.23%	13.66%	0.0082%
Target Corp	TGT	54,623.37	0.21%	2.45%	8.23%	10.77%	0.0224%
Tiffany & Co	TIF	11,189.58	0.04%	2.52%	8.42%	11.04%	0.0047%
TJX Cos Inc/The	TJX	67,385.91	0.26%	1.65%	11.07%	12.81%	0.0328%
Thermo Fisher Scientific Inc	TMO	116,646.57	0.44%	0.25%	11.00%	11.26%	0.0500%
T-Mobile US Inc	TMUS	67,305.58	0.26%	0.00%	11.27%	11.27%	0.0288%
Tapestry Inc	TPR	7,497.96	0.03%	5.24%	8.83%	14.30%	0.0041%
TripAdvisor Inc	TRIP	5,388.13	0.02%	0.00%	14.28%	14.28%	0.0029%
T Rowe Price Group Inc	TROW	26,913.30	0.10%	2.63%	8.20%	10.94%	0.0112%
Travelers Cos Inc/The	TRV	38,716.75	0.15%	2.17%	12.38%	14.69%	0.0216%
Tractor Supply Co	TSCO	10,786.32	0.04%	1.48%	10.82%	12.37%	0.0051%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Tyson Foods Inc	TSN	31,414.08	0.12%	1.74%	4.90%	6.68%	0.0080%
Take-Two Interactive Software Inc	TTWO	14,185.73	0.05%	0.00%	9.86%	9.86%	0.0053%
Twitter Inc	TWTR	31,848.33	0.12%	0.00%	31.80%	31.80%	0.0385%
Texas Instruments Inc	TXN	120,661.04	0.46%	2.43%	8.35%	10.88%	0.0499%
Textron Inc	TXT	11,266.85	0.04%	0.16%	11.86%	12.03%	0.0052%
Under Armour Inc	UAA	8,552.83	0.03%	0.00%	30.97%	30.97%	0.0101%
United Airlines Holdings Inc	UAL	22,714.43	0.09%	0.02%	12.80%	12.81%	0.0111%
UDR Inc	UDR	14,197.00	0.05%	2.82%	6.37%	9.28%	0.0050%
Universal Health Services Inc	UHS	13,162.72	0.05%	0.32%	8.08%	8.40%	0.0042%
Ulta Beauty Inc	ULTA	14,750.49	0.06%	0.00%	19.25%	19.25%	0.0108%
UnitedHealth Group Inc	UNH	205,949.95	0.78%	1.89%	12.28%	14.29%	0.1119%
Unum Group	UNM	6,200.51	0.02%	3.64%	9.00%	12.81%	0.0030%
Union Pacific Corp	UNP	114,119.73	0.43%	2.24%	12.90%	15.29%	0.0663%
United Parcel Service Inc	UPS	102,890.03	0.39%	3.20%	8.93%	12.28%	0.0480%
United Rentals Inc	URI	9,617.57	0.04%	0.00%	12.00%	12.00%	0.0044%
US Bancorp	USB	87,206.25	0.33%	2.86%	6.33%	9.28%	0.0308%
United Technologies Corp	UTX	117,805.66	0.45%	2.17%	9.75%	12.02%	0.0539%
Visa Inc	V	341,253.19	1.30%	0.58%	15.59%	16.22%	0.2105%
Varian Medical Systems Inc	VAR	10,844.42	0.04%	0.00%	8.40%	8.40%	0.0035%
VF Corp	VFC	35,433.73	0.13%	2.01%	10.42%	12.54%	0.0169%
Viacom Inc	VIAB	9,803.82	0.04%	3.35%	3.36%	6.77%	0.0025%
Valero Energy Corp	VLO	35,323.75	0.13%	4.23%	9.75%	14.19%	0.0191%
Vulcan Materials Co	VMC	20,007.06	0.08%	0.81%	18.12%	19.00%	0.0145%
Vornado Realty Trust	VNO	12,149.09	0.05%	4.12%	5.46%	9.69%	0.0045%
Verisk Analytics Inc	VRSK	25,856.85	0.10%	0.54%	18.47%	19.06%	0.0187%
VeriSign Inc	VRSN	22,328.48	0.08%	0.00%	9.70%	9.70%	0.0082%
Vertex Pharmaceuticals Inc	VRTX	43,546.94	0.17%	0.00%	24.60%	24.60%	0.0407%
Ventas Inc	VTR	27,209.85	0.10%	4.35%	4.85%	9.31%	0.0096%
Verizon Communications Inc	VZ	249,634.76	0.95%	4.04%	2.56%	6.65%	0.0631%
Wabtec Corp	WAB	13,775.46	0.05%	0.60%	76.00%	76.83%	0.0402%
Waters Corp	WAT	14,902.71	0.06%	0.00%	11.26%	11.26%	0.0064%
Walgreens Boots Alliance Inc	WBA	49,952.86	0.19%	3.24%	5.47%	8.80%	0.0167%
WellCare Health Plans Inc	WCG	13,039.38	0.05%	0.00%	15.83%	15.83%	0.0078%
Western Digital Corp	WDC	17,653.67	0.07%	3.37%	3.07%	6.50%	0.0044%
WEC Energy Group Inc	WEC	29,997.95	0.11%	2.48%	6.44%	9.00%	0.0103%
Welltower Inc	WELL	36,735.62	0.14%	3.84%	6.34%	10.30%	0.0144%
Wells Fargo & Co	WFC	222,244.04	0.85%	3.79%	9.86%	13.83%	0.1169%
Whirlpool Corp	WHR	10,060.20	0.04%	3.02%	4.61%	7.69%	0.0029%
Willis Towers Watson PLC	WLTW	24,892.06	0.09%	1.31%	14.40%	15.80%	0.0150%
Waste Management Inc	WM	48,786.70	0.19%	1.78%	7.74%	9.59%	0.0178%
Williams Cos Inc/The	WMB	29,161.26	0.11%	6.31%	8.00%	14.57%	0.0162%
Walmart Inc	WMT	337,559.63	1.28%	1.79%	7.97%	9.84%	0.1263%
Westrock Co	WRK	9,380.10	0.04%	4.96%	1.80%	6.81%	0.0024%
Western Union Co/The	WU	9,821.55	0.04%	3.41%	3.61%	7.08%	0.0026%
Weyerhaeuser Co	WY	20,634.55	0.08%	4.92%	2.40%	7.38%	0.0058%
Wynn Resorts Ltd	WYNN	11,700.00	0.04%	3.51%	13.50%	17.25%	0.0077%
Cimarex Energy Co	XEC	4,863.85	0.02%	1.59%	26.17%	27.97%	0.0052%
Xcel Energy Inc	XEL	33,419.04	0.13%	2.50%	5.53%	8.10%	0.0103%
Xilinx Inc	XLNX	24,224.79	0.09%	1.53%	9.45%	11.06%	0.0102%
Exxon Mobil Corp	XOM	298,758.42	1.14%	4.86%	8.52%	13.59%	0.1544%
DENTSPLY SIRONA Inc	XRAY	11,951.22	0.05%	0.67%	13.14%	13.86%	0.0063%
Xerox Holdings Corp	XRX	6,618.60	0.03%	3.39%	6.20%	9.69%	0.0024%
Xylem Inc/NY	XYL	14,333.92	0.05%	1.21%	14.07%	15.36%	0.0084%
Yum! Brands Inc	YUM	34,515.13	0.13%	1.48%	12.50%	14.07%	0.0185%
Zimmer Biomet Holdings Inc	ZBH	28,183.53	0.11%	0.71%	6.02%	6.76%	0.0072%
Zions Bancorp NA	ZION	7,878.39	0.03%	2.89%	6.24%	9.22%	0.0028%
Zoetis Inc	ZTS	59,498.94	0.23%	0.52%	10.23%	10.78%	0.0244%
Total Market Capitalization:		26,296,710.42					14.20%

Notes:
[1] Equals sum of Col. [9]
[2] Source: Bloomberg Professional
[3] Equals [1] – [2]
[4] Source: Bloomberg Professional
[5] Equals weight in S&P 500 based on market capitalization
[6] Source: Bloomberg Professional
[7] Source: Bloomberg Professional
[8] Equals ([6] x (1 + (0.5 x [7]))) + [7]
[9] Equals Col. [5] x Col. [8]

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

[1] S&P 500 Est. Required Market Return	[2] Current 30-Year Treasury (30-day average)	[3] Implied Market Risk Premium
14.47%	2.11%	12.36%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	23,690.36	0.10%	0.86%	9.50%	10.40%	0.0102%
American Airlines Group Inc	AAL	12,106.67	0.05%	1.47%	7.50%	9.03%	0.0045%
Advance Auto Parts Inc	AAP	11,449.05	0.05%	0.15%	14.00%	14.16%	0.0067%
Apple Inc	AAPL	996,408.50	4.11%	1.45%	12.50%	14.04%	0.5776%
AbbVie Inc	ABBV	109,443.80	0.45%	5.78%	10.50%	16.58%	0.0749%
AmerisourceBergen Corp	ABC	17,087.16	0.07%	2.02%	8.00%	10.10%	0.0071%
ABIOMED Inc	ABMD	8,060.69	0.03%	0.00%	15.00%	15.00%	0.0050%
Abbott Laboratories	ABT	146,093.10	0.60%	1.55%	10.00%	11.63%	0.0701%
Accenture PLC	ACN	122,540.50	0.51%	1.67%	9.00%	10.75%	0.0544%
Adobe Inc	ADBE	137,620.30	0.57%	0.00%	20.50%	20.50%	0.1165%
Analog Devices Inc	ADI	41,794.59	0.17%	1.91%	10.00%	12.01%	0.0207%
Archer-Daniels-Midland Co	ADM	22,799.88	0.09%	3.43%	9.50%	13.09%	0.0123%
Automatic Data Processing Inc	ADP	71,104.08	0.29%	2.12%	14.50%	16.77%	0.0492%
Alliance Data Systems Corp	ADS	6,504.00	0.03%	1.97%	9.50%	11.56%	0.0031%
Autodesk Inc	ADSK	32,720.87	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	19,757.40	0.08%	2.51%	6.50%	9.09%	0.0074%
American Electric Power Co Inc	AEP	46,556.44	0.19%	3.01%	4.00%	7.07%	0.0136%
AES Corp/VA	AES	10,766.80	N/A	3.39%	N/A	N/A	N/A
Aflac Inc	AFL	38,437.54	0.16%	2.14%	7.50%	9.72%	0.0154%
Allergan PLC	AGN	54,723.23	0.23%	1.77%	3.50%	5.30%	0.0120%
American International Group Inc	AIG	48,610.12	N/A	2.29%	N/A	N/A	N/A
Apartment Investment & Management Co	AIV	7,956.51	0.03%	2.99%	-3.00%	-0.05%	0.0000%
Assurant Inc	AIZ	7,761.18	0.03%	1.89%	6.50%	8.45%	0.0027%
Arthur J Gallagher & Co	AJG	16,709.09	0.07%	1.92%	14.50%	16.56%	0.0114%
Akamai Technologies Inc	AKAM	14,797.06	0.06%	0.00%	18.00%	18.00%	0.0110%
Albemarle Corp	ALB	7,120.19	0.03%	2.19%	5.50%	7.75%	0.0023%
Align Technology Inc	ALGN	14,295.04	0.06%	0.00%	25.00%	25.00%	0.0148%
Alaska Air Group Inc	ALK	7,963.94	0.03%	2.17%	5.50%	7.73%	0.0025%
Allstate Corp/The	ALL	32,433.00	0.13%	1.85%	10.50%	12.45%	0.0167%
Allegion PLC	ALLE	9,593.68	0.04%	1.05%	8.50%	9.59%	0.0038%
Alexion Pharmaceuticals Inc	ALXN	22,128.54	0.09%	0.00%	42.00%	42.00%	0.0384%
Applied Materials Inc	AMAT	48,186.60	0.20%	1.63%	8.50%	10.20%	0.0203%
Amcor PLC	AMCR	N/A	N/A	0.00%	N/A	N/A	N/A
Advanced Micro Devices Inc	AMD	32,151.77	0.13%	0.00%	27.50%	27.50%	0.0365%
AMETEK Inc	AME	20,589.96	0.09%	0.62%	15.50%	16.17%	0.0137%
Affiliated Managers Group Inc	AMG	4,206.58	0.02%	1.62%	10.00%	11.70%	0.0020%
Amgen Inc	AMGN	117,638.30	0.49%	3.05%	7.00%	10.16%	0.0493%
Ameriprise Financial Inc	AMP	19,184.53	0.08%	2.66%	12.50%	15.33%	0.0121%
American Tower Corp	AMT	98,652.08	0.41%	1.91%	7.50%	9.48%	0.0386%
Amazon.com Inc	AMZN	859,481.00	3.55%	0.00%	39.00%	39.00%	1.3839%
Arista Networks Inc	ANET	18,680.19	0.08%	0.00%	11.50%	11.50%	0.0089%
ANSYS Inc	ANSS	18,495.30	0.08%	0.00%	11.50%	11.50%	0.0088%
Anthem Inc	ANTM	61,103.19	0.25%	1.34%	19.50%	20.97%	0.0529%
Aon PLC	AON	45,897.86	0.19%	0.90%	10.00%	10.95%	0.0207%
AO Smith Corp	AOS	7,807.50	0.03%	1.85%	9.50%	11.44%	0.0037%
Apache Corp	APA	9,500.41	0.04%	3.96%	50.00%	54.95%	0.0216%
Air Products & Chemicals Inc	APD	49,203.07	0.20%	2.08%	9.50%	11.68%	0.0237%
Amphenol Corp	APH	28,673.98	0.12%	1.04%	9.50%	10.59%	0.0125%
Aptiv PLC	APTV	22,470.69	0.09%	1.00%	11.00%	12.06%	0.0112%
Alexandria Real Estate Equities Inc	ARE	17,232.39	N/A	2.58%	N/A	N/A	N/A
Arconic Inc	ARNC	11,576.94	N/A	0.30%	N/A	N/A	N/A
Atmos Energy Corp	ATO	13,551.17	0.06%	1.95%	7.50%	9.52%	0.0053%
Activision Blizzard Inc	ATVI	41,578.12	0.17%	0.74%	9.50%	10.28%	0.0176%
AvalonBay Communities Inc	AVB	29,859.55	0.12%	2.95%	2.50%	5.49%	0.0068%
Broadcom Inc	AVGO	110,210.20	0.46%	3.83%	33.50%	37.97%	0.1728%
Avery Dennison Corp	AVY	9,480.59	0.04%	2.17%	11.00%	13.29%	0.0052%
American Water Works Co Inc	AWK	22,604.99	0.09%	1.64%	9.50%	11.22%	0.0105%
American Express Co	AXP	98,933.13	0.41%	1.45%	10.00%	11.52%	0.0471%
AutoZone Inc	AZO	26,719.91	0.11%	0.00%	13.50%	13.50%	0.0149%
Boeing Co/The	BA	217,704.20	0.90%	2.32%	15.50%	18.00%	0.1618%
Bank of America Corp	BAC	272,150.00	1.12%	2.47%	10.50%	13.10%	0.1472%
Baxter International Inc	BAX	44,761.51	0.18%	1.00%	10.50%	11.55%	0.0213%
BB&T Corp	BBT	40,537.25	0.17%	3.40%	8.00%	11.54%	0.0193%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Best Buy Co Inc	BBY	17,744.40	0.07%	3.14%	8.50%	11.77%	0.0086%
Becton Dickinson and Co	BDX	67,634.27	0.28%	1.25%	10.00%	11.31%	0.0316%
Franklin Resources Inc	BEN	14,448.08	0.06%	3.94%	7.50%	11.59%	0.0069%
Brown-Forman Corp	BF/B	29,941.69	0.12%	1.07%	14.50%	15.65%	0.0193%
Baker Hughes a GE Co	BHGE	12,347.88	N/A	3.01%	N/A	N/A	N/A
Biogen Inc	BIIB	48,023.89	0.20%	0.00%	8.00%	8.00%	0.0159%
Bank of New York Mellon Corp/The	BK	43,956.32	0.18%	2.66%	7.00%	9.75%	0.0177%
Booking Holdings Inc	BKNG	84,608.41	0.35%	0.00%	12.00%	12.00%	0.0419%
BlackRock Inc	BLK	68,926.63	0.28%	2.96%	9.00%	12.09%	0.0344%
Ball Corp	BLL	24,712.13	0.10%	0.81%	25.00%	25.91%	0.0264%
Bristol-Myers Squibb Co	BMY	81,739.28	0.34%	3.28%	9.00%	12.43%	0.0419%
Broadridge Financial Solutions Inc	BR	14,666.07	0.06%	1.71%	11.00%	12.80%	0.0078%
Berkshire Hathaway Inc	BRK/B	-	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	58,931.42	0.24%	0.00%	16.00%	16.00%	0.0389%
BorgWarner Inc	BWA	7,552.25	0.03%	1.86%	4.50%	6.40%	0.0020%
Boston Properties Inc	BXP	20,479.59	0.08%	2.98%	5.00%	8.05%	0.0068%
Citigroup Inc	C	156,123.40	0.64%	2.95%	10.00%	13.10%	0.0844%
Conagra Brands Inc	CAG	15,068.63	0.06%	2.74%	4.50%	7.30%	0.0045%
Cardinal Health Inc	CAH	14,095.40	0.06%	4.06%	10.50%	14.77%	0.0086%
Caterpillar Inc	CAT	71,105.63	0.29%	3.26%	13.00%	16.47%	0.0484%
Chubb Ltd	CB	73,182.27	0.30%	1.87%	10.00%	11.96%	0.0361%
Cboe Global Markets Inc	CBOE	13,151.02	0.05%	1.22%	14.50%	15.81%	0.0086%
CBRE Group Inc	CBRE	17,906.21	0.07%	0.00%	11.00%	11.00%	0.0081%
CBS Corp	CBS	15,112.50	0.06%	1.94%	9.50%	11.53%	0.0072%
Crown Castle International Corp	CCI	59,072.00	0.24%	3.45%	12.50%	16.17%	0.0394%
Carnival Corp	CCL	23,161.65	0.10%	4.55%	10.00%	14.78%	0.0141%
Cadence Design Systems Inc	CDNS	18,652.59	0.08%	0.00%	12.50%	12.50%	0.0096%
CDW Corp/DE	CDW	17,893.00	0.07%	0.96%	9.50%	10.51%	0.0078%
Celanese Corp	CE	15,045.55	0.06%	2.04%	8.50%	10.63%	0.0066%
Celgene Corp	CELG	69,851.02	0.29%	0.00%	9.00%	9.00%	0.0260%
Cerner Corp	CERN	21,744.36	0.09%	1.05%	9.00%	10.10%	0.0091%
CF Industries Holdings Inc	CF	10,775.19	N/A	2.54%	N/A	N/A	N/A
Citizens Financial Group Inc	CFG	16,099.91	0.07%	4.10%	9.50%	13.79%	0.0092%
Church & Dwight Co Inc	CHD	18,433.09	0.08%	1.22%	9.00%	10.27%	0.0078%
CH Robinson Worldwide Inc	CHRW	11,413.62	0.05%	2.38%	9.00%	11.49%	0.0054%
Charter Communications Inc	CHTR	91,027.46	0.38%	0.00%	17.50%	17.50%	0.0658%
Cigna Corp	CI	56,562.05	0.23%	0.03%	14.50%	14.53%	0.0339%
Cincinnati Financial Corp	CINF	19,039.15	0.08%	1.92%	8.50%	10.50%	0.0083%
Colgate-Palmolive Co	CL	62,394.20	0.26%	2.37%	6.00%	8.44%	0.0217%
Clorox Co/The	CLX	18,927.05	0.08%	2.82%	5.00%	7.89%	0.0062%
Comerica Inc	CMA	9,733.81	0.04%	4.12%	11.00%	15.35%	0.0062%
Comcast Corp	CMCSA	204,069.80	0.84%	1.87%	13.50%	15.50%	0.1306%
CME Group Inc	CME	77,139.96	0.32%	1.39%	3.00%	4.41%	0.0140%
Chipotle Mexican Grill Inc	CMG	22,666.31	0.09%	0.00%	26.00%	26.00%	0.0243%
Cummins Inc	CMI	25,240.11	0.10%	3.28%	8.00%	11.41%	0.0119%
CMS Energy Corp	CMS	18,458.35	0.08%	2.48%	7.00%	9.57%	0.0073%
Centene Corp	CNC	17,835.42	0.07%	0.00%	15.50%	15.50%	0.0114%
CenterPoint Energy Inc	CNP	15,126.68	0.06%	3.92%	12.50%	16.67%	0.0104%
Capital One Financial Corp	COF	42,861.45	0.18%	1.76%	6.00%	7.81%	0.0138%
Cabot Oil & Gas Corp	COG	7,183.72	0.03%	2.10%	46.50%	49.09%	0.0146%
Cooper Cos Inc/The	COO	14,764.67	0.06%	0.02%	14.50%	14.52%	0.0089%
ConocoPhillips	COP	64,032.99	0.26%	2.12%	37.00%	39.51%	0.1045%
Costco Wholesale Corp	COST	126,779.90	0.52%	0.90%	8.50%	9.44%	0.0494%
Coty Inc	COTY	7,784.50	0.03%	4.83%	5.00%	9.95%	0.0032%
Campbell Soup Co	CPB	14,056.70	0.06%	3.00%	0.50%	3.51%	0.0020%
Capri Holdings Ltd	CPRI	4,962.24	0.02%	0.00%	10.50%	10.50%	0.0022%
Copart Inc	CPRT	18,513.34	0.08%	0.00%	17.50%	17.50%	0.0134%
salesforce.com Inc	CRM	118,825.20	0.49%	0.00%	29.00%	29.00%	0.1423%
Cisco Systems Inc	CSCO	210,603.80	0.87%	2.87%	8.00%	10.98%	0.0955%
CSX Corp	CSX	55,409.38	0.23%	1.38%	14.50%	15.98%	0.0366%
Cintas Corp	CTAS	27,682.18	0.11%	0.84%	15.00%	15.90%	0.0182%
CenturyLink Inc	CTL	13,670.32	0.06%	7.97%	1.00%	9.01%	0.0051%
Cognizant Technology Solutions Corp	CTSH	32,932.32	0.14%	1.34%	6.00%	7.38%	0.0100%
Corteva Inc	CTVA	20,697.25	N/A	1.95%	N/A	N/A	N/A
Citrix Systems Inc	CTXS	12,505.49	0.05%	1.46%	6.50%	8.01%	0.0041%
CVS Health Corp	CVS	80,005.41	0.33%	3.25%	6.50%	9.86%	0.0326%
Chevron Corp	CVX	228,113.90	0.94%	3.99%	16.50%	20.82%	0.1961%
Concho Resources Inc	CXO	13,710.88	0.06%	0.73%	19.50%	20.30%	0.0115%
Dominion Energy Inc	D	64,850.28	0.27%	4.61%	6.50%	11.26%	0.0301%
Delta Air Lines Inc	DAL	38,218.81	0.16%	2.74%	10.00%	12.88%	0.0203%
DuPont de Nemours Inc	DD	50,445.72	N/A	1.78%	N/A	N/A	N/A
Deere & Co	DE	52,398.02	0.22%	1.83%	14.00%	15.96%	0.0345%
Discover Financial Services	DFS	25,989.29	0.11%	2.16%	7.50%	9.74%	0.0105%
Dollar General Corp	DG	41,002.35	0.17%	0.80%	12.00%	12.85%	0.0217%
Quest Diagnostics Inc	DGX	14,372.10	0.06%	1.99%	8.50%	10.57%	0.0063%
DR Horton Inc	DHI	19,378.49	0.08%	1.18%	7.50%	8.72%	0.0070%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Danaher Corp	DHR	102,401.80	0.42%	0.48%	13.50%	14.01%	0.0592%
Walt Disney Co/The	DIS	233,791.80	0.97%	1.34%	6.50%	7.88%	0.0761%
Discovery Inc	DISCA	13,865.04	0.06%	0.00%	18.00%	18.00%	0.0103%
DISH Network Corp	DISH	15,978.67	0.07%	0.00%	-2.00%	-2.00%	-0.0013%
Digital Realty Trust Inc	DLR	26,531.93	0.11%	3.55%	7.00%	10.67%	0.0117%
Dollar Tree Inc	DLTR	26,630.53	0.11%	0.00%	11.50%	11.50%	0.0126%
Dover Corp	DOV	14,473.99	0.06%	1.97%	10.50%	12.57%	0.0075%
Dow Inc	DOW	35,101.91	N/A	6.14%	N/A	N/A	N/A
Duke Realty Corp	DRE	12,236.82	0.05%	2.76%	4.50%	7.32%	0.0037%
Darden Restaurants Inc	DRI	14,333.76	0.06%	3.06%	11.00%	14.23%	0.0084%
DTE Energy Co	DTE	24,459.82	0.10%	3.03%	5.50%	8.61%	0.0087%
Duke Energy Corp	DUK	70,033.60	0.29%	3.95%	6.00%	10.07%	0.0291%
DaVita Inc	DVA	9,210.49	0.04%	0.00%	11.50%	11.50%	0.0044%
Devon Energy Corp	DVN	9,991.01	0.04%	1.48%	25.00%	26.67%	0.0110%
DXC Technology Co	DXC	7,749.35	0.03%	2.84%	10.00%	12.98%	0.0042%
Electronic Arts Inc	EA	28,599.52	0.12%	0.00%	11.00%	11.00%	0.0130%
eBay Inc	EBAY	32,770.64	0.14%	1.49%	10.00%	11.56%	0.0156%
Ecolab Inc	ECL	57,098.63	0.24%	0.93%	10.00%	10.98%	0.0259%
Consolidated Edison Inc	ED	31,423.80	0.13%	3.21%	3.00%	6.26%	0.0081%
Equifax Inc	EFX	17,314.09	0.07%	1.09%	7.50%	8.63%	0.0062%
Edison International	EIX	24,878.93	0.10%	3.21%	14.00%	17.43%	0.0179%
Estee Lauder Cos Inc/The	EL	70,668.73	0.29%	0.98%	14.00%	15.05%	0.0439%
Eastman Chemical Co	EMN	9,921.52	0.04%	3.42%	8.00%	11.56%	0.0047%
Emerson Electric Co	EMR	39,483.27	0.16%	3.10%	11.50%	14.78%	0.0241%
EOG Resources Inc	EOG	43,599.20	0.18%	1.53%	33.00%	34.78%	0.0626%
Equinix Inc	EQIX	49,451.18	0.20%	1.79%	23.50%	25.50%	0.0521%
Equity Residential	EQR	32,049.58	0.13%	2.69%	-13.50%	-10.99%	-0.0145%
Eversource Energy	ES	27,587.92	0.11%	2.58%	5.50%	8.15%	0.0093%
Essex Property Trust Inc	ESS	21,757.54	0.09%	2.44%	-0.50%	1.93%	0.0017%
E*TRADE Financial Corp	ETFC	10,078.23	0.04%	1.33%	17.50%	18.95%	0.0079%
Eaton Corp PLC	ETN	34,645.80	0.14%	3.44%	9.00%	12.59%	0.0180%
Entergy Corp	ETR	23,355.54	0.10%	3.17%	0.50%	3.68%	0.0035%
Evergy Inc	EVRG	15,849.22	N/A	3.03%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	46,070.64	0.19%	0.00%	15.50%	15.50%	0.0295%
Exelon Corp	EXC	47,704.60	0.20%	3.07%	9.00%	12.21%	0.0240%
Expeditors International of Washington I	EXPD	12,389.12	0.05%	1.37%	9.00%	10.43%	0.0053%
Expedia Group Inc	EXPE	19,866.46	0.08%	1.02%	24.00%	25.14%	0.0206%
Extra Space Storage Inc	EXR	14,995.73	0.06%	3.12%	4.00%	7.18%	0.0044%
Ford Motor Co	F	36,467.16	0.15%	6.57%	3.50%	10.18%	0.0153%
Diamondback Energy Inc	FANG	14,775.08	0.06%	0.83%	17.00%	17.90%	0.0109%
Fastenal Co	FAST	18,342.97	0.08%	2.75%	8.50%	11.37%	0.0086%
Facebook Inc	FB	514,033.90	2.12%	0.00%	17.50%	17.50%	0.3714%
Fortune Brands Home & Security Inc	FBHS	7,603.03	0.03%	1.62%	10.50%	12.21%	0.0038%
Freeport-McMoRan Inc	FCX	14,219.80	0.06%	2.04%	22.50%	24.77%	0.0145%
FedEx Corp	FDX	37,873.70	0.16%	1.89%	7.50%	9.46%	0.0148%
FirstEnergy Corp	FE	25,928.89	0.11%	3.24%	8.00%	11.37%	0.0122%
F5 Networks Inc	FFIV	8,402.43	0.03%	0.00%	12.00%	12.00%	0.0042%
Fidelity National Information Services I	FIS	43,228.09	0.18%	1.05%	18.00%	19.14%	0.0342%
Fiserv Inc	FISV	41,282.01	0.17%	0.00%	10.50%	10.50%	0.0179%
Fifth Third Bancorp	FITB	20,035.07	0.08%	3.51%	7.00%	10.63%	0.0088%
FLIR Systems Inc	FLIR	7,259.86	0.03%	1.33%	12.00%	13.41%	0.0040%
Flowserve Corp	FLS	6,051.81	0.02%	1.64%	13.50%	15.25%	0.0038%
FleetCor Technologies Inc	FLT	25,328.80	0.10%	0.00%	16.50%	16.50%	0.0173%
FMC Corp	FMC	11,403.76	0.05%	1.94%	15.00%	17.09%	0.0080%
Fox Corp	FOXA	N/A	N/A	0.00%	N/A	N/A	N/A
First Republic Bank/CA	FRC	16,230.67	0.07%	0.79%	10.50%	11.33%	0.0076%
Federal Realty Investment Trust	FRT	10,107.65	0.04%	3.09%	3.50%	6.64%	0.0028%
TechnipFMC PLC	FTI	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	13,485.06	0.06%	0.00%	26.00%	26.00%	0.0145%
Fortive Corp	FTV	22,800.49	0.09%	0.41%	10.00%	10.43%	0.0098%
General Dynamics Corp	GD	53,724.98	0.22%	2.19%	6.00%	8.26%	0.0183%
General Electric Co	GE	78,718.20	0.32%	0.44%	2.50%	2.95%	0.0096%
Gilead Sciences Inc	GILD	80,201.10	0.33%	3.98%	-1.50%	2.45%	0.0081%
General Mills Inc	GIS	33,219.46	0.14%	3.60%	4.00%	7.67%	0.0105%
Globe Life Inc	GL	10,491.96	0.04%	0.72%	9.50%	10.25%	0.0044%
Corning Inc	GLW	21,991.17	0.09%	2.83%	15.00%	18.04%	0.0164%
General Motors Co	GM	53,696.89	0.22%	4.15%	2.50%	6.70%	0.0149%
Alphabet Inc	GOOGL	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	14,232.38	0.06%	3.13%	8.00%	11.26%	0.0066%
Global Payments Inc	GPN	25,071.13	0.10%	0.03%	17.50%	17.53%	0.0181%
Gap Inc/The	GPS	6,388.24	0.03%	5.71%	5.00%	10.85%	0.0029%
Garmin Ltd	GRMN	16,037.00	0.07%	2.70%	10.50%	13.34%	0.0088%
Goldman Sachs Group Inc/The	GS	75,071.43	0.31%	2.40%	8.50%	11.00%	0.0341%
WW Grainger Inc	GWW	16,023.14	0.07%	1.96%	8.50%	10.54%	0.0070%
Halliburton Co	HAL	16,841.98	0.07%	3.74%	24.50%	28.70%	0.0200%
Hasbro Inc	HAS	14,816.70	0.06%	2.32%	8.00%	10.41%	0.0064%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Huntington Bancshares Inc/OH	HBAN	14,789.23	0.06%	4.28%	11.50%	16.03%	0.0098%
Hanesbrands Inc	HBI	5,437.43	0.02%	3.99%	4.00%	8.07%	0.0018%
HCA Healthcare Inc	HCA	40,343.41	0.17%	1.35%	12.00%	13.43%	0.0224%
HCP Inc	HCP	16,893.81	0.07%	4.18%	-3.50%	0.61%	0.0004%
Home Depot Inc/The	HD	251,849.80	1.04%	2.68%	9.00%	11.80%	0.1227%
Hess Corp	HES	18,780.39	N/A	1.62%	N/A	N/A	N/A
HollyFrontier Corp	HFC	8,877.26	0.04%	2.52%	18.00%	20.75%	0.0076%
Hartford Financial Services Group Inc/Th	HIG	21,916.88	0.09%	2.01%	12.50%	14.64%	0.0132%
Huntington Ingalls Industries Inc	HII	8,870.36	0.04%	1.61%	7.00%	8.67%	0.0032%
Hilton Worldwide Holdings Inc	HLT	26,470.63	0.11%	0.65%	17.00%	17.71%	0.0193%
Harley-Davidson Inc	HOG	5,520.10	0.02%	4.26%	8.50%	12.94%	0.0029%
Hologic Inc	HOLX	13,248.45	0.05%	0.00%	12.00%	12.00%	0.0066%
Honeywell International Inc	HON	120,179.40	0.50%	1.96%	8.50%	10.54%	0.0523%
Helmerich & Payne Inc	HP	4,494.41	N/A	6.92%	N/A	N/A	N/A
Hewlett Packard Enterprise Co	HPE	19,165.30	0.08%	3.08%	6.50%	9.68%	0.0077%
HP Inc	HPQ	27,296.85	0.11%	3.69%	8.50%	12.35%	0.0139%
H&R Block Inc	HRB	4,750.67	0.02%	4.44%	7.00%	11.60%	0.0023%
Hormel Foods Corp	HRL	23,236.43	0.10%	2.02%	9.00%	11.11%	0.0107%
Henry Schein Inc	HSIC	9,108.92	0.04%	0.00%	7.00%	7.00%	0.0026%
Host Hotels & Resorts Inc	HST	12,512.76	0.05%	4.85%	-1.50%	3.31%	0.0017%
Hershey Co/The	HSY	32,346.19	0.13%	2.00%	6.50%	8.57%	0.0114%
Humana Inc	HUM	35,652.69	0.15%	0.85%	11.50%	12.40%	0.0183%
International Business Machines Corp	IBM	127,167.30	0.53%	4.56%	1.50%	6.09%	0.0320%
Intercontinental Exchange Inc	ICE	52,829.37	0.22%	1.17%	10.50%	11.73%	0.0256%
IDEXX Laboratories Inc	IDXX	23,683.49	0.10%	0.00%	13.00%	13.00%	0.0127%
IDEX Corp	IEX	12,427.04	0.05%	1.22%	9.50%	10.78%	0.0055%
International Flavors & Fragrances Inc	IFF	12,791.53	0.05%	2.54%	8.50%	11.15%	0.0059%
Illumina Inc	ILMN	44,204.64	0.18%	0.00%	14.00%	14.00%	0.0256%
Incyte Corp	INCY	15,848.51	N/A	0.00%	N/A	N/A	N/A
IHS Markit Ltd	INFO	26,399.21	0.11%	0.00%	17.00%	17.00%	0.0185%
Intel Corp	INTC	225,575.60	0.93%	2.47%	10.50%	13.10%	0.1220%
Intuit Inc	INTU	69,947.56	0.29%	0.79%	13.50%	14.34%	0.0414%
International Paper Co	IP	16,275.95	0.07%	4.84%	10.50%	15.59%	0.0105%
Interpublic Group of Cos Inc/The	IPG	8,083.49	0.03%	4.78%	11.00%	16.04%	0.0054%
IPG Photonics Corp	IPGP	7,130.78	0.03%	0.00%	9.50%	9.50%	0.0028%
IQVIA Holdings Inc	IQV	29,730.27	0.12%	0.00%	12.50%	12.50%	0.0153%
Ingersoll-Rand PLC	IR	29,829.93	0.12%	1.72%	12.00%	13.82%	0.0170%
Iron Mountain Inc	IRM	9,160.15	0.04%	7.65%	8.50%	16.48%	0.0062%
Intuitive Surgical Inc	ISRG	62,587.01	0.26%	0.00%	14.00%	14.00%	0.0362%
Gartner Inc	IT	12,969.81	0.05%	0.00%	13.50%	13.50%	0.0072%
Illinois Tool Works Inc	ITW	50,246.02	0.21%	2.76%	9.00%	11.88%	0.0247%
Invesco Ltd	IVZ	7,920.73	0.03%	7.36%	6.00%	13.58%	0.0044%
JB Hunt Transport Services Inc	JBHT	12,139.52	0.05%	0.95%	10.00%	11.00%	0.0055%
Johnson Controls International plc	JCI	34,684.86	0.14%	2.39%	2.00%	4.41%	0.0063%
Jacobs Engineering Group Inc	JEC	12,359.54	0.05%	0.75%	14.50%	15.30%	0.0078%
Jack Henry & Associates Inc	JKHY	11,302.06	0.05%	1.09%	10.50%	11.65%	0.0054%
Johnson & Johnson	JNJ	340,430.10	1.41%	2.95%	12.00%	15.13%	0.2126%
Juniper Networks Inc	JNPR	8,526.38	0.04%	3.15%	6.00%	9.24%	0.0033%
JPMorgan Chase & Co	JPM	374,201.70	1.54%	3.08%	8.50%	11.71%	0.1809%
Nordstrom Inc	JWN	4,986.23	0.02%	4.60%	6.00%	10.74%	0.0022%
Kellogg Co	K	21,895.61	0.09%	3.58%	4.00%	7.65%	0.0069%
KeyCorp	KEY	17,835.37	0.07%	4.16%	10.50%	14.88%	0.0110%
Keysight Technologies Inc	KEYS	18,644.78	0.08%	0.00%	19.00%	19.00%	0.0146%
Kraft Heinz Co/The	KHC	34,172.20	0.14%	5.86%	2.00%	7.92%	0.0112%
Kimco Realty Corp	KIM	8,756.46	0.04%	5.53%	5.00%	10.67%	0.0039%
KLA Corp	KLAC	26,174.36	0.11%	2.10%	11.50%	13.72%	0.0148%
Kimberly-Clark Corp	KMB	48,228.10	0.20%	2.94%	7.00%	10.04%	0.0200%
Kinder Morgan Inc/DE	KMI	46,426.46	0.19%	4.87%	35.50%	41.23%	0.0790%
CarMax Inc	KMX	14,286.82	0.06%	0.00%	10.50%	10.50%	0.0062%
Coca-Cola Co/The	KO	232,517.30	0.96%	2.94%	6.50%	9.54%	0.0915%
Kroger Co/The	KR	20,675.56	0.09%	2.48%	4.50%	7.04%	0.0060%
Kohl's Corp	KSS	7,824.27	0.03%	5.74%	6.50%	12.43%	0.0040%
Kansas City Southern	KSU	13,308.61	0.05%	1.08%	12.00%	13.14%	0.0072%
Loews Corp	L	15,477.89	0.06%	0.49%	14.00%	14.52%	0.0093%
L Brands Inc	LB	5,249.23	0.02%	6.32%	-2.00%	4.26%	0.0009%
Leidos Holdings Inc	LDOS	12,546.72	0.05%	1.56%	9.00%	10.63%	0.0055%
Leggett & Platt Inc	LEG	5,367.92	0.02%	3.92%	9.00%	13.10%	0.0029%
Lennar Corp	LEN	17,901.65	0.07%	0.29%	8.00%	8.30%	0.0061%
Laboratory Corp of America Holdings	LH	16,332.60	0.07%	0.00%	8.00%	8.00%	0.0054%
L3Harris Technologies Inc	LHX	25,277.87	0.10%	1.41%	16.50%	18.03%	0.0188%
Linde PLC	LIN	104,102.40	N/A	2.02%	N/A	N/A	N/A
LKQ Corp	LKQ	9,733.71	0.04%	0.00%	10.00%	10.00%	0.0040%
Eli Lilly & Co	LLY	107,954.70	0.45%	2.31%	11.50%	13.94%	0.0621%
Lockheed Martin Corp	LMT	110,959.80	0.46%	2.34%	11.50%	13.97%	0.0640%
Lincoln National Corp	LNC	12,076.68	0.05%	2.66%	9.00%	11.78%	0.0059%
Alliant Energy Corp	LNT	12,887.89	0.05%	2.62%	6.50%	9.21%	0.0049%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Lowe's Cos Inc	LOW	85,918.72	0.35%	1.99%	11.50%	13.60%	0.0483%
Lam Research Corp	LRCX	35,072.66	0.14%	1.89%	8.50%	10.47%	0.0152%
Southwest Airlines Co	LUV	29,337.68	0.12%	1.32%	10.50%	11.89%	0.0144%
Lamb Weston Holdings Inc	LW	10,772.32	N/A	1.09%	N/A	N/A	N/A
LyondellBasell Industries NV	LYB	32,408.86	0.13%	4.80%	5.50%	10.43%	0.0140%
Macy's Inc	M	4,710.95	0.02%	9.90%	3.50%	13.57%	0.0026%
Mastercard Inc	MA	278,272.30	1.15%	0.48%	16.00%	16.52%	0.1898%
Mid-America Apartment Communities Inc	MAA	14,852.09	0.06%	2.94%	1.00%	3.95%	0.0024%
Macerich Co/The	MAC	4,553.00	0.02%	9.55%	3.00%	12.69%	0.0024%
Marriott International Inc/MD	MAR	40,073.11	0.17%	1.58%	11.50%	13.17%	0.0218%
Masco Corp	MAS	11,915.60	0.05%	1.30%	9.50%	10.86%	0.0053%
McDonald's Corp	MCD	161,448.40	0.67%	2.35%	8.50%	10.95%	0.0730%
Microchip Technology Inc	MCHP	21,987.29	0.09%	1.62%	10.50%	12.21%	0.0111%
McKesson Corp	MCK	25,746.45	0.11%	1.18%	8.50%	9.73%	0.0103%
Moody's Corp	MCO	40,325.55	0.17%	0.94%	11.00%	11.99%	0.0200%
Mondelez International Inc	MDLZ	80,806.20	0.33%	2.05%	8.50%	10.64%	0.0355%
Medtronic PLC	MDT	144,001.60	0.59%	2.01%	8.50%	10.60%	0.0630%
MetLife Inc	MET	44,063.21	0.18%	3.78%	7.50%	11.42%	0.0208%
MGM Resorts International	MGM	14,568.90	0.06%	1.88%	14.00%	16.01%	0.0096%
Mohawk Industries Inc	MHK	8,793.67	0.04%	0.00%	3.50%	3.50%	0.0013%
McCormick & Co Inc/MD	MKC	21,283.68	0.09%	1.46%	8.00%	9.52%	0.0084%
MarketAxess Holdings Inc	MKTX	12,534.00	0.05%	0.61%	14.00%	14.65%	0.0076%
Martin Marietta Materials Inc	MLM	17,082.96	0.07%	0.81%	8.00%	8.84%	0.0062%
Marsh & McLennan Cos Inc	MMC	50,793.57	0.21%	1.84%	9.00%	10.92%	0.0229%
3M Co	MMM	94,247.95	0.39%	3.52%	7.00%	10.64%	0.0414%
Monster Beverage Corp	MNST	31,474.54	0.13%	0.00%	14.50%	14.50%	0.0188%
Altria Group Inc	MO	75,956.51	0.31%	8.26%	8.50%	17.11%	0.0537%
Mosaic Co/The	MOS	7,698.05	0.03%	1.15%	21.00%	22.27%	0.0071%
Marathon Petroleum Corp	MPC	40,154.40	0.17%	3.49%	10.50%	14.17%	0.0235%
Merck & Co Inc	MRK	215,302.80	0.89%	2.62%	9.00%	11.74%	0.1043%
Marathon Oil Corp	MRO	9,599.76	N/A	1.68%	N/A	N/A	N/A
Morgan Stanley	MS	70,698.27	0.29%	3.29%	10.00%	13.45%	0.0393%
MSCI Inc	MSCI	18,933.57	0.08%	1.24%	18.50%	19.85%	0.0155%
Microsoft Corp	MSFT	1,069,714.00	4.42%	1.46%	14.50%	16.07%	0.7095%
Motorola Solutions Inc	MSI	28,458.29	0.12%	1.43%	10.50%	12.01%	0.0141%
M&T Bank Corp	MTB	21,051.35	0.09%	2.55%	9.50%	12.17%	0.0106%
Mettler-Toledo International Inc	MTD	17,235.90	0.07%	0.00%	10.00%	10.00%	0.0071%
Micron Technology Inc	MU	53,654.40	0.22%	0.00%	12.00%	12.00%	0.0266%
Maxim Integrated Products Inc	MXIM	15,898.72	0.07%	3.29%	6.00%	9.39%	0.0062%
Mylan NV	MYL	10,193.43	0.04%	0.00%	3.50%	3.50%	0.0015%
Noble Energy Inc	NBL	10,959.27	N/A	2.12%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	11,046.74	0.05%	0.00%	16.00%	16.00%	0.0073%
Nasdaq Inc	NDAQ	16,839.91	0.07%	1.85%	8.00%	9.92%	0.0069%
NextEra Energy Inc	NEE	110,993.90	0.46%	2.30%	10.50%	12.92%	0.0592%
Newmont Goldcorp Corp	NEM	32,279.23	0.13%	1.42%	2.50%	3.94%	0.0052%
Netflix Inc	NFLX	115,286.30	0.48%	0.00%	32.00%	32.00%	0.1523%
NiSource Inc	NI	11,406.49	0.05%	2.62%	12.50%	15.28%	0.0072%
NIKE Inc	NKE	144,983.40	0.60%	0.96%	14.00%	15.03%	0.0900%
Nektar Therapeutics	NKTR	3,072.40	0.01%	0.00%	10.50%	10.50%	0.0013%
Nielsen Holdings PLC	NLSN	7,593.64	0.03%	6.56%	45.50%	53.55%	0.0168%
Northrop Grumman Corp	NOC	64,700.29	0.27%	1.38%	9.50%	10.95%	0.0292%
National Oilwell Varco Inc	NOV	8,516.90	N/A	0.91%	N/A	N/A	N/A
NRG Energy Inc	NRG	10,213.55	N/A	0.30%	N/A	N/A	N/A
Norfolk Southern Corp	NSC	48,195.58	0.20%	2.06%	15.00%	17.21%	0.0343%
NetApp Inc	NTAP	12,831.91	0.05%	3.58%	10.00%	13.76%	0.0073%
Northern Trust Corp	NTRS	20,184.71	0.08%	2.98%	8.50%	11.61%	0.0097%
Nucor Corp	NUE	14,957.76	0.06%	3.24%	13.00%	16.45%	0.0102%
NVIDIA Corp	NVDA	108,000.10	0.45%	0.36%	11.50%	11.88%	0.0530%
NVR Inc	NVR	13,161.84	0.05%	0.00%	13.50%	13.50%	0.0073%
Newell Brands Inc	NWL	7,752.46	0.03%	5.03%	4.00%	9.13%	0.0029%
News Corp	NWSA	8,150.10	N/A	1.44%	N/A	N/A	N/A
Realty Income Corp	O	23,473.18	0.10%	3.60%	4.50%	8.18%	0.0079%
ONEOK Inc	OKE	30,348.80	0.13%	5.10%	17.00%	22.53%	0.0282%
Omnicom Group Inc	OMC	16,723.25	0.07%	3.51%	6.50%	10.12%	0.0070%
Oracle Corp	ORCL	177,852.20	0.73%	1.78%	10.00%	11.87%	0.0872%
O'Reilly Automotive Inc	ORLY	30,381.51	0.13%	0.00%	12.00%	12.00%	0.0151%
Occidental Petroleum Corp	OXY	33,935.63	0.14%	6.99%	33.00%	41.14%	0.0576%
Paychex Inc	PAYX	29,675.66	0.12%	3.15%	10.50%	13.82%	0.0169%
People's United Financial Inc	PBCT	6,256.15	0.03%	4.53%	9.00%	13.73%	0.0035%
PACCAR Inc	PCAR	23,818.46	0.10%	4.80%	7.50%	12.48%	0.0123%
Public Service Enterprise Group Inc	PEG	31,379.04	0.13%	3.08%	6.00%	9.17%	0.0119%
PepsiCo Inc	PEP	189,872.30	0.78%	2.82%	6.50%	9.41%	0.0738%
Pfizer Inc	PFE	199,008.40	0.82%	4.03%	10.00%	14.23%	0.1169%
Principal Financial Group Inc	PFG	15,802.19	0.07%	3.88%	5.50%	9.49%	0.0062%
Procter & Gamble Co/The	PG	311,365.60	1.29%	2.40%	9.00%	11.51%	0.1479%
Progressive Corp/The	PGR	44,993.22	0.19%	0.52%	15.50%	16.06%	0.0298%

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Parker-Hannifin Corp	PH	23,106.69	0.10%	1.95%	11.50%	13.56%	0.0129%
PulteGroup Inc	PHM	9,948.60	0.04%	1.27%	8.00%	9.32%	0.0038%
Packaging Corp of America	PKG	9,899.94	0.04%	3.02%	6.00%	9.11%	0.0037%
PerkinElmer Inc	PKI	9,474.36	0.04%	0.33%	11.00%	11.35%	0.0044%
Prologis Inc	PLD	54,316.97	0.22%	2.60%	6.50%	9.18%	0.0206%
Philip Morris International Inc	PM	117,138.30	0.48%	6.22%	6.00%	12.41%	0.0600%
PNC Financial Services Group Inc/The	PNC	62,624.70	0.26%	3.28%	8.00%	11.41%	0.0295%
Pentair PLC	PNR	6,259.83	0.03%	1.93%	6.00%	7.99%	0.0021%
Pinnacle West Capital Corp	PNW	10,968.63	0.05%	3.11%	5.50%	8.70%	0.0039%
PPG Industries Inc	PPG	27,565.94	0.11%	1.75%	7.50%	9.32%	0.0106%
PPL Corp	PPL	22,889.55	0.09%	5.24%	1.50%	6.78%	0.0064%
Perrigo Co PLC	PRGO	7,342.89	0.03%	1.63%	2.00%	3.65%	0.0011%
Prudential Financial Inc	PRU	36,163.52	0.15%	4.46%	6.50%	11.10%	0.0166%
Public Storage	PSA	42,918.07	0.18%	3.37%	4.50%	7.95%	0.0141%
Phillips 66	PSX	46,899.55	0.19%	3.63%	10.00%	13.81%	0.0267%
PVH Corp	PVH	6,460.94	0.03%	0.17%	9.50%	9.68%	0.0026%
Quanta Services Inc	PWR	5,348.32	0.02%	0.43%	15.50%	15.96%	0.0035%
Pioneer Natural Resources Co	PXD	21,115.74	0.09%	1.19%	37.50%	38.91%	0.0339%
PayPal Holdings Inc	PYPL	123,055.40	0.51%	0.00%	20.00%	20.00%	0.1016%
QUALCOMM Inc	QCOM	94,212.30	0.39%	3.21%	10.50%	13.88%	0.0540%
Qorvo Inc	QRVO	8,857.52	N/A	0.00%	N/A	N/A	N/A
Royal Caribbean Cruises Ltd	RCL	22,403.87	0.09%	2.92%	12.50%	15.60%	0.0144%
Everest Re Group Ltd	RE	10,851.77	0.04%	2.22%	18.50%	20.93%	0.0094%
Regency Centers Corp	REG	11,560.26	0.05%	3.40%	16.00%	19.67%	0.0094%
Regeneron Pharmaceuticals Inc	REGN	30,883.05	0.13%	0.00%	10.00%	10.00%	0.0128%
Regions Financial Corp	RF	15,950.70	0.07%	3.90%	10.50%	14.60%	0.0096%
Robert Half International Inc	RHI	6,462.33	0.03%	2.37%	9.00%	11.48%	0.0031%
Raymond James Financial Inc	RJF	11,825.61	0.05%	1.65%	10.00%	11.73%	0.0057%
Ralph Lauren Corp	RL	7,189.64	0.03%	2.95%	8.00%	11.07%	0.0033%
ResMed Inc	RMD	19,295.80	0.08%	1.16%	15.50%	16.75%	0.0133%
Rockwell Automation Inc	ROK	19,128.33	0.08%	2.39%	9.50%	12.00%	0.0095%
Rollins Inc	ROL	11,075.58	0.05%	1.24%	13.00%	14.32%	0.0065%
Roper Technologies Inc	ROP	36,943.59	0.15%	0.52%	11.50%	12.05%	0.0184%
Ross Stores Inc	ROST	39,059.61	0.16%	0.99%	9.50%	10.54%	0.0170%
Republic Services Inc	RSG	30,654.52	0.13%	1.87%	11.50%	13.48%	0.0171%
Raytheon Co	RTN	55,024.54	0.23%	1.91%	10.00%	12.01%	0.0273%
SBA Communications Corp	SBAC	27,816.75	0.11%	0.60%	27.00%	27.68%	0.0318%
Starbucks Corp	SBUX	108,343.70	0.45%	1.87%	13.50%	15.50%	0.0693%
Charles Schwab Corp/The	SCHW	53,504.73	0.22%	1.66%	12.00%	13.76%	0.0304%
Sealed Air Corp	SEE	6,333.30	0.03%	1.56%	22.50%	24.24%	0.0063%
Sherwin-Williams Co/The	SHW	50,588.57	0.21%	0.92%	10.50%	11.47%	0.0240%
SVB Financial Group	SIVB	10,624.35	0.04%	0.00%	15.00%	15.00%	0.0066%
JM Smucker Co/The	SJM	12,448.56	0.05%	3.23%	5.00%	8.31%	0.0043%
Schlumberger Ltd	SLB	47,768.99	0.20%	5.79%	19.50%	25.85%	0.0510%
SL Green Realty Corp	SLG	6,974.02	0.03%	4.33%	5.50%	9.95%	0.0029%
Snap-on Inc	SNA	8,552.98	0.04%	2.74%	6.00%	8.82%	0.0031%
Synopsys Inc	SNPS	21,163.49	0.09%	0.00%	10.50%	10.50%	0.0092%
Southern Co/The	SO	64,658.05	0.27%	4.07%	3.50%	7.64%	0.0204%
Simon Property Group Inc	SPG	48,087.98	0.20%	5.56%	4.50%	10.19%	0.0202%
S&P Global Inc	SPGI	63,052.80	0.26%	0.95%	11.00%	12.00%	0.0312%
Sempra Energy	SRE	39,656.02	0.16%	2.79%	11.00%	13.94%	0.0228%
SunTrust Banks Inc	STI	30,297.74	0.13%	3.28%	10.00%	13.44%	0.0168%
State Street Corp	STT	22,000.44	0.09%	3.52%	5.00%	8.61%	0.0078%
Seagate Technology PLC	STX	14,439.80	0.06%	4.70%	4.00%	8.79%	0.0052%
Constellation Brands Inc	STZ	39,477.24	0.16%	1.50%	8.00%	9.56%	0.0156%
Stanley Black & Decker Inc	SWK	21,630.96	0.09%	1.94%	9.00%	11.03%	0.0098%
Skyworks Solutions Inc	SWKS	13,789.78	0.06%	2.19%	6.00%	8.26%	0.0047%
Synchrony Financial	SYF	22,515.45	0.09%	2.61%	9.00%	11.73%	0.0109%
Stryker Corp	SYK	80,951.51	0.33%	0.96%	13.00%	14.02%	0.0469%
Symantec Corp	SYMC	14,647.58	0.06%	1.26%	7.00%	8.30%	0.0050%
Sysco Corp	SYY	40,414.71	0.17%	1.98%	12.00%	14.10%	0.0235%
AT&T Inc	T	273,062.00	1.13%	5.54%	5.50%	11.19%	0.1262%
Molson Coors Brewing Co	TAP	12,200.13	0.05%	3.99%	5.50%	9.60%	0.0048%
TransDigm Group Inc	TDG	28,278.34	0.12%	0.00%	11.00%	11.00%	0.0128%
TE Connectivity Ltd	TEL	31,316.41	0.13%	1.98%	7.50%	9.55%	0.0124%
Teleflex Inc	TFX	15,719.22	0.06%	0.40%	15.00%	15.43%	0.0100%
Target Corp	TGT	54,349.79	0.22%	2.48%	8.00%	10.58%	0.0237%
Tiffany & Co	TIF	10,972.26	0.05%	2.59%	10.50%	13.23%	0.0060%
TJX Cos Inc/The	TJX	66,757.28	0.28%	1.67%	13.50%	15.28%	0.0421%
Thermo Fisher Scientific Inc	TMO	114,876.50	0.47%	0.27%	10.00%	10.28%	0.0488%
T-Mobile US Inc	TMUS	67,501.79	0.28%	0.00%	18.00%	18.00%	0.0502%
Tapestry Inc	TPR	7,400.45	0.03%	5.29%	12.00%	17.61%	0.0054%
TripAdvisor Inc	TRIP	5,276.86	0.02%	0.00%	19.50%	19.50%	0.0042%
T Rowe Price Group Inc	TROW	26,385.08	0.11%	2.79%	10.00%	12.93%	0.0141%
Travelers Cos Inc/The	TRV	38,550.43	0.16%	2.22%	9.00%	11.32%	0.0180%
Tractor Supply Co	TSCO	10,650.56	0.04%	1.66%	11.50%	13.26%	0.0058%

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Tyson Foods Inc	TSN	31,557.90	0.13%	1.79%	7.00%	8.85%	0.0115%
Take-Two Interactive Software Inc	TTWO	14,338.45	0.06%	0.00%	22.50%	22.50%	0.0133%
Twitter Inc	TWTR	32,780.36	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	119,727.10	0.49%	2.47%	6.50%	9.05%	0.0447%
Textron Inc	TXT	11,590.32	0.05%	0.16%	13.00%	13.17%	0.0063%
Under Armour Inc	UAA	8,930.18	0.04%	0.00%	18.50%	18.50%	0.0068%
United Airlines Holdings Inc	UAL	22,796.13	0.09%	0.00%	12.00%	12.00%	0.0113%
UDR Inc	UDR	13,350.20	0.06%	2.83%	5.50%	8.41%	0.0046%
Universal Health Services Inc	UHS	12,968.95	0.05%	0.55%	11.00%	11.58%	0.0062%
Ulta Beauty Inc	ULTA	13,661.08	0.06%	0.00%	17.00%	17.00%	0.0096%
UnitedHealth Group Inc	UNH	204,275.00	0.84%	2.01%	13.50%	15.65%	0.1320%
Unum Group	UNM	6,142.64	0.03%	3.89%	8.50%	12.56%	0.0032%
Union Pacific Corp	UNP	115,420.20	0.48%	2.37%	14.50%	17.04%	0.0812%
United Parcel Service Inc	UPS	101,701.20	0.42%	3.39%	8.00%	11.53%	0.0484%
United Rentals Inc	URI	9,878.00	0.04%	0.00%	14.50%	14.50%	0.0059%
US Bancorp	USB	88,050.27	0.36%	3.06%	6.00%	9.15%	0.0333%
United Technologies Corp	UTX	118,665.10	0.49%	2.14%	9.00%	11.24%	0.0550%
Visa Inc	V	348,840.90	1.44%	0.64%	18.00%	18.70%	0.2693%
Varian Medical Systems Inc	VAR	10,622.43	0.04%	0.00%	10.00%	10.00%	0.0044%
VF Corp	VFC	35,044.99	0.14%	1.95%	7.00%	9.02%	0.0130%
Viacom Inc	VIAB	9,708.99	0.04%	3.33%	6.00%	9.43%	0.0038%
Valero Energy Corp	VLO	34,462.21	0.14%	4.45%	11.50%	16.21%	0.0231%
Vulcan Materials Co	VMC	20,048.86	0.08%	0.82%	14.50%	15.38%	0.0127%
Vornado Realty Trust	VNO	12,152.88	0.05%	4.15%	-1.50%	2.62%	0.0013%
Verisk Analytics Inc	VRSK	26,103.65	0.11%	0.63%	10.00%	10.66%	0.0115%
VeriSign Inc	VRSN	22,665.19	0.09%	0.00%	11.00%	11.00%	0.0103%
Vertex Pharmaceuticals Inc	VRTX	43,518.57	0.18%	0.00%	50.00%	50.00%	0.0898%
Ventas Inc	VTR	26,290.05	0.11%	4.33%	4.00%	8.42%	0.0091%
Verizon Communications Inc	VZ	249,965.60	1.03%	4.07%	4.00%	8.15%	0.0841%
Wabtec Corp	WAB	13,536.00	0.06%	0.67%	13.50%	14.22%	0.0079%
Waters Corp	WAT	14,689.09	0.06%	0.00%	10.00%	10.00%	0.0061%
Walgreens Boots Alliance Inc	WBA	48,841.98	0.20%	3.38%	9.50%	13.04%	0.0263%
WellCare Health Plans Inc	WCG	13,049.93	0.05%	0.00%	20.00%	20.00%	0.0108%
Western Digital Corp	WDC	18,231.00	0.08%	3.24%	1.00%	4.26%	0.0032%
WEC Energy Group Inc	WEC	30,250.31	0.12%	2.58%	6.00%	8.66%	0.0108%
Welltower Inc	WELL	33,862.88	0.14%	3.94%	10.50%	14.65%	0.0205%
Wells Fargo & Co	WFC	215,985.40	0.89%	4.17%	5.50%	9.78%	0.0873%
Whirlpool Corp	WHR	9,754.92	0.04%	3.10%	6.50%	9.70%	0.0039%
Willis Towers Watson PLC	WLTW	25,541.21	0.11%	1.31%	17.50%	18.92%	0.0200%
Waste Management Inc	WM	48,775.26	0.20%	1.78%	9.00%	10.86%	0.0219%
Williams Cos Inc/The	WMB	29,221.43	0.12%	6.30%	20.00%	26.93%	0.0325%
Walmart Inc	WMT	336,800.10	1.39%	1.80%	7.50%	9.37%	0.1303%
Westrock Co	WRK	9,347.71	0.04%	5.01%	10.00%	15.26%	0.0059%
Western Union Co/The	WU	9,557.20	0.04%	3.57%	4.50%	8.15%	0.0032%
Weyerhaeuser Co	WY	20,782.85	0.09%	4.88%	17.50%	22.81%	0.0196%
Wynn Resorts Ltd	WYNN	11,874.76	0.05%	3.63%	14.50%	18.39%	0.0090%
Cimarex Energy Co	XEC	4,740.82	0.02%	1.71%	16.00%	17.85%	0.0035%
Xcel Energy Inc	XEL	33,759.70	0.14%	2.55%	5.50%	8.12%	0.0113%
Xilinx Inc	XLNX	24,409.19	0.10%	1.52%	9.50%	11.09%	0.0112%
Exxon Mobil Corp	XOM	300,274.10	1.24%	4.90%	14.00%	19.24%	0.2386%
DENTSPLY SIRONA Inc	XRAY	11,962.46	0.05%	0.66%	4.50%	5.17%	0.0026%
Xerox Holdings Corp	XRX	6,709.72	0.03%	3.29%	9.50%	12.95%	0.0036%
Xylem Inc/NY	XYL	14,287.33	0.06%	1.21%	14.00%	15.29%	0.0090%
Yum! Brands Inc	YUM	34,294.24	0.14%	1.54%	12.00%	13.63%	0.0193%
Zimmer Biomet Holdings Inc	ZBH	28,038.52	0.12%	0.72%	4.50%	5.24%	0.0061%
Zions Bancorp NA	ZION	7,778.06	0.03%	3.09%	9.50%	12.74%	0.0041%
Zoetis Inc	ZTS	60,234.11	0.25%	0.52%	13.50%	14.06%	0.0350%
	Total Market Capitalization:	24,221,128.42					14.47%

Notes:

[1] Equals sum of Col. [9]
[2] Source: Bloomberg Professional
[3] Equals [1] – [2]
[4] Source: Value Line
[5] Equals weight in S&P 500 based on market capitalization
[6] Source: Value Line
[7] Source: Value Line
[8] Equals ([6] x (1 + (0.5 x [7]))) + [7]
[9] Equals Col. [5] x Col. [8]

Bloomberg and Value Line Beta Coefficients

Company	Ticker	[1] Bloomberg	[2] Value Line
Atmos Energy Corporation	ATO	0.486	0.600
New Jersey Resources Corporation	NJR	0.640	0.700
Northwest Natural Holding Company	NWN	0.559	0.600
ONE Gas, Inc.	OGS	0.534	0.650
South Jersey Industries, Inc.	SJI	0.724	0.800
Spire Inc.	SR	0.532	0.650
Southwest Gas Holdings, Inc.	SWX	0.594	0.700
Mean		0.581	0.671

Notes:
[1] Source: Bloomberg Professional
[2] Source: Value Line

Capital Asset Pricing Model Results
Bloomberg and Value Line Derived Market Risk Premium

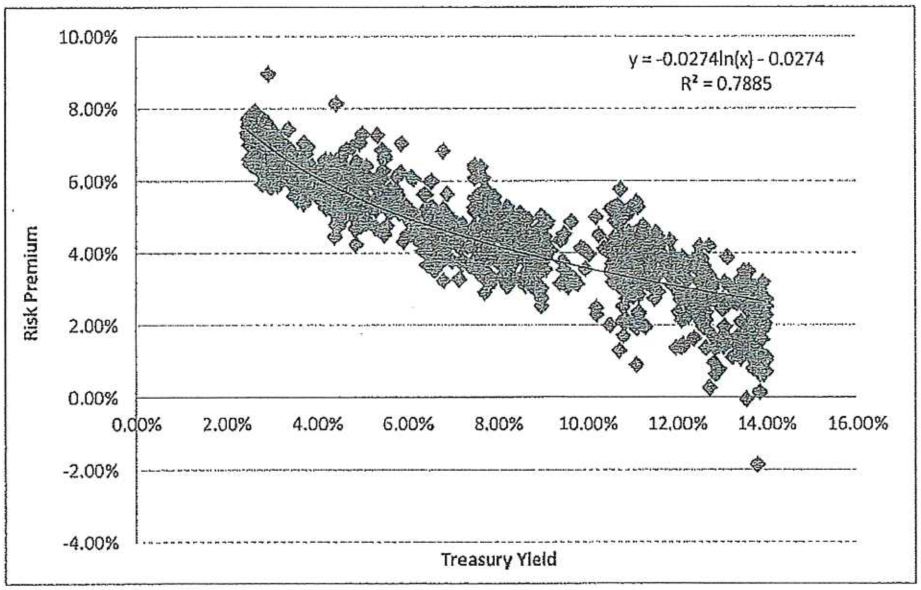
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
			Ex-Ante Market Risk Premium		CAPM Result		ECAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT								
Current 30-Year Treasury [9]	2.11%	0.581	12.08%	12.36%	9.14%	9.30%	10.40%	10.59%
Near Term Projected 30-Year Treasury [10]	2.28%	0.581	12.08%	12.36%	9.31%	9.47%	10.57%	10.76%
Mean					9.22%	9.38%	10.49%	10.68%

			Ex-Ante Market Risk Premium		CAPM Result		ECAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT								
Current 30-Year Treasury [9]	2.11%	0.671	12.08%	12.36%	10.22%	10.41%	11.22%	11.43%
Near Term Projected 30-Year Treasury [10]	2.28%	0.671	12.08%	12.36%	10.40%	10.58%	11.39%	11.60%
Mean					10.31%	10.50%	11.30%	11.51%

Notes:
[1] See Notes [9] and [10]
[2] Source: DEW 2.5
[3] Source: DEW 2.4
[3] Source: DEW 2.4
[5] Equals Col. [1] + (Col. [2] x Col. [3])
[6] Equals Col. [1] + (Col. [2] x Col. [4])
[7] Equals Col. [1] + (0.75 x Col. [2] x Col. [3]) + (0.25 x Col. [3])
[8] Equals Col. [1] + (0.75 x Col. [2] x Col. [4]) + (0.25 x Col. [4])
[9] Source: Bloomberg Professional
[10] Source: Blue Chip Financial Forecasts, Vol. 38, No. 10, October 1, 2019, at 2.

Bond Yield Plus Risk Premium

	[1] Constant	[2] Slope	[3] 30-Year Treasury Yield	[4] Risk Premium	[5] Return on Equity
	-2.74%	-2.74%			
Current 30-Year Treasury			2.11%	7.84%	9.96%
Near Term Projected 30-Year Treasury			2.28%	7.63%	9.91%
Long Term Projected 30-Year Treasury			3.70%	6.31%	10.01%



Notes:
[1] Constant of regression equation
[2] Slope of regression equation
[3] Source: Current = Bloomberg Professional
Near Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 10, October 1, 2019, at 2.
Long Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14.
[4] Equals [1] + ln([3]) x [2]
[5] Equals [3] + [4]
[6] Source: S&P Global Market Intelligence
[7] Source: S&P Global Market Intelligence
[8] Source: Bloomberg Professional, equals 187-trading day average (i.e. lag period)
[9] Equals [7] - [8]

[6] Date of Natural Gas Rate Case	[7] Return on Equity	[8] 30-Year Treasury Yield	[9] Risk Premium
1/3/1980	12.55%	9.39%	3.16%
1/4/1980	13.75%	9.40%	4.35%
1/14/1980	13.20%	9.44%	3.76%
1/18/1980	14.00%	9.47%	4.53%
1/31/1980	12.61%	9.56%	3.05%
2/8/1980	14.50%	9.63%	4.87%
2/14/1980	13.00%	9.67%	3.33%
2/15/1980	13.00%	9.69%	3.31%
2/29/1980	14.00%	9.86%	4.14%
3/5/1980	14.00%	9.91%	4.09%
3/7/1980	13.50%	9.95%	3.55%
3/14/1980	14.00%	10.04%	3.96%
3/27/1980	12.69%	10.20%	2.49%
4/1/1980	14.75%	10.26%	4.49%
4/29/1980	12.50%	10.51%	1.99%
5/7/1980	14.27%	10.56%	3.71%
5/8/1980	13.75%	10.56%	3.19%
5/19/1980	15.50%	10.62%	4.88%
5/27/1980	14.60%	10.65%	3.95%
5/29/1980	16.00%	10.67%	5.33%
6/10/1980	13.78%	10.71%	3.07%
6/25/1980	14.25%	10.74%	3.51%
7/9/1980	14.51%	10.77%	3.74%
7/17/1980	12.90%	10.79%	2.11%
7/18/1980	13.80%	10.79%	3.01%
7/22/1980	14.10%	10.79%	3.31%
7/23/1980	14.19%	10.79%	3.40%
8/1/1980	12.50%	10.80%	1.70%
8/11/1980	14.85%	10.81%	4.04%
8/21/1980	13.03%	10.84%	2.19%
8/28/1980	13.61%	10.87%	2.74%
8/28/1980	14.00%	10.87%	3.13%
9/4/1980	14.00%	10.90%	3.10%
9/24/1980	15.00%	10.98%	4.02%
10/9/1980	14.50%	11.05%	3.45%
10/9/1980	14.50%	11.05%	3.45%
10/24/1980	14.00%	11.09%	2.91%
10/27/1980	15.20%	11.10%	4.10%
10/27/1980	15.20%	11.10%	4.10%
10/28/1980	12.00%	11.10%	0.90%
10/28/1980	13.00%	11.10%	1.90%
10/31/1980	14.50%	11.12%	3.38%
11/4/1980	15.00%	11.12%	3.88%
11/6/1980	14.35%	11.13%	3.22%
11/10/1980	13.25%	11.14%	2.11%
11/17/1980	15.50%	11.15%	4.35%
11/19/1980	13.50%	11.14%	2.36%
12/5/1980	14.60%	11.13%	3.47%
12/8/1980	16.40%	11.13%	5.27%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/12/1980	15.45%	11.15%	4.30%
12/17/1980	14.20%	11.16%	3.04%
12/17/1980	14.40%	11.16%	3.24%
12/18/1980	14.00%	11.16%	2.84%
12/22/1980	13.45%	11.16%	2.29%
12/26/1980	14.00%	11.15%	2.85%
12/30/1980	14.50%	11.14%	3.36%
12/31/1980	14.56%	11.14%	3.42%
1/7/1981	14.30%	11.13%	3.17%
1/12/1981	14.95%	11.14%	3.81%
1/26/1981	15.25%	11.20%	4.05%
1/30/1981	13.25%	11.23%	2.02%
2/11/1981	14.50%	11.33%	3.17%
2/20/1981	14.50%	11.40%	3.10%
3/12/1981	15.65%	11.60%	4.05%
3/25/1981	15.30%	11.74%	3.56%
4/1/1981	15.30%	11.82%	3.48%
4/9/1981	15.00%	11.91%	3.09%
4/29/1981	13.50%	12.12%	1.38%
4/29/1981	14.25%	12.12%	2.13%
4/30/1981	13.60%	12.14%	1.46%
4/30/1981	15.00%	12.14%	2.86%
5/21/1981	14.00%	12.37%	1.63%
6/3/1981	14.67%	12.46%	2.21%
6/22/1981	16.00%	12.57%	3.43%
6/25/1981	14.75%	12.60%	2.15%
7/2/1981	14.00%	12.64%	1.36%
7/10/1981	16.00%	12.69%	3.31%
7/14/1981	16.90%	12.71%	4.19%
7/21/1981	15.78%	12.78%	3.00%
7/27/1981	13.77%	12.82%	0.95%
7/27/1981	15.50%	12.82%	2.68%
7/31/1981	13.50%	12.86%	0.64%
7/31/1981	14.20%	12.86%	1.34%
8/12/1981	13.72%	12.93%	0.79%
8/12/1981	13.72%	12.93%	0.79%
8/12/1981	14.41%	12.93%	1.48%
8/25/1981	15.45%	13.02%	2.43%
8/27/1981	14.43%	13.04%	1.39%
8/28/1981	15.00%	13.05%	1.95%
9/23/1981	14.34%	13.24%	1.10%
9/24/1981	16.25%	13.26%	2.99%
9/29/1981	14.50%	13.31%	1.19%
9/30/1981	15.94%	13.32%	2.62%
10/2/1981	14.80%	13.36%	1.44%
10/12/1981	16.25%	13.43%	2.82%
10/20/1981	15.25%	13.50%	1.75%
10/20/1981	16.50%	13.50%	3.00%
10/20/1981	17.00%	13.50%	3.50%
10/23/1981	15.50%	13.54%	1.96%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/26/1981	13.50%	13.56%	-0.06%
10/29/1981	16.50%	13.60%	2.90%
11/4/1981	15.33%	13.62%	1.71%
11/6/1981	15.17%	13.64%	1.53%
11/12/1981	15.00%	13.65%	1.35%
11/25/1981	15.25%	13.66%	1.59%
11/25/1981	16.10%	13.66%	2.44%
11/25/1981	16.10%	13.66%	2.44%
11/30/1981	16.75%	13.66%	3.09%
12/1/1981	15.70%	13.66%	2.04%
12/1/1981	16.00%	13.66%	2.34%
12/15/1981	15.81%	13.69%	2.12%
12/17/1981	14.75%	13.70%	1.05%
12/22/1981	15.70%	13.72%	1.98%
12/22/1981	16.00%	13.72%	2.28%
12/30/1981	16.00%	13.74%	2.26%
12/30/1981	16.25%	13.74%	2.51%
1/4/1982	15.50%	13.75%	1.75%
1/14/1982	11.95%	13.80%	-1.85%
1/25/1982	16.25%	13.84%	2.41%
1/27/1982	16.84%	13.85%	2.99%
1/31/1982	14.00%	13.86%	0.14%
2/2/1982	16.24%	13.86%	2.38%
2/8/1982	15.50%	13.87%	1.63%
2/9/1982	14.95%	13.88%	1.07%
2/9/1982	15.75%	13.88%	1.87%
2/11/1982	16.00%	13.89%	2.11%
3/1/1982	15.96%	13.91%	2.05%
3/3/1982	15.00%	13.91%	1.09%
3/8/1982	17.10%	13.92%	3.18%
3/26/1982	16.00%	13.97%	2.03%
3/31/1982	16.25%	13.98%	2.27%
4/1/1982	16.50%	13.98%	2.52%
4/6/1982	15.00%	13.99%	1.01%
4/9/1982	16.50%	13.99%	2.51%
4/12/1982	15.10%	13.99%	1.11%
4/12/1982	16.70%	13.99%	2.71%
4/18/1982	14.70%	13.99%	0.71%
4/27/1982	15.00%	13.97%	1.03%
5/10/1982	14.57%	13.94%	0.63%
5/14/1982	15.80%	13.92%	1.88%
5/20/1982	15.82%	13.91%	1.91%
5/21/1982	15.50%	13.90%	1.60%
5/25/1982	16.25%	13.90%	2.35%
6/2/1982	14.50%	13.87%	0.63%
6/7/1982	16.00%	13.85%	2.15%
6/23/1982	15.50%	13.81%	1.69%
6/25/1982	16.50%	13.81%	2.69%
7/1/1982	15.55%	13.79%	1.76%
7/1/1982	16.00%	13.79%	2.21%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/2/1982	15.10%	13.79%	1.31%
7/13/1982	16.80%	13.75%	3.05%
7/22/1982	14.50%	13.71%	0.79%
7/28/1982	16.10%	13.68%	2.42%
7/30/1982	14.82%	13.66%	1.16%
8/4/1982	15.58%	13.64%	1.94%
8/6/1982	16.50%	13.63%	2.87%
8/11/1982	17.11%	13.62%	3.49%
8/25/1982	16.00%	13.59%	2.41%
8/30/1982	16.25%	13.58%	2.67%
9/3/1982	15.50%	13.57%	1.93%
9/9/1982	16.04%	13.55%	2.49%
9/15/1982	16.04%	13.52%	2.52%
9/17/1982	15.25%	13.51%	1.74%
9/29/1982	14.50%	13.43%	1.07%
9/30/1982	14.74%	13.42%	1.32%
9/30/1982	15.50%	13.42%	2.08%
9/30/1982	16.50%	13.42%	3.08%
9/30/1982	16.70%	13.42%	3.28%
10/1/1982	16.50%	13.41%	3.09%
10/8/1982	15.00%	13.33%	1.67%
10/15/1982	15.90%	13.26%	2.64%
10/19/1982	15.90%	13.22%	2.68%
10/27/1982	17.00%	13.12%	3.88%
10/28/1982	14.75%	13.11%	1.64%
11/2/1982	16.25%	13.07%	3.18%
11/4/1982	15.75%	13.03%	2.72%
11/5/1982	14.73%	13.01%	1.72%
11/17/1982	16.00%	12.86%	3.14%
11/23/1982	15.50%	12.79%	2.71%
11/24/1982	14.50%	12.77%	1.73%
11/24/1982	16.02%	12.77%	3.25%
11/30/1982	12.98%	12.72%	0.26%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.65%	12.72%	2.93%
11/30/1982	16.00%	12.72%	3.28%
11/30/1982	16.10%	12.72%	3.38%
12/3/1982	15.33%	12.68%	2.65%
12/8/1982	15.75%	12.63%	3.12%
12/13/1982	16.00%	12.58%	3.42%
12/14/1982	16.40%	12.57%	3.83%
12/17/1982	16.25%	12.52%	3.73%
12/20/1982	15.00%	12.51%	2.49%
12/21/1982	15.70%	12.49%	3.21%
12/28/1982	15.25%	12.42%	2.83%
12/28/1982	15.25%	12.42%	2.83%
12/29/1982	16.25%	12.41%	3.84%
12/29/1982	16.25%	12.41%	3.84%
1/11/1983	15.90%	12.26%	3.64%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/12/1983	15.50%	12.24%	3.26%
1/18/1983	15.00%	12.18%	2.82%
1/24/1983	15.50%	12.13%	3.37%
1/24/1983	16.00%	12.13%	3.87%
1/28/1983	14.90%	12.08%	2.82%
1/31/1983	15.00%	12.07%	2.93%
2/10/1983	15.00%	11.97%	3.03%
2/25/1983	15.70%	11.84%	3.86%
3/2/1983	15.25%	11.79%	3.46%
3/16/1983	16.00%	11.62%	4.38%
3/21/1983	14.96%	11.57%	3.39%
3/23/1983	15.40%	11.53%	3.87%
3/23/1983	16.10%	11.53%	4.57%
3/24/1983	15.00%	11.51%	3.49%
4/12/1983	13.25%	11.30%	1.95%
4/29/1983	15.05%	11.09%	3.96%
5/3/1983	15.40%	11.06%	4.34%
5/9/1983	15.50%	11.00%	4.50%
5/19/1983	14.85%	10.90%	3.95%
5/31/1983	14.00%	10.84%	3.16%
6/2/1983	14.50%	10.82%	3.68%
6/7/1983	14.50%	10.80%	3.70%
6/9/1983	14.85%	10.79%	4.06%
6/20/1983	14.15%	10.74%	3.41%
6/20/1983	16.50%	10.74%	5.76%
6/27/1983	14.50%	10.71%	3.79%
6/30/1983	14.80%	10.70%	4.10%
6/30/1983	15.90%	10.70%	5.20%
7/1/1983	14.80%	10.70%	4.10%
7/5/1983	15.00%	10.69%	4.31%
7/8/1983	15.50%	10.69%	4.81%
7/19/1983	15.00%	10.70%	4.30%
7/19/1983	15.10%	10.70%	4.40%
8/18/1983	15.30%	10.81%	4.49%
8/19/1983	15.79%	10.82%	4.97%
8/29/1983	16.00%	10.85%	5.15%
8/31/1983	14.75%	10.87%	3.88%
8/31/1983	15.25%	10.87%	4.38%
9/8/1983	14.75%	10.89%	3.86%
9/16/1983	15.51%	10.93%	4.58%
9/26/1983	14.50%	10.96%	3.54%
9/28/1983	14.25%	10.97%	3.28%
9/30/1983	16.15%	10.98%	5.17%
9/30/1983	16.25%	10.98%	5.27%
10/1/1983	16.25%	10.98%	5.27%
10/13/1983	15.52%	11.02%	4.50%
10/19/1983	15.20%	11.04%	4.16%
10/26/1983	14.75%	11.06%	3.69%
10/27/1983	14.88%	11.07%	3.81%
10/27/1983	15.33%	11.07%	4.26%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/9/1983	14.82%	11.10%	3.72%
11/9/1983	16.51%	11.10%	5.41%
11/9/1983	16.51%	11.10%	5.41%
12/1/1983	14.50%	11.17%	3.33%
12/8/1983	15.90%	11.20%	4.70%
12/9/1983	15.30%	11.21%	4.09%
12/12/1983	14.50%	11.22%	3.28%
12/12/1983	15.50%	11.22%	4.28%
12/20/1983	15.40%	11.26%	4.14%
12/20/1983	16.00%	11.26%	4.74%
12/22/1983	15.75%	11.27%	4.48%
12/29/1983	15.00%	11.30%	3.70%
12/30/1983	15.00%	11.30%	3.70%
1/10/1984	15.90%	11.34%	4.56%
1/13/1984	15.50%	11.36%	4.14%
1/18/1984	15.53%	11.38%	4.15%
1/26/1984	15.90%	11.42%	4.48%
2/14/1984	14.25%	11.51%	2.74%
2/28/1984	14.50%	11.58%	2.92%
3/20/1984	16.00%	11.70%	4.30%
3/23/1984	15.50%	11.72%	3.78%
4/9/1984	15.20%	11.81%	3.39%
4/18/1984	16.20%	11.86%	4.34%
4/27/1984	15.85%	11.90%	3.95%
5/15/1984	13.35%	11.99%	1.36%
5/16/1984	15.00%	12.00%	3.00%
5/22/1984	14.40%	12.04%	2.36%
6/13/1984	15.50%	12.18%	3.32%
7/10/1984	16.00%	12.37%	3.63%
8/7/1984	16.69%	12.51%	4.18%
8/9/1984	15.33%	12.51%	2.82%
8/17/1984	14.82%	12.54%	2.28%
8/21/1984	14.64%	12.54%	2.10%
8/27/1984	14.52%	12.56%	1.96%
8/28/1984	14.75%	12.57%	2.18%
8/30/1984	15.60%	12.58%	3.02%
9/12/1984	15.60%	12.60%	3.00%
9/12/1984	15.90%	12.60%	3.30%
9/25/1984	16.25%	12.61%	3.64%
10/2/1984	14.80%	12.62%	2.18%
10/9/1984	14.75%	12.63%	2.12%
10/10/1984	15.50%	12.63%	2.87%
10/18/1984	15.00%	12.65%	2.35%
10/24/1984	15.50%	12.65%	2.85%
11/7/1984	15.00%	12.64%	2.36%
11/20/1984	15.92%	12.63%	3.29%
11/30/1984	15.50%	12.60%	2.90%
12/18/1984	15.00%	12.55%	2.45%
12/20/1984	15.00%	12.54%	2.46%
12/28/1984	15.75%	12.51%	3.24%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/28/1984	16.25%	12.51%	3.74%
1/2/1985	16.00%	12.50%	3.50%
1/31/1985	14.75%	12.37%	2.38%
2/7/1985	14.85%	12.33%	2.52%
2/15/1985	15.00%	12.27%	2.73%
2/20/1985	14.50%	12.25%	2.25%
2/22/1985	14.86%	12.25%	2.61%
3/14/1985	15.50%	12.16%	3.34%
3/28/1985	14.80%	12.08%	2.72%
4/9/1985	15.50%	12.02%	3.48%
4/16/1985	15.70%	11.96%	3.74%
6/10/1985	15.75%	11.58%	4.17%
6/26/1985	14.82%	11.46%	3.36%
7/9/1985	15.00%	11.38%	3.62%
7/26/1985	14.50%	11.26%	3.24%
8/29/1985	14.50%	11.11%	3.39%
8/30/1985	14.38%	11.11%	3.27%
9/12/1985	15.25%	11.07%	4.18%
9/23/1985	15.30%	11.03%	4.27%
9/25/1985	14.50%	11.02%	3.48%
9/26/1985	13.80%	11.02%	2.78%
9/26/1985	14.50%	11.02%	3.48%
10/25/1985	15.25%	10.91%	4.34%
11/8/1985	12.94%	10.85%	2.09%
11/20/1985	14.90%	10.81%	4.09%
11/25/1985	13.30%	10.79%	2.51%
12/6/1985	12.00%	10.71%	1.29%
12/11/1985	14.90%	10.68%	4.22%
12/20/1985	14.88%	10.59%	4.29%
12/20/1985	15.00%	10.59%	4.41%
12/20/1985	15.00%	10.59%	4.41%
12/30/1985	15.75%	10.53%	5.22%
12/31/1985	14.00%	10.51%	3.49%
12/31/1985	14.50%	10.51%	3.99%
1/17/1986	14.50%	10.38%	4.12%
2/11/1986	12.50%	10.20%	2.30%
2/12/1986	15.20%	10.19%	5.01%
3/11/1986	14.00%	9.98%	4.02%
4/2/1986	12.90%	9.76%	3.14%
4/28/1986	13.01%	9.47%	3.54%
5/21/1986	13.25%	9.18%	4.07%
5/28/1986	14.00%	9.12%	4.88%
5/29/1986	13.90%	9.10%	4.80%
6/2/1986	13.00%	9.08%	3.92%
6/11/1986	14.00%	8.97%	5.03%
6/13/1986	13.55%	8.94%	4.61%
6/27/1986	11.88%	8.77%	3.11%
7/14/1986	12.60%	8.59%	4.01%
7/30/1986	13.30%	8.38%	4.92%
8/14/1986	13.50%	8.22%	5.28%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/5/1986	13.30%	8.02%	5.28%
9/23/1986	12.75%	7.91%	4.84%
10/30/1986	13.00%	7.67%	5.33%
10/31/1986	13.75%	7.66%	6.09%
11/10/1986	14.00%	7.61%	6.39%
11/19/1986	13.75%	7.56%	6.19%
11/25/1986	13.15%	7.54%	5.61%
12/22/1986	13.80%	7.47%	6.33%
12/30/1986	13.90%	7.47%	6.43%
1/20/1987	12.75%	7.47%	5.28%
1/23/1987	13.55%	7.47%	6.08%
1/27/1987	12.16%	7.47%	4.69%
2/13/1987	12.60%	7.47%	5.13%
2/24/1987	12.00%	7.47%	4.53%
3/30/1987	12.20%	7.46%	4.74%
3/31/1987	13.00%	7.47%	5.53%
5/5/1987	12.85%	7.60%	5.25%
5/28/1987	13.50%	7.73%	5.77%
6/15/1987	13.20%	7.80%	5.40%
6/30/1987	12.60%	7.85%	4.75%
7/10/1987	12.90%	7.88%	5.02%
7/27/1987	13.50%	7.93%	5.57%
8/25/1987	11.40%	8.09%	3.31%
9/18/1987	13.00%	8.27%	4.73%
10/20/1987	12.60%	8.55%	4.05%
10/20/1987	12.98%	8.55%	4.43%
11/12/1987	12.75%	8.68%	4.07%
11/13/1987	12.75%	8.68%	4.07%
11/24/1987	12.50%	8.73%	3.77%
12/8/1987	12.50%	8.81%	3.69%
12/22/1987	12.00%	8.90%	3.10%
12/31/1987	12.85%	8.94%	3.91%
12/31/1987	13.25%	8.94%	4.31%
1/15/1988	13.15%	8.99%	4.16%
1/20/1988	12.75%	8.99%	3.76%
1/29/1988	13.20%	8.99%	4.21%
2/4/1988	12.60%	8.99%	3.61%
3/23/1988	13.00%	8.95%	4.05%
5/27/1988	13.18%	9.02%	4.16%
6/14/1988	13.50%	9.00%	4.50%
6/17/1988	11.72%	8.99%	2.73%
6/24/1988	11.50%	8.97%	2.53%
7/1/1988	12.75%	8.95%	3.80%
7/8/1988	12.00%	8.93%	3.07%
7/18/1988	12.00%	8.91%	3.09%
7/20/1988	13.40%	8.90%	4.50%
8/8/1988	12.74%	8.90%	3.84%
9/20/1988	12.90%	8.93%	3.97%
9/26/1988	12.40%	8.93%	3.47%
9/27/1988	13.65%	8.93%	4.72%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/30/1988	13.25%	8.94%	4.31%
10/13/1988	13.10%	8.93%	4.17%
10/21/1988	12.80%	8.94%	3.86%
10/25/1988	13.25%	8.94%	4.31%
10/26/1988	13.50%	8.94%	4.56%
10/27/1988	12.95%	8.94%	4.01%
10/28/1988	13.00%	8.95%	4.05%
11/15/1988	12.00%	8.98%	3.02%
11/29/1988	12.75%	9.01%	3.74%
12/19/1988	13.00%	9.05%	3.95%
12/21/1988	12.90%	9.05%	3.85%
12/22/1988	13.50%	9.05%	4.45%
1/26/1989	12.60%	9.06%	3.54%
1/27/1989	13.00%	9.06%	3.94%
2/8/1989	13.37%	9.05%	4.32%
3/8/1989	13.00%	9.04%	3.96%
5/4/1989	13.00%	9.04%	3.96%
6/8/1989	13.50%	8.96%	4.54%
7/19/1989	11.80%	8.84%	2.96%
7/25/1989	12.80%	8.82%	3.98%
7/31/1989	13.00%	8.81%	4.19%
8/14/1989	12.50%	8.76%	3.74%
8/22/1989	12.80%	8.73%	4.07%
8/23/1989	12.90%	8.72%	4.18%
9/21/1989	12.10%	8.62%	3.48%
10/6/1989	13.00%	8.58%	4.42%
10/17/1989	12.41%	8.54%	3.87%
10/18/1989	13.25%	8.54%	4.71%
10/20/1989	12.90%	8.53%	4.37%
10/31/1989	13.60%	8.50%	5.10%
11/3/1989	12.93%	8.48%	4.45%
11/5/1989	13.20%	8.48%	4.72%
11/9/1989	12.60%	8.45%	4.15%
11/9/1989	13.00%	8.45%	4.55%
11/28/1989	12.75%	8.37%	4.38%
12/7/1989	13.25%	8.32%	4.93%
12/15/1989	13.00%	8.28%	4.72%
12/20/1989	12.90%	8.26%	4.64%
12/21/1989	12.80%	8.25%	4.55%
12/21/1989	12.90%	8.25%	4.65%
12/27/1989	12.50%	8.23%	4.27%
1/9/1990	13.00%	8.19%	4.81%
1/18/1990	12.50%	8.16%	4.34%
1/26/1990	12.10%	8.14%	3.96%
3/21/1990	12.80%	8.15%	4.65%
3/28/1990	13.00%	8.16%	4.84%
4/5/1990	12.20%	8.17%	4.03%
4/12/1990	13.25%	8.19%	5.06%
4/30/1990	12.45%	8.24%	4.21%
5/31/1990	12.40%	8.31%	4.09%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/15/1990	13.20%	8.33%	4.87%
6/27/1990	12.90%	8.34%	4.56%
6/29/1990	13.25%	8.35%	4.90%
7/6/1990	12.10%	8.36%	3.74%
7/19/1990	11.70%	8.38%	3.32%
8/31/1990	12.50%	8.53%	3.97%
8/31/1990	12.50%	8.53%	3.97%
9/13/1990	12.50%	8.58%	3.92%
9/18/1990	12.75%	8.60%	4.15%
9/20/1990	12.50%	8.61%	3.89%
10/2/1990	13.00%	8.65%	4.35%
10/17/1990	11.90%	8.68%	3.22%
10/31/1990	12.95%	8.70%	4.25%
11/9/1990	13.25%	8.70%	4.55%
11/19/1990	13.00%	8.70%	4.30%
11/21/1990	12.10%	8.70%	3.40%
11/21/1990	12.50%	8.70%	3.80%
11/28/1990	12.75%	8.70%	4.05%
11/29/1990	12.75%	8.70%	4.05%
12/18/1990	13.10%	8.68%	4.42%
12/20/1990	12.50%	8.67%	3.83%
12/21/1990	12.50%	8.67%	3.83%
12/21/1990	13.00%	8.67%	4.33%
12/21/1990	13.60%	8.67%	4.93%
1/3/1991	13.02%	8.66%	4.36%
1/16/1991	13.25%	8.63%	4.62%
1/25/1991	11.70%	8.61%	3.09%
2/15/1991	12.70%	8.56%	4.14%
2/15/1991	12.80%	8.56%	4.24%
4/3/1991	13.00%	8.51%	4.49%
4/30/1991	12.45%	8.48%	3.97%
4/30/1991	13.00%	8.48%	4.52%
6/25/1991	11.70%	8.34%	3.36%
6/28/1991	12.50%	8.34%	4.16%
7/1/1991	11.70%	8.34%	3.36%
7/19/1991	12.10%	8.31%	3.79%
7/19/1991	12.30%	8.31%	3.99%
7/22/1991	12.90%	8.30%	4.60%
8/15/1991	12.25%	8.28%	3.97%
8/29/1991	13.30%	8.26%	5.04%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.40%	8.23%	4.17%
10/3/1991	11.30%	8.22%	3.08%
10/9/1991	11.70%	8.21%	3.49%
10/15/1991	13.40%	8.20%	5.20%
11/1/1991	12.90%	8.20%	4.70%
11/8/1991	12.75%	8.20%	4.55%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.00%	8.18%	3.82%
11/27/1991	12.70%	8.18%	4.52%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/6/1991	12.70%	8.16%	4.54%
12/10/1991	11.75%	8.15%	3.60%
12/19/1991	12.60%	8.14%	4.46%
12/19/1991	12.80%	8.14%	4.66%
12/30/1991	12.10%	8.11%	3.99%
1/22/1992	12.84%	8.05%	4.79%
1/31/1992	12.00%	8.03%	3.97%
2/20/1992	13.00%	8.00%	5.00%
2/27/1992	11.75%	7.98%	3.77%
3/18/1992	12.50%	7.94%	4.56%
5/15/1992	12.75%	7.86%	4.89%
6/24/1992	12.20%	7.85%	4.35%
6/29/1992	11.00%	7.85%	3.15%
7/14/1992	12.00%	7.83%	4.17%
7/22/1992	11.20%	7.82%	3.38%
8/10/1992	12.10%	7.79%	4.31%
8/26/1992	12.43%	7.75%	4.68%
9/30/1992	11.60%	7.72%	3.88%
10/6/1992	12.25%	7.72%	4.53%
10/13/1992	12.75%	7.71%	5.04%
10/23/1992	11.65%	7.71%	3.94%
10/28/1992	12.25%	7.71%	4.54%
10/29/1992	12.75%	7.70%	5.05%
10/30/1992	11.40%	7.70%	3.70%
11/9/1992	10.60%	7.70%	2.90%
11/25/1992	11.00%	7.68%	3.32%
11/25/1992	12.00%	7.68%	4.32%
12/3/1992	11.85%	7.66%	4.19%
12/16/1992	11.90%	7.64%	4.26%
12/22/1992	12.30%	7.62%	4.68%
12/22/1992	12.40%	7.62%	4.78%
12/30/1992	12.00%	7.61%	4.39%
12/31/1992	12.00%	7.61%	4.39%
1/12/1993	12.00%	7.59%	4.41%
1/12/1993	12.00%	7.59%	4.41%
2/2/1993	11.40%	7.53%	3.87%
2/22/1993	11.60%	7.48%	4.12%
4/23/1993	11.75%	7.27%	4.48%
5/3/1993	11.50%	7.25%	4.25%
5/3/1993	11.75%	7.25%	4.50%
6/3/1993	12.00%	7.20%	4.80%
6/7/1993	11.50%	7.20%	4.30%
6/22/1993	11.75%	7.16%	4.59%
7/21/1993	11.78%	7.06%	4.72%
7/21/1993	11.90%	7.06%	4.84%
7/23/1993	11.50%	7.05%	4.45%
7/29/1993	11.50%	7.03%	4.47%
8/12/1993	10.75%	6.97%	3.78%
8/24/1993	11.50%	6.92%	4.58%
8/31/1993	11.90%	6.88%	5.02%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/1/1993	11.25%	6.87%	4.38%
9/1/1993	11.47%	6.87%	4.60%
9/27/1993	10.50%	6.74%	3.76%
9/29/1993	11.00%	6.72%	4.28%
9/30/1993	11.60%	6.72%	4.88%
10/8/1993	11.50%	6.67%	4.83%
10/14/1993	11.20%	6.65%	4.55%
10/15/1993	11.75%	6.64%	5.11%
10/25/1993	11.55%	6.60%	4.95%
10/28/1993	11.50%	6.58%	4.92%
10/29/1993	10.10%	6.57%	3.53%
10/29/1993	10.20%	6.57%	3.63%
10/29/1993	11.25%	6.57%	4.68%
11/2/1993	10.80%	6.56%	4.24%
11/12/1993	11.80%	6.53%	5.27%
11/23/1993	12.50%	6.51%	5.99%
11/26/1993	11.00%	6.50%	4.50%
12/1/1993	11.45%	6.49%	4.96%
12/16/1993	10.60%	6.45%	4.15%
12/16/1993	11.20%	6.45%	4.75%
12/21/1993	11.30%	6.44%	4.86%
12/22/1993	11.00%	6.44%	4.56%
12/23/1993	10.10%	6.44%	3.66%
1/5/1994	11.50%	6.41%	5.09%
1/10/1994	11.00%	6.40%	4.60%
1/25/1994	12.00%	6.37%	5.63%
2/2/1994	10.40%	6.35%	4.05%
2/9/1994	10.70%	6.34%	4.36%
4/6/1994	11.24%	6.35%	4.89%
4/25/1994	11.00%	6.39%	4.61%
6/16/1994	10.50%	6.63%	3.87%
6/23/1994	10.60%	6.67%	3.93%
7/19/1994	10.70%	6.83%	3.87%
9/29/1994	10.90%	7.20%	3.70%
9/29/1994	11.00%	7.20%	3.80%
10/7/1994	11.87%	7.26%	4.61%
10/18/1994	11.50%	7.32%	4.18%
10/18/1994	11.50%	7.32%	4.18%
10/24/1994	11.00%	7.35%	3.65%
11/22/1994	12.12%	7.52%	4.60%
11/29/1994	11.30%	7.55%	3.75%
12/1/1994	11.00%	7.56%	3.44%
12/8/1994	11.50%	7.59%	3.91%
12/8/1994	11.70%	7.59%	4.11%
12/12/1994	11.82%	7.60%	4.22%
12/14/1994	11.50%	7.61%	3.89%
12/19/1994	11.50%	7.62%	3.88%
4/19/1995	11.00%	7.72%	3.28%
9/11/1995	11.30%	7.16%	4.14%
9/15/1995	10.40%	7.13%	3.27%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/29/1995	11.50%	7.06%	4.44%
10/13/1995	10.76%	6.98%	3.78%
11/7/1995	12.50%	6.86%	5.64%
11/8/1995	11.10%	6.85%	4.25%
11/8/1995	11.30%	6.85%	4.45%
11/17/1995	10.90%	6.81%	4.09%
11/20/1995	11.40%	6.80%	4.60%
11/27/1995	13.60%	6.77%	6.83%
12/14/1995	11.30%	6.68%	4.62%
12/20/1995	11.60%	6.65%	4.95%
1/31/1996	11.30%	6.45%	4.85%
3/11/1996	11.60%	6.40%	5.20%
4/3/1996	11.13%	6.41%	4.72%
4/15/1996	10.50%	6.41%	4.09%
4/17/1996	10.77%	6.40%	4.37%
4/26/1996	10.60%	6.40%	4.20%
5/10/1996	11.00%	6.40%	4.60%
5/13/1996	11.25%	6.41%	4.84%
7/3/1996	11.25%	6.49%	4.76%
7/22/1996	11.25%	6.54%	4.71%
10/3/1996	10.00%	6.77%	3.23%
10/29/1996	11.30%	6.84%	4.46%
11/26/1996	11.30%	6.86%	4.44%
11/27/1996	11.30%	6.86%	4.44%
11/29/1996	11.00%	6.86%	4.14%
12/12/1996	11.96%	6.85%	5.11%
12/17/1996	11.50%	6.85%	4.65%
1/22/1997	11.30%	6.83%	4.47%
1/27/1997	11.25%	6.83%	4.42%
1/31/1997	11.25%	6.83%	4.42%
2/13/1997	11.00%	6.82%	4.18%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.81%	4.99%
3/27/1997	10.75%	6.79%	3.96%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
10/29/1997	10.75%	6.70%	4.05%
10/31/1997	11.25%	6.70%	4.55%
12/24/1997	10.75%	6.53%	4.22%
4/28/1998	10.90%	6.11%	4.79%
4/30/1998	12.20%	6.10%	6.10%
6/30/1998	11.00%	5.94%	5.06%
8/26/1998	10.93%	5.82%	5.11%
9/3/1998	11.40%	5.80%	5.60%
9/15/1998	11.90%	5.77%	6.13%
10/7/1998	11.06%	5.70%	5.36%
10/30/1998	11.40%	5.63%	5.77%
12/10/1998	12.20%	5.52%	6.68%
12/17/1998	12.10%	5.49%	6.61%
2/19/1999	11.15%	5.32%	5.83%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/1/1999	10.65%	5.31%	5.34%
3/1/1999	10.65%	5.31%	5.34%
6/8/1999	11.25%	5.35%	5.90%
11/12/1999	10.25%	5.92%	4.33%
12/14/1999	10.50%	5.99%	4.51%
1/28/2000	10.71%	6.16%	4.55%
2/17/2000	10.60%	6.20%	4.40%
5/25/2000	10.80%	6.19%	4.61%
6/19/2000	11.05%	6.18%	4.87%
6/22/2000	11.25%	6.18%	5.07%
7/17/2000	11.06%	6.15%	4.91%
7/20/2000	12.20%	6.14%	6.06%
8/11/2000	11.00%	6.11%	4.89%
9/27/2000	11.25%	6.00%	5.25%
9/29/2000	11.16%	6.00%	5.16%
10/5/2000	11.30%	5.98%	5.32%
11/28/2000	12.90%	5.87%	7.03%
11/30/2000	12.10%	5.86%	6.24%
2/5/2001	11.50%	5.75%	5.75%
3/15/2001	11.25%	5.66%	5.59%
5/8/2001	10.75%	5.61%	5.14%
10/24/2001	10.30%	5.54%	4.76%
10/24/2001	11.00%	5.54%	5.46%
1/9/2002	10.00%	5.50%	4.50%
1/30/2002	11.00%	5.47%	5.53%
1/31/2002	11.00%	5.47%	5.53%
4/17/2002	11.50%	5.44%	6.06%
4/29/2002	11.00%	5.45%	5.55%
6/11/2002	11.77%	5.48%	6.29%
6/20/2002	12.30%	5.48%	6.82%
8/28/2002	11.00%	5.49%	5.51%
9/11/2002	11.20%	5.45%	5.75%
9/12/2002	12.30%	5.45%	6.85%
10/28/2002	11.30%	5.35%	5.95%
10/30/2002	10.60%	5.34%	5.26%
11/1/2002	12.60%	5.34%	7.26%
11/7/2002	11.40%	5.33%	6.07%
11/8/2002	10.75%	5.33%	5.42%
11/20/2002	10.00%	5.30%	4.70%
11/20/2002	10.50%	5.30%	5.20%
12/4/2002	10.75%	5.27%	5.48%
12/30/2002	11.20%	5.19%	6.01%
1/6/2003	11.25%	5.16%	6.09%
2/28/2003	12.30%	5.01%	7.29%
3/7/2003	9.96%	4.99%	4.97%
3/12/2003	11.40%	4.97%	6.43%
3/20/2003	12.00%	4.95%	7.05%
4/3/2003	12.00%	4.92%	7.08%
5/2/2003	11.40%	4.88%	6.52%
5/15/2003	11.05%	4.87%	6.18%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/26/2003	11.00%	4.80%	6.20%
7/1/2003	11.00%	4.80%	6.20%
7/29/2003	11.71%	4.78%	6.93%
8/22/2003	10.20%	4.81%	5.39%
9/17/2003	9.90%	4.85%	5.05%
9/25/2003	10.25%	4.85%	5.40%
10/17/2003	10.54%	4.87%	5.67%
10/22/2003	10.46%	4.87%	5.59%
10/22/2003	10.71%	4.87%	5.84%
10/30/2003	11.00%	4.88%	6.12%
10/31/2003	10.20%	4.88%	5.32%
10/31/2003	10.75%	4.88%	5.87%
11/10/2003	10.60%	4.89%	5.71%
12/9/2003	10.50%	4.93%	5.57%
12/18/2003	10.50%	4.94%	5.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
1/13/2004	10.25%	4.95%	5.30%
1/13/2004	12.00%	4.95%	7.05%
2/9/2004	11.25%	4.98%	6.27%
3/16/2004	10.90%	5.05%	5.85%
3/16/2004	10.90%	5.05%	5.85%
5/25/2004	10.00%	5.06%	4.94%
6/2/2004	11.22%	5.07%	6.15%
6/30/2004	10.50%	5.10%	5.40%
7/8/2004	10.00%	5.10%	4.90%
7/22/2004	10.25%	5.10%	5.15%
8/26/2004	10.50%	5.10%	5.40%
8/26/2004	10.50%	5.10%	5.40%
9/9/2004	10.40%	5.10%	5.30%
9/21/2004	10.50%	5.09%	5.41%
9/27/2004	10.30%	5.09%	5.21%
9/27/2004	10.50%	5.09%	5.41%
10/20/2004	10.20%	5.08%	5.12%
11/30/2004	10.60%	5.08%	5.52%
12/8/2004	9.90%	5.09%	4.81%
12/21/2004	11.50%	5.09%	6.41%
12/22/2004	11.50%	5.09%	6.41%
12/28/2004	10.25%	5.09%	5.16%
2/18/2005	10.30%	4.95%	5.35%
3/29/2005	11.00%	4.86%	6.14%
4/13/2005	10.60%	4.84%	5.76%
4/28/2005	11.00%	4.80%	6.20%
5/17/2005	10.00%	4.77%	5.23%
6/8/2005	10.18%	4.71%	5.47%
6/10/2005	10.90%	4.71%	6.19%
7/6/2005	10.50%	4.65%	5.85%
7/19/2005	11.50%	4.63%	6.87%
8/11/2005	10.40%	4.60%	5.80%
9/19/2005	9.45%	4.53%	4.92%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/30/2005	10.51%	4.52%	5.99%
10/4/2005	9.90%	4.52%	5.38%
10/4/2005	10.75%	4.52%	6.23%
10/14/2005	10.40%	4.52%	5.88%
10/31/2005	10.25%	4.53%	5.72%
11/2/2005	9.70%	4.53%	5.17%
11/30/2005	10.00%	4.53%	5.47%
12/9/2005	9.70%	4.53%	5.17%
12/12/2005	11.00%	4.53%	6.47%
12/20/2005	10.13%	4.53%	5.60%
12/21/2005	10.40%	4.52%	5.88%
12/21/2005	11.00%	4.52%	6.48%
12/22/2005	10.20%	4.52%	5.68%
12/22/2005	11.00%	4.52%	6.48%
12/28/2005	10.00%	4.52%	5.48%
1/5/2006	11.00%	4.52%	6.48%
1/25/2006	11.20%	4.52%	6.68%
1/25/2006	11.20%	4.52%	6.68%
2/3/2006	10.50%	4.52%	5.98%
2/15/2006	9.50%	4.53%	4.97%
4/26/2006	10.60%	4.65%	5.95%
7/24/2006	9.60%	4.87%	4.73%
7/24/2006	10.00%	4.87%	5.13%
9/20/2006	11.00%	4.93%	6.07%
9/26/2006	10.75%	4.93%	5.82%
10/20/2006	9.80%	4.96%	4.84%
11/2/2006	9.71%	4.97%	4.74%
11/9/2006	10.00%	4.97%	5.03%
11/21/2006	11.00%	4.98%	6.02%
12/5/2006	10.20%	4.97%	5.23%
1/5/2007	10.40%	4.95%	5.45%
1/9/2007	11.00%	4.94%	6.06%
1/11/2007	10.90%	4.94%	5.96%
1/19/2007	10.80%	4.93%	5.87%
1/26/2007	10.00%	4.92%	5.08%
2/8/2007	10.40%	4.91%	5.49%
3/14/2007	10.10%	4.86%	5.24%
3/20/2007	10.25%	4.84%	5.41%
3/21/2007	11.35%	4.84%	6.51%
3/22/2007	10.50%	4.84%	5.66%
3/29/2007	10.00%	4.83%	5.17%
6/13/2007	10.75%	4.81%	5.94%
6/29/2007	9.53%	4.84%	4.69%
6/29/2007	10.10%	4.84%	5.26%
7/3/2007	10.25%	4.85%	5.40%
7/13/2007	9.50%	4.86%	4.64%
7/24/2007	10.40%	4.87%	5.53%
8/1/2007	10.15%	4.88%	5.27%
8/29/2007	10.50%	4.91%	5.59%
9/10/2007	9.71%	4.91%	4.80%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/19/2007	10.00%	4.91%	5.09%
9/25/2007	9.70%	4.92%	4.78%
10/8/2007	10.48%	4.92%	5.56%
10/19/2007	10.50%	4.91%	5.59%
10/25/2007	9.65%	4.91%	4.74%
11/15/2007	10.00%	4.89%	5.11%
11/20/2007	9.90%	4.89%	5.01%
11/27/2007	10.00%	4.88%	5.12%
11/29/2007	10.90%	4.88%	6.02%
12/14/2007	10.80%	4.87%	5.93%
12/18/2007	10.40%	4.86%	5.54%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	10.20%	4.86%	5.34%
12/21/2007	9.10%	4.86%	4.24%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/17/2008	10.75%	4.81%	5.94%
2/5/2008	9.99%	4.78%	5.21%
2/5/2008	10.19%	4.78%	5.41%
2/13/2008	10.20%	4.76%	5.44%
3/31/2008	10.00%	4.63%	5.37%
5/28/2008	10.50%	4.53%	5.97%
6/24/2008	10.00%	4.52%	5.48%
6/27/2008	10.00%	4.52%	5.48%
7/31/2008	10.70%	4.50%	6.20%
7/31/2008	10.82%	4.50%	6.32%
8/27/2008	10.25%	4.50%	5.75%
9/2/2008	10.25%	4.50%	5.75%
9/19/2008	10.70%	4.48%	6.22%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/24/2008	10.68%	4.48%	6.20%
9/30/2008	10.20%	4.48%	5.72%
10/3/2008	10.30%	4.48%	5.82%
10/8/2008	10.15%	4.47%	5.68%
10/20/2008	10.06%	4.47%	5.59%
10/24/2008	10.60%	4.46%	6.14%
10/24/2008	10.60%	4.46%	6.14%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/24/2008	10.50%	4.41%	6.09%
12/3/2008	10.39%	4.37%	6.02%
12/24/2008	10.00%	4.26%	5.74%
12/26/2008	10.10%	4.24%	5.86%
12/29/2008	10.20%	4.23%	5.97%
1/13/2009	10.45%	4.14%	6.31%
2/2/2009	10.05%	4.04%	6.01%
3/9/2009	10.30%	3.89%	6.41%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/25/2009	10.17%	3.84%	6.33%
4/2/2009	10.75%	3.81%	6.94%
5/5/2009	10.75%	3.71%	7.04%
5/15/2009	10.20%	3.70%	6.50%
5/29/2009	9.54%	3.70%	5.84%
6/3/2009	10.10%	3.71%	6.39%
6/22/2009	10.00%	3.73%	6.27%
6/29/2009	10.21%	3.74%	6.47%
6/30/2009	9.31%	3.74%	5.57%
7/17/2009	9.26%	3.75%	5.51%
7/17/2009	10.50%	3.75%	6.75%
10/16/2009	10.40%	4.09%	6.31%
10/26/2009	10.10%	4.11%	5.99%
10/28/2009	10.15%	4.12%	6.03%
10/28/2009	10.15%	4.12%	6.03%
10/30/2009	9.95%	4.12%	5.83%
11/20/2009	9.45%	4.18%	5.27%
12/14/2009	10.50%	4.24%	6.26%
12/16/2009	10.75%	4.25%	6.50%
12/17/2009	10.30%	4.26%	6.04%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.50%	4.26%	6.24%
12/22/2009	10.20%	4.27%	5.93%
12/22/2009	10.40%	4.27%	6.13%
12/28/2009	10.85%	4.29%	6.56%
12/29/2009	10.38%	4.30%	6.08%
1/11/2010	10.24%	4.34%	5.90%
1/21/2010	10.23%	4.37%	5.86%
1/21/2010	10.33%	4.37%	5.96%
1/26/2010	10.40%	4.37%	6.03%
2/10/2010	10.00%	4.39%	5.61%
2/23/2010	10.50%	4.40%	6.10%
3/9/2010	9.60%	4.40%	5.20%
3/24/2010	10.13%	4.42%	5.71%
3/31/2010	10.70%	4.43%	6.27%
4/1/2010	9.50%	4.43%	5.07%
4/2/2010	10.10%	4.44%	5.66%
4/8/2010	10.35%	4.44%	5.91%
4/29/2010	9.19%	4.46%	4.73%
4/29/2010	9.40%	4.46%	4.94%
4/29/2010	9.40%	4.46%	4.94%
5/17/2010	10.55%	4.46%	6.09%
5/24/2010	10.05%	4.46%	5.59%
6/3/2010	11.00%	4.46%	6.54%
6/16/2010	10.00%	4.46%	5.54%
6/18/2010	10.30%	4.46%	5.84%
8/9/2010	12.55%	4.41%	8.14%
8/17/2010	10.10%	4.40%	5.70%
9/16/2010	9.60%	4.31%	5.29%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.00%	4.31%	5.69%
9/16/2010	10.30%	4.31%	5.99%
10/21/2010	10.40%	4.20%	6.20%
11/2/2010	9.75%	4.17%	5.58%
11/2/2010	9.75%	4.17%	5.58%
11/3/2010	10.75%	4.17%	6.58%
11/19/2010	10.20%	4.15%	6.05%
12/1/2010	10.00%	4.13%	5.87%
12/6/2010	9.56%	4.12%	5.44%
12/6/2010	10.09%	4.12%	5.97%
12/9/2010	10.25%	4.12%	6.13%
12/14/2010	10.33%	4.11%	6.22%
12/17/2010	10.10%	4.11%	5.99%
12/20/2010	10.10%	4.11%	5.99%
12/23/2010	9.92%	4.10%	5.82%
1/6/2011	10.35%	4.09%	6.26%
1/12/2011	10.30%	4.09%	6.21%
1/13/2011	10.30%	4.09%	6.21%
3/10/2011	10.10%	4.16%	5.94%
3/31/2011	9.45%	4.20%	5.25%
4/18/2011	10.05%	4.23%	5.82%
5/26/2011	10.50%	4.32%	6.18%
6/21/2011	10.00%	4.36%	5.64%
6/29/2011	8.83%	4.38%	4.45%
8/1/2011	9.20%	4.41%	4.79%
9/1/2011	10.10%	4.33%	5.77%
11/14/2011	9.60%	3.93%	5.67%
12/13/2011	9.50%	3.76%	5.74%
12/20/2011	10.00%	3.72%	6.28%
12/22/2011	10.40%	3.70%	6.70%
1/10/2012	9.06%	3.59%	5.47%
1/10/2012	9.45%	3.59%	5.86%
1/10/2012	9.45%	3.59%	5.86%
1/23/2012	10.20%	3.53%	6.67%
1/31/2012	10.00%	3.49%	6.51%
4/24/2012	9.50%	3.16%	6.34%
4/24/2012	9.75%	3.16%	6.59%
5/7/2012	9.80%	3.13%	6.67%
5/22/2012	9.60%	3.10%	6.50%
5/24/2012	9.70%	3.09%	6.61%
6/7/2012	10.30%	3.06%	7.24%
6/15/2012	10.40%	3.05%	7.35%
6/18/2012	9.60%	3.05%	6.55%
7/2/2012	9.75%	3.04%	6.71%
10/24/2012	10.30%	2.92%	7.38%
10/26/2012	9.50%	2.92%	6.58%
10/31/2012	9.30%	2.92%	6.38%
10/31/2012	9.90%	2.92%	6.98%
10/31/2012	10.00%	2.92%	7.08%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/1/2012	9.45%	2.91%	6.54%
11/8/2012	10.10%	2.91%	7.19%
11/9/2012	10.30%	2.90%	7.40%
11/26/2012	10.00%	2.89%	7.11%
11/28/2012	10.40%	2.88%	7.52%
11/28/2012	10.50%	2.88%	7.62%
12/4/2012	10.00%	2.87%	7.13%
12/4/2012	10.50%	2.87%	7.63%
12/20/2012	9.50%	2.84%	6.66%
12/20/2012	10.10%	2.84%	7.26%
12/20/2012	10.25%	2.84%	7.41%
12/20/2012	10.30%	2.84%	7.46%
12/20/2012	10.40%	2.84%	7.56%
12/20/2012	10.50%	2.84%	7.66%
12/26/2012	9.80%	2.83%	6.97%
2/22/2013	9.60%	2.86%	6.74%
3/14/2013	9.30%	2.89%	6.41%
3/27/2013	9.80%	2.92%	6.88%
4/23/2013	9.80%	2.96%	6.84%
5/10/2013	9.25%	2.96%	6.29%
6/13/2013	9.40%	3.01%	6.39%
6/18/2013	9.28%	3.02%	6.26%
6/18/2013	9.28%	3.02%	6.26%
6/25/2013	9.80%	3.04%	6.76%
9/23/2013	9.60%	3.33%	6.27%
11/6/2013	10.20%	3.42%	6.78%
11/13/2013	9.84%	3.44%	6.40%
11/14/2013	10.25%	3.44%	6.81%
11/22/2013	9.50%	3.47%	6.03%
12/5/2013	10.20%	3.50%	6.70%
12/13/2013	9.60%	3.52%	6.08%
12/16/2013	9.73%	3.53%	6.20%
12/17/2013	10.00%	3.53%	6.47%
12/18/2013	9.08%	3.53%	5.55%
12/23/2013	9.72%	3.55%	6.17%
12/30/2013	10.00%	3.57%	6.43%
1/21/2014	9.65%	3.66%	5.99%
1/22/2014	9.18%	3.66%	5.52%
2/20/2014	9.30%	3.71%	5.59%
2/21/2014	9.85%	3.72%	6.13%
2/28/2014	9.55%	3.73%	5.82%
3/16/2014	9.72%	3.74%	5.98%
4/21/2014	9.50%	3.73%	5.77%
4/22/2014	9.80%	3.73%	6.07%
5/8/2014	9.10%	3.71%	5.39%
5/8/2014	9.59%	3.71%	5.88%
6/6/2014	10.40%	3.66%	6.74%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%
6/12/2014	10.10%	3.66%	6.44%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/7/2014	9.30%	3.63%	5.67%
7/25/2014	9.30%	3.60%	5.70%
7/31/2014	9.90%	3.59%	6.31%
9/4/2014	9.10%	3.50%	5.60%
9/24/2014	9.35%	3.46%	5.89%
9/30/2014	9.75%	3.44%	6.31%
10/29/2014	10.80%	3.37%	7.43%
11/6/2014	10.20%	3.35%	6.85%
11/14/2014	10.20%	3.33%	6.87%
11/14/2014	10.30%	3.33%	6.97%
11/26/2014	10.20%	3.30%	6.90%
12/3/2014	10.00%	3.29%	6.71%
1/13/2015	10.30%	3.16%	7.14%
1/21/2015	9.05%	3.13%	5.92%
1/21/2015	9.05%	3.13%	5.92%
4/9/2015	9.50%	2.88%	6.62%
5/11/2015	9.80%	2.82%	6.98%
6/17/2015	9.00%	2.79%	6.21%
8/21/2015	9.75%	2.78%	6.97%
10/7/2015	9.55%	2.82%	6.73%
10/13/2015	9.75%	2.83%	6.92%
10/15/2015	9.00%	2.84%	6.16%
10/30/2015	9.80%	2.87%	6.93%
11/19/2015	10.00%	2.89%	7.11%
12/3/2015	10.00%	2.91%	7.09%
12/9/2015	9.60%	2.92%	6.68%
12/11/2015	9.90%	2.92%	6.98%
12/18/2015	9.50%	2.94%	6.56%
1/6/2016	9.50%	2.97%	6.53%
1/6/2016	9.50%	2.97%	6.53%
1/28/2016	9.40%	2.97%	6.43%
2/10/2016	9.60%	2.95%	6.65%
2/16/2016	9.50%	2.94%	6.56%
2/29/2016	9.40%	2.92%	6.48%
4/29/2016	9.80%	2.83%	6.97%
5/5/2016	9.49%	2.82%	6.67%
6/1/2016	9.55%	2.80%	6.75%
6/3/2016	9.65%	2.79%	6.86%
6/15/2016	9.00%	2.77%	6.23%
6/15/2016	9.00%	2.77%	6.23%
9/2/2016	9.50%	2.56%	6.94%
9/23/2016	9.75%	2.52%	7.23%
9/27/2016	9.50%	2.51%	6.99%
9/29/2016	9.11%	2.50%	6.61%
10/13/2016	10.20%	2.48%	7.72%
10/28/2016	9.70%	2.47%	7.23%
11/9/2016	9.80%	2.47%	7.33%
11/18/2016	10.00%	2.49%	7.51%
12/9/2016	10.10%	2.51%	7.59%
12/15/2016	9.00%	2.53%	6.47%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/15/2016	9.00%	2.53%	6.47%
12/20/2016	9.75%	2.53%	7.22%
12/22/2016	9.50%	2.54%	6.96%
1/24/2017	9.00%	2.59%	6.41%
2/21/2017	10.55%	2.63%	7.92%
3/1/2017	9.25%	2.65%	6.60%
4/11/2017	9.50%	2.77%	6.73%
4/20/2017	8.70%	2.79%	5.91%
4/28/2017	9.50%	2.81%	6.69%
5/23/2017	9.60%	2.88%	6.72%
6/6/2017	9.70%	2.91%	6.79%
6/22/2017	9.70%	2.93%	6.77%
6/30/2017	9.60%	2.94%	6.66%
7/20/2017	9.55%	2.97%	6.58%
7/31/2017	10.10%	2.98%	7.12%
9/13/2017	9.40%	2.93%	6.47%
9/19/2017	9.70%	2.92%	6.78%
9/22/2017	11.88%	2.92%	8.96%
9/27/2017	10.20%	2.92%	7.28%
10/20/2017	9.60%	2.90%	6.70%
10/26/2017	10.20%	2.90%	7.30%
10/30/2017	10.05%	2.90%	7.15%
12/5/2017	9.50%	2.86%	6.64%
12/7/2017	9.80%	2.86%	6.94%
12/13/2017	9.25%	2.85%	6.40%
12/28/2017	9.50%	2.84%	6.66%
1/31/2018	9.80%	2.83%	6.97%
2/21/2018	9.80%	2.84%	6.96%
2/21/2018	9.80%	2.84%	6.96%
2/28/2018	9.50%	2.85%	6.65%
3/15/2018	9.00%	2.87%	6.13%
3/26/2018	10.19%	2.88%	7.31%
4/26/2018	9.50%	2.91%	6.59%
4/27/2018	9.30%	2.91%	6.39%
5/2/2018	9.50%	2.91%	6.59%
5/3/2018	9.70%	2.91%	6.79%
5/29/2018	9.40%	2.95%	6.45%
6/6/2018	9.80%	2.96%	6.84%
6/14/2018	8.80%	2.97%	5.83%
7/16/2018	9.60%	2.98%	6.62%
7/20/2018	9.40%	2.99%	6.41%
8/24/2018	9.28%	3.02%	6.26%
8/28/2018	10.00%	3.03%	6.97%
9/13/2018	10.00%	3.04%	6.96%
9/14/2018	10.00%	3.05%	6.95%
9/19/2018	9.85%	3.05%	6.80%
9/20/2018	9.80%	3.05%	6.75%
9/26/2018	9.40%	3.06%	6.34%
9/26/2018	10.20%	3.06%	7.14%
9/28/2018	9.50%	3.07%	6.43%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/28/2018	9.50%	3.07%	6.43%
10/5/2018	9.61%	3.08%	6.53%
10/15/2018	9.80%	3.09%	6.71%
10/26/2018	9.40%	3.11%	6.29%
10/29/2018	9.60%	3.11%	6.49%
11/1/2018	9.87%	3.11%	6.76%
11/8/2018	9.70%	3.12%	6.58%
11/8/2018	9.70%	3.12%	6.58%
12/11/2018	9.70%	3.14%	6.56%
12/12/2018	9.30%	3.14%	6.16%
12/13/2018	9.60%	3.14%	6.46%
12/19/2018	9.30%	3.14%	6.16%
12/21/2018	9.35%	3.14%	6.21%
12/24/2018	9.25%	3.14%	6.11%
12/24/2018	9.25%	3.14%	6.11%
1/4/2019	9.80%	3.14%	6.66%
1/18/2019	9.70%	3.14%	6.56%
3/14/2019	9.00%	3.12%	5.88%
3/27/2019	9.70%	3.12%	6.58%
4/30/2019	9.73%	3.11%	6.62%
5/7/2019	9.65%	3.10%	6.55%
5/21/2019	9.80%	3.10%	6.70%
9/4/2019	10.00%	2.76%	7.24%
9/26/2019	9.90%	2.69%	7.21%
		# of Cases:	4.70%
		Average ROE:	1,123

Expected Earnings Analysis

Company	Ticker	[1] Expected ROE 2022-24	[2] Shares Outstanding 2019	[3] Shares Outstanding 2022-24	[4] Shares Outstanding % Increase	[5] Adjustment Factor	[6] Adjusted ROE
Atmos Energy Corporation	ATO	10.0%	120.00	145.00	4.84%	1.024	10.24%
New Jersey Resources Corporation	NJR	11.5%	88.00	89.00	0.28%	1.001	11.52%
Northwest Natural Holding Company	NWN	12.0%	30.50	32.00	1.21%	1.006	12.07%
ONE Gas, Inc.	OGS	10.0%	53.00	55.00	0.93%	1.005	10.05%
South Jersey Industries, Inc.	SJI	12.0%	94.00	100.00	1.56%	1.008	12.09%
Spire Inc.	SR	9.0%	51.00	55.00	1.91%	1.009	9.08%
Southwest Gas Holdings, Inc.	SWX	10.0%	55.00	58.00	1.34%	1.007	10.07%
						Median	10.24%
						Average	10.73%

Notes:
[1] Source: Value Line
[2] Source: Value Line
[3] Source: Value Line
[4] Equals = ([3] / [2])^(1/4)-1
[5] Equals (2 x (1 + [4])) / (2 + [4])
[6] Equals [1] x [5]

Proxy Group Capital Structure Analysis

Common Equity

Company	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Atmos Energy Corporation	ATO	60.69%	60.12%	59.37%	60.85%	60.80%	60.61%	59.80%	55.97%	59.78%
New Jersey Resources Corporation	NJR	54.05%	54.61%	53.34%	52.11%	53.49%	55.77%	53.59%	51.55%	53.56%
Northwest Natural Holding Company	NWN	48.92%	51.67%	50.88%	47.67%	50.03%	50.45%	48.78%	52.07%	50.06%
ONE Gas, Inc.	OGS	61.44%	61.38%	61.38%	62.81%	62.88%	62.87%	62.16%	61.82%	62.09%
South Jersey Industries, Inc.	SJI	39.31%	38.16%	30.84%	30.88%	31.98%	50.85%	50.12%	50.62%	40.35%
Spire Inc.	SR	49.42%	51.58%	51.27%	47.43%	48.29%	48.16%	49.87%	49.36%	49.42%
Southwest Gas Corporation	SWX	51.78%	51.60%	51.32%	52.08%	51.42%	49.70%	49.33%	48.73%	50.75%
Average		52.23%	52.73%	51.20%	50.55%	51.27%	54.06%	53.38%	52.87%	52.29%

Long-Term Debt

Company	Ticker	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	2017Q3	Average
Atmos Energy Corporation	ATO	39.31%	39.88%	40.63%	39.15%	39.20%	39.39%	40.20%	44.03%	40.22%
New Jersey Resources Corporation	NJR	45.95%	45.39%	46.66%	47.89%	46.51%	44.23%	46.41%	48.45%	46.44%
Northwest Natural Holding Company	NWN	51.08%	48.33%	49.12%	52.33%	49.97%	49.55%	51.22%	47.93%	49.94%
ONE Gas, Inc.	OGS	38.56%	38.62%	38.62%	37.19%	37.12%	37.13%	37.84%	38.18%	37.91%
South Jersey Industries, Inc.	SJI	60.69%	61.84%	69.16%	69.12%	68.02%	49.15%	49.88%	49.38%	59.65%
Spire Inc.	SR	50.58%	48.42%	48.73%	52.57%	51.71%	51.84%	50.13%	50.64%	50.58%
Southwest Gas Corporation	SWX	48.22%	48.40%	48.68%	47.92%	48.58%	50.30%	50.67%	51.27%	49.25%
Average		47.77%	47.27%	48.80%	49.45%	48.73%	45.94%	46.62%	47.13%	47.71%

2015-2019 Reported Authorized Returns on Equity, Natural Gas Utility Rate Cases

State	Utility	Parent Company Ticker	Case Identification	Case Type	Date Authorized	Authorized ROE
Michigan	Consumers Energy Co.	CMS	C-U-17643	Distribution	1/13/2015	10.30
Illinois	North Shore Gas Co.	WEC	D-14-0224	Distribution	1/21/2015	9.05
Illinois	Peoples Gas Light & Coke Co.	WEC	D-14-0225	Distribution	1/21/2015	9.05
Oregon	Avista Corp.	AVA	D-UG-284	Distribution	4/9/2015	9.50
Tennessee	Atmos Energy Corp.	ATO	D-14-00146	Distribution	5/11/2015	9.80
New York	Central Hudson Gas & Electric	FTS	C-14-G-0319	Distribution	6/17/2015	9.00
Virginia	Columbia Gas of Virginia Inc	NI	C-PUE-2014-00020	Distribution	8/21/2015	9.75
Massachusetts	Bay State Gas Company	NI	DPU 15-50	Distribution	10/7/2015	9.55
West Virginia	Mountaineer Gas Co.		C-15-0003-G-42T	Distribution	10/13/2015	9.75
New York	Orange & Rockland Utils Inc.	ED	C-14-G-0494	Distribution	10/15/2015	9.00
Massachusetts	NSTAR Gas Co.	ES	DPU 14-150	Distribution	10/30/2015	9.80
Wisconsin	Wisconsin Public Service Corp.	WEC	D-6690-UR-124 (Gas)	Distribution	11/19/2015	10.00
Wisconsin	Northern States Power Co - WI	XEL	D-4220-UR-121 (Gas)	Distribution	12/3/2015	10.00
Illinois	Ameren Illinois	AEE	D-15-0142	Distribution	12/9/2015	9.60
Michigan	Michigan Gas Utilities Corp.	WEC	C-U-17880	Distribution	12/11/2015	9.90
Idaho	Avista Corp.	AVA	C-AVU-G-15-01	Distribution	12/18/2015	9.50
Washington	Avista Corp.	AVA	D-UG-150205	Distribution	1/6/2016	9.50
Oklahoma	Oklahoma Natural Gas Co	OGS	Ca-PUD201500213	Distribution	1/6/2016	9.50
Arkansas	Black Hills Energy Arkansas	BKH	D-15-011-U	Distribution	1/28/2016	9.40
Massachusetts	Liberty Utilities (NE Nat Gas)	AQN	DPU 15-75	Distribution	2/10/2016	9.60
Colorado	Public Service Co. of CO	XEL	D-15AL-0135G	Distribution	2/16/2016	9.50
Oregon	Avista Corp.	AVA	D-UG 288	Distribution	2/29/2016	9.40
Massachusetts	Fitchburg Gas & Electric Light	UTL	DPU 15-81	Distribution	4/29/2016	9.80
Minnesota	CenterPoint Energy Resources	CNP	D-G-008/GR-15-424	Distribution	5/5/2016	9.49
Maine	Maine Natural Gas	IBE	D-2015-00005	Distribution	6/1/2016	9.55
Maryland	Baltimore Gas and Electric Co.	EXC	C-9406 (gas)	Distribution	6/3/2016	9.65
New York	NY State Electric & Gas Corp.	IBE	C-15-G-0284	Distribution	6/15/2016	9.00
New York	Rochester Gas & Electric Corp.	IBE	C-15-G-0286	Distribution	6/15/2016	9.00
Arkansas	CenterPoint Energy Resources	CNP	D-15-098-U	Distribution	9/2/2016	9.50
New Jersey	New Jersey Natural Gas Co.	NJR	D-GR-15111304	Distribution	9/23/2016	9.75
Texas	Texas Gas Service Co.	OGS	D-GUD-10506	Distribution	9/27/2016	9.50
Minnesota	Minnesota Energy Resources	WEC	D-G-011/GR-15-736	Distribution	9/29/2016	9.11
South Carolina	Piedmont Natural Gas Co.	DUK	D-2016-7-G	Distribution	10/13/2016	10.20
North Carolina	Public Service Co. of NC	D	D-G-5, Sub 565	Distribution	10/28/2016	9.70
Wisconsin	Madison Gas and Electric Co.	MGEE	D-3270-UR-121 (Gas)	Distribution	11/9/2016	9.80
Wisconsin	Wisconsin Power and Light Co	LNT	D-6680-UR-120 (Gas)	Distribution	11/18/2016	10.00
Michigan	DTE Gas Co.	DTE	C-U-17999	Distribution	12/9/2016	10.10
New York	Brooklyn Union Gas Co.	NG.	C-16-G-0059	Distribution	12/15/2016	9.00
New York	KeySpan Gas East Corp.	NG.	C-16-G-0058	Distribution	12/15/2016	9.00
Delaware	Chesapeake Utilities Corp.	CPK	D-15-1734	Distribution	12/20/2016	9.75
Nevada	Sierra Pacific Power Co.	BRK.A	D-16-06007	Distribution	12/22/2016	9.50
New York	Consolidated Edison Co. of NY	ED	C-16-G-0061	Distribution	1/24/2017	9.00
Georgia	Atlanta Gas Light Co.	SO	D-40828	Distribution	2/21/2017	10.55
District of Columbia	Washington Gas Light Co.	ALA	FC-1137	Distribution	3/1/2017	9.25
Arizona	Southwest Gas Corp.	SWX	D-G-01551A-16-0107	Distribution	4/11/2017	9.50
New York	Natl Fuel Gas Distribution Cor	NFG	C-16-G-0257	Distribution	4/20/2017	8.70
Idaho	Intermountain Gas Co.	MDU	C-INT-G-16-2	Distribution	4/28/2017	9.50
Texas	CenterPoint Energy Resources	CNP	D-GUD-10567	Distribution	5/23/2017	9.60
Delaware	Delmarva Power & Light Co.	EXC	D-16-0650	Distribution	6/6/2017	9.70
Kentucky	Louisville Gas & Electric Co.	PPL	C-2016-00371 (gas)	Distribution	6/22/2017	9.70
New Jersey	Elizabethtown Gas Co.	SJI	D-GR-16090826	Distribution	6/30/2017	9.60
Montana	NorthWestern Corp.	NWE	D-D2016.9.68	Distribution	7/20/2017	9.55
Michigan	Consumers Energy Co.	CMS	C-U-18124	Distribution	7/31/2017	10.10
Oregon	Avista Corp.	AVA	D-UG 325	Distribution	9/13/2017	9.40
Maryland	Columbia Gas of Maryland Inc	NI	C-9447	Distribution	9/19/2017	9.70
Alaska	ENSTAR Natural Gas Co.	ALA	D-U-16-066	Distribution	9/22/2017	11.88
South Carolina	Piedmont Natural Gas Co.	DUK	D-2017-7-G	Distribution	9/27/2017	10.20
New Jersey	South Jersey Gas Co.	SJI	D-GR-17010071	Distribution	10/20/2017	9.60
California	San Diego Gas & Electric Co.	SRE	Advice No. 2611-G	Distribution	10/26/2017	10.20
California	Southern California Gas Co.	SRE	Advice No. 5192	Distribution	10/30/2017	10.05
Washington	Puget Sound Energy Inc.		D-UG-170034	Distribution	12/5/2017	9.50
Wisconsin	Northern States Power Co - WI	XEL	D-4220-UR-123 (Gas)	Distribution	12/7/2017	9.80
Connecticut	Southern Connecticut Gas Co.	IBE	D-17-05-42	Distribution	12/13/2017	9.25
Idaho	Avista Corp.	AVA	C-AVU-G-17-01	Distribution	12/28/2017	9.50
Illinois	Northern Illinois Gas Co.	SO	D-17-0124	Distribution	1/31/2018	9.80

State	Utility	Parent Company Ticker	Case Identification	Case Type	Date Authorized	Authorized ROE
Missouri	Missouri Gas Energy	SR	C-GR-2017-0216	Distribution	2/21/2018	9.80
Missouri	Spire Missouri Inc.	SR	C-GR-2017-0215	Distribution	2/21/2018	9.80
Maine	Northern Utilities Inc.	UTL	D-2017-00065	Distribution	2/28/2018	9.50
New York	Niagara Mohawk Power Corp.	NG.	C-17-G-0239	Distribution	3/15/2018	9.00
Florida	Pivotal Utility Holdings Inc.	NEE	20170179-GU	Distribution	3/26/2018	10.19
Washington	Avista Corp.	AVA	D-UG-170486	Distribution	4/26/2018	9.50
New Hampshire	Liberty Utilities EnergyNorth	AQN	D-DG-17-048	Distribution	4/27/2018	9.30
New Hampshire	Northern Utilities Inc.	UTL	D-DG-17-070	Distribution	5/2/2018	9.50
Kentucky	Atmos Energy Corp.	ATO	C-2017-00349	Distribution	5/3/2018	9.70
Montana	MDU Resources Group Inc.	MDU	D2017.9.79	Distribution	5/29/2018	9.40
Missouri	Liberty Utilities (Midstates)	AQN	C-GR-2018-0013	Distribution	6/6/2018	9.80
New York	Central Hudson Gas & Electric	FTS	C-17-G-0460	Distribution	6/14/2018	8.80
Wyoming	Black Hills Northwest Wyoming	BKH	D-30011-97-GR-17	Distribution	7/16/2018	9.60
Washington	Cascade Natural Gas Corp.	MDU	D-UG-170929	Distribution	7/20/2018	9.40
Rhode Island	Narragansett Electric Co.	NG.	D-4770 (gas)	Distribution	8/24/2018	9.28
Michigan	Consumers Energy Co.	CMS	C-U-18424	Distribution	8/28/2018	10.00
Michigan	DTE Gas Co.	DTE	C-U-18999	Distribution	9/13/2018	10.00
Wisconsin	Wisconsin Power and Light Co	LNT	D-6680-UR-121 (Gas)	Distribution	9/14/2018	10.00
Indiana	Northern IN Public Svc Co.	NI	Ca-44988	Distribution	9/19/2018	9.85
Wisconsin	Madison Gas and Electric Co.	MGEE	D-3270-UR-122 (Gas)	Distribution	9/20/2018	9.80
North Dakota	MDU Resources Group Inc.	MDU	C-PU-17-295	Distribution	9/26/2018	9.40
South Carolina	Piedmont Natural Gas Co.	DUK	D-2018-7-G	Distribution	9/26/2018	10.20
Massachusetts	Boston Gas Co.	NG.	DPU-17-170 (Boston Gas)	Distribution	9/28/2018	9.50
Massachusetts	Colonial Gas Co.	NG.	DPU-17-170 (Colonial Gas)	Distribution	9/28/2018	9.50
Arkansas	Black Hills Energy Arkansas	BKH	D-17-071-U	Distribution	10/5/2018	9.61
Tennessee	Chattanooga Gas Co.	SO	D-18-00017	Distribution	10/15/2018	9.80
Oregon	Northwest Natural Gas Co.	NWN	D-UG-344	Distribution	10/26/2018	9.40
New Jersey	Public Service Electric Gas	PEG	D-GR18010030	Distribution	10/29/2018	9.60
Illinois	Ameren Illinois	AEE	D-18-0463	Distribution	11/1/2018	9.87
Minnesota	Minnesota Energy Resources	WEC	D-G-011/GR-17-563	Distribution	11/8/2018	9.70
Delaware	Delmarva Power & Light Co.	EXC	D-17-0978	Distribution	11/8/2018	9.70
Maryland	Washington Gas Light Co.	ALA	C-9481	Distribution	12/11/2018	9.70
Connecticut	Yankee Gas Services Co.	ES	D-18-05-10	Distribution	12/12/2018	9.30
Iowa	Interstate Power & Light Co.	LNT	D-RPU-2018-0002	Distribution	12/13/2018	9.60
Connecticut	CT Natural Gas Corp.	IBE	D-18-05-16	Distribution	12/19/2018	9.30
Colorado	Public Service Co. of CO	XEL	D-17AL-0363G	Distribution	12/21/2018	9.35
Nevada	Southwest Gas Corp.	SWX	D-18-05031 (Southern)	Distribution	12/24/2018	9.25
Nevada	Southwest Gas Corp.	SWX	D-18-05031 (Northern)	Distribution	12/24/2018	9.25
Maryland	Baltimore Gas and Electric Co.	EXC	C-9484	Distribution	1/4/2019	9.80
Massachusetts	Berkshire Gas Co.	IBE	DPU 18-40	Distribution	1/18/2019	9.70
New York	Orange & Rockland Utils Inc.	ED	C-18-G-0068	Distribution	3/14/2019	9.00
Kentucky	Duke Energy Kentucky Inc.	DUK	C-2018-00261	Distribution	3/27/2019	9.70
Kentucky	Louisville Gas & Electric Co.	PPL	C-2018-00295 (gas)	Distribution	4/30/2019	9.73
Kentucky	Atmos Energy Corp.	ATO	C-2018-00281	Distribution	5/7/2019	9.65
Texas	Atmos Energy Corp.	ATO	D-GUD-10779 (Mid-Tex Division)	Distribution	5/21/2019	9.80
Wisconsin	Northern States Power Co - WI	XEL	D-4220-UR-124 (Gas)	Distribution	9/4/2019	10.00
Michigan	Consumers Energy Co.	CMS	C-U-20322	Distribution	9/26/2019	9.90

Average	9.62
Median	9.60
Minimum	8.70
Maximum	11.88

Source: Regulatory Research Associates

	Median
2015	9.68
2016	9.50
2017	9.60
2018	9.60

2019 Average	9.70
2019 Median	9.73
2019 # >9.50%	8
Total 2019	9
%	88.89%
2019 # >= 9.70%	7

Mr. Coleman's Constant Growth DCF Analysis - As Filed

Single State DCF Model Using Value Line Forecast Growth Rates

Company	Average Stock Price	Annualized Dividend	Dividend Yield	Projected 3-5 Year EPS Growth	Projected 3-5 Year Dividend Growth	Estimated COE EPS Growth	Estimated COE Dividend Growth	75-25 Wtd. Growth	Estimated Cost of Equity Wtd. Growth
Atmos Energy Corporation	$110.90	$2.10	1.89%	7.50%	7.00%	9.54%	9.03%	7.38%	9.40%
Chesapeake Utilities Corporation	$94.21	$1.55	1.65%	9.00%	9.00%	10.79%	10.79%	9.00%	10.79%
Northwest Natural Holding Company	$71.13	$1.93	2.71%		2.50%		5.28%		
ONE Gas, Inc.	$92.19	$2.00	2.17%	8.00%	8.50%	10.34%	10.85%	8.13%	10.48%
South Jersey Industries, Inc.	$32.32	$1.20	3.71%	10.50%	4.00%	14.60%	7.86%	8.88%	12.74%
Spire Inc.	$90.28	$2.18	2.41%	9.00%	5.00%	11.63%	7.54%	8.00%	10.54%
Southwest Gas Corporation	$85.11	$2.37	2.78%	5.50%	4.00%	8.44%	6.90%	5.13%	8.02%
Average			2.48%	8.25%	5.71%	10.89%	8.32%	7.75%	10.33%
Median			2.41%	8.50%	5.00%	10.57%	7.86%	8.06%	10.51%

Single State DCF Model Using average of Zacks, First Call and Value Line Forecast Growth Rates

Company	Average Stock Price	Annualized Dividend	Dividend Yield	Projected 3-5 Year EPS Growth	Projected 3-5 Year Dividend Growth	Estimated COE EPS Growth	Estimated COE Dividend Growth	75-25 Wtd. Growth	Estimated Cost of Equity Wtd. Growth
Atmos Energy Corporation	$110.90	$2.10	1.89%	6.82%	7.00%	8.84%	9.03%	6.86%	8.89%
Chesapeake Utilities Corporation	$94.21	$1.55	1.65%	7.00%	9.00%	8.76%	10.79%	7.50%	9.29%
Northwest Natural Holding Company	$71.13	$1.93	2.71%	5.45%	2.50%	8.31%	5.28%	4.71%	7.49%
ONE Gas, Inc.	$92.19	$2.00	2.17%	6.30%	8.50%	8.61%	10.85%	6.85%	9.20%
South Jersey Industries, Inc.	$32.32	$1.20	3.71%	7.87%	4.00%	11.87%	7.86%	6.90%	10.76%
Spire Inc.	$90.28	$2.18	2.41%	5.21%	5.00%	7.75%	7.54%	5.16%	7.69%
Southwest Gas Corporation	$85.11	$2.37	2.78%	6.00%	4.00%	8.95%	6.90%	5.50%	8.40%
Average			2.48%	6.38%	5.71%	9.01%	8.32%	6.21%	8.82%
Median			2.41%	6.30%	5.00%	8.76%	7.86%	6.85%	8.89%

Mr. Coleman's Constant Growth DCF Analysis - Corrected Expected Dividend Yield and SR and SWX Data

Single State DCF Model Using Value Line Forecast Growth Rates

Company	Average Stock Price	Annualized Dividend	Dividend Yield	Projected 3-5 Year EPS Growth	Projected 3-5 Year Dividend Growth	Estimated COE EPS Growth	Estimated COE Dividend Growth	75-25 Wtd. Growth	Estimated Cost of Equity Wtd. Growth
Atmos Energy Corporation	$110.90	$2.10	1.89%	7.50%	7.00%	9.54%	9.03%	7.38%	9.41%
Chesapeake Utilities Corporation	$94.21	$1.55	1.65%	9.00%	9.00%	10.79%	10.79%	9.00%	10.79%
Northwest Natural Holding Company	$71.13	$1.93	2.71%		2.50%	2.71%	5.28%		
ONE Gas, Inc.	$92.19	$2.00	2.17%	8.00%	8.50%	10.34%	10.85%	8.13%	10.47%
South Jersey Industries, Inc.	$32.32	$1.20	3.71%	10.50%	4.00%	14.60%	7.86%	8.88%	12.92%
Spire Inc.	$85.11	$2.37	2.78%	5.50%	4.00%	8.44%	6.90%	5.13%	8.05%
Southwest Gas Corporation	$90.28	$2.18	2.41%	9.00%	5.00%	11.63%	7.54%	8.00%	10.61%
Average			2.48%	8.25%	5.71%	9.72%	8.32%	7.75%	10.37%
Median			2.41%	8.50%	5.00%	10.34%	7.86%	8.06%	10.54%

Single State DCF Model Using average of Zacks, First Call and Value Line Forecast Growth Rates

Company	Average Stock Price	Annualized Dividend	Dividend Yield	Projected 3-5 Year EPS Growth	Projected 3-5 Year Dividend Growth	Estimated COE EPS Growth	Estimated COE Dividend Growth	75-25 Wtd. Growth	Estimated Cost of Equity Wtd. Growth
Atmos Energy Corporation	$110.90	$2.10	1.89%	6.82%	7.00%	8.84%	9.03%	6.86%	8.89%
Chesapeake Utilities Corporation	$94.21	$1.55	1.65%	7.00%	9.00%	8.76%	10.79%	7.50%	9.27%
Northwest Natural Holding Company	$71.13	$1.93	2.71%	5.45%	2.50%	8.31%	5.28%	4.71%	7.55%
ONE Gas, Inc.	$92.19	$2.00	2.17%	6.30%	8.50%	8.61%	10.85%	6.85%	9.17%
South Jersey Industries, Inc.	$32.32	$1.20	3.71%	7.87%	4.00%	11.87%	7.86%	6.90%	10.87%
Spire Inc.	$85.11	$2.37	2.78%	4.04%	4.00%	6.94%	6.90%	4.03%	6.93%
Southwest Gas Corporation	$90.28	$2.18	2.41%	7.17%	5.00%	9.75%	7.54%	6.63%	9.20%
Average			2.48%	6.38%	5.71%	9.01%	8.32%	6.21%	8.84%
Median			2.41%	6.82%	5.00%	8.76%	7.86%	6.85%	9.17%

Mr. Coleman's Constant Growth DCF Analysis - Updated Zacks and First Call Growth Rates, Removing NWN

Single State DCF Model Using Value Line Forecast Growth Rates

Company	Average Stock Price	Annualized Dividend	Dividend Yield	Projected 3-5 Year EPS Growth	Projected 3-5 Year Dividend Growth	Estimated COE EPS Growth	Estimated COE Dividend Growth	75-25 Wtd. Growth	Estimated Cost of Equity Wtd. Growth
Atmos Energy Corporation	$110.90	$2.10	1.89%	7.50%	7.00%	9.54%	9.03%	7.38%	9.41%
Chesapeake Utilities Corporation	$94.21	$1.55	1.65%	9.00%	9.00%	10.79%	10.79%	9.00%	10.79%
Northwest Natural Holding Company	$71.13	$1.93	2.71%		2.50%		5.28%		
ONE Gas, Inc.	$92.19	$2.00	2.17%	8.00%	8.50%	10.34%	10.85%	8.13%	10.47%
South Jersey Industries, Inc.	$32.32	$1.20	3.71%	10.50%	4.00%	14.60%	7.86%	8.88%	12.92%
Spire Inc.	$85.11	$2.37	2.78%	5.50%	4.00%	8.44%	6.90%	5.13%	8.05%
Southwest Gas Corporation	$90.28	$2.18	2.41%	9.00%	5.00%	11.63%	7.54%	8.00%	10.61%
Average			2.48%	8.25%	5.71%	10.89%	8.32%	7.75%	10.37%
Median			2.41%	8.50%	5.00%	10.57%	7.86%	8.06%	10.54%

Single State DCF Model Using average of Zacks, First Call and Value Line Forecast Growth Rates

Company	Average Stock Price	Annualized Dividend	Dividend Yield	Projected 3-5 Year EPS Growth	Projected 3-5 Year Dividend Growth	Estimated COE EPS Growth	Estimated COE Dividend Growth	75-25 Wtd. Growth	Estimated Cost of Equity Wtd. Growth
Atmos Energy Corporation	$110.90	$2.10	1.89%	7.17%	7.00%	9.20%	9.03%	7.13%	9.15%
Chesapeake Utilities Corporation	$94.21	$1.55	1.65%	7.67%	9.00%	9.44%	10.79%	8.00%	9.78%
Northwest Natural Holding Company	$71.13	$1.93	2.71%	5.61%	2.50%		5.28%	4.84%	
ONE Gas, Inc.	$92.19	$2.00	2.17%	6.37%	8.50%	8.67%	10.85%	6.90%	9.22%
South Jersey Industries, Inc.	$32.32	$1.20	3.71%	7.87%	4.00%	11.87%	7.86%	6.90%	10.87%
Spire Inc.	$85.11	$2.37	2.78%	4.74%	4.00%	7.66%	6.90%	4.56%	7.47%
Southwest Gas Corporation	$90.28	$2.18	2.41%	8.17%	5.00%	10.78%	7.54%	7.38%	9.97%
Average			2.48%	6.80%	5.71%	9.60%	8.32%	6.53%	9.41%
Median			2.41%	7.17%	5.00%	9.32%	7.86%	6.90%	9.50%

Proof Concept: Earnings, Dividends, Book Value and
Stock Price Growth Rate Equivalence in Constant Growth DCF

Line Description	IMPLIED GROWTH RATE AT ALLOWED ROE:	
Input	Dividend Yield	4.50% [1]
Assumes g = Allowed ROE - Div. Yield	Assumed Growth Rate	6.00%
Input	Total Return	10.50% [1]
Input	Payout Ratio	63.59% [2]
Input	Book Value/Share	20 [2]

		0	1	2	3	4	5	6	7	8	9	10	250
BV/S Escalates at Constant Growth g	Book Value/Share	$20.00	$21.20	$22.47	$23.82	$25.25	$26.76	$28.37	$30.07	$31.88	$33.79	$35.82	$ 42,412,738.21
Demonstrating Constant BV/S growth			6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Earnings based on ROE applied to BV/S	Earnings/share	$ 2.10	$ 2.23	$ 2.36	$ 2.50	$ 2.65	$ 2.81	$ 2.98	$ 3.16	$ 3.35	$ 3.55	$ 3.76	$ 4,453,337.51
Demonstrating Constant EPS growth			6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Demonstrating Constant Return Earned based on BV/S and EPS	Allowed ROE	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%	10.50%
Div/S based on EPS and Constant Payout ratio	Dividends/Share	$ 1.34	$ 1.42	$ 1.50	$ 1.59	$ 1.69	$ 1.79	$ 1.89	$ 2.01	$ 2.13	$ 2.26	$ 2.39	$ 2,831,733.40
Demonstrating Constant Div/S growth			6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Retained Earnings based on difference between EPS and Div/S	Earnings retained to book vali	$ 0.76	$ 0.81	$ 0.86	$ 0.91	$ 0.97	$ 1.02	$ 1.08	$ 1.15	$ 1.22	$ 1.29	$ 1.37	$ 1,621,604.11
Demonstrating Constant growth in Retained Earnings			6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Demonstrating Constant Market/Book ratio	Market/Book Ratio	1.573	1.573	1.573	1.573	1.573	1.573	1.573	1.573	1.573	1.573	1.573	1.573
DCF calculation of market price = [Div/S]*[1+g]/[ROE-g]	Market Price	$31.45	$33.34	$35.34	$37.46	$39.71	$42.09	$44.62	$47.30	$50.13	$53.14	$56.33	$ 66,703,053.38
Demonstrating Price Appreciation equals Long Term Growth Rate	Price Appreciation	6.00%	OK	<== Price appreciation should equal long term growth rate									
Demonstrating Constant Price/Earnings Ratio	Price/Earnings	14.98	14.98	14.98	14.98	14.98	14.98	14.98	14.98	14.98	14.98	14.98	14.98
Present Value Factor calculated based upon the current period and the Constant ROE	Present Value Factor		0.9050	0.8190	0.7412	0.6707	0.6070	0.5493	0.4971	0.4499	0.4071	0.3684	0.00

CASE 1	DIVIDENDS IN PERPETUITY											
Present value of Div/S obtained by multiplying nominal Div/S by the Present Value Factor for the period	Present Value Dividend	1.2809	1.2288	1.1787	1.1307	1.0847	1.0405	0.9981	0.9575	0.9185	0.8811	0.00
Total Value of investment sum of all Present Value Dividends in perpetuity (250 instances for demonstration purposes)	Value of Investment	$31.45										

CASE 2	10-YEAR HOLDING PERIOD										
Present value of Div/S obtained by multiplying nominal Div/S by the Present Value Factor for the period	Present Value of Dividend	$ 1.28	$ 1.23	$ 1.18	$ 1.13	$ 1.08	$ 1.04	$ 1.00	$ 0.96	$ 0.92	$ 0.88
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 10th Period (Terminal Value)	Present Value of Stock Price	–	–	–	–	–	–	–	–	–	20.75
Value of dividends = sum of all Present Value Dividends for periods 1-10	Value of Dividends	$10.70									
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 10th Period (Terminal Value)	Value of Stock Price	$20.75									
Total Value of investment sum of all Present Value Dividends for periods 1-10 and Present Value of Stock in period 10 (Terminal Value)	Value of Investment	$31.45									

CASE 3	5-YEAR HOLDING PERIOD					
Present value of Div/S obtained by multiplying nominal Div/S by the Present Value Factor for the period	Present Value of Dividend	$ 1.28	$ 1.23	$ 1.18	$ 1.13	$ 1.08
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 5th Period (Terminal Value)	Present Value of Stock Price	–	–	–	–	25.55
Value of dividends = sum of all Present Value Dividends for periods 1-5	Value of Dividends	$ 5.90				
Present value of Stock Price obtained by multiplying nominal Stock Price by the Present Value Factor for the 5th Period (Terminal Value)	Value of Stock Price	$25.55				
Total Value of investment sum of all Present Value Dividends for periods 1-5 and Present Value of Stock in period 5 (Terminal Value)	Value of Investment	$31.45				

[1] Note, for purposes of this exhibit, these data are illustrative only.
[2] Note: Illustrative only.

Natural Gas Utility Payout Ratios

ATO US Equity Date	TRAIL_12M_DILUTI	EQY_DP	Payout %	CPK US Equity Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %
12/31/1990	0.98	0.7733	0.7890816	12/31/1990	0.6067	0.5678	0.9358826
12/31/1991	0.8	0.8	1	12/31/1991	0.4933	0.5733	1.1621731
12/31/1992	0.9733	0.8267	0.8493784	12/31/1992	0.6733	0.5733	0.8514778
12/31/1993	1.22	0.8533	0.6994262	12/31/1993	0.7333	0.5733	0.7818083
12/30/1994	0.97	0.88	0.9072165	12/30/1994	0.8	0.5867	0.733375
12/29/1995	1.22	0.92	0.7540984	12/29/1995	1.26	0.6	0.4761905
12/31/1996	1.42	0.96	0.6760563	12/31/1996	1.1133	0.62	0.5569029
12/31/1997	0.81	1.005	1.2407407	12/31/1997	0.78	0.6467	0.8291026
12/31/1998	1.84	1.06	0.576087	12/31/1998	0.6933	0.6667	0.9616328
12/31/1999	0.58	1.1	1.8965517	12/31/1999	1.0467	0.6867	0.6560619
12/29/2000	1.14	1.14	1	12/29/2000	0.9333	0.7133	0.7642773
12/31/2001	1.47	1.16	0.7891156	12/31/2001	0.8267	0.73	0.8830289
12/31/2002	1.45	1.18	0.8137931	12/31/2002	0.4533	0.7333	1.6176925
12/31/2003	1.54	1.2	0.7792208	12/31/2003	1.0867	0.7333	0.6747953
12/31/2004	1.58	1.22	0.7721519	12/31/2004	1.08	0.7467	0.6913889
12/30/2005	1.72	1.24	0.7209302	12/30/2005	1.18	0.76	0.6440678
12/29/2006	1.82	1.26	0.6923077	12/29/2006	1.1467	0.7733	0.6743699
12/31/2007	1.92	1.28	0.6666667	12/31/2007	1.2933	0.7867	0.6082889
12/31/2008	2	1.3	0.65	12/31/2008	1.32	0.8067	0.6111364
12/31/2009	2.08	1.32	0.6346154	12/31/2009	1.4333	0.8333	0.5813856
12/31/2010	2.2	1.34	0.6090909	12/31/2010	1.82	0.87	0.478022
12/30/2011	2.27	1.36	0.5991189	12/30/2011	1.9133	0.91	0.475618
12/31/2012	2.37	1.38	0.5822785	12/31/2012	1.9933	0.96	0.4816134
12/31/2013	2.64	1.4	0.530303	12/31/2013	2.26	1.0133	0.4483628
12/31/2014	2.96	1.48	0.5	12/31/2014	2.47	1.067	0.4319838
12/31/2015	3.09	1.56	0.5048544	12/31/2015	2.72	1.1325	0.4163603
12/30/2016	3.38	1.68	0.4970414	12/30/2016	2.86	1.2025	0.4204545
12/29/2017	3.73	1.8	0.4825737	12/29/2017	3.55	1.28	0.3605634
12/31/2018	5.43	1.94	0.3572744	12/31/2018	3.45	1.435	0.415942
		Median	0.6923077			Median	0.6440678

Gas Universe Average Payout Ratio	63.59%

Current Payout Ratios		Projected Payout Ratios 2022-2024
Atmos Energy Corporation	ATO	48.00%
Chesapeake Utilities Corporation	CPK	43.00%
New Jersey Resources Corporation	NJR	53.00%
Northwest Natural Gas Company	NWN	63.00%
ONE Gas, Inc.	OGS	56.00%
South Jersey Industries, Inc.	SJI	60.00%
Spire Inc	SR	53.00%
Southwest Gas Corporation	SWX	45.00%
Updated Proxy Group		54.00%
Source: Bloomberg Professional Services, Value Line		9.59%

NJR US Equity				NI US Equity			
Date	TRAIL_12M_DILUTED_E	EQY_DPS	Payout %	Date	TRAIL_12M_DILUTED_E	EQY_DP:	Payout %
12/31/1990	0.2156	0.32	1.48423006	12/31/1990	0.5905	0.52	0.8806097
12/31/1991	0.1844	0.3333	1.80748373	12/31/1991	0.97	0.58	0.5979381
12/31/1992	0.3644	0.3378	0.92700329	12/31/1992	1	0.62	0.62
12/31/1993	0.3822	0.3378	0.88383046	12/31/1993	1.18	0.66	0.559322
12/30/1994	0.4289	0.3378	0.78759618	12/30/1994	1.24	0.72	0.5806452
12/29/1995	0.3133	0.3378	1.07819981	12/29/1995	1.36	0.78	0.5735294
12/31/1996	0.4578	0.3444	0.75229358	12/31/1996	1.44	0.84	0.5833333
12/31/1997	0.4911	0.3556	0.72408878	12/31/1997	1.53	0.9	0.5882353
12/31/1998	0.5178	0.3644	0.70374662	12/31/1998	1.59	0.96	0.6037736
12/31/1999	0.5533	0.3733	0.6746792	12/31/1999	1.27	1.035	0.8149606
12/29/2000	0.6089	0.3822	0.62768928	12/29/2000	1.11	1.035	
12/31/2001	0.6511	0.3911	0.60067578	12/31/2001	1.03	1.16	1.1262136
12/31/2002	0.6967	0.4	0.57413521	12/31/2002	1.75	1.16	0.6628571
12/31/2003	0.7933	0.4133	0.52098828	12/31/2003	0.33	1.1	3.3333333
12/31/2004	0.85	0.4333	0.50976471	12/31/2004	1.64	0.92	0.5609756
12/30/2005	0.9033	0.4533	0.50182664	12/30/2005	1.12	0.92	0.8214286
12/29/2006	2.6333	0.48	0.18228079	12/29/2006	1.03	0.92	0.8932039
12/31/2007	0.7767	0.5067	0.65237543	12/31/2007	1.17	0.92	0.7863248
12/31/2008	1.295	0.555	0.42857143	12/31/2008	0.29	0.92	3.1724138
12/31/2009	0.32	0.62	1.9375	12/31/2009	0.79	0.92	1.164557
12/31/2010	1.41	0.68	0.4822695	12/31/2010	1.01	0.92	0.9108911
12/30/2011	1.22	0.72	0.59016393	12/30/2011	1.03	0.92	0.8932039
12/31/2012	1.115	0.76	0.68161435	12/31/2012	1.39	0.94	0.676259
12/31/2013	1.375	0.81	0.58909091	12/31/2013	1.7	0.98	0.5764706
12/31/2014	1.67	0.855	0.51197605	12/31/2014	1.67	1.02	0.6107784
12/31/2015	2.1	0.915	0.43571429	12/31/2015	0.8959	0.83	0.9264427
12/30/2016	1.52	0.975	0.64144737	12/30/2016	1.02	0.64	0.627451
12/29/2017	1.52	1.0375	0.68256579	12/29/2017	0.39	0.7	1.7948718
12/31/2018	2.64	1.11	0.42045455	12/31/2018	-0.18	0.78	-4.3333333
		Median	0.64144737			Median	0.6695581

NWN US Equity

Date	TRAIL_12M_	EQY_DPS	Payout %
12/31/1990	1.5867	1.1	0.6932627
12/31/1991	0.6733	1.1267	1.6733997
12/31/1992	0.74	1.1467	1.5495946
12/31/1993	1.74	1.1667	0.6705172
12/30/1994	1.6267	1.1733	0.7212762
12/29/1995	1.6133	1.18	0.7314201
12/31/1996	1.94	1.2	0.6185567
12/31/1997	1.76	1.205	0.6846591
12/31/1998	1.02	1.22	1.1960784
12/31/1999	1.7	1.225	0.7205882
12/29/2000	1.88	1.24	0.6595745
12/31/2001	1.88	1.245	0.662234
12/31/2002	1.62	1.26	0.7777778
12/31/2003	1.76	1.27	0.7215909
12/31/2004	1.86	1.299	0.6983871
12/30/2005	2.11	1.32	0.6255924
12/29/2006	2.29	1.39	0.6069869
12/31/2007	2.76	1.44	0.5217391
12/31/2008	2.61	1.52	0.5823755
12/31/2009	2.83	1.6	0.565371
12/31/2010	2.73	1.68	0.6153846
12/30/2011	2.39	1.75	0.7322176
12/31/2012	2.18	1.79	0.8211009
12/31/2013	2.24	1.83	0.8169643
12/31/2014	2.16	1.85	0.8564815
12/31/2015	1.96	1.86	0.9489796
12/30/2016	2.12	1.87	0.8820755
12/29/2017	-1.94	1.88	-0.9690722
12/31/2018	2.24	1.8925	0.8448661
		Median	0.7205882

OGS US Equity

Date	TRAIL_12M_DILUTED_E	EQY_DP:	Payout %
12/31/2013	#N/A N/A	0	
12/31/2014	2.07	0.84	0.4057971
12/31/2015	2.24	1.2	0.5357143
12/30/2016	2.65	1.4	0.5283019
12/29/2017	3.08	1.68	0.5454545
12/31/2018	3.25	1.84	0.5661538
		Median	0.5357143

SJI US Equity

Date	TRAIL_12M_DILUTED_E	EQY_DP:	Payout %
12/31/1990	0.3333	0.3505	1.0516052
12/31/1991	0.3186	0.3529	1.1076585
12/31/1992	0.3946	0.3529	0.8943234
12/31/1993	0.3975	0.3582	0.9011321
12/30/1994	0.3025	0.36	1.1900826
12/29/1995	0.4125	0.36	0.8727273
12/31/1996	0.7105	0.36	0.5066854
12/31/1997	0.367	0.36	0.9809264
12/31/1998	0.255	0.36	1.4117647
12/31/1999	0.4975	0.36	0.7236181
12/29/2000	0.53	0.365	0.6886792
12/31/2001	0.565	0.37	0.6548673
12/31/2002	0.5975	0.375	0.6276151
12/31/2003	0.66	0.39	0.5909091
12/31/2004	0.765	0.41	0.5359477
12/30/2005	0.69	0.43	0.6231884
12/29/2006	1.22	0.46	0.3770492
12/31/2007	1.05	0.505	0.4809524
12/31/2008	1.29	0.555	0.4302326
12/31/2009	0.97	0.61	0.628866
12/31/2010	1.11	0.68	0.6126126
12/30/2011	1.485	0.75	0.5050505
12/31/2012	1.485	0.825	0.5555556
12/31/2013	1.275	0.9	0.7058824
12/31/2014	1.46	0.96	0.6575342
12/31/2015	1.52	1.02	0.6710526
12/30/2016	1.56	1.07	0.6858974
12/29/2017	-0.04	1.1	-27.5
12/31/2018	0.21	1.13	5.3809524
		Median	0.6575342

SWX US Equity

Date	TRAIL_12M_DILUTED_E	EQY_DP:	Payout %
12/31/1992	0.81	0.7	0.86419753
12/31/1993	0.71	0.74	1.04225352
12/30/1994	1.22	0.8	0.6557377
12/29/1995	-0.66	0.82	-1.2424242
12/31/1996	0.25	0.82	3.28
12/31/1997	0.25	0.82	3.28
12/31/1998	1.65	0.82	0.4969697
12/31/1999	1.27	0.82	0.64566929
12/29/2000	1.21	0.82	0.67768595
12/31/2001	1.15	0.82	0.71304348
12/31/2002	1.32	0.82	0.62121212
12/31/2003	1.13	0.82	0.72566372
12/31/2004	1.6	0.82	0.5125
12/30/2005	1.14	0.82	0.71929825
12/29/2006	2.05	0.82	0.4
12/31/2007	1.95	0.86	0.44102564
12/31/2008	1.39	0.9	0.64748201
12/31/2009	1.94	0.95	0.48969072
12/31/2010	2.27	1	0.44052863
12/30/2011	2.43	1.06	0.43621399
12/31/2012	2.86	1.18	0.41258741
12/31/2013	3.11	1.32	0.4244373
12/31/2014	3.01	1.46	0.48504983
12/31/2015	2.92	1.62	0.55479452
12/30/2016	3.18	1.8	0.56603774
12/29/2017	4.04	2.475	0.61262376
12/31/2018	3.68	2.08	0.56521739
		Median	0.56603774

SR US Equity

Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %
12/31/1990	1.185	1.18	0.9957806
12/31/1991	1.28	1.2	0.9375
12/31/1992	1.165	1.2	1.0300429
12/31/1993	1.61	1.215	0.7546584
12/30/1994	1.42	1.22	0.8591549
12/29/1995	1.27	1.24	0.976378
12/31/1996	1.87	1.26	0.6737968
12/31/1997	1.84	1.3	0.7065217
12/31/1998	1.58	1.32	0.835443
12/31/1999	1.43	1.34	0.9370629
12/29/2000	1.37	1.34	0.9781022
12/31/2001	1.61	1.34	0.8322981
12/31/2002	1.18	1.34	1.1355932
12/31/2003	1.82	1.34	0.7362637
12/31/2004	1.82	1.355	0.7445055
12/30/2005	1.9	1.375	0.7236842
12/29/2006	2.3	1.41	0.6130435
12/31/2007	2.31	1.46	0.6320346
12/31/2008	3.58	1.5	0.4189944
12/31/2009	2.92	1.54	0.5273973
12/31/2010	2.43	1.58	0.6502058
12/30/2011	2.86	1.62	0.5664336
12/31/2012	2.79	1.66	0.5949821
12/31/2013	2.02	1.7	0.8415842
12/31/2014	2.35	1.76	0.7489362
12/31/2015	3.16	1.84	0.5822785
12/30/2016	3.24	1.96	0.6049383
12/29/2017	3.43	2.1	0.6122449
12/31/2018	4.33	2.25	0.5196305
		Median	0.7362637

UGI US Equity

Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %
12/31/1992	0.2444	0.2822	1.1546645
12/31/1993	0.2089	0.2933	1.4040211
12/30/1994	0.3111	0.3022	0.9713918
12/29/1995	-0.0578	0.2322	-4.017301
12/31/1996	0.2644	0.3133	1.184947
12/31/1997	0.3489	0.3178	0.9108627
12/31/1998	0.2711	0.3222	1.1884913
12/31/1999	0.3867	0.3267	0.844841
12/29/2000	0.3644	0.3389	0.930022
12/31/2001	0.4578	0.35	0.764526
12/31/2004	0.7667	0.39	0.5086735
12/30/2005	1.18	0.4333	0.3672034
12/29/2006	1.1	0.46	0.4181818
12/31/2007	1.26	0.482	0.3825397
12/31/2008	1.3267	0.5033	0.3793623
12/31/2009	1.5733	0.5233	0.332613
12/31/2010	1.5733	0.6	0.381364
12/30/2011	1.3733	0.68	0.4951576
12/31/2012	1.2333	0.7067	0.5730155
12/31/2013	1.6067	0.7367	0.4585175
12/31/2014	1.92	0.791	0.4119792
12/31/2015	1.6	0.89	0.55625
12/30/2016	2.08	0.93	0.4471154
12/29/2017	2.46	0.975	0.3963415
12/31/2018	4.06	1.02	0.2512315
		Median	0.4951576

Mr. Lawton's Multi-Stage DCF Model - 150 Year Cash Flow

	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX	Average	Median
Stock Price	$110.76	$94.90	$45.04	$71.34	$93.87	$32.26	$85.62	$90.22		
Dividend	$2.24	$1.68	$1.21	$1.97	$2.16	$1.25	$2.46	$2.30		
Value Line DPS 2021-	$2.70	$2.15	$1.33	$2.20	$2.65	$1.40	$2.67	$2.60		
Stage 1 Growth	6.85%	9.33%	3.31%	3.89%	7.56%	4.00%	2.85%	4.35%		
Long Term Growth	12.38%	12.09%	5.80%	7.90%	5.81%	8.41%	5.61%	6.60%		
Cost of Equity (IRR)	13.87%	13.43%	8.22%	10.28%	8.10%	11.81%	8.20%	8.88%	10.35%	9.58%
End of Year Dividends: Cost of Equity (XIRR)	13.86%	13.42%	8.22%	10.27%	8.09%	11.80%	8.19%	8.88%	10.34%	9.57%
Mid-Year Dividends: Cost of Equity (XIRR)	14.00%	13.56%	8.33%	10.41%	8.20%	12.01%	8.31%	8.99%	10.48%	9.70%
									0.14%	0.13%
EOY Excl <7.50%, >12.50%									9.24%	8.55%
Mid-Yr Excl <7.50%, >12.50%									9.37%	8.66%
									0.13%	0.11%

Mid-Year	End-of-Year	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX
1/1/2020	1/1/2020	($110.76)	($94.90)	($45.04)	($71.34)	($93.87)	($32.26)	($85.62)	($90.22)
7/1/2020	12/31/2020	$ 2.24	$ 1.68	$ 1.21	$ 1.97	$ 2.16	$ 1.25	$ 2.46	$ 2.30
7/1/2021	12/31/2021	$ 2.39	$ 1.84	$ 1.25	$ 2.05	$ 2.32	$ 1.30	$ 2.53	$ 2.40
7/1/2022	12/31/2022	$ 2.55	$ 1.99	$ 1.29	$ 2.12	$ 2.49	$ 1.35	$ 2.60	$ 2.50
7/1/2023	12/31/2023	$ 2.70	$ 2.15	$ 1.33	$ 2.20	$ 2.65	$ 1.40	$ 2.67	$ 2.60
7/1/2024	12/31/2024	$ 3.03	$ 2.41	$ 1.41	$ 2.37	$ 2.80	$ 1.52	$ 2.82	$ 2.77
7/1/2025	12/31/2025	$ 3.41	$ 2.70	$ 1.49	$ 2.56	$ 2.97	$ 1.65	$ 2.98	$ 2.95
7/1/2026	12/31/2026	$ 3.83	$ 3.03	$ 1.58	$ 2.76	$ 3.14	$ 1.78	$ 3.14	$ 3.15
7/1/2027	12/31/2027	$ 4.31	$ 3.39	$ 1.67	$ 2.98	$ 3.32	$ 1.93	$ 3.32	$ 3.36
7/1/2028	12/31/2028	$ 4.84	$ 3.80	$ 1.76	$ 3.22	$ 3.52	$ 2.10	$ 3.51	$ 3.58
7/1/2029	12/31/2029	$ 5.44	$ 4.26	$ 1.87	$ 3.47	$ 3.72	$ 2.27	$ 3.70	$ 3.81
7/1/2030	12/31/2030	$ 6.11	$ 4.78	$ 1.97	$ 3.75	$ 3.94	$ 2.46	$ 3.91	$ 4.07
7/1/2031	12/31/2031	$ 6.87	$ 5.36	$ 2.09	$ 4.04	$ 4.16	$ 2.67	$ 4.13	$ 4.33
7/1/2032	12/31/2032	$ 7.72	$ 6.01	$ 2.21	$ 4.36	$ 4.41	$ 2.90	$ 4.36	$ 4.62
7/1/2033	12/31/2033	$ 8.68	$ 6.73	$ 2.34	$ 4.71	$ 4.66	$ 3.14	$ 4.61	$ 4.92
7/1/2034	12/31/2034	$ 9.75	$ 7.55	$ 2.47	$ 5.08	$ 4.93	$ 3.40	$ 4.87	$ 5.25
7/1/2035	12/31/2035	$ 10.96	$ 8.46	$ 2.62	$ 5.48	$ 5.22	$ 3.69	$ 5.14	$ 5.60
7/1/2036	12/31/2036	$ 12.31	$ 9.48	$ 2.77	$ 5.91	$ 5.53	$ 4.00	$ 5.43	$ 5.96
7/1/2037	12/31/2037	$ 13.84	$ 10.63	$ 2.93	$ 6.38	$ 5.85	$ 4.33	$ 5.73	$ 6.36
7/1/2038	12/31/2038	$ 15.55	$ 11.91	$ 3.10	$ 6.89	$ 6.19	$ 4.70	$ 6.05	$ 6.78
7/1/2039	12/31/2039	$ 17.48	$ 13.35	$ 3.28	$ 7.43	$ 6.55	$ 5.09	$ 6.39	$ 7.22
7/1/2040	12/31/2040	$ 19.64	$ 14.96	$ 3.47	$ 8.02	$ 6.93	$ 5.52	$ 6.75	$ 7.70
7/1/2041	12/31/2041	$ 22.07	$ 16.77	$ 3.67	$ 8.65	$ 7.33	$ 5.99	$ 7.13	$ 8.21
7/1/2042	12/31/2042	$ 24.81	$ 18.80	$ 3.88	$ 9.34	$ 7.76	$ 6.49	$ 7.53	$ 8.75
7/1/2043	12/31/2043	$ 27.88	$ 21.07	$ 4.11	$ 10.07	$ 8.21	$ 7.04	$ 7.95	$ 9.33
7/1/2044	12/31/2044	$ 31.33	$ 23.62	$ 4.35	$ 10.87	$ 8.68	$ 7.63	$ 8.40	$ 9.94
7/1/2045	12/31/2045	$ 35.21	$ 26.48	$ 4.60	$ 11.73	$ 9.19	$ 8.27	$ 8.87	$ 10.60
7/1/2046	12/31/2046	$ 39.57	$ 29.68	$ 4.87	$ 12.66	$ 9.72	$ 8.96	$ 9.37	$ 11.30
7/1/2047	12/31/2047	$ 44.47	$ 33.27	$ 5.15	$ 13.66	$ 10.29	$ 9.72	$ 9.89	$ 12.04
7/1/2048	12/31/2048	$ 49.97	$ 37.29	$ 5.45	$ 14.74	$ 10.89	$ 10.54	$ 10.45	$ 12.84
7/1/2049	12/31/2049	$ 56.16	$ 41.80	$ 5.77	$ 15.90	$ 11.52	$ 11.42	$ 11.03	$ 13.68

Mid-Year	End-of-Year	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX
7/1/2050	12/31/2050	$ 63.11	$ 46.85	$ 6.10	$ 17.16	$ 12.19	$ 12.38	$ 11.65	$ 14.59
7/1/2051	12/31/2051	$ 70.93	$ 52.52	$ 6.45	$ 18.51	$ 12.90	$ 13.42	$ 12.31	$ 15.55
7/1/2052	12/31/2052	$ 79.71	$ 58.87	$ 6.83	$ 19.98	$ 13.66	$ 14.55	$ 13.00	$ 16.57

Mid-Year	End-of-Year	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX
7/1/2053	12/31/2053	$ 89.58	$ 65.98	$ 7.23	$ 21.56	$ 14.44	$ 15.77	$ 13.73	$ 17.67
7/1/2054	12/31/2054	$ 100.67	$ 73.96	$ 7.65	$ 23.26	$ 15.28	$ 17.10	$ 14.50	$ 18.83
7/1/2055	12/31/2055	$ 113.13	$ 82.90	$ 8.09	$ 25.10	$ 16.17	$ 18.54	$ 15.31	$ 20.07
7/1/2056	12/31/2056	$ 127.14	$ 92.92	$ 8.56	$ 27.08	$ 17.11	$ 20.10	$ 16.17	$ 21.40
7/1/2057	12/31/2057	$ 142.88	$ 104.16	$ 9.05	$ 29.22	$ 18.11	$ 21.79	$ 17.08	$ 22.81
7/1/2058	12/31/2058	$ 160.57	$ 116.75	$ 9.58	$ 31.53	$ 19.16	$ 23.62	$ 18.03	$ 24.31
7/1/2059	12/31/2059	$ 180.45	$ 130.87	$ 10.14	$ 34.02	$ 20.27	$ 25.61	$ 19.04	$ 25.92
7/1/2060	12/31/2060	$ 202.79	$ 146.69	$ 10.72	$ 36.71	$ 21.45	$ 27.76	$ 20.11	$ 27.63
7/1/2061	12/31/2061	$ 227.90	$ 164.42	$ 11.35	$ 39.61	$ 22.70	$ 30.09	$ 21.24	$ 29.45
7/1/2062	12/31/2062	$ 256.12	$ 184.30	$ 12.01	$ 42.75	$ 24.02	$ 32.62	$ 22.43	$ 31.39
7/1/2063	12/31/2063	$ 287.83	$ 206.58	$ 12.70	$ 46.12	$ 25.41	$ 35.37	$ 23.69	$ 33.46
7/1/2064	12/31/2064	$ 323.47	$ 231.56	$ 13.44	$ 49.77	$ 26.89	$ 38.34	$ 25.02	$ 35.67
7/1/2065	12/31/2065	$ 363.52	$ 259.55	$ 14.22	$ 53.70	$ 28.46	$ 41.56	$ 26.42	$ 38.02
7/1/2066	12/31/2066	$ 408.53	$ 290.93	$ 15.05	$ 57.95	$ 30.11	$ 45.06	$ 27.91	$ 40.53
7/1/2067	12/31/2067	$ 459.11	$ 326.11	$ 15.92	$ 62.53	$ 31.86	$ 48.85	$ 29.47	$ 43.20
7/1/2068	12/31/2068	$ 515.95	$ 365.53	$ 16.84	$ 67.47	$ 33.71	$ 52.95	$ 31.12	$ 46.05
7/1/2069	12/31/2069	$ 579.84	$ 409.73	$ 17.82	$ 72.80	$ 35.67	$ 57.40	$ 32.87	$ 49.09
7/1/2070	12/31/2070	$ 651.63	$ 459.26	$ 18.85	$ 78.56	$ 37.75	$ 62.23	$ 34.71	$ 52.33
7/1/2071	12/31/2071	$ 732.31	$ 514.79	$ 19.95	$ 84.77	$ 39.94	$ 67.46	$ 36.66	$ 55.78
7/1/2072	12/31/2072	$ 822.98	$ 577.02	$ 21.11	$ 91.47	$ 42.27	$ 73.14	$ 38.72	$ 59.46
7/1/2073	12/31/2073	$ 924.88	$ 646.79	$ 22.33	$ 98.70	$ 44.72	$ 79.28	$ 40.89	$ 63.38
7/1/2074	12/31/2074	$ 1,039.39	$ 724.98	$ 23.63	$ 106.50	$ 47.33	$ 85.95	$ 43.18	$ 67.56
7/1/2075	12/31/2075	$ 1,168.08	$ 812.63	$ 25.00	$ 114.92	$ 50.08	$ 93.18	$ 45.60	$ 72.01
7/1/2076	12/31/2076	$ 1,312.70	$ 910.88	$ 26.45	$ 124.00	$ 52.99	$ 101.01	$ 48.16	$ 76.76
7/1/2077	12/31/2077	$ 1,475.24	$ 1,021.00	$ 27.98	$ 133.80	$ 56.07	$ 109.51	$ 50.86	$ 81.83
7/1/2078	12/31/2078	$ 1,657.89	$ 1,144.44	$ 29.61	$ 144.38	$ 59.33	$ 118.71	$ 53.72	$ 87.22
7/1/2079	12/31/2079	$ 1,863.16	$ 1,282.80	$ 31.33	$ 155.79	$ 62.78	$ 128.69	$ 56.73	$ 92.98
7/1/2080	12/31/2080	$ 2,093.85	$ 1,437.89	$ 33.14	$ 168.10	$ 66.43	$ 139.51	$ 59.91	$ 99.11
7/1/2081	12/31/2081	$ 2,353.09	$ 1,611.73	$ 35.07	$ 181.39	$ 70.29	$ 151.24	$ 63.27	$ 105.65
7/1/2082	12/31/2082	$ 2,644.44	$ 1,806.59	$ 37.10	$ 195.72	$ 74.38	$ 163.96	$ 66.82	$ 112.61
7/1/2083	12/31/2083	$ 2,971.86	$ 2,025.00	$ 39.26	$ 211.19	$ 78.71	$ 177.75	$ 70.57	$ 120.04
7/1/2084	12/31/2084	$ 3,339.81	$ 2,269.82	$ 41.54	$ 227.89	$ 83.28	$ 192.69	$ 74.53	$ 127.96
7/1/2085	12/31/2085	$ 3,753.33	$ 2,544.24	$ 43.95	$ 245.90	$ 88.12	$ 208.89	$ 78.71	$ 136.40
7/1/2086	12/31/2086	$ 4,218.04	$ 2,851.84	$ 46.50	$ 265.33	$ 93.25	$ 226.46	$ 83.13	$ 145.39
7/1/2087	12/31/2087	$ 4,740.30	$ 3,196.62	$ 49.19	$ 286.31	$ 98.67	$ 245.50	$ 87.79	$ 154.98
7/1/2088	12/31/2088	$ 5,327.21	$ 3,583.09	$ 52.05	$ 308.94	$ 104.41	$ 266.14	$ 92.71	$ 165.21
7/1/2089	12/31/2089	$ 5,986.79	$ 4,016.28	$ 55.07	$ 333.36	$ 110.48	$ 288.52	$ 97.91	$ 176.10
7/1/2090	12/31/2090	$ 6,728.04	$ 4,501.84	$ 58.27	$ 359.70	$ 116.90	$ 312.77	$ 103.40	$ 187.72
7/1/2091	12/31/2091	$ 7,561.07	$ 5,046.11	$ 61.65	$ 388.13	$ 123.70	$ 339.07	$ 109.21	$ 200.10
7/1/2092	12/31/2092	$ 8,497.23	$ 5,656.18	$ 65.23	$ 418.81	$ 130.89	$ 367.58	$ 115.33	$ 213.30
7/1/2093	12/31/2093	$ 9,549.31	$ 6,340.00	$ 69.01	$ 451.92	$ 138.51	$ 398.49	$ 121.80	$ 227.36
7/1/2094	12/31/2094	$ 10,731.64	$ 7,106.50	$ 73.02	$ 487.64	$ 146.56	$ 431.99	$ 128.63	$ 242.36
7/1/2095	12/31/2095	$ 12,060.37	$ 7,965.67	$ 77.26	$ 526.18	$ 155.08	$ 468.31	$ 135.85	$ 258.35
7/1/2096	12/31/2096	$ 13,553.61	$ 8,928.71	$ 81.74	$ 567.77	$ 164.10	$ 507.69	$ 143.47	$ 275.39
7/1/2097	12/31/2097	$ 15,231.74	$ 10,008.19	$ 86.48	$ 612.64	$ 173.64	$ 550.38	$ 151.51	$ 293.55
7/1/2098	12/31/2098	$ 17,117.64	$ 11,218.16	$ 91.50	$ 661.07	$ 183.74	$ 596.65	$ 160.01	$ 312.91
7/1/2099	12/31/2099	$ 19,237.04	$ 12,574.43	$ 96.81	$ 713.32	$ 194.42	$ 646.82	$ 168.99	$ 333.55

Mid-Year	End-of-Year	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX
7/1/2100	12/31/2100	$ 21,618.85	$ 14,094.66	$ 102.43	$ 769.70	$ 205.73	$ 701.20	$ 178.47	$ 355.55
7/1/2101	12/31/2101	$ 24,295.57	$ 15,798.69	$ 108.38	$ 830.54	$ 217.69	$ 760.16	$ 188.48	$ 379.00
7/1/2102	12/31/2102	$ 27,303.70	$ 17,708.74	$ 114.67	$ 896.18	$ 230.35	$ 824.07	$ 199.05	$ 403.99
7/1/2103	12/31/2103	$ 30,684.27	$ 19,849.70	$ 121.32	$ 967.02	$ 243.74	$ 893.36	$ 210.22	$ 430.64
7/1/2104	12/31/2104	$ 34,483.41	$ 22,249.51	$ 128.36	$ 1,043.45	$ 257.91	$ 968.47	$ 222.01	$ 459.04
7/1/2105	12/31/2105	$ 38,752.94	$ 24,939.45	$ 135.81	$ 1,125.93	$ 272.91	$ 1,049.90	$ 234.46	$ 489.32
7/1/2106	12/31/2106	$ 43,551.09	$ 27,954.60	$ 143.69	$ 1,214.92	$ 288.78	$ 1,138.18	$ 247.61	$ 521.59
7/1/2107	12/31/2107	$ 48,943.32	$ 31,334.28	$ 152.03	$ 1,310.95	$ 305.57	$ 1,233.88	$ 261.50	$ 556.00
7/1/2108	12/31/2108	$ 55,003.19	$ 35,122.57	$ 160.86	$ 1,414.56	$ 323.34	$ 1,337.62	$ 276.17	$ 592.67
7/1/2109	12/31/2109	$ 61,813.35	$ 39,368.85	$ 170.19	$ 1,526.37	$ 342.14	$ 1,450.09	$ 291.66	$ 631.76
7/1/2110	12/31/2110	$ 69,466.70	$ 44,128.50	$ 180.07	$ 1,647.02	$ 362.03	$ 1,572.01	$ 308.02	$ 673.43
7/1/2111	12/31/2111	$ 78,067.64	$ 49,463.58	$ 190.52	$ 1,777.20	$ 383.08	$ 1,704.18	$ 325.30	$ 717.84
7/1/2112	12/31/2112	$ 87,733.50	$ 55,443.68	$ 201.58	$ 1,917.67	$ 405.36	$ 1,847.47	$ 343.54	$ 765.19
7/1/2113	12/31/2113	$ 98,596.13	$ 62,146.75	$ 213.28	$ 2,069.24	$ 428.93	$ 2,002.81	$ 362.81	$ 815.66
7/1/2114	12/31/2114	$ 110,803.70	$ 69,660.23	$ 225.66	$ 2,232.79	$ 453.87	$ 2,171.20	$ 383.17	$ 869.46
7/1/2115	12/31/2115	$ 124,522.74	$ 78,082.07	$ 238.75	$ 2,409.27	$ 480.26	$ 2,353.75	$ 404.66	$ 926.80
7/1/2116	12/31/2116	$ 139,940.39	$ 87,522.11	$ 252.61	$ 2,599.70	$ 508.19	$ 2,551.66	$ 427.36	$ 987.93
7/1/2117	12/31/2117	$ 157,266.95	$ 98,103.44	$ 267.27	$ 2,805.18	$ 537.74	$ 2,766.20	$ 451.33	$ 1,053.09
7/1/2118	12/31/2118	$ 176,738.79	$ 109,964.04	$ 282.78	$ 3,026.91	$ 569.01	$ 2,998.78	$ 476.64	$ 1,122.55
7/1/2119	12/31/2119	$ 198,621.51	$ 123,258.57	$ 299.20	$ 3,266.15	$ 602.09	$ 3,250.92	$ 503.38	$ 1,196.59
7/1/2120	12/31/2120	$ 223,213.61	$ 138,160.39	$ 316.56	$ 3,524.31	$ 637.10	$ 3,524.26	$ 531.62	$ 1,275.51
7/1/2121	12/31/2121	$ 250,850.56	$ 154,863.84	$ 334.93	$ 3,802.87	$ 674.15	$ 3,820.57	$ 561.44	$ 1,359.63
7/1/2122	12/31/2122	$ 281,909.35	$ 173,586.70	$ 354.37	$ 4,103.45	$ 713.35	$ 4,141.81	$ 592.93	$ 1,449.31
7/1/2123	12/31/2123	$ 316,813.64	$ 194,573.14	$ 374.94	$ 4,427.79	$ 754.83	$ 4,490.05	$ 626.19	$ 1,544.90
7/1/2124	12/31/2124	$ 356,039.58	$ 218,096.82	$ 396.70	$ 4,777.77	$ 798.72	$ 4,867.57	$ 661.31	$ 1,646.80
7/1/2125	12/31/2125	$ 400,122.23	$ 244,464.49	$ 419.72	$ 5,155.40	$ 845.16	$ 5,276.83	$ 698.41	$ 1,755.41
7/1/2126	12/31/2126	$ 449,662.92	$ 274,019.98	$ 444.08	$ 5,562.89	$ 894.30	$ 5,720.51	$ 737.58	$ 1,871.19
7/1/2127	12/31/2127	$ 505,337.45	$ 307,148.70	$ 469.85	$ 6,002.58	$ 946.30	$ 6,201.49	$ 778.95	$ 1,994.61
7/1/2128	12/31/2128	$ 567,905.25	$ 344,282.64	$ 497.12	$ 6,477.02	$ 1,001.33	$ 6,722.91	$ 822.65	$ 2,126.17
7/1/2129	12/31/2129	$ 638,219.82	$ 385,906.03	$ 525.98	$ 6,988.97	$ 1,059.55	$ 7,288.17	$ 868.79	$ 2,266.40
7/1/2130	12/31/2130	$ 717,240.30	$ 432,561.65	$ 556.50	$ 7,541.38	$ 1,121.16	$ 7,900.96	$ 917.52	$ 2,415.88
7/1/2131	12/31/2131	$ 806,044.62	$ 484,857.87	$ 588.80	$ 8,137.45	$ 1,186.35	$ 8,565.27	$ 968.99	$ 2,575.22
7/1/2132	12/31/2132	$ 905,844.16	$ 543,476.66	$ 622.97	$ 8,780.64	$ 1,255.34	$ 9,285.43	$ 1,023.34	$ 2,745.07
7/1/2133	12/31/2133	$ 1,018,000.26	$ 609,182.39	$ 659.13	$ 9,474.66	$ 1,328.33	$ 10,066.15	$ 1,080.75	$ 2,926.13
7/1/2134	12/31/2134	$ 1,144,042.85	$ 682,831.88	$ 697.38	$ 10,223.54	$ 1,405.57	$ 10,912.51	$ 1,141.37	$ 3,119.12
7/1/2135	12/31/2135	$ 1,285,691.26	$ 765,385.50	$ 737.86	$ 11,031.61	$ 1,487.30	$ 11,830.03	$ 1,205.39	$ 3,324.85
7/1/2136	12/31/2136	$ 1,444,877.71	$ 857,919.77	$ 780.68	$ 11,903.55	$ 1,573.78	$ 12,824.69	$ 1,273.00	$ 3,544.14
7/1/2137	12/31/2137	$ 1,623,773.66	$ 961,641.33	$ 825.99	$ 12,844.41	$ 1,665.29	$ 13,902.99	$ 1,344.41	$ 3,777.90
7/1/2138	12/31/2138	$ 1,824,819.42	$ 1,077,902.71	$ 873.93	$ 13,859.64	$ 1,762.12	$ 15,071.95	$ 1,419.82	$ 4,027.08
7/1/2139	12/31/2139	$ 2,050,757.44	$ 1,208,219.97	$ 924.65	$ 14,955.11	$ 1,864.59	$ 16,339.20	$ 1,499.46	$ 4,292.69
7/1/2140	12/31/2140	$ 2,304,669.72	$ 1,354,292.44	$ 978.31	$ 16,137.16	$ 1,973.01	$ 17,712.99	$ 1,583.57	$ 4,575.81
7/1/2141	12/31/2141	$ 2,590,019.88	$ 1,518,024.91	$ 1,035.09	$ 17,412.65	$ 2,087.73	$ 19,202.30	$ 1,672.40	$ 4,877.62
7/1/2142	12/31/2142	$ 2,910,700.35	$ 1,701,552.46	$ 1,095.16	$ 18,788.95	$ 2,209.13	$ 20,816.82	$ 1,766.20	$ 5,199.32
7/1/2143	12/31/2143	$ 3,271,085.53	$ 1,907,268.28	$ 1,158.73	$ 20,274.03	$ 2,337.58	$ 22,567.09	$ 1,865.28	$ 5,542.25
7/1/2144	12/31/2144	$ 3,676,091.40	$ 2,137,854.93	$ 1,225.97	$ 21,876.49	$ 2,473.50	$ 24,464.53	$ 1,969.90	$ 5,907.80

Mid-Year	End-of-Year	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX
7/1/2145	12/31/2145	$ 4,131,242.63	$ 2,396,319.24	$ 1,297.13	$ 23,605.62	$ 2,617.33	$ 26,521.50	$ 2,080.40	$ 6,297.45
7/1/2146	12/31/2146	$ 4,642,747.91	$ 2,686,031.61	$ 1,372.41	$ 25,471.41	$ 2,769.52	$ 28,751.42	$ 2,197.09	$ 6,712.80
7/1/2147	12/31/2147	$ 5,217,584.66	$ 3,010,769.69	$ 1,452.06	$ 27,484.68	$ 2,930.56	$ 31,168.83	$ 2,320.33	$ 7,155.55
7/1/2148	12/31/2148	$ 5,863,594.18	$ 3,374,768.67	$ 1,536.33	$ 29,657.07	$ 3,100.96	$ 33,789.50	$ 2,450.49	$ 7,627.51
7/1/2149	12/31/2149	$ 6,589,588.67	$ 3,782,774.50	$ 1,625.50	$ 32,001.18	$ 3,281.27	$ 36,630.51	$ 2,587.94	$ 8,130.59
7/1/2150	12/31/2150	$ 7,405,471.38	$ 4,240,107.79	$ 1,719.84	$ 34,530.56	$ 3,472.07	$ 39,710.40	$ 2,733.11	$ 8,666.85
7/1/2151	12/31/2151	$ 8,322,371.70	$ 4,752,732.17	$ 1,819.66	$ 37,259.86	$ 3,673.96	$ 43,049.24	$ 2,886.41	$ 9,238.48
7/1/2152	12/31/2152	$ 9,352,797.04	$ 5,327,332.28	$ 1,925.26	$ 40,204.89	$ 3,887.59	$ 46,668.81	$ 3,048.32	$ 9,847.81
7/1/2153	12/31/2153	$ 10,510,803.36	$ 5,971,400.91	$ 2,037.00	$ 43,382.69	$ 4,113.64	$ 50,592.71	$ 3,219.31	$ 10,497.33
7/1/2154	12/31/2154	$ 11,812,186.96	$ 6,693,336.74	$ 2,155.22	$ 46,811.67	$ 4,352.84	$ 54,846.53	$ 3,399.88	$ 11,189.69
7/1/2155	12/31/2155	$ 13,274,699.95	$ 7,502,553.81	$ 2,280.31	$ 50,511.68	$ 4,605.94	$ 59,458.01	$ 3,590.59	$ 11,927.72
7/1/2156	12/31/2156	$ 14,918,292.38	$ 8,409,604.34	$ 2,412.65	$ 54,504.13	$ 4,873.76	$ 64,457.23	$ 3,792.00	$ 12,714.43
7/1/2157	12/31/2157	$ 16,765,384.41	$ 9,426,316.29	$ 2,552.68	$ 58,812.15	$ 5,157.16	$ 69,876.78	$ 4,004.70	$ 13,553.02
7/1/2158	12/31/2158	$ 18,841,172.11	$ 10,565,947.59	$ 2,700.83	$ 63,460.68	$ 5,457.03	$ 75,752.00	$ 4,229.33	$ 14,446.92
7/1/2159	12/31/2159	$ 21,173,971.19	$ 11,843,359.07	$ 2,857.58	$ 68,476.63	$ 5,774.34	$ 82,121.21	$ 4,466.57	$ 15,399.78
7/1/2160	12/31/2160	$ 23,795,603.24	$ 13,275,208.20	$ 3,023.42	$ 73,889.04	$ 6,110.10	$ 89,025.94	$ 4,717.11	$ 16,415.49
7/1/2161	12/31/2161	$ 26,741,829.78	$ 14,880,166.32	$ 3,198.89	$ 79,729.25	$ 6,465.39	$ 96,511.21	$ 4,981.70	$ 17,498.19
7/1/2162	12/31/2162	$ 30,052,840.14	$ 16,679,162.11	$ 3,384.55	$ 86,031.07	$ 6,841.33	$ 104,625.85	$ 5,261.14	$ 18,652.30
7/1/2163	12/31/2163	$ 33,773,799.62	$ 18,695,654.52	$ 3,580.98	$ 92,830.98	$ 7,239.13	$ 113,422.77	$ 5,556.25	$ 19,882.53
7/1/2164	12/31/2164	$ 37,955,465.62	$ 20,955,938.66	$ 3,788.81	$ 100,168.37	$ 7,660.07	$ 122,959.33	$ 5,867.91	$ 21,193.90
7/1/2165	12/31/2165	$ 42,654,880.01	$ 23,489,488.67	$ 4,008.71	$ 108,085.70	$ 8,105.48	$ 133,297.71	$ 6,197.06	$ 22,591.77
7/1/2166	12/31/2166	$ 47,936,147.25	$ 26,329,342.09	$ 4,241.36	$ 116,628.82	$ 8,576.78	$ 144,505.35	$ 6,544.66	$ 24,081.83
7/1/2167	12/31/2167	$ 53,871,308.81	$ 29,512,530.69	$ 4,487.52	$ 125,847.19	$ 9,075.50	$ 156,655.33	$ 6,911.77	$ 25,670.17
7/1/2168	12/31/2168	$ 60,541,325.89	$ 33,080,563.29	$ 4,747.96	$ 135,794.19	$ 9,603.21	$ 169,826.86	$ 7,299.47	$ 27,363.27
7/1/2169	12/31/2169	$ 68,037,183.83	$ 37,079,967.13	$ 5,023.52	$ 146,527.39	$ 10,161.61	$ 184,105.86	$ 7,708.91	$ 29,168.04

Source: Exhibit (OCS-3.8)

Please note that the slight discrepancy (approximately 0.01%) results from cash flows beyond year 150 not included in Mr. Lawton's model, but implicity incorporated in the terminal value

Moody's Sensitivity Analysis [1]
Financial Metrics - As Filed

Company Requested Cost of Capital

Description	Amount	Ratio	Cost Rate	Weighted Cost	Weighted Cost W/ FIT	Return	Return & Taxes
Long Term Debt	$817,296,278	45.00%	4.340%	1.953%	1.953%	$35,470,658	$35,470,658
Common Equity	$998,917,673	55.00%	10.500%	5.775%	7.310%	$104,886,356	$132,767,539
Total Capital	$1,816,213,951	100.00%		7.728%	9.263%	$140,357,014	**$168,238,197**
Rate Base Investment			$1,816,213,951				

Mr. Lawton's Recommendation

Description		Ratio	Cost Rate	Weighted Cost	Weighted Cost W/ FIT	Return	Return & Taxes
Long Term Debt	$817,296,278	45.00%	4.340%	1.953%	1.953%	$35,470,658	$35,470,658
Common Equity	$998,917,673	55.00%	9.100%	5.005%	6.335%	$90,901,508	$115,065,200
Total Capital	$1,816,213,951	100.00%		6.958%	8.288%	$126,372,167	**$150,535,859**
Rate Base Investment			$1,816,213,951				

Description	Company Filed Case	Adjustment	Mr. Lawton's Recommendation
Rate Base Investment	$1,816,213,951	$0	$1,816,213,951
Rate of Return	7.73%		6.96%
Return	$140,357,014	($13,984,847)	$126,372,167
Depreciation / Amortization	$85,423,490	$0	$85,423,490
Current Deferred Income Taxes	$5,817,654	$0	$5,817,654
EBITDA Cash Flow	$196,127,500	($13,984,847)	$182,142,652
Total Debt	$817,296,278	$0	$817,296,278
Total Interest	$35,470,658	$0	$35,470,658
Debt Percentage	45.00%		45.00%

Moody's Financial Metrics Description	Company Filed Case	Mr. Lawton's Recommendation	Moody's "A" Benchmarks [2]
CFO/ Debt (%)	**24.00%**	**22.29%**	**19% - 27%**
CFO-Dividends/Debt (%)	**16.30%**	**15.61%**	**15% - 23%**
Debt Percentage	**45.00%**	**45.00%**	**35% - 45%**

Taxes		
Taxes		
Federal Income Tax	21.00%	
	79.00%	(1 - 21.00%)
Tax Gross-Up Factor	1.266	(1 / 79.00%)

Notes:
[1] Source: Exhibit (OCS-3.11), Page 1.
[2] Source: Moody's Investors Service, Regulated Electric and Gas Utilities Rating Methodology, June 23, 2017, at 22.

Moody's Sensitivity Analysis [1]
Financial Metrics - Minimum Benchmark Test

Company Requested Rate Base

Description	Amount	Ratio	Cost Rate	Weighted Cost	Weighted Cost W/ FIT	Return	Return & Taxes
Long Term Debt	$817,296,278	45.00%	4.340%	1.953%	1.953%	$35,470,658	$35,470,658.46
Common Equity	$998,917,673	55.00%	10.500%	5.775%	7.310%	$104,886,356	$132,767,538.82
Total	$1,816,213,951	100.00%		7.728%	9.263%	$140,357,014	$168,238,197
Rate Base Investment			$1,816,213,951				

Minimum ROE to Maintain "A" Benchmarks

Description		Ratio	Cost Rate	Weighted Cost	Weighted Cost W/ FIT	Return	Return & Taxes
Long Term Debt	$817,296,278	45.00%	4.340%	1.953%	1.953%	$35,470,658	$35,470,658.46
Common Equity	$998,917,673	55.00%	7.850%	4.318%	5.465%	$78,415,037	$99,259,540.93
Total	$1,816,213,951	100.00%		6.271%	7.418%	$113,885,696	$134,730,199
Rate Base Investment			$1,816,213,951				

Description	Company Filed Case	Adjustment	Minimum Benchmark Case
Rate Base Investment	$1,816,213,951	$0	$1,816,213,951
Rate of Return	7.73%		6.27%
Return	$140,357,014	($26,471,318)	$113,885,696
Depreciation / Amortization	$85,423,490	$0	$85,423,490
Current Deferred Income Taxes	$5,817,654	$0	$5,817,654
EBITDA Cash Flow	$196,127,500	($26,471,318)	$169,656,181
Total Debt	$817,296,278	($0)	$817,296,278
Total Interest	$35,470,658	$0	$35,470,658
Debt Percentage	45.00%		45.00%

Moody's Financial Metrics Description	Company Filed Case	Minimum Benchmark of 7.85%	Moody's "A" Benchmarks [2]
CFO/ Debt (%)	24.00%	20.76%	19% - 27%
CFO-Dividends/Debt (%)	16.30%	15.00%	15% - 23%
Debt Percentage	45.00%	45.00%	35% - 45%

Taxes		
Taxes		
Federal Income Tax	21.00%	
	79.00%	(1 - 21.00%)
Tax Gross-Up Factor	1.266	(1 / 79.00%)

Notes:
[1] Source: Exhibit (OCS-3.11), Page 1.
[2] Source: Moody's Investors Service, Regulated Electric and Gas Utilities Rating Methodology, June 23, 2017, at 22.

DEU Exhibit 2.01 with Mr. Lawton's Outlier Screens Applied (Excluding ROEs < 7.50% or >12.50%)
30 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Retention Growth Estimate	[9] Average Earnings Growth	[10] Low ROE	[11] Mean ROE	[12] High ROE	midpoint
Atmos Energy Corporation	ATO	$2.10	$101.11	2.08%	2.16%	6.50%	6.45%	7.50%	10.09%	7.64%	8.59%	9.79%	12.27%	
Chesapeake Utilities Corporation	CPK	$1.62	$92.44	1.75%	1.82%	6.00%	6.00%	9.00%	10.63%	7.91%	7.81%	9.73%	12.48%	
New Jersey Resources Corporation	NJR	$1.17	$49.40	2.37%	2.43%	7.00%	6.00%	2.50%	5.48%	5.25%	NA	7.68%	9.45%	
Northwest Natural Holding Company	NWN	$1.90	$66.82	2.84%	2.99%	4.50%	4.00%	25.50%	6.42%	10.11%	NA	NA	NA	
ONE Gas, Inc.	OGS	$2.00	$87.48	2.29%	2.36%	5.90%	5.00%	9.00%	5.27%	6.29%	NA	8.65%	11.39%	
South Jersey Industries, Inc.	SJI	$1.15	$31.97	3.60%	3.73%	7.20%	5.90%	9.50%	7.05%	7.41%	9.60%	11.14%	NA	
Spire Inc.	SR	$2.37	$83.36	2.84%	2.91%	3.80%	2.82%	5.50%	5.85%	4.49%	NA	NA	8.78%	
Southwest Gas Corporation	SWX	$2.18	$82.86	2.63%	2.72%	6.20%	6.30%	8.50%	7.18%	7.04%	8.91%	9.77%	11.24%	
Proxy Group Mean				2.55%	2.64%	5.89%	5.31%	9.63%	7.25%	7.02%	8.73%	9.46%	10.94%	9.83%
Proxy Group Median				2.50%	2.58%	6.10%	5.95%	8.75%	6.73%	7.23%	8.75%	9.75%	11.32%	10.03%
														9.93%
														9.83%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of May 17, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [9])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Source: Schedule RBH-2, Value Line
[9] Equals Average([5], [6], [7], [8])
[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])
[11] Equals [4] + [9]
[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Mr. Lawton's Exhibit (OCS-3.7)
Excluding ROE Results < 8.70% and >12.50%

Company	Ticker	[1] Average Stock Price	[2] Annualized Dividend	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Growth Rate	[6] Mean ROE	[7] Adjusted ROE
Atmos Energy Corporation	ATO	$110.76	$2.10	1.90%	1.96%	6.89%	8.85%	8.85%
Chesapeake Utilities Corporation	CPK	$94.90	$1.62	1.71%	1.77%	7.33%	9.10%	9.10%
New Jersey Resources Corporation	NJR	$45.04	$1.25	2.78%	2.86%	5.50%	8.36%	NA
Northwest Natural Holding Company	NWN	$71.34	$1.90	2.66%	2.82%	11.83%	14.65%	NA
ONE Gas, Inc.	OGS	$93.87	$2.00	2.13%	2.20%	6.28%	8.48%	NA
South Jersey Industries, Inc.	SJI	$32.26	$1.15	3.56%	3.69%	7.52%	11.22%	11.22%
Spire Inc.	SR	$85.62	$2.37	2.77%	2.83%	4.21%	7.03%	NA
Southwest Gas Corporation	SWX	$90.22	$2.18	2.42%	2.50%	7.09%	9.59%	9.59%
Proxy Group Mean				2.49%	2.58%	7.08%	9.66%	9.69%
Proxy Group Median				2.54%	2.66%	6.99%	8.98%	9.35%

Notes:
[1] Source: Exhibit (OCS-3.7)

Mr. Lawton's Exhibit (OCS-3.8)
Excluding ROE Results < 8.70% and >12.50%

Company	Ticker	NEXT YEAR DPS 2020	DPS 2022-2024	ANNUAL CHANGE IN DIVIDEND	CURRENT PRICE	YEAR 1 DIVIDEND	YEAR 2 DIVIDEND	YEAR 3 DIVIDEND	YEAR 4 DIVIDEND	YEAR 5 DIVIDEND	GROWTH YEARS 5-150	TWO-STAGE ROE	ADJUSTED TWO-STAGE ROE
Atmos Energy Corporation	ATO	$2.24	$2.70	$0.15	$110.76	$2.24	$2.39	$2.55	$2.70	$3.03	12.38%	13.87%	NA
Chesapeake Utilities Corporation	CPK	$1.68	$2.15	$0.16	$94.90	$1.68	$1.84	$1.99	$2.15	$2.41	12.09%	13.43%	NA
New Jersey Resources Corporation	NJR	$1.21	$1.33	$0.04	$45.04	$1.21	$1.25	$1.29	$1.33	$1.41	5.80%	8.22%	NA
Northwest Natural Holding Company	NWN	$1.97	$2.20	$0.08	$71.34	$1.97	$2.05	$2.12	$2.20	$2.37	7.90%	10.28%	10.28%
ONE Gas, Inc.	OGS	$2.16	$2.65	$0.16	$93.87	$2.16	$2.32	$2.49	$2.65	$2.80	5.81%	8.10%	NA
South Jersey Industries, Inc.	SJI	$1.25	$1.40	$0.05	$32.26	$1.25	$1.30	$1.35	$1.40	$1.52	8.41%	11.81%	11.81%
Spire Inc.	SR	$2.46	$2.67	$0.07	$85.62	$2.46	$2.53	$2.60	$2.67	$2.82	5.61%	8.20%	NA
Southwest Gas Corporation	SWX	$2.30	$2.60	$0.10	$90.22	$2.30	$2.40	$2.50	$2.60	$2.77	6.60%	8.88%	8.88%
Proxy Group Mean		$1.91	$2.21	$0.10	$78.00	$1.91	$2.01	$2.11	$2.21	$2.39	8.08%	10.35%	10.32%
Proxy Group Median		$2.07	$2.40	$0.09	$87.92	$2.07	$2.19	$2.31	$2.40	$2.59	7.25%	9.58%	10.28%

Notes:
[1] Source: Exhibit (OCS-3.8)

Analysis Using Mr. Gorman's Rolling Average Equity Risk Premium Data

Year	Authorized Electric Returns	30-Year Treasury Bond Yield	Indicated Risk Premium	Rolling 5-Year Average Treasury	Rolling 5-Year Average Risk Premium	Slope	Rolling 10-Year Average Treasury	Rolling 10-Year Average Risk Premium	Slope
1986	13.46%	7.80%	5.66%						
1987	12.74%	8.58%	4.16%						
1988	12.85%	8.96%	3.89%						
1989	12.88%	8.45%	4.43%						
1990	12.67%	8.61%	4.06%	8.48%	4.44%	-46.89%			-48.50%
1991	12.46%	8.14%	4.32%	8.55%	4.17%				
1992	12.01%	7.67%	4.34%	8.36%	4.21%				
1993	11.35%	6.60%	4.75%	7.89%	4.38%				
1994	11.35%	7.37%	3.98%	7.68%	4.29%				
1995	11.43%	6.88%	4.55%	7.33%	4.39%		7.91%	4.42%	
1996	11.19%	6.70%	4.49%	7.04%	4.42%		7.80%	4.30%	
1997	11.29%	6.61%	4.68%	6.83%	4.49%		7.60%	4.35%	
1998	11.51%	5.58%	5.93%	6.63%	4.73%		7.26%	4.55%	
1999	10.66%	5.87%	4.79%	6.33%	4.89%		7.00%	4.59%	
2000	11.39%	5.94%	5.45%	6.14%	5.07%		6.73%	4.73%	
2001	10.95%	5.49%	5.46%	5.90%	5.26%		6.47%	4.84%	
2002	11.03%	5.43%	5.60%	5.66%	5.45%		6.25%	4.97%	
2003	10.99%	4.96%	6.03%	5.54%	5.47%		6.08%	5.10%	
2004	10.59%	5.05%	5.54%	5.37%	5.62%		5.85%	5.25%	
2005	10.46%	4.65%	5.81%	5.11%	5.69%		5.63%	5.38%	
2006	10.40%	4.90%	5.50%	5.00%	5.70%		5.45%	5.48%	
2007	10.22%	4.83%	5.39%	4.88%	5.66%		5.27%	5.55%	
2008	10.39%	4.28%	6.11%	4.74%	5.67%		5.14%	5.57%	
2009	10.22%	4.07%	6.15%	4.55%	5.79%		4.96%	5.70%	
2010	10.15%	4.25%	5.90%	4.47%	5.81%		4.79%	5.75%	
2011	9.92%	3.91%	6.01%	4.27%	5.91%		4.63%	5.80%	
2012	9.94%	2.92%	7.02%	3.89%	6.24%		4.38%	5.95%	
2013	9.68%	3.45%	6.23%	3.72%	6.26%		4.23%	5.97%	
2014	9.78%	3.34%	6.44%	3.57%	6.32%		4.06%	6.06%	
2015	9.60%	2.84%	6.76%	3.29%	6.49%		3.88%	6.15%	
2016	9.54%	2.60%	6.94%	3.03%	6.68%		3.65%	6.29%	
2017	9.72%	2.90%	6.83%	3.02%	6.64%		3.46%	6.44%	
2018	9.59%	3.11%	6.48%	2.96%	6.69%		3.34%	6.48%	
2019	9.63%	2.90%	6.74%	2.87%	6.75%		3.22%	6.53%	
Average	10.94%	5.46%	5.48%	5.44%	5.45%		5.40%	5.45%	
Minimum				2.87%	4.17%		3.22%	4.30%	
Maximum				8.55%	6.75%		7.91%	6.53%	

Source: FEA Exhibit 1.12

Analysis Using Mr. Gorman's Rolling Average Equity Risk Premium Data

Year	Authorized Electric Returns	Utility Bond Yield	Indicated Risk Premium	Rolling 5-Year Average Utility Bond	Rolling 5-Year Average Risk Premium	Slope	Rolling 10-Year Average Utility Bond	Rolling 10-Year Average Risk Premium	Slope
1986	13.46%	9.58%	3.88%						
1987	12.74%	10.10%	2.64%						
1988	12.85%	10.49%	2.36%						
1989	12.88%	9.77%	3.11%						
1990	12.67%	9.86%	2.81%	9.96%	2.96%	-47.37%			-47.81%
1991	12.46%	9.36%	3.10%	9.92%	2.80%				
1992	12.01%	8.69%	3.32%	9.63%	2.94%				
1993	11.35%	7.59%	3.76%	9.05%	3.22%				
1994	11.35%	8.31%	3.04%	8.76%	3.21%				
1995	11.43%	7.89%	3.54%	8.37%	3.35%		9.16%	3.16%	
1996	11.19%	7.75%	3.44%	8.05%	3.42%		8.98%	3.11%	
1997	11.29%	7.60%	3.69%	7.83%	3.49%		8.73%	3.22%	
1998	11.51%	7.04%	4.47%	7.72%	3.64%		8.39%	3.43%	
1999	10.66%	7.62%	3.04%	7.58%	3.64%		8.17%	3.42%	
2000	11.39%	8.24%	3.15%	7.65%	3.56%		8.01%	3.45%	
2001	10.95%	7.76%	3.19%	7.65%	3.51%		7.85%	3.46%	
2002	11.03%	7.37%	3.66%	7.61%	3.50%		7.72%	3.50%	
2003	10.99%	6.58%	4.41%	7.52%	3.49%		7.62%	3.56%	
2004	10.59%	6.16%	4.43%	7.22%	3.77%		7.40%	3.70%	
2005	10.46%	5.65%	4.81%	6.71%	4.10%		7.18%	3.83%	
2006	10.40%	6.07%	4.33%	6.37%	4.33%		7.01%	3.92%	
2007	10.22%	6.07%	4.15%	6.11%	4.43%		6.86%	3.96%	
2008	10.39%	6.53%	3.86%	6.10%	4.32%		6.81%	3.90%	
2009	10.22%	6.04%	4.18%	6.07%	4.27%		6.65%	4.02%	
2010	10.15%	5.47%	4.68%	6.04%	4.24%		6.37%	4.17%	
2011	9.92%	5.04%	4.88%	5.83%	4.35%		6.10%	4.34%	
2012	9.94%	4.13%	5.81%	5.44%	4.68%		5.77%	4.55%	
2013	9.68%	4.48%	5.20%	5.03%	4.95%		5.56%	4.63%	
2014	9.78%	4.28%	5.50%	4.68%	5.22%		5.38%	4.74%	
2015	9.60%	4.12%	5.48%	4.41%	5.38%		5.22%	4.81%	
2016	9.54%	3.93%	5.61%	4.19%	5.52%		5.01%	4.94%	
2017	9.72%	4.00%	5.72%	4.16%	5.50%		4.80%	5.09%	
2018	9.59%	4.25%	5.34%	4.11%	5.53%		4.57%	5.24%	
2019	9.63%	4.11%	5.52%	4.08%	5.54%		4.38%	5.38%	
Average	10.94%	6.82%	4.12%	6.79%	4.09%		6.79%	4.06%	
Minimum				4.08%	2.80%		4.38%	3.11%	
Maximum				9.96%	5.54%		9.16%	5.38%	

Source: FEA Exhibit 1.13

Analysis Using Mr. Gorman's Rolling Average Equity Risk Premium Data

SUMMARY OUTPUT

MRP: 6.83% ROE: 9.33% Rf: 2.50%

Regression Statistics	
Multiple R	0.985302989
R Square	0.97082198
Adjusted R Square	0.969779908
Standard Error	0.001470495
Observations	30

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.00201451	0.002014508	931.6264533	4.91204E-23
Residual	28	6.0546E-05	2.16236E-06		
Total	29	0.00207505			

	Coefficients	Standard Erroi	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.080015966	0.00087729	91.20765941	3.42035E-36	0.07821891	0.081813022
Five Year Avg Treas	-0.468935898	0.01536359	-30.52255647	4.91204E-23	-0.500406775	-0.43746502

SUMMARY OUTPUT

MRP: 5.56% ROE: 9.26% Rf: 3.70%

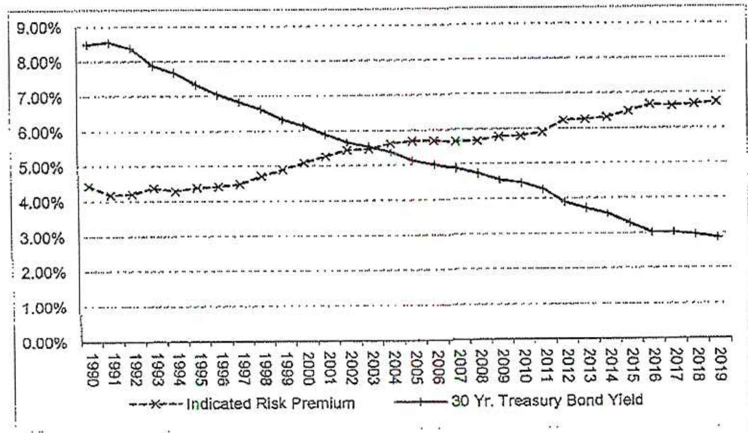
9.29%

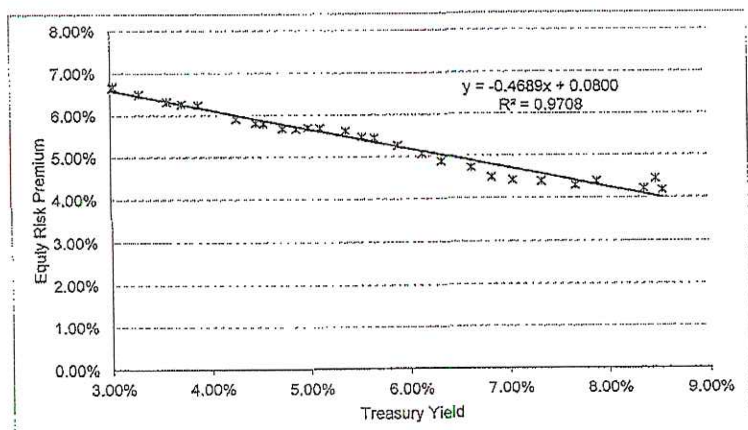
Regression Statistics	
Multiple R	0.982775964
R Square	0.965848595
Adjusted R Square	0.964628902
Standard Error	0.00162191
Observations	30

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.00208311	0.002083109	791.8784328	4.45902E-22
Residual	28	7.3657E-05	2.63059E-06		
Total	29	0.00215677			

	Coefficients	Standard Erroi	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.07313084	0.00118151	61.89582378	1.68027E-31	0.070710616	0.075551064
Five Year Avg Utility	-0.473741742	0.01683497	-28.14033462	4.45902E-22	-0.508226618	-0.439256865


9.00%
8.00%
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019
Indicated Risk Premium
30 Yr. Treasury Bond Yield


y = -0.4689x + 0.0800
R² = 0.9708
Equity Risk Premium
8.00%
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
3.00% 4.00% 5.00% 6.00% 7.00% 8.00% 9.00%
Treasury Yield

Analysis Using Mr. Gorman's Annual Equity Risk Premium Data

Year	ROE	Utility "A" Bond Yield	Treasury Bond Yield	Credit Spread	Treasury Equity Risk Premium	Utility Bond Equity Risk Premium	Treasury Yield	Credit Spread
1986	13.46%	9.58%	7.80%	1.78%	5.66%	3.88%	7.80%	1.78%
1987	12.74%	10.10%	8.58%	1.52%	4.16%	2.64%	8.58%	1.52%
1988	12.85%	10.49%	8.96%	1.53%	3.89%	2.36%	8.96%	1.53%
1989	12.88%	9.77%	8.45%	1.32%	4.43%	3.11%	8.45%	1.32%
1990	12.67%	9.86%	8.61%	1.25%	4.06%	2.81%	8.61%	1.25%
1991	12.46%	9.36%	8.14%	1.22%	4.32%	3.10%	8.14%	1.22%
1992	12.01%	8.69%	7.67%	1.02%	4.34%	3.32%	7.67%	1.02%
1993	11.35%	7.59%	6.60%	0.99%	4.75%	3.76%	6.60%	0.99%
1994	11.35%	8.31%	7.37%	0.94%	3.98%	3.04%	7.37%	0.94%
1995	11.43%	7.89%	6.88%	1.01%	4.55%	3.54%	6.88%	1.01%
1996	11.19%	7.75%	6.70%	1.05%	4.49%	3.44%	6.70%	1.05%
1997	11.29%	7.60%	6.61%	0.99%	4.68%	3.69%	6.61%	0.99%
1998	11.51%	7.04%	5.58%	1.46%	5.93%	4.47%	5.58%	1.46%
1999	10.66%	7.62%	5.87%	1.75%	4.79%	3.04%	5.87%	1.75%
2000	11.39%	8.24%	5.94%	2.30%	5.45%	3.15%	5.94%	2.30%
2001	10.95%	7.76%	5.49%	2.27%	5.46%	3.19%	5.49%	2.27%
2002	11.03%	7.37%	5.43%	1.94%	5.60%	3.66%	5.43%	1.94%
2003	10.99%	6.58%	4.96%	1.62%	6.03%	4.41%	4.96%	1.62%
2004	10.59%	6.16%	5.05%	1.11%	5.54%	4.43%	5.05%	1.11%
2005	10.46%	5.65%	4.65%	1.00%	5.81%	4.81%	4.65%	1.00%
2006	10.40%	6.07%	4.90%	1.17%	5.50%	4.33%	4.90%	1.17%
2007	10.22%	6.07%	4.83%	1.24%	5.39%	4.15%	4.83%	1.24%
2008	10.39%	6.53%	4.28%	2.25%	6.11%	3.86%	4.28%	2.25%
2009	10.22%	6.04%	4.07%	1.97%	6.15%	4.18%	4.07%	1.97%
2010	10.15%	5.47%	4.25%	1.22%	5.90%	4.68%	4.25%	1.22%
2011	9.92%	5.04%	3.91%	1.13%	6.01%	4.88%	3.91%	1.13%
2012	9.94%	4.13%	2.92%	1.21%	7.02%	5.81%	2.92%	1.21%
2013	9.68%	4.48%	3.45%	1.03%	6.23%	5.20%	3.45%	1.03%
2014	9.78%	4.28%	3.34%	0.94%	6.44%	5.50%	3.34%	0.94%
2015	9.60%	4.12%	2.84%	1.27%	6.76%	5.48%	2.84%	1.27%
2016	9.54%	3.93%	2.60%	1.33%	6.94%	5.61%	2.60%	1.33%
2017	9.72%	4.00%	2.90%	1.10%	6.83%	5.72%	2.90%	1.10%
2018	9.59%	4.25%	3.11%	1.14%	6.48%	5.34%	3.11%	1.14%
2019	9.63%	4.11%	2.90%	1.21%	6.74%	5.52%	2.90%	1.21%

Source: FEA Exhibits 1.12 and 1.13

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.93674495
R Square	0.877491102
Adjusted R Square	0.873662699
Standard Error	0.003374454
Observations	34

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.002609949	0.002609949	229.2055163	3.8306E-16
Residual	32	0.000364382	1.13869E-05		
Total	33	0.002974331			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.079653001	0.001738584	45.81487751	9.42146E-31	0.076111622	0.0831944
Treasury Yield	-0.454661214	0.030031386	-15.1395349	3.8306E-16	-0.51583315	-0.393489

RESIDUAL OUTPUT

Observation	Predicted Treasury	Residuals	$(e_t - e_{(t-1)})^2$	$(e_t)^2$
1	0.044197004	0.012419662		
2	0.040643069	0.000956931	0.00013	0.00000
3	0.038919146	-1.08122E-05	0.00000	0.00000
4	0.041237918	0.003070416	0.00001	0.00001
5	0.040514249	0.000102418	0.00001	0.00000
6	0.042662523	0.000579144	0.00000	0.00000
7	0.044795642	-0.001362308	0.00000	0.00000
8	0.049652939	-0.002136272	0.00000	0.00000
9	0.04614447	-0.00634447	0.00002	0.00004
10	0.048353366	-0.002895032	0.00001	0.00001
11	0.049186911	-0.004295245	0.00000	0.00002
12	0.049618839	-0.002777173	0.00000	0.00001
13	0.054290483	0.005026183	0.00006	0.00003
14	0.052983332	-0.005041666	0.00010	0.00003
15	0.052634759	0.001840241	0.00005	0.00000
16	0.054676945	-0.000110279	0.00000	0.00000
17	0.054964898	0.001035102	0.00000	0.00000
18	0.057113172	0.003211828	0.00000	0.00001
19	0.056707766	-0.001274432	0.00002	0.00000
20	0.058530199	-0.000388533	0.00000	0.00000
21	0.057382869	-0.002364687	0.00000	0.00001
22	0.057673921	-0.003815587	0.00000	0.00001
23	0.06019729	0.000911043	0.00002	0.00000
24	0.061152079	0.000356254	0.00000	0.00000
25	0.060326111	-0.001334444	0.00000	0.00000
26	0.061871959	-0.001780293	0.00000	0.00000
27	0.066373105	0.003818561	0.00003	0.00001
28	0.063974767	-0.001658101	0.00003	0.00000
29	0.064467317	-6.73169E-05	0.00000	0.00000
30	0.066736834	0.000854833	0.00000	0.00000
31	0.067843176	0.001581824	0.00000	0.00000
32	0.066490559	0.001759441	0.00000	0.00000
33	0.065501671	-0.000726671	0.00001	0.00000
34	0.066490559	0.000859441	0.00000	0.00000
			0.00054	0.00021

	Durbin-Watson	2.54684		
(1% significance)	dL	1.184	4-dL	4-dU
	dU	1.298	2.82	2.702
	DW>2	TRUE		
	DW<4-dU?	TRUE	No Autocorrelation	

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.947601552
R Square	0.897948702
Adjusted R Square	0.894759598
Standard Error	0.003247661
Observations	34

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.00296978	0.00296978	281.5677887	2.03706E-17
Residual	32	0.000337514	1.05473E-05		
Total	33	0.003307294			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.073259195	0.001989446	36.82392127	9.01361E-28	0.069206826	0.077311563
Utility "A" Bond Yield	-0.469826421	0.027999221	-16.7799818	2.03706E-17	-0.52685897	-0.412793874

RESIDUAL OUTPUT

Observation	Predicted Utility Bond	Residuals	$(e_t - e_{(t-1)})^2$	$(e_t)^2$
1	0.028249824	0.010550176		
2	0.025806726	0.000593274	0.00010	0.00000
3	0.023974403	-0.000374403	0.00000	0.00000
4	0.027357153	0.003742847	0.00002	0.00001
5	0.02693431	0.00116569	0.00001	0.00000
6	0.029283442	0.001716558	0.00000	0.00000
7	0.032431279	0.000768721	0.00000	0.00000
8	0.037599369	6.30684E-07	0.00000	0.00000
9	0.034216619	-0.003816619	0.00001	0.00001
10	0.03618989	-0.00078989	0.00001	0.00000
11	0.036847647	-0.002447647	0.00000	0.00001
12	0.037552387	-0.000652387	0.00000	0.00000
13	0.040183415	0.004516585	0.00003	0.00002
14	0.037458421	-0.007058421	0.00013	0.00005
15	0.034525921	-0.003067588	0.00002	0.00001
16	0.036788919	-0.004913919	0.00000	0.00002
17	0.038621242	-0.002046242	0.00001	0.00000
18	0.042340701	0.001750966	0.00001	0.00000
19	0.044317887	-1.78871E-05	0.00000	0.00000
20	0.046717917	0.001390416	0.00000	0.00000
21	0.044748561	-0.001431895	0.00001	0.00000
22	0.04472507	-0.003258403	0.00000	0.00001
23	0.04258736	-0.003970693	0.00000	0.00002
24	0.044885594	-0.003077261	0.00000	0.00001
25	0.047564895	-0.000753815	0.00001	0.00000
26	0.049584607	-0.000774681	0.00000	0.00000
27	0.05385134	0.004240096	0.00003	0.00002
28	0.052229901	-0.000189609	0.00002	0.00000
29	0.053162795	0.001863111	0.00000	0.00000
30	0.053923973	0.000922059	0.00000	0.00000
31	0.054794081	0.001303928	0.00000	0.00000
32	0.05447199	0.002740466	0.00000	0.00001
33	0.053290494	0.000107212	0.00001	0.00000
34	0.053965236	0.001268622	0.00000	0.00000
			0.00044	0.00023

	Durbin-Watson	1.95096		
dL		1.184	4-dL	4-dU
dU		1.298	2.816	2.702
DW>2		FALSE		
dU<DW<2		TRUE	No Autocorrelation	

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.946050787
R Square	0.895012092
Adjusted R Square	0.888238679
Standard Error	0.003173829
Observations	34

ANOVA

	df	SS	MS	F	Significance F
Regression	2	0.002662062	0.001331031	132.1360499	6.72448E-16
Residual	31	0.000312269	1.00732E-05		
Total	33	0.002974331			

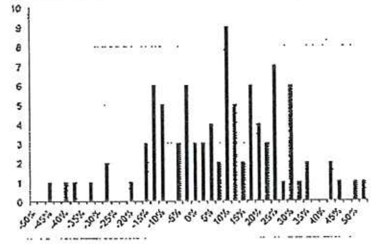
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.075565806	0.002429599	31.10217749	6.11561E-25	0.070610607	0.080521005
Treasury Yield	-0.458426639	0.028294367	-16.2020462	1.10533E-16	-0.51613338	-0.400719897
Credit Spread	0.315148477	0.138555791	2.274524039	0.030006017	0.032562079	0.597734876

RESIDUAL OUTPUT

Observation	Predicted Treasury	Residuals	$(e_t - e_{(t-1)})^2$	$(e_t)^2$
1	0.045431064	0.011185602		
2	0.041023058	0.000576942	0.00011	0.00000
3	0.039318998	-0.000410664	0.00000	0.00000
4	0.040995162	0.003313172	0.00001	0.00001
5	0.040047522	0.000569145	0.00001	0.00000
6	0.042126922	0.001114745	0.00000	0.00000
7	0.043644783	-0.00021145	0.00000	0.00000
8	0.048442511	-0.000925844	0.00000	0.00000
9	0.044742159	-0.004942159	0.00002	0.00002
10	0.047176821	-0.001718488	0.00001	0.00000
11	0.048153834	-0.003262167	0.00000	0.00001
12	0.048416008	-0.001574341	0.00000	0.00000
13	0.054599661	0.004717006	0.00004	0.00002
14	0.054203493	-0.006261827	0.00012	0.00004
15	0.055577471	-0.001102471	0.00003	0.00000
16	0.057534147	-0.00296748	0.00000	0.00001
17	0.056794999	-0.000794999	0.00000	0.00000
18	0.057955216	0.002369784	0.00001	0.00001
19	0.055939195	-0.000505862	0.00001	0.00000
20	0.057430058	0.000711608	0.00000	0.00000
21	0.056798951	-0.001780769	0.00001	0.00000
22	0.057309913	-0.00345158	0.00000	0.00001
23	0.063037181	-0.001928848	0.00000	0.00000
24	0.063120087	-0.001611754	0.00000	0.00000
25	0.059917547	-0.000925881	0.00000	0.00000
26	0.061192928	-0.001101261	0.00000	0.00000
27	0.065989298	0.004202369	0.00003	0.00002
28	0.062996311	-0.000679645	0.00002	0.00000
29	0.063208588	0.001191412	0.00000	0.00000
30	0.066559437	0.00103223	0.00000	0.00000
31	0.067858155	0.001566845	0.00000	0.00000
32	0.06577282	0.00247718	0.00000	0.00001
33	0.064882814	-0.000107814	0.00001	0.00000
34	0.066112739	0.001237261	0.00000	0.00000
			0.00046	0.00019

Durbin-Watson	2.46301			
dL	1.128	4-dL		4-dU
dU	1.364	2.872		2.636
DW>2	TRUE			
DW<4-dU	TRUE	No Autocorrelation		

Frequency Distribution of Market Risk Premium, 1926 - 2018



Year	Large Company Stocks Total Returns Jan-Dec*	Long-Term Government Bond Income Returns Jan-Dec*	MRP Jan-Dec*
1926	0.1162	0.0373	0.0789
1927	0.3749	0.0341	0.3408
1928	0.4361	0.0322	0.4039
1929	-0.0842	0.0347	-0.1189
1930	-0.2490	0.0332	-0.2822
1931	-0.4334	0.0333	-0.4667
1932	-0.0819	0.0369	-0.1188
1933	0.5399	0.0312	0.5087
1934	-0.0144	0.0318	-0.0462
1935	0.4767	0.0281	0.4486
1936	0.3392	0.0277	0.3115
1937	-0.3503	0.0266	-0.3769
1938	0.3112	0.0264	0.2848
1939	-0.0041	0.0240	-0.0281
1940	-0.0978	0.0223	-0.1201
1941	-0.1159	0.0194	-0.1353
1942	0.2034	0.0246	0.1788
1943	0.2590	0.0244	0.2346
1944	0.1975	0.0246	0.1729
1945	0.3644	0.0234	0.3410
1946	-0.0807	0.0204	-0.1011
1947	0.0571	0.0213	0.0358
1948	0.0550	0.0240	0.0310
1949	0.1879	0.0225	0.1654
1950	0.3171	0.0212	0.2959
1951	0.2402	0.0238	0.2164
1952	0.1837	0.0266	0.1571
1953	-0.0099	0.0284	-0.0383
1954	0.5262	0.0279	0.4983
1955	0.3156	0.0275	0.2881
1956	0.0656	0.0299	0.0357
1957	-0.1078	0.0344	-0.1422
1958	0.4336	0.0327	0.4009
1959	0.1196	0.0401	0.0795
1960	0.0047	0.0426	-0.0379
1961	0.2689	0.0383	0.2306
1962	-0.0873	0.0400	-0.1273
1963	0.2280	0.0389	0.1891
1964	0.1648	0.0415	0.1233
1965	0.1245	0.0419	0.0826
1966	-0.1006	0.0449	-0.1455
1967	0.2398	0.0459	0.1939
1968	0.1106	0.0550	0.0556
1969	-0.0850	0.0595	-0.1445
1970	0.0386	0.0674	-0.0288
1971	0.1430	0.0632	0.0798
1972	0.1899	0.0587	0.1312
1973	-0.1469	0.0651	-0.2120
1974	-0.2647	0.0727	-0.3374
1975	0.3723	0.0799	0.2924
1976	0.2393	0.0789	0.1604
1977	-0.0716	0.0714	-0.1430
1978	0.0657	0.0790	-0.0133
1979	0.1861	0.0886	0.0975
1980	0.3250	0.0997	0.2253
1981	-0.0492	0.1155	-0.1647
1982	0.2155	0.1350	0.0805
1983	0.2256	0.1038	0.1218
1984	0.0627	0.1174	-0.0547
1985	0.3173	0.1125	0.2048
1986	0.1867	0.0898	0.0969
1987	0.0525	0.0792	-0.0267
1988	0.1661	0.0897	0.0764
1989	0.3169	0.0881	0.2288
1990	-0.0310	0.0819	-0.1129
1991	0.3047	0.0822	0.2225
1992	0.0762	0.0726	0.0036
1993	0.1008	0.0717	0.0291
1994	0.0132	0.0659	-0.0527
1995	0.3758	0.0760	0.2998
1996	0.2296	0.0618	0.1678
1997	0.3336	0.0664	0.2672
1998	0.2858	0.0583	0.2275
1999	0.2104	0.0557	0.1547
2000	-0.0910	0.0650	-0.1560
2001	-0.1189	0.0553	-0.1742
2002	-0.2210	0.0559	-0.2769
2003	0.2868	0.0480	0.2388
2004	0.1088	0.0502	0.0586
2005	0.0491	0.0469	0.0022
2006	0.1579	0.0468	0.1111
2007	0.0549	0.0486	0.0063
2008	-0.3700	0.0445	-0.4145
2009	0.2646	0.0347	0.2299
2010	0.1506	0.0425	0.1081
2011	0.0211	0.0382	-0.0171
2012	0.1600	0.0246	0.1354
2013	0.3239	0.0288	0.2951
2014	0.1369	0.0341	0.1028
2015	0.0138	0.0247	-0.0109
2016	0.1196	0.0230	0.0966
2017	0.2183	0.0267	0.1916
2018	-0.0438	0.0282	-0.0720
Average	0.1188	0.0497	0.0691
Std. Dev.	0.1976	0.0263	0.1985

Source: Duff & Phelps, 2019 SBBI, Appendix A-1, A-7

MRP		
Bin	*Frequency*	*Cumulative %*
-50.00%	0	0.0%
-47.50%	0	0.0%
-45.00%	1	1.1%
-42.50%	0	1.1%
-40.00%	1	2.2%
-37.50%	1	3.2%
-35.00%	0	3.2%
-32.50%	1	4.3%
-30.00%	0	4.3%
-27.50%	2	6.5%
-25.00%	0	6.5%
-22.50%	0	6.5%
-20.00%	1	7.5%
-17.50%	0	7.5%
-15.00%	3	10.8%
-12.50%	6	17.2%
-10.00%	5	22.6%
-7.50%	0	22.6%
-5.00%	3	25.8%
-2.50%	6	32.3%
0.00%	3	35.5%
2.50%	3	38.7%
5.00%	4	43.0%
7.50%	2	45.2%
10.00%	9	54.8%
12.50%	5	60.2%
15.00%	2	62.4%
17.50%	6	68.8%
20.00%	4	73.1%
22.50%	3	76.3%
25.00%	7	83.9%
27.50%	1	84.9%
30.00%	6	91.4%
32.50%	1	92.5%
35.00%	2	94.6%
37.50%	0	94.6%
40.00%	0	94.6%
42.50%	2	96.8%
45.00%	1	97.8%
47.50%	0	97.8%
50.00%	1	98.9%
51.00%	1	100.0%

Count: 93

Highest MRP from Direct	Rank	
12.02%	58.30%	41.70%

Historical Market Return

Havert	% Rank	Occurrence
14.93%	51.90%	45
13.42%	49.70%	47
		93

CAPM vs. ECAPM Security Market Line
Using Mr. Gorman's Inputs

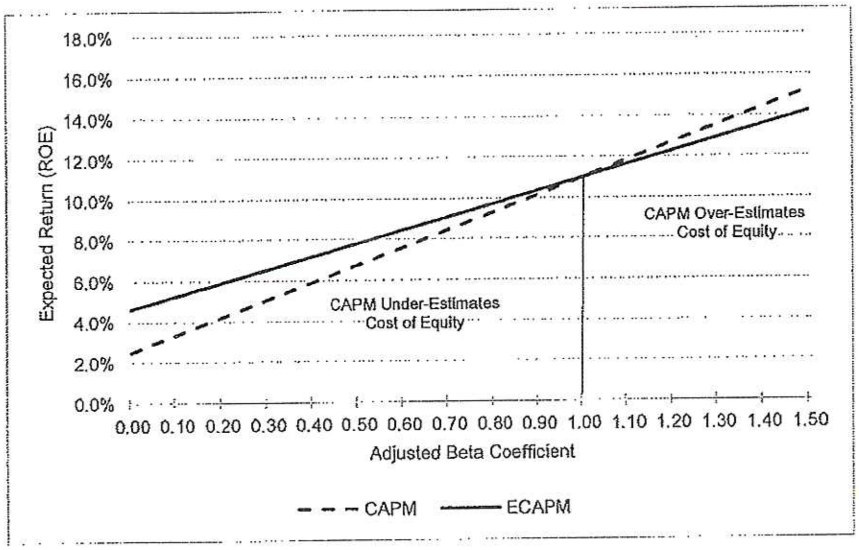
	Risk-Free Rate	2.50%			ECAPM	0.33	0.25
	MRP	8.50%	ECAPM alpha		Factors	0.67	0.75

Beta	CAPM	ECAPM	1.00%	2.00%	Raw Beta	Alt. ECAPM	Raw Beta ECAPM
0.00	2.50%	4.63%	3.50%	4.50%	-0.49	2.50%	1.49%
0.01	2.59%	4.69%	3.58%	4.57%	-0.48	2.59%	1.58%
0.02	2.67%	4.75%	3.65%	4.63%	-0.46	2.67%	1.68%
0.03	2.76%	4.82%	3.73%	4.70%	-0.45	2.76%	1.77%
0.04	2.84%	4.88%	3.80%	4.76%	-0.43	2.84%	1.87%
0.05	2.93%	4.94%	3.88%	4.83%	-0.42	2.93%	1.96%
0.06	3.01%	5.01%	3.95%	4.89%	-0.40	3.01%	2.06%
0.07	3.10%	5.07%	4.03%	4.96%	-0.39	3.10%	2.15%
0.08	3.18%	5.14%	4.10%	5.02%	-0.37	3.18%	2.25%
0.09	3.27%	5.20%	4.18%	5.09%	-0.36	3.27%	2.34%
0.10	3.35%	5.26%	4.25%	5.15%	-0.34	3.35%	2.44%
0.11	3.44%	5.33%	4.33%	5.22%	-0.33	3.44%	2.53%
0.12	3.52%	5.39%	4.40%	5.28%	-0.31	3.52%	2.63%
0.13	3.61%	5.45%	4.48%	5.35%	-0.30	3.61%	2.72%
0.14	3.69%	5.52%	4.55%	5.41%	-0.28	3.69%	2.82%
0.15	3.78%	5.58%	4.63%	5.48%	-0.27	3.78%	2.91%
0.16	3.86%	5.65%	4.70%	5.54%	-0.25	3.86%	3.01%
0.17	3.95%	5.71%	4.78%	5.61%	-0.24	3.95%	3.10%
0.18	4.03%	5.77%	4.85%	5.67%	-0.22	4.03%	3.20%
0.19	4.12%	5.84%	4.93%	5.74%	-0.21	4.12%	3.29%
0.20	4.20%	5.90%	5.00%	5.80%	-0.19	4.20%	3.39%
0.21	4.29%	5.96%	5.08%	5.87%	-0.18	4.29%	3.48%
0.22	4.37%	6.03%	5.15%	5.93%	-0.16	4.37%	3.58%
0.23	4.46%	6.09%	5.23%	6.00%	-0.15	4.46%	3.67%
0.24	4.54%	6.16%	5.30%	6.06%	-0.13	4.54%	3.77%
0.25	4.63%	6.22%	5.38%	6.13%	-0.12	4.63%	3.86%
0.26	4.71%	6.28%	5.45%	6.19%	-0.10	4.71%	3.96%
0.27	4.80%	6.35%	5.53%	6.26%	-0.09	4.80%	4.05%
0.28	4.88%	6.41%	5.60%	6.32%	-0.07	4.88%	4.15%
0.29	4.97%	6.47%	5.68%	6.39%	-0.06	4.97%	4.24%
0.30	5.05%	6.54%	5.75%	6.45%	-0.04	5.05%	4.34%
0.31	5.14%	6.60%	5.83%	6.52%	-0.03	5.14%	4.43%
0.32	5.22%	6.67%	5.90%	6.58%	-0.01	5.22%	4.53%
0.33	5.31%	6.73%	5.98%	6.65%	0.00	5.31%	4.63%
0.34	5.39%	6.79%	6.05%	6.71%	0.01	5.39%	4.72%
0.35	5.48%	6.86%	6.13%	6.78%	0.03	5.48%	4.82%
0.36	5.56%	6.92%	6.20%	6.84%	0.04	5.56%	4.91%
0.37	5.65%	6.98%	6.28%	6.91%	0.06	5.65%	5.01%
0.38	5.73%	7.05%	6.35%	6.97%	0.07	5.73%	5.10%
0.39	5.82%	7.11%	6.43%	7.04%	0.09	5.82%	5.20%
0.40	5.90%	7.18%	6.50%	7.10%	0.10	5.90%	5.29%
0.41	5.99%	7.24%	6.58%	7.17%	0.12	5.99%	5.39%
0.42	6.07%	7.30%	6.65%	7.23%	0.13	6.07%	5.48%
0.43	6.16%	7.37%	6.73%	7.30%	0.15	6.16%	5.58%
0.44	6.24%	7.43%	6.80%	7.36%	0.16	6.24%	5.67%
0.45	6.33%	7.49%	6.88%	7.43%	0.18	6.33%	5.77%
0.46	6.41%	7.56%	6.95%	7.49%	0.19	6.41%	5.86%
0.47	6.50%	7.62%	7.03%	7.56%	0.21	6.50%	5.96%

Beta	CAPM	ECAPM	1.00%	2.00%	Raw Beta	Alt. ECAPM	Raw Beta ECAPM
0.48	6.58%	7.69%	7.10%	7.62%	0.22	6.58%	6.05%
0.49	6.67%	7.75%	7.18%	7.69%	0.24	6.67%	6.15%
0.50	6.75%	7.81%	7.25%	7.75%	0.25	6.75%	6.24%
0.51	6.84%	7.88%	7.33%	7.82%	0.27	6.84%	6.34%
0.52	6.92%	7.94%	7.40%	7.88%	0.28	6.92%	6.43%
0.53	7.01%	8.00%	7.48%	7.95%	0.30	7.01%	6.53%
0.54	7.09%	8.07%	7.55%	8.01%	0.31	7.09%	6.62%
0.55	7.18%	8.13%	7.63%	8.08%	0.33	7.18%	6.72%
0.56	7.26%	8.20%	7.70%	8.14%	0.34	7.26%	6.81%
0.57	7.35%	8.26%	7.78%	8.21%	0.36	7.35%	6.91%
0.58	7.43%	8.32%	7.85%	8.27%	0.37	7.43%	7.00%
0.59	7.52%	8.39%	7.93%	8.34%	0.39	7.52%	7.10%
0.60	7.60%	8.45%	8.00%	8.40%	0.40	7.60%	7.19%
0.61	7.69%	8.51%	8.08%	8.47%	0.42	7.69%	7.29%
0.62	7.77%	8.58%	8.15%	8.53%	0.43	7.77%	7.38%
0.63	7.86%	8.64%	8.23%	8.60%	0.45	7.86%	7.48%
0.64	7.94%	8.71%	8.30%	8.66%	0.46	7.94%	7.57%
0.65	8.03%	8.77%	8.38%	8.73%	0.48	8.03%	7.67%
0.66	8.11%	8.83%	8.45%	8.79%	0.49	8.11%	7.76%
0.67	8.20%	8.90%	8.53%	8.86%	0.51	8.20%	7.86%
0.68	8.28%	8.96%	8.60%	8.92%	0.52	8.28%	7.96%
0.69	8.37%	9.02%	8.68%	8.99%	0.54	8.37%	8.05%
0.70	8.45%	9.09%	8.75%	9.05%	0.55	8.45%	8.15%
0.71	8.54%	9.15%	8.83%	9.12%	0.57	8.54%	8.24%
0.72	8.62%	9.22%	8.90%	9.18%	0.58	8.62%	8.34%
0.73	8.71%	9.28%	8.98%	9.25%	0.60	8.71%	8.43%
0.74	8.79%	9.34%	9.05%	9.31%	0.61	8.79%	8.53%
0.75	8.88%	9.41%	9.13%	9.38%	0.63	8.88%	8.62%
0.76	8.96%	9.47%	9.20%	9.44%	0.64	8.96%	8.72%
0.77	9.05%	9.53%	9.28%	9.51%	0.66	9.05%	8.81%
0.78	9.13%	9.60%	9.35%	9.57%	0.67	9.13%	8.91%
0.79	9.22%	9.66%	9.43%	9.64%	0.69	9.22%	9.00%
0.80	9.30%	9.73%	9.50%	9.70%	0.70	9.30%	9.10%
0.81	9.39%	9.79%	9.58%	9.77%	0.72	9.39%	9.19%
0.82	9.47%	9.85%	9.65%	9.83%	0.73	9.47%	9.29%
0.83	9.56%	9.92%	9.73%	9.90%	0.75	9.56%	9.38%
0.84	9.64%	9.98%	9.80%	9.96%	0.76	9.64%	9.48%
0.85	9.73%	10.04%	9.88%	10.03%	0.78	9.73%	9.57%
0.86	9.81%	10.11%	9.95%	10.09%	0.79	9.81%	9.67%
0.87	9.90%	10.17%	10.03%	10.16%	0.81	9.90%	9.76%
0.88	9.98%	10.24%	10.10%	10.22%	0.82	9.98%	9.86%
0.89	10.07%	10.30%	10.18%	10.29%	0.84	10.07%	9.95%
0.90	10.15%	10.36%	10.25%	10.35%	0.85	10.15%	10.05%
0.91	10.24%	10.43%	10.33%	10.42%	0.87	10.24%	10.14%
0.92	10.32%	10.49%	10.40%	10.48%	0.88	10.32%	10.24%
0.93	10.41%	10.55%	10.48%	10.55%	0.90	10.41%	10.33%
0.94	10.49%	10.62%	10.55%	10.61%	0.91	10.49%	10.43%
0.95	10.58%	10.68%	10.63%	10.68%	0.93	10.58%	10.52%
0.96	10.66%	10.75%	10.70%	10.74%	0.94	10.66%	10.62%
0.97	10.75%	10.81%	10.78%	10.81%	0.96	10.75%	10.71%
0.98	10.83%	10.87%	10.85%	10.87%	0.97	10.83%	10.81%
0.99	10.92%	10.94%	10.93%	10.94%	0.99	10.92%	10.90%
1.00	11.00%	11.00%	11.00%	11.00%	1.00	11.00%	11.00%
1.01	11.09%	11.06%	11.08%	11.07%	1.01	11.09%	11.10%

Beta	CAPM	ECAPM	1.00%	2.00%	Raw Beta	Alt. ECAPM	Raw Beta ECAPM
1.02	11.17%	11.13%	11.15%	11.13%	1.03	11.17%	11.19%
1.03	11.26%	11.19%	11.23%	11.20%	1.04	11.26%	11.29%
1.04	11.34%	11.26%	11.30%	11.26%	1.06	11.34%	11.38%
1.05	11.43%	11.32%	11.38%	11.33%	1.07	11.43%	11.48%
1.06	11.51%	11.38%	11.45%	11.39%	1.09	11.51%	11.57%
1.07	11.60%	11.45%	11.53%	11.46%	1.10	11.60%	11.67%
1.08	11.68%	11.51%	11.60%	11.52%	1.12	11.68%	11.76%
1.09	11.77%	11.57%	11.68%	11.59%	1.13	11.77%	11.86%
1.10	11.85%	11.64%	11.75%	11.65%	1.15	11.85%	11.95%
1.11	11.94%	11.70%	11.83%	11.72%	1.16	11.94%	12.05%
1.12	12.02%	11.77%	11.90%	11.78%	1.18	12.02%	12.14%
1.13	12.11%	11.83%	11.98%	11.85%	1.19	12.11%	12.24%
1.14	12.19%	11.89%	12.05%	11.91%	1.21	12.19%	12.33%
1.15	12.28%	11.96%	12.13%	11.98%	1.22	12.28%	12.43%
1.16	12.36%	12.02%	12.20%	12.04%	1.24	12.36%	12.52%
1.17	12.45%	12.08%	12.28%	12.11%	1.25	12.45%	12.62%
1.18	12.53%	12.15%	12.35%	12.17%	1.27	12.53%	12.71%
1.19	12.62%	12.21%	12.43%	12.24%	1.28	12.62%	12.81%
1.20	12.70%	12.28%	12.50%	12.30%	1.30	12.70%	12.90%
1.21	12.79%	12.34%	12.58%	12.37%	1.31	12.79%	13.00%
1.22	12.87%	12.40%	12.65%	12.43%	1.33	12.87%	13.09%
1.23	12.96%	12.47%	12.73%	12.50%	1.34	12.96%	13.19%
1.24	13.04%	12.53%	12.80%	12.56%	1.36	13.04%	13.28%
1.25	13.13%	12.59%	12.88%	12.63%	1.37	13.13%	13.38%
1.26	13.21%	12.66%	12.95%	12.69%	1.39	13.21%	13.47%
1.27	13.30%	12.72%	13.03%	12.76%	1.40	13.30%	13.57%
1.28	13.38%	12.79%	13.10%	12.82%	1.42	13.38%	13.66%
1.29	13.47%	12.85%	13.18%	12.89%	1.43	13.47%	13.76%
1.30	13.55%	12.91%	13.25%	12.95%	1.45	13.55%	13.85%
1.31	13.64%	12.98%	13.33%	13.02%	1.46	13.64%	13.95%
1.32	13.72%	13.04%	13.40%	13.08%	1.48	13.72%	14.04%
1.33	13.81%	13.10%	13.48%	13.15%	1.49	13.81%	14.14%
1.34	13.89%	13.17%	13.55%	13.21%	1.51	13.89%	14.24%
1.35	13.98%	13.23%	13.63%	13.28%	1.52	13.98%	14.33%
1.36	14.06%	13.30%	13.70%	13.34%	1.54	14.06%	14.43%
1.37	14.15%	13.36%	13.78%	13.41%	1.55	14.15%	14.52%
1.38	14.23%	13.42%	13.85%	13.47%	1.57	14.23%	14.62%
1.39	14.32%	13.49%	13.93%	13.54%	1.58	14.32%	14.71%
1.40	14.40%	13.55%	14.00%	13.60%	1.60	14.40%	14.81%
1.41	14.49%	13.61%	14.08%	13.67%	1.61	14.49%	14.90%
1.42	14.57%	13.68%	14.15%	13.73%	1.63	14.57%	15.00%
1.43	14.66%	13.74%	14.23%	13.80%	1.64	14.66%	15.09%
1.44	14.74%	13.81%	14.30%	13.86%	1.66	14.74%	15.19%
1.45	14.83%	13.87%	14.38%	13.93%	1.67	14.83%	15.28%
1.46	14.91%	13.93%	14.45%	13.99%	1.69	14.91%	15.38%
1.47	15.00%	14.00%	14.53%	14.06%	1.70	15.00%	15.47%
1.48	15.08%	14.06%	14.60%	14.12%	1.72	15.08%	15.57%
1.49	15.17%	14.12%	14.68%	14.19%	1.73	15.17%	15.66%
1.50	15.25%	14.19%	14.75%	14.25%	1.75	15.25%	15.76%

Source: Exhibit S-4, Schedule D-5, page 7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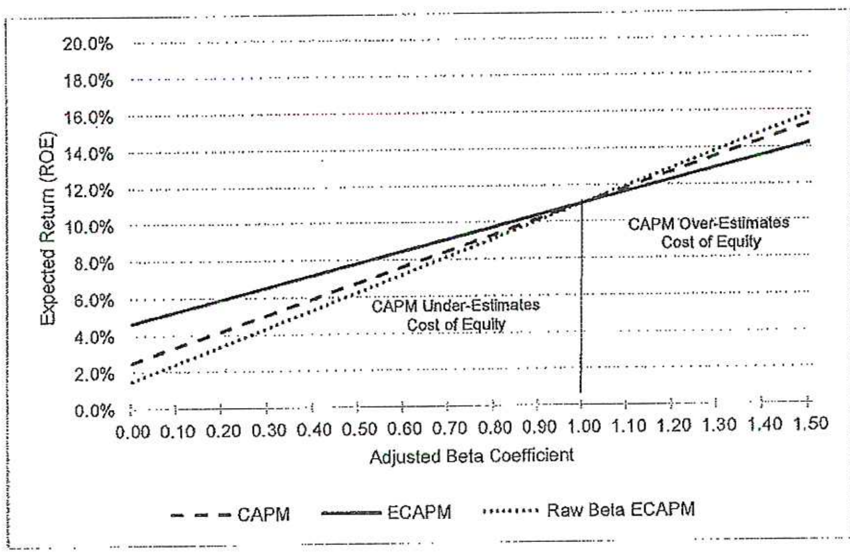
Expected Return (ROE)
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50
Adjusted Beta Coefficient
CAPM Over-Estimates Cost of Equity
CAPM Under-Estimates Cost of Equity
CAPM
ECAPM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4.0%
2.0%
0.0%
Expected Return (ROE)
0.00 0.10 0.20 0.30 0.40 0.50 0.60 0.70 0.80 0.90 1.00 1.10 1.20 1.30 1.40 1.50
Adjusted Beta Coefficient
CAPM Over-Estimates Cost of Equity
CAPM Under-Estimates Cost of Equity
CAPM
ECAPM
Raw Beta ECAPM

Alternative Bond Yield Plus Risk Premium Analyses

	[1]	[2]	[3]	[4]
	Constant	LN(30-Year Treasury)	Moody's Utility Baa Credit Spread	VIX
	-0.026	-0.025	0.459	0.000
Long Term Average [5]			1.34%	18.85

	30-Yr. Treasury Yield [6]	Risk Premium [7]	Return on Equity [8]
Current 30-Year Treasury	2.11%	7.66%	9.78%
Near-Term Projected 30-Year Treasury	2.28%	7.47%	9.75%
Long-Term Projected 30-Year Treasury	3.70%	6.24%	9.94%
Mr. Gorman's Projected 30-Year Treasury	2.50%	7.23%	9.73%

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.826227443
R Square	0.682651788
Adjusted R Square	0.680975653
Standard Error	0.005221269
Observations	572

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	0.033309154	0.011103	407.27735	4.3E-141
Residual	568	0.015484616	2.73E-05		
Total	571	0.04879377			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-0.026435267	0.002458001	-10.75478	1.112E-24	-0.0312631	-0.02160739
LN(30-Year Treasury)	-0.025421628	0.000738303	-34.4325	3.7E-141	-0.0268718	-0.02397149
Moody's Utility A Credit Spread	0.459420005	0.098053829	4.685386	3.501E-06	0.2668276	0.65201236
VIX	-6.10195E-05	6.32121E-05	-0.965313	0.3347988	-0.0001852	6.3139E-05

[1] Constant of regression equation (1993 - 2019)
[2] Equals Regression Coefficient of 30-year Treasury Yield variable
[3] Equals Regression Coefficient of Credit Spread variable
[4] Equals Regression Coefficient of VIX variable
[5] Long-Term Historical Average of each variable
[6] Source: Current = Bloomberg Professional as of 9/30/2019
Near-Term = Blue Chip Financial Forecasts, Vol. 38, No. 8, October 1, 2019, at 2
Long-Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14
[6] Direct Testiony of Michael P. Gorman, at 59.
[7] Equals [1] + (ln([6]) x [2]) + ([3] x [5]) + ([4] x [5])
[8] Equals [6] + [7]
[9] Source: S&P Global Market Intelligence
[10] Source: S&P Global Market Intelligence
[11] Source: Bloomberg Professional, equals 200-trading day average (i.e. lag period)
[12] Source: Bloomberg Professional, equals 200-trading day average (i.e. lag period)
[13] Equals LN[11]
[14] Equals [12] - [11]
[15] Source: Bloomberg Professional, equals 200-trading day average (i.e. lag period)
[16] Equals [10] - [11]

[9] Date of Rate Case	[10] Return on Equity	[11] 30-Year Treasury Yield	[12] Moody's Utility A Yield	[13] LN(30-Year Treasury)	[14] Moody's Utility A Credit Spread	[15] VIX	[16] Risk Premium
1/9/1990	13.00%	8.19%		-2.50		19.54	4.81%
1/18/1990	12.50%	8.16%		-2.51		21.80	4.34%
1/26/1990	12.10%	8.14%		-2.51		22.87	3.96%
3/21/1990	12.80%	8.15%		-2.51		22.42	4.65%
3/28/1990	13.00%	8.16%		-2.51		22.28	4.84%
4/5/1990	12.20%	8.17%		-2.50		22.14	4.03%
4/12/1990	13.25%	8.19%		-2.50		22.04	5.06%
4/30/1990	12.45%	8.24%		-2.50		21.99	4.21%
5/31/1990	12.40%	8.31%		-2.49		21.17	4.09%
6/15/1990	13.20%	8.33%		-2.49		20.80	4.87%
6/27/1990	12.90%	8.34%		-2.48		20.52	4.56%
6/29/1990	13.25%	8.35%		-2.48		20.45	4.90%
7/6/1990	12.10%	8.36%		-2.48		20.33	3.74%
7/19/1990	11.70%	8.38%		-2.48		20.13	3.32%
8/31/1990	12.50%	8.53%		-2.46		21.24	3.97%
8/31/1990	12.50%	8.53%		-2.46		21.24	3.97%
9/13/1990	12.50%	8.58%		-2.46		21.59	3.92%
9/18/1990	12.75%	8.60%		-2.45		21.72	4.15%
9/20/1990	12.50%	8.61%		-2.45		21.79	3.89%
10/2/1990	13.00%	8.65%		-2.45		22.16	4.35%
10/17/1990	11.90%	8.68%		-2.44		22.57	3.22%
10/31/1990	12.95%	8.70%		-2.44		22.77	4.25%
11/9/1990	13.25%	8.70%		-2.44		22.99	4.55%
11/19/1990	13.00%	8.70%		-2.44		23.01	4.30%
11/21/1990	12.10%	8.70%		-2.44		22.99	3.40%
11/21/1990	12.50%	8.70%		-2.44		22.99	3.80%
11/28/1990	12.75%	8.70%		-2.44		23.00	4.05%
11/29/1990	12.75%	8.70%		-2.44		23.02	4.05%
12/18/1990	13.10%	8.68%		-2.44		23.23	4.42%
12/20/1990	12.50%	8.67%		-2.45		23.26	3.83%
12/21/1990	12.50%	8.67%		-2.45		23.27	3.83%
12/21/1990	13.00%	8.67%		-2.45		23.27	4.33%
12/21/1990	13.60%	8.67%		-2.45		23.27	4.93%
1/3/1991	13.02%	8.66%		-2.45		23.45	4.36%
1/16/1991	13.25%	8.63%		-2.45		23.97	4.62%
1/25/1991	11.70%	8.61%		-2.45		24.10	3.09%
2/15/1991	12.70%	8.56%		-2.46		24.39	4.14%
2/15/1991	12.80%	8.56%		-2.46		24.39	4.24%
4/3/1991	13.00%	8.51%		-2.46		24.66	4.49%
4/30/1991	12.45%	8.48%		-2.47		24.51	3.97%
4/30/1991	13.00%	8.48%		-2.47		24.51	4.52%
6/25/1991	11.70%	8.34%		-2.48		22.04	3.36%
6/28/1991	12.50%	8.34%		-2.48		21.88	4.16%
7/1/1991	11.70%	8.34%		-2.48		21.83	3.36%
7/19/1991	12.10%	8.31%		-2.49		21.00	3.79%
7/19/1991	12.30%	8.31%		-2.49		21.00	3.99%
7/22/1991	12.90%	8.30%		-2.49		20.94	4.60%
8/15/1991	12.25%	8.28%		-2.49		19.70	3.97%
8/29/1991	13.30%	8.26%		-2.49		19.39	5.04%
9/27/1991	12.50%	8.23%		-2.50		18.70	4.27%
9/30/1991	12.40%	8.23%		-2.50		18.64	4.17%
10/3/1991	11.30%	8.22%		-2.50		18.45	3.08%
10/9/1991	11.70%	8.21%		-2.50		18.14	3.49%
10/15/1991	13.40%	8.20%		-2.50		17.80	5.20%
11/1/1991	12.90%	8.20%		-2.50		17.31	4.70%
11/8/1991	12.75%	8.20%		-2.50		17.13	4.55%
11/26/1991	11.60%	8.18%		-2.50		16.95	3.42%
11/26/1991	12.00%	8.18%		-2.50		16.95	3.82%
11/27/1991	12.70%	8.18%		-2.50		16.95	4.52%
12/6/1991	12.70%	8.16%		-2.51		16.95	4.54%
12/10/1991	11.75%	8.15%		-2.51		17.00	3.60%
12/19/1991	12.60%	8.14%		-2.51		17.08	4.46%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
12/19/1991	12.80%	8.14%		-2.51		17.08	4.66%
12/30/1991	12.10%	8.11%		-2.51		17.06	3.99%
1/22/1992	12.84%	8.05%		-2.52		17.13	4.79%
1/31/1992	12.00%	8.03%		-2.52		17.10	3.97%
2/20/1992	13.00%	8.00%		-2.53		17.16	5.00%
2/27/1992	11.75%	7.98%		-2.53		17.18	3.77%
3/18/1992	12.50%	7.94%		-2.53		17.29	4.56%
5/15/1992	12.75%	7.86%		-2.54		17.14	4.89%
6/24/1992	12.20%	7.85%		-2.54		16.94	4.35%
6/29/1992	11.00%	7.85%		-2.54		16.92	3.15%
7/14/1992	12.00%	7.83%		-2.55		16.77	4.17%
7/22/1992	11.20%	7.82%		-2.55		16.65	3.38%
8/10/1992	12.10%	7.79%		-2.55		16.52	4.31%
8/26/1992	12.43%	7.75%		-2.56		16.24	4.68%
9/30/1992	11.60%	7.72%		-2.56		15.63	3.88%
10/6/1992	12.25%	7.72%		-2.56		15.63	4.53%
10/13/1992	12.75%	7.71%		-2.56		15.69	5.04%
10/23/1992	11.65%	7.71%		-2.56		15.69	3.94%
10/28/1992	12.25%	7.71%		-2.56		15.66	4.54%
10/29/1992	12.75%	7.70%		-2.56		15.65	5.05%
10/30/1992	11.40%	7.70%		-2.56		15.64	3.70%
11/9/1992	10.60%	7.70%		-2.56		15.57	2.90%
11/25/1992	11.00%	7.68%		-2.57		15.38	3.32%
11/25/1992	12.00%	7.68%		-2.57		15.38	4.32%
12/3/1992	11.85%	7.66%		-2.57		15.21	4.19%
12/16/1992	11.90%	7.64%		-2.57		14.95	4.26%
12/22/1992	12.30%	7.62%		-2.57		14.85	4.68%
12/22/1992	12.40%	7.62%		-2.57		14.85	4.78%
12/30/1992	12.00%	7.61%		-2.58		14.73	4.39%
12/31/1992	12.00%	7.61%		-2.58		14.71	4.39%
1/12/1993	12.00%	7.59%		-2.58		14.57	4.41%
1/12/1993	12.00%	7.59%		-2.58		14.57	4.41%
2/2/1993	11.40%	7.53%		-2.59		14.22	3.87%
2/22/1993	11.60%	7.48%		-2.59		14.16	4.12%
4/23/1993	11.75%	7.27%		-2.62		13.90	4.48%
5/3/1993	11.50%	7.25%		-2.62		13.89	4.25%
5/3/1993	11.75%	7.25%		-2.62		13.89	4.50%
6/3/1993	12.00%	7.20%		-2.63		13.82	4.80%
6/7/1993	11.50%	7.20%		-2.63		13.82	4.30%
6/22/1993	11.75%	7.16%		-2.64		13.76	4.59%
7/21/1993	11.78%	7.06%		-2.65		13.12	4.72%
7/21/1993	11.90%	7.06%		-2.65		13.12	4.84%
7/23/1993	11.50%	7.05%		-2.65		13.07	4.45%
7/29/1993	11.50%	7.03%		-2.66		12.97	4.47%
8/12/1993	10.75%	6.97%		-2.66		12.80	3.78%
8/24/1993	11.50%	6.92%		-2.67		12.71	4.58%
8/31/1993	11.90%	6.88%		-2.68		12.69	5.02%
9/1/1993	11.25%	6.87%		-2.68		12.69	4.38%
9/1/1993	11.47%	6.87%		-2.68		12.69	4.60%
9/27/1993	10.50%	6.74%	7.73%	-2.70	0.99%	12.78	3.76%
9/29/1993	11.00%	6.72%	7.71%	-2.70	0.99%	12.77	4.28%
9/30/1993	11.60%	6.72%	7.71%	-2.70	0.99%	12.77	4.88%
10/8/1993	11.50%	6.67%	7.67%	-2.71	0.99%	12.75	4.83%
10/14/1993	11.20%	6.65%	7.64%	-2.71	0.99%	12.75	4.55%
10/15/1993	11.75%	6.64%	7.63%	-2.71	0.99%	12.74	5.11%
10/25/1993	11.55%	6.60%	7.59%	-2.72	0.99%	12.73	4.95%
10/28/1993	11.50%	6.58%	7.57%	-2.72	0.99%	12.73	4.92%
10/29/1993	10.10%	6.57%	7.57%	-2.72	1.00%	12.72	3.53%
10/29/1993	10.20%	6.57%	7.57%	-2.72	1.00%	12.72	3.63%
10/29/1993	11.25%	6.57%	7.57%	-2.72	1.00%	12.72	4.68%
11/2/1993	10.80%	6.56%	7.56%	-2.72	1.00%	12.71	4.24%
11/12/1993	11.80%	6.53%	7.53%	-2.73	1.00%	12.71	5.27%
11/23/1993	12.50%	6.51%	7.51%	-2.73	1.00%	12.74	5.99%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
11/26/1993	11.00%	6.50%	7.50%	-2.73	1.00%	12.75	4.50%
12/1/1993	11.45%	6.49%	7.49%	-2.73	1.00%	12.74	4.96%
12/16/1993	10.60%	6.45%	7.46%	-2.74	1.00%	12.61	4.15%
12/16/1993	11.20%	6.45%	7.46%	-2.74	1.00%	12.61	4.75%
12/21/1993	11.30%	6.44%	7.45%	-2.74	1.00%	12.59	4.86%
12/22/1993	11.00%	6.44%	7.45%	-2.74	1.00%	12.57	4.56%
12/23/1993	10.10%	6.44%	7.44%	-2.74	1.01%	12.56	3.66%
1/5/1994	11.50%	6.41%	7.42%	-2.75	1.01%	12.45	5.09%
1/10/1994	11.00%	6.40%	7.41%	-2.75	1.01%	12.45	4.60%
1/25/1994	12.00%	6.37%	7.38%	-2.75	1.01%	12.37	5.63%
2/2/1994	10.40%	6.35%	7.37%	-2.76	1.02%	12.29	4.05%
2/9/1994	10.70%	6.34%	7.36%	-2.76	1.02%	12.28	4.36%
4/6/1994	11.24%	6.35%	7.36%	-2.76	1.01%	12.80	4.89%
4/25/1994	11.00%	6.39%	7.41%	-2.75	1.02%	13.14	4.61%
6/16/1994	10.50%	6.63%	7.62%	-2.71	0.99%	13.38	3.87%
6/23/1994	10.60%	6.67%	7.65%	-2.71	0.98%	13.38	3.93%
7/19/1994	10.70%	6.83%	7.79%	-2.68	0.95%	13.53	3.87%
9/29/1994	10.90%	7.20%	8.10%	-2.63	0.90%	13.48	3.70%
9/29/1994	11.00%	7.20%	8.10%	-2.63	0.90%	13.48	3.80%
10/7/1994	11.87%	7.26%	8.15%	-2.62	0.89%	13.62	4.61%
10/18/1994	11.50%	7.32%	8.21%	-2.62	0.89%	13.72	4.18%
10/18/1994	11.50%	7.32%	8.21%	-2.62	0.89%	13.72	4.18%
10/24/1994	11.00%	7.35%	8.24%	-2.61	0.89%	13.82	3.65%
11/22/1994	12.12%	7.52%	8.41%	-2.59	0.89%	14.15	4.60%
11/29/1994	11.30%	7.55%	8.44%	-2.58	0.89%	14.18	3.75%
12/1/1994	11.00%	7.56%	8.45%	-2.58	0.89%	14.19	3.44%
12/8/1994	11.50%	7.59%	8.48%	-2.58	0.89%	14.21	3.91%
12/8/1994	11.70%	7.59%	8.48%	-2.58	0.89%	14.21	4.11%
12/12/1994	11.82%	7.60%	8.49%	-2.58	0.89%	14.22	4.22%
12/14/1994	11.50%	7.61%	8.50%	-2.58	0.89%	14.23	3.89%
12/19/1994	11.50%	7.62%	8.51%	-2.57	0.89%	14.22	3.88%
4/19/1995	11.00%	7.72%	8.62%	-2.56	0.90%	13.26	3.28%
9/11/1995	11.30%	7.16%	8.13%	-2.64	0.97%	12.24	4.14%
9/15/1995	10.40%	7.13%	8.11%	-2.64	0.98%	12.21	3.27%
9/29/1995	11.50%	7.06%	8.05%	-2.65	0.99%	12.20	4.44%
10/13/1995	10.76%	6.98%	7.98%	-2.66	1.00%	12.32	3.78%
11/7/1995	12.50%	6.86%	7.87%	-2.68	1.01%	12.52	5.64%
11/8/1995	11.10%	6.85%	7.87%	-2.68	1.01%	12.53	4.25%
11/8/1995	11.30%	6.85%	7.87%	-2.68	1.01%	12.53	4.45%
11/17/1995	10.90%	6.81%	7.83%	-2.69	1.02%	12.57	4.09%
11/20/1995	11.40%	6.80%	7.82%	-2.69	1.02%	12.58	4.60%
11/27/1995	13.60%	6.77%	7.81%	-2.69	1.04%	12.58	6.83%
12/14/1995	11.30%	6.68%	7.73%	-2.71	1.05%	12.51	4.62%
12/20/1995	11.60%	6.65%	7.70%	-2.71	1.06%	12.54	4.95%
1/31/1996	11.30%	6.45%	7.56%	-2.74	1.10%	12.65	4.85%
3/11/1996	11.60%	6.40%	7.50%	-2.75	1.11%	13.13	5.20%
4/3/1996	11.13%	6.41%	7.52%	-2.75	1.11%	13.69	4.72%
4/15/1996	10.50%	6.41%	7.53%	-2.75	1.13%	13.90	4.09%
4/17/1996	10.77%	6.40%	7.54%	-2.75	1.13%	13.94	4.37%
4/26/1996	10.60%	6.40%	7.54%	-2.75	1.14%	14.02	4.20%
5/10/1996	11.00%	6.40%	7.55%	-2.75	1.15%	14.20	4.60%
5/13/1996	11.25%	6.41%	7.55%	-2.75	1.15%	14.21	4.84%
7/3/1996	11.25%	6.49%	7.61%	-2.73	1.12%	14.88	4.76%
7/22/1996	11.25%	6.54%	7.65%	-2.73	1.10%	15.12	4.71%
10/3/1996	10.00%	6.77%	7.81%	-2.69	1.04%	16.29	3.23%
10/29/1996	11.30%	6.84%	7.86%	-2.68	1.02%	16.54	4.46%
11/26/1996	11.30%	6.86%	7.87%	-2.68	1.01%	16.62	4.44%
11/27/1996	11.30%	6.86%	7.87%	-2.68	1.01%	16.62	4.44%
11/29/1996	11.00%	6.86%	7.87%	-2.68	1.01%	16.62	4.14%
12/12/1996	11.96%	6.85%	7.86%	-2.68	1.02%	16.65	5.11%
12/17/1996	11.50%	6.85%	7.86%	-2.68	1.02%	16.70	4.65%
1/22/1997	11.30%	6.83%	7.84%	-2.68	1.01%	17.01	4.47%
1/27/1997	11.25%	6.83%	7.84%	-2.68	1.01%	17.06	4.42%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
1/31/1997	11.25%	6.83%	7.84%	-2.68	1.01%	17.11	4.42%
2/13/1997	11.00%	6.82%	7.82%	-2.69	1.00%	17.30	4.18%
2/13/1997	11.80%	6.82%	7.82%	-2.69	1.00%	17.30	4.98%
2/20/1997	11.80%	6.81%	7.81%	-2.69	1.00%	17.40	4.99%
3/27/1997	10.75%	6.79%	7.79%	-2.69	1.00%	17.90	3.96%
4/29/1997	11.70%	6.81%	7.79%	-2.69	0.98%	18.11	4.89%
7/17/1997	12.00%	6.77%	7.74%	-2.69	0.97%	19.25	5.23%
10/29/1997	10.75%	6.70%	7.66%	-2.70	0.96%	21.14	4.05%
10/31/1997	11.25%	6.70%	7.66%	-2.70	0.96%	21.32	4.55%
12/24/1997	10.75%	6.53%	7.46%	-2.73	0.92%	23.07	4.22%
4/28/1998	10.90%	6.11%	7.25%	-2.80	1.15%	23.82	4.79%
4/30/1998	12.20%	6.10%	7.25%	-2.80	1.15%	23.82	6.10%
6/30/1998	11.00%	5.94%	7.16%	-2.82	1.22%	23.34	5.06%
8/26/1998	10.93%	5.82%	7.10%	-2.84	1.28%	22.69	5.11%
9/3/1998	11.40%	5.80%	7.09%	-2.85	1.29%	23.15	5.60%
9/15/1998	11.90%	5.77%	7.08%	-2.85	1.31%	23.72	6.13%
10/7/1998	11.06%	5.70%	7.06%	-2.86	1.36%	24.70	5.36%
10/30/1998	11.40%	5.63%	7.06%	-2.88	1.43%	25.81	5.77%
12/10/1998	12.20%	5.52%	7.04%	-2.90	1.52%	26.80	6.68%
12/17/1998	12.10%	5.49%	7.03%	-2.90	1.54%	27.07	6.61%
2/19/1999	11.15%	5.32%	6.99%	-2.93	1.68%	28.36	5.83%
3/1/1999	10.65%	5.31%	7.00%	-2.94	1.69%	28.53	5.34%
3/1/1999	10.65%	5.31%	7.00%	-2.94	1.69%	28.53	5.34%
6/8/1999	11.25%	5.35%	7.12%	-2.93	1.76%	28.27	5.90%
11/12/1999	10.25%	5.92%	7.65%	-2.83	1.73%	24.09	4.33%
12/14/1999	10.50%	5.99%	7.74%	-2.81	1.75%	23.54	4.51%
1/28/2000	10.71%	6.16%	7.92%	-2.79	1.76%	23.40	4.55%
2/17/2000	10.60%	6.20%	7.98%	-2.78	1.78%	23.18	4.40%
5/25/2000	10.80%	6.19%	8.21%	-2.78	2.01%	23.92	4.61%
6/19/2000	11.05%	6.18%	8.25%	-2.78	2.07%	23.79	4.87%
6/22/2000	11.25%	6.18%	8.26%	-2.78	2.08%	23.69	5.07%
7/17/2000	11.06%	6.15%	8.28%	-2.79	2.14%	23.32	4.91%
7/20/2000	12.20%	6.14%	8.29%	-2.79	2.14%	23.26	6.06%
8/11/2000	11.00%	6.11%	8.30%	-2.79	2.19%	22.99	4.89%
9/27/2000	11.25%	6.00%	8.32%	-2.81	2.31%	22.44	5.25%
9/29/2000	11.16%	6.00%	8.32%	-2.81	2.32%	22.38	5.16%
10/5/2000	11.30%	5.98%	8.32%	-2.82	2.34%	22.33	5.32%
11/28/2000	12.90%	5.87%	8.28%	-2.84	2.41%	22.94	7.03%
11/30/2000	12.10%	5.86%	8.28%	-2.84	2.42%	23.00	6.24%
2/5/2001	11.50%	5.75%	8.17%	-2.86	2.42%	22.93	5.75%
3/15/2001	11.25%	5.66%	8.04%	-2.87	2.38%	23.12	5.59%
5/8/2001	10.75%	5.61%	7.96%	-2.88	2.34%	24.69	5.14%
10/24/2001	10.30%	5.54%	7.86%	-2.89	2.32%	25.71	4.76%
10/24/2001	11.00%	5.54%	7.82%	-2.89	2.28%	25.71	5.46%
1/9/2002	10.00%	5.50%	7.77%	-2.90	2.27%	25.45	4.50%
1/30/2002	11.00%	5.47%	7.74%	-2.91	2.27%	25.13	5.53%
1/31/2002	11.00%	5.47%	7.74%	-2.91	2.27%	25.11	5.53%
4/17/2002	11.50%	5.44%	7.66%	-2.91	2.22%	24.72	6.06%
4/29/2002	11.00%	5.45%	7.65%	-2.91	2.21%	24.61	5.55%
6/11/2002	11.77%	5.48%	7.64%	-2.90	2.16%	24.38	6.29%
6/20/2002	12.30%	5.48%	7.63%	-2.90	2.15%	23.88	6.82%
8/28/2002	11.00%	5.49%	7.53%	-2.90	2.04%	24.55	5.51%
9/11/2002	11.20%	5.45%	7.50%	-2.91	2.05%	25.11	5.75%
9/12/2002	12.30%	5.45%	7.49%	-2.91	2.05%	25.17	6.85%
10/28/2002	11.30%	5.35%	7.40%	-2.93	2.05%	27.59	5.95%
10/30/2002	10.60%	5.34%	7.40%	-2.93	2.05%	27.69	5.26%
11/1/2002	12.60%	5.34%	7.39%	-2.93	2.06%	27.73	7.26%
11/7/2002	11.40%	5.33%	7.39%	-2.93	2.06%	27.91	6.07%
11/8/2002	10.75%	5.33%	7.38%	-2.93	2.06%	27.95	5.42%
11/20/2002	10.00%	5.30%	7.37%	-2.94	2.06%	28.21	4.70%
11/20/2002	10.50%	5.30%	7.37%	-2.94	2.06%	28.21	5.20%
12/4/2002	10.75%	5.27%	7.35%	-2.94	2.08%	28.49	5.48%
12/30/2002	11.20%	5.19%	7.28%	-2.96	2.09%	29.36	6.01%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
1/6/2003	11.25%	5.16%	7.27%	-2.96	2.10%	29.50	6.09%
2/28/2003	12.30%	5.01%	7.16%	-2.99	2.16%	31.45	7.29%
3/7/2003	9.96%	4.99%	7.14%	-3.00	2.16%	31.65	4.97%
3/12/2003	11.40%	4.97%	7.13%	-3.00	2.16%	31.79	6.43%
3/20/2003	12.00%	4.95%	7.11%	-3.01	2.16%	31.96	7.05%
4/3/2003	12.00%	4.92%	7.08%	-3.01	2.15%	32.01	7.08%
5/2/2003	11.40%	4.88%	7.01%	-3.02	2.12%	30.57	6.52%
5/15/2003	11.05%	4.87%	6.97%	-3.02	2.11%	29.85	6.18%
6/26/2003	11.00%	4.80%	6.83%	-3.04	2.03%	27.57	6.20%
7/1/2003	11.00%	4.80%	6.82%	-3.04	2.02%	27.29	6.20%
7/29/2003	11.71%	4.78%	6.75%	-3.04	1.97%	25.61	6.93%
8/22/2003	10.20%	4.81%	6.71%	-3.03	1.90%	24.69	5.39%
9/17/2003	9.90%	4.85%	6.68%	-3.03	1.83%	23.88	5.05%
9/25/2003	10.25%	4.85%	6.66%	-3.03	1.81%	23.61	5.40%
10/17/2003	10.54%	4.87%	6.60%	-3.02	1.74%	23.06	5.67%
10/22/2003	10.46%	4.87%	6.60%	-3.02	1.72%	22.83	5.59%
10/22/2003	10.71%	4.87%	6.60%	-3.02	1.72%	22.83	5.84%
10/30/2003	11.00%	4.88%	6.58%	-3.02	1.69%	22.37	6.12%
10/31/2003	10.20%	4.88%	6.57%	-3.02	1.69%	22.28	5.32%
10/31/2003	10.75%	4.88%	6.57%	-3.02	1.69%	22.28	5.87%
11/10/2003	10.60%	4.89%	6.56%	-3.02	1.66%	21.73	5.71%
12/9/2003	10.50%	4.93%	6.51%	-3.01	1.57%	20.22	5.57%
12/18/2003	10.50%	4.94%	6.49%	-3.01	1.55%	19.70	5.56%
12/19/2003	12.00%	4.94%	6.48%	-3.01	1.54%	19.64	7.06%
12/19/2003	12.00%	4.94%	6.48%	-3.01	1.54%	19.64	7.06%
1/13/2004	10.25%	4.95%	6.44%	-3.01	1.49%	18.87	5.30%
1/13/2004	12.00%	4.95%	6.44%	-3.01	1.49%	18.87	7.05%
2/9/2004	11.25%	4.98%	6.40%	-3.00	1.42%	18.41	6.27%
3/16/2004	10.90%	5.05%	6.38%	-2.99	1.33%	17.87	5.85%
3/16/2004	10.90%	5.05%	6.38%	-2.99	1.33%	17.87	5.85%
5/25/2004	10.00%	5.06%	6.32%	-2.98	1.26%	17.29	4.94%
6/2/2004	11.22%	5.07%	6.32%	-2.98	1.25%	17.20	6.15%
6/30/2004	10.50%	5.10%	6.30%	-2.98	1.20%	16.76	5.40%
7/8/2004	10.00%	5.10%	6.30%	-2.98	1.20%	16.65	4.90%
7/22/2004	10.25%	5.10%	6.29%	-2.98	1.19%	16.51	5.15%
8/26/2004	10.50%	5.10%	6.26%	-2.98	1.16%	16.43	5.40%
8/26/2004	10.50%	5.10%	6.26%	-2.98	1.16%	16.43	5.40%
9/9/2004	10.40%	5.10%	6.25%	-2.98	1.15%	16.32	5.30%
9/21/2004	10.50%	5.09%	6.24%	-2.98	1.15%	16.22	5.41%
9/27/2004	10.30%	5.09%	6.23%	-2.98	1.15%	16.17	5.21%
9/27/2004	10.50%	5.09%	6.23%	-2.98	1.15%	16.17	5.41%
10/20/2004	10.20%	5.08%	6.21%	-2.98	1.13%	15.99	5.12%
11/30/2004	10.60%	5.08%	6.19%	-2.98	1.11%	15.74	5.52%
12/8/2004	9.90%	5.09%	6.19%	-2.98	1.10%	15.60	4.81%
12/21/2004	11.50%	5.09%	6.19%	-2.98	1.10%	15.24	6.41%
12/22/2004	11.50%	5.09%	6.19%	-2.98	1.10%	15.21	6.41%
12/28/2004	10.25%	5.09%	6.19%	-2.98	1.10%	15.14	5.16%
2/18/2005	10.30%	4.95%	6.04%	-3.01	1.10%	14.32	5.35%
3/29/2005	11.00%	4.86%	5.95%	-3.02	1.09%	13.98	6.14%
4/13/2005	10.60%	4.84%	5.92%	-3.03	1.08%	13.86	5.76%
4/28/2005	11.00%	4.80%	5.88%	-3.04	1.08%	13.85	6.20%
5/17/2005	10.00%	4.77%	5.84%	-3.04	1.07%	13.65	5.23%
6/8/2005	10.18%	4.71%	5.78%	-3.05	1.07%	13.48	5.47%
6/10/2005	10.90%	4.71%	5.78%	-3.06	1.07%	13.47	6.19%
7/6/2005	10.50%	4.65%	5.73%	-3.07	1.08%	13.26	5.85%
7/19/2005	11.50%	4.63%	5.71%	-3.07	1.07%	13.06	6.87%
8/11/2005	10.40%	4.60%	5.67%	-3.08	1.07%	12.77	5.80%
9/19/2005	9.45%	4.53%	5.60%	-3.09	1.07%	12.79	4.92%
9/30/2005	10.51%	4.52%	5.59%	-3.10	1.07%	12.80	5.99%
10/4/2005	9.90%	4.52%	5.58%	-3.10	1.07%	12.79	5.38%
10/4/2005	10.75%	4.52%	5.58%	-3.10	1.07%	12.79	6.23%
10/14/2005	10.40%	4.52%	5.58%	-3.10	1.07%	12.90	5.88%
10/31/2005	10.25%	4.53%	5.59%	-3.10	1.06%	13.00	5.72%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
11/2/2005	9.70%	4.53%	5.59%	-3.09	1.06%	13.03	5.17%
11/30/2005	10.00%	4.53%	5.62%	-3.09	1.08%	13.04	5.47%
12/9/2005	9.70%	4.53%	5.62%	-3.09	1.09%	12.99	5.17%
12/12/2005	11.00%	4.53%	5.62%	-3.09	1.09%	12.99	6.47%
12/20/2005	10.13%	4.53%	5.62%	-3.10	1.09%	12.90	5.60%
12/21/2005	10.40%	4.52%	5.62%	-3.10	1.09%	12.88	5.88%
12/21/2005	11.00%	4.52%	5.62%	-3.10	1.09%	12.88	6.48%
12/22/2005	10.20%	4.52%	5.61%	-3.10	1.09%	12.86	5.68%
12/22/2005	11.00%	4.52%	5.61%	-3.10	1.09%	12.86	6.48%
12/28/2005	10.00%	4.52%	5.61%	-3.10	1.09%	12.81	5.48%
1/5/2006	11.00%	4.52%	5.61%	-3.10	1.10%	12.78	6.48%
1/25/2006	11.20%	4.52%	5.62%	-3.10	1.10%	12.57	6.68%
1/25/2006	11.20%	4.52%	5.62%	-3.10	1.10%	12.57	6.68%
2/3/2006	10.50%	4.52%	5.63%	-3.10	1.11%	12.50	5.98%
2/15/2006	9.50%	4.53%	5.64%	-3.09	1.11%	12.42	4.97%
4/26/2006	10.60%	4.65%	5.80%	-3.07	1.15%	12.45	5.95%
7/24/2006	9.60%	4.87%	6.07%	-3.02	1.20%	13.16	4.73%
7/24/2006	10.00%	4.87%	6.07%	-3.02	1.20%	13.16	5.13%
9/20/2006	11.00%	4.93%	6.13%	-3.01	1.20%	13.38	6.07%
9/26/2006	10.75%	4.93%	6.14%	-3.01	1.20%	13.41	5.82%
10/20/2006	9.80%	4.96%	6.16%	-3.00	1.20%	13.37	4.84%
11/2/2006	9.71%	4.97%	6.17%	-3.00	1.20%	13.29	4.74%
11/9/2006	10.00%	4.97%	6.17%	-3.00	1.20%	13.24	5.03%
11/21/2006	11.00%	4.98%	6.17%	-3.00	1.19%	13.17	6.02%
12/5/2006	10.20%	4.97%	6.16%	-3.00	1.19%	13.12	5.23%
1/5/2007	10.40%	4.95%	6.14%	-3.01	1.19%	13.08	5.45%
1/9/2007	11.00%	4.94%	6.13%	-3.01	1.19%	13.07	6.06%
1/11/2007	10.90%	4.94%	6.13%	-3.01	1.19%	13.06	5.96%
1/19/2007	10.80%	4.93%	6.12%	-3.01	1.19%	13.03	5.87%
1/26/2007	10.00%	4.92%	6.11%	-3.01	1.19%	13.00	5.08%
2/8/2007	10.40%	4.91%	6.09%	-3.01	1.18%	12.93	5.49%
3/14/2007	10.10%	4.86%	6.02%	-3.02	1.17%	12.50	5.24%
3/20/2007	10.25%	4.84%	6.01%	-3.03	1.17%	12.46	5.41%
3/21/2007	11.35%	4.84%	6.01%	-3.03	1.16%	12.45	6.51%
3/22/2007	10.50%	4.84%	6.00%	-3.03	1.16%	12.43	5.66%
3/29/2007	10.00%	4.83%	5.99%	-3.03	1.16%	12.39	5.17%
6/13/2007	10.75%	4.81%	5.93%	-3.03	1.11%	12.23	5.94%
6/29/2007	9.53%	4.84%	5.95%	-3.03	1.11%	12.44	4.69%
6/29/2007	10.10%	4.84%	5.95%	-3.03	1.11%	12.44	5.26%
7/3/2007	10.25%	4.85%	5.96%	-3.03	1.11%	12.47	5.40%
7/13/2007	9.50%	4.86%	5.97%	-3.02	1.11%	12.63	4.64%
7/24/2007	10.40%	4.87%	5.97%	-3.02	1.10%	12.83	5.53%
8/1/2007	10.15%	4.88%	5.98%	-3.02	1.11%	13.18	5.27%
8/29/2007	10.50%	4.91%	6.03%	-3.01	1.12%	14.71	5.59%
9/10/2007	9.71%	4.91%	6.05%	-3.01	1.13%	15.21	4.80%
9/19/2007	10.00%	4.91%	6.06%	-3.01	1.15%	15.71	5.09%
9/25/2007	9.70%	4.92%	6.07%	-3.01	1.15%	15.89	4.78%
10/8/2007	10.48%	4.92%	6.08%	-3.01	1.16%	16.20	5.56%
10/19/2007	10.50%	4.91%	6.09%	-3.01	1.18%	16.59	5.59%
10/25/2007	9.65%	4.91%	6.09%	-3.01	1.18%	16.80	4.74%
11/15/2007	10.00%	4.89%	6.09%	-3.02	1.20%	17.90	5.11%
11/20/2007	9.90%	4.89%	6.09%	-3.02	1.20%	18.13	5.01%
11/27/2007	10.00%	4.88%	6.10%	-3.02	1.21%	18.34	5.12%
11/29/2007	10.90%	4.88%	6.10%	-3.02	1.22%	18.41	6.02%
12/14/2007	10.80%	4.87%	6.12%	-3.02	1.25%	18.84	5.93%
12/18/2007	10.40%	4.86%	6.12%	-3.02	1.26%	18.96	5.54%
12/19/2007	9.80%	4.86%	6.12%	-3.02	1.26%	19.00	4.94%
12/19/2007	9.80%	4.86%	6.12%	-3.02	1.26%	19.00	4.94%
12/19/2007	10.20%	4.86%	6.12%	-3.02	1.26%	19.00	5.34%
12/21/2007	9.10%	4.86%	6.12%	-3.02	1.27%	19.06	4.24%
1/8/2008	10.75%	4.83%	6.13%	-3.03	1.30%	19.51	5.92%
1/17/2008	10.75%	4.81%	6.13%	-3.03	1.32%	19.95	5.94%
1/17/2008	10.75%	4.81%	6.13%	-3.03	1.32%	19.95	5.94%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
2/5/2008	9.99%	4.78%	6.14%	-3.04	1.36%	20.88	5.21%
2/5/2008	10.19%	4.78%	6.14%	-3.04	1.36%	20.88	5.41%
2/13/2008	10.20%	4.76%	6.15%	-3.05	1.39%	21.32	5.44%
3/31/2008	10.00%	4.63%	6.15%	-3.07	1.52%	23.25	5.37%
5/28/2008	10.50%	4.53%	6.16%	-3.09	1.62%	22.97	5.97%
6/24/2008	10.00%	4.52%	6.18%	-3.10	1.66%	22.83	5.48%
6/27/2008	10.00%	4.52%	6.18%	-3.10	1.66%	22.91	5.48%
7/31/2008	10.70%	4.50%	6.21%	-3.10	1.72%	23.52	6.20%
7/31/2008	10.82%	4.50%	6.21%	-3.10	1.72%	23.52	6.32%
8/27/2008	10.25%	4.50%	6.26%	-3.10	1.75%	23.00	5.75%
9/2/2008	10.25%	4.50%	6.26%	-3.10	1.76%	22.96	5.75%
9/19/2008	10.70%	4.48%	6.27%	-3.11	1.79%	23.33	6.22%
9/24/2008	10.68%	4.48%	6.28%	-3.11	1.80%	23.59	6.20%
9/24/2008	10.68%	4.48%	6.28%	-3.11	1.80%	23.59	6.20%
9/24/2008	10.68%	4.48%	6.28%	-3.11	1.80%	23.59	6.20%
9/30/2008	10.20%	4.48%	6.30%	-3.11	1.82%	23.93	5.72%
10/3/2008	10.30%	4.48%	6.31%	-3.11	1.84%	24.24	5.82%
10/8/2008	10.15%	4.47%	6.33%	-3.11	1.86%	24.73	5.68%
10/20/2008	10.06%	4.47%	6.39%	-3.11	1.92%	26.28	5.59%
10/24/2008	10.60%	4.46%	6.43%	-3.11	1.97%	27.13	6.14%
10/24/2008	10.60%	4.46%	6.43%	-3.11	1.97%	27.13	6.14%
11/21/2008	10.50%	4.42%	6.59%	-3.12	2.17%	31.33	6.08%
11/21/2008	10.50%	4.42%	6.59%	-3.12	2.17%	31.33	6.08%
11/21/2008	10.50%	4.42%	6.59%	-3.12	2.17%	31.33	6.08%
11/24/2008	10.50%	4.41%	6.59%	-3.12	2.18%	31.53	6.09%
12/3/2008	10.39%	4.37%	6.62%	-3.13	2.25%	32.61	6.02%
12/24/2008	10.00%	4.26%	6.65%	-3.16	2.39%	34.69	5.74%
12/26/2008	10.10%	4.24%	6.65%	-3.16	2.41%	34.79	5.86%
12/29/2008	10.20%	4.23%	6.65%	-3.16	2.42%	34.90	5.97%
1/13/2009	10.45%	4.14%	6.65%	-3.18	2.51%	35.94	6.31%
2/2/2009	10.05%	4.04%	6.66%	-3.21	2.62%	37.80	6.01%
3/9/2009	10.30%	3.89%	6.66%	-3.25	2.77%	41.33	6.41%
3/25/2009	10.17%	3.84%	6.66%	-3.26	2.83%	42.65	6.33%
4/2/2009	10.75%	3.81%	6.67%	-3.27	2.86%	43.23	6.94%
5/5/2009	10.75%	3.71%	6.68%	-3.29	2.97%	44.81	7.04%
5/15/2009	10.20%	3.70%	6.68%	-3.30	2.98%	45.32	6.50%
5/29/2009	9.54%	3.70%	6.69%	-3.30	2.99%	45.82	5.84%
6/3/2009	10.10%	3.71%	6.69%	-3.30	2.98%	45.95	6.39%
6/22/2009	10.00%	3.73%	6.68%	-3.29	2.96%	45.99	6.27%
6/29/2009	10.21%	3.74%	6.66%	-3.29	2.92%	45.72	6.47%
6/30/2009	9.31%	3.74%	6.66%	-3.29	2.92%	45.64	5.57%
7/17/2009	9.26%	3.75%	6.58%	-3.28	2.83%	43.64	5.51%
7/17/2009	10.50%	3.75%	6.58%	-3.28	2.83%	43.64	6.75%
10/16/2009	10.40%	4.09%	6.11%	-3.20	2.02%	32.97	6.31%
10/26/2009	10.10%	4.11%	6.08%	-3.19	1.97%	32.26	5.99%
10/28/2009	10.15%	4.12%	6.07%	-3.19	1.96%	32.06	6.03%
10/28/2009	10.15%	4.12%	6.07%	-3.19	1.96%	32.06	6.03%
10/30/2009	9.95%	4.12%	6.07%	-3.19	1.94%	31.89	5.83%
11/20/2009	9.45%	4.18%	6.02%	-3.17	1.83%	30.16	5.27%
12/14/2009	10.50%	4.24%	5.96%	-3.16	1.72%	28.27	6.26%
12/16/2009	10.75%	4.25%	5.96%	-3.16	1.70%	28.02	6.50%
12/17/2009	10.30%	4.26%	5.95%	-3.16	1.69%	27.91	6.04%
12/18/2009	10.40%	4.26%	5.95%	-3.16	1.68%	27.80	6.14%
12/18/2009	10.40%	4.26%	5.95%	-3.16	1.68%	27.80	6.14%
12/18/2009	10.50%	4.26%	5.95%	-3.16	1.68%	27.80	6.24%
12/22/2009	10.20%	4.27%	5.94%	-3.15	1.67%	27.57	5.93%
12/22/2009	10.40%	4.27%	5.94%	-3.15	1.67%	27.57	6.13%
12/28/2009	10.85%	4.29%	5.93%	-3.15	1.64%	27.19	6.56%
12/29/2009	10.38%	4.30%	5.93%	-3.15	1.63%	27.07	6.08%
1/11/2010	10.24%	4.34%	5.90%	-3.14	1.56%	26.25	5.90%
1/21/2010	10.23%	4.37%	5.87%	-3.13	1.51%	25.56	5.86%
1/21/2010	10.33%	4.37%	5.87%	-3.13	1.51%	25.56	5.96%
1/26/2010	10.40%	4.37%	5.86%	-3.13	1.49%	25.38	6.03%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
2/10/2010	10.00%	4.39%	5.82%	-3.12	1.42%	24.84	5.61%
2/23/2010	10.50%	4.40%	5.80%	-3.12	1.40%	24.44	6.10%
3/9/2010	9.60%	4.40%	5.77%	-3.12	1.36%	23.86	5.20%
3/24/2010	10.13%	4.42%	5.74%	-3.12	1.32%	23.13	5.71%
3/31/2010	10.70%	4.43%	5.74%	-3.12	1.31%	22.90	6.27%
4/1/2010	9.50%	4.43%	5.74%	-3.12	1.31%	22.84	5.07%
4/2/2010	10.10%	4.44%	5.74%	-3.12	1.31%	22.84	5.66%
4/8/2010	10.35%	4.44%	5.74%	-3.11	1.30%	22.55	5.91%
4/29/2010	9.19%	4.46%	5.72%	-3.11	1.27%	21.95	4.73%
4/29/2010	9.40%	4.46%	5.72%	-3.11	1.27%	21.95	4.94%
4/29/2010	9.40%	4.46%	5.72%	-3.11	1.27%	21.95	4.94%
5/17/2010	10.55%	4.46%	5.71%	-3.11	1.25%	22.12	6.09%
5/24/2010	10.05%	4.46%	5.70%	-3.11	1.24%	22.47	5.59%
6/3/2010	11.00%	4.46%	5.70%	-3.11	1.24%	22.69	6.54%
6/16/2010	10.00%	4.46%	5.70%	-3.11	1.24%	23.02	5.54%
6/18/2010	10.30%	4.46%	5.70%	-3.11	1.24%	23.03	5.84%
8/9/2010	12.55%	4.41%	5.65%	-3.12	1.23%	23.24	8.14%
8/17/2010	10.10%	4.40%	5.63%	-3.12	1.23%	23.30	5.70%
9/16/2010	9.60%	4.31%	5.54%	-3.14	1.23%	23.54	5.29%
9/16/2010	10.00%	4.31%	5.54%	-3.14	1.23%	23.54	5.69%
9/16/2010	10.00%	4.31%	5.54%	-3.14	1.23%	23.54	5.69%
9/16/2010	10.30%	4.31%	5.54%	-3.14	1.23%	23.54	5.99%
10/21/2010	10.40%	4.20%	5.44%	-3.17	1.24%	23.70	6.20%
11/2/2010	9.75%	4.17%	5.42%	-3.18	1.24%	23.57	5.58%
11/2/2010	9.75%	4.17%	5.42%	-3.18	1.24%	23.57	5.58%
11/3/2010	10.75%	4.17%	5.42%	-3.18	1.24%	23.53	6.58%
11/19/2010	10.20%	4.15%	5.38%	-3.18	1.24%	23.36	6.05%
12/1/2010	10.00%	4.13%	5.37%	-3.19	1.24%	23.45	5.87%
12/6/2010	9.56%	4.12%	5.36%	-3.19	1.24%	23.46	5.44%
12/6/2010	10.09%	4.12%	5.36%	-3.19	1.24%	23.46	5.97%
12/9/2010	10.25%	4.12%	5.36%	-3.19	1.24%	23.46	6.13%
12/14/2010	10.33%	4.11%	5.35%	-3.19	1.24%	23.47	6.22%
12/17/2010	10.10%	4.11%	5.35%	-3.19	1.24%	23.47	5.99%
12/20/2010	10.10%	4.11%	5.35%	-3.19	1.24%	23.46	5.99%
12/23/2010	9.92%	4.10%	5.34%	-3.19	1.24%	23.44	5.82%
1/6/2011	10.35%	4.09%	5.32%	-3.20	1.24%	23.48	6.26%
1/12/2011	10.30%	4.09%	5.32%	-3.20	1.23%	23.48	6.21%
1/13/2011	10.30%	4.09%	5.32%	-3.20	1.23%	23.49	6.21%
3/10/2011	10.10%	4.16%	5.33%	-3.18	1.17%	21.21	5.94%
3/31/2011	9.45%	4.20%	5.35%	-3.17	1.15%	20.60	5.25%
4/18/2011	10.05%	4.23%	5.37%	-3.16	1.13%	20.07	5.82%
5/26/2011	10.50%	4.32%	5.41%	-3.14	1.09%	18.92	6.18%
6/21/2011	10.00%	4.36%	5.43%	-3.13	1.07%	18.57	5.64%
6/29/2011	8.83%	4.38%	5.44%	-3.13	1.07%	18.46	4.45%
8/1/2011	9.20%	4.41%	5.46%	-3.12	1.05%	18.34	4.79%
9/1/2011	10.10%	4.33%	5.37%	-3.14	1.04%	20.25	5.77%
11/14/2011	9.60%	3.93%	5.07%	-3.24	1.14%	24.91	5.67%
12/13/2011	9.50%	3.76%	4.93%	-3.28	1.17%	25.86	5.74%
12/20/2011	10.00%	3.72%	4.90%	-3.29	1.18%	26.01	6.28%
12/22/2011	10.40%	3.70%	4.88%	-3.30	1.18%	26.03	6.70%
1/10/2012	9.06%	3.59%	4.81%	-3.33	1.22%	26.31	5.47%
1/10/2012	9.45%	3.59%	4.81%	-3.33	1.22%	26.31	5.86%
1/10/2012	9.45%	3.59%	4.81%	-3.33	1.22%	26.31	5.86%
1/23/2012	10.20%	3.53%	4.76%	-3.35	1.23%	26.50	6.67%
1/31/2012	10.00%	3.49%	4.72%	-3.36	1.23%	26.60	6.51%
4/24/2012	9.50%	3.16%	4.45%	-3.46	1.29%	26.35	6.34%
4/24/2012	9.75%	3.16%	4.45%	-3.46	1.29%	26.35	6.59%
5/7/2012	9.80%	3.13%	4.42%	-3.46	1.29%	25.75	6.67%
5/22/2012	9.60%	3.10%	4.39%	-3.47	1.29%	24.80	6.50%
5/24/2012	9.70%	3.09%	4.39%	-3.48	1.29%	24.63	6.61%
6/7/2012	10.30%	3.06%	4.36%	-3.49	1.30%	24.13	7.24%
6/15/2012	10.40%	3.05%	4.35%	-3.49	1.29%	23.75	7.35%
6/18/2012	9.60%	3.05%	4.34%	-3.49	1.29%	23.67	6.55%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
7/2/2012	9.75%	3.04%	4.33%	-3.49	1.29%	22.50	6.71%
10/24/2012	10.30%	2.92%	4.16%	-3.53	1.24%	17.72	7.38%
10/26/2012	9.50%	2.92%	4.16%	-3.53	1.24%	17.71	6.58%
10/31/2012	9.30%	2.92%	4.15%	-3.54	1.24%	17.71	6.38%
10/31/2012	9.90%	2.92%	4.15%	-3.54	1.24%	17.71	6.98%
10/31/2012	10.00%	2.92%	4.15%	-3.54	1.24%	17.71	7.08%
11/1/2012	9.45%	2.91%	4.15%	-3.54	1.23%	17.71	6.54%
11/8/2012	10.10%	2.91%	4.13%	-3.54	1.23%	17.70	7.19%
11/9/2012	10.30%	2.90%	4.13%	-3.54	1.23%	17.70	7.40%
11/26/2012	10.00%	2.89%	4.10%	-3.55	1.22%	17.58	7.11%
11/28/2012	10.40%	2.88%	4.10%	-3.55	1.22%	17.55	7.52%
11/28/2012	10.50%	2.88%	4.10%	-3.55	1.22%	17.55	7.62%
12/4/2012	10.00%	2.87%	4.09%	-3.55	1.22%	17.50	7.13%
12/4/2012	10.50%	2.87%	4.09%	-3.55	1.22%	17.50	7.63%
12/20/2012	9.50%	2.84%	4.06%	-3.56	1.22%	17.55	6.66%
12/20/2012	10.10%	2.84%	4.06%	-3.56	1.22%	17.55	7.26%
12/20/2012	10.25%	2.84%	4.06%	-3.56	1.22%	17.55	7.41%
12/20/2012	10.30%	2.84%	4.06%	-3.56	1.22%	17.55	7.46%
12/20/2012	10.40%	2.84%	4.06%	-3.56	1.22%	17.55	7.56%
12/20/2012	10.50%	2.84%	4.06%	-3.56	1.22%	17.55	7.66%
12/26/2012	9.80%	2.83%	4.05%	-3.56	1.22%	17.60	6.97%
2/22/2013	9.60%	2.86%	4.01%	-3.55	1.15%	16.58	6.74%
3/14/2013	9.30%	2.89%	4.02%	-3.54	1.13%	15.88	6.41%
3/27/2013	9.80%	2.92%	4.02%	-3.54	1.11%	15.58	6.88%
4/23/2013	9.80%	2.96%	4.03%	-3.52	1.07%	15.25	6.84%
5/10/2013	9.25%	2.96%	4.04%	-3.52	1.07%	14.97	6.29%
6/13/2013	9.40%	3.01%	4.07%	-3.50	1.06%	14.87	6.39%
6/18/2013	9.28%	3.02%	4.08%	-3.50	1.06%	14.91	6.26%
6/18/2013	9.28%	3.02%	4.08%	-3.50	1.06%	14.91	6.26%
6/25/2013	9.80%	3.04%	4.09%	-3.49	1.05%	15.04	6.76%
9/23/2013	9.60%	3.33%	4.37%	-3.40	1.04%	14.33	6.27%
11/6/2013	10.20%	3.42%	4.46%	-3.37	1.04%	14.46	6.78%
11/13/2013	9.84%	3.44%	4.47%	-3.37	1.03%	14.47	6.40%
11/14/2013	10.25%	3.44%	4.48%	-3.37	1.03%	14.46	6.81%
11/22/2013	9.50%	3.47%	4.50%	-3.36	1.03%	14.36	6.03%
12/5/2013	10.20%	3.50%	4.52%	-3.35	1.03%	14.38	6.70%
12/13/2013	9.60%	3.52%	4.54%	-3.35	1.02%	14.45	6.08%
12/16/2013	9.73%	3.53%	4.54%	-3.35	1.02%	14.46	6.20%
12/17/2013	10.00%	3.53%	4.55%	-3.34	1.02%	14.48	6.47%
12/18/2013	9.08%	3.53%	4.55%	-3.34	1.02%	14.48	5.55%
12/23/2013	9.72%	3.55%	4.56%	-3.34	1.01%	14.49	6.17%
12/30/2013	10.00%	3.57%	4.57%	-3.33	1.00%	14.47	6.43%
1/21/2014	9.65%	3.66%	4.63%	-3.31	0.97%	14.38	5.99%
1/22/2014	9.18%	3.66%	4.63%	-3.31	0.97%	14.38	5.52%
2/20/2014	9.30%	3.71%	4.68%	-3.29	0.97%	14.72	5.59%
2/21/2014	9.85%	3.72%	4.68%	-3.29	0.96%	14.72	6.13%
2/28/2014	9.55%	3.73%	4.69%	-3.29	0.96%	14.69	5.82%
3/16/2014	9.72%	3.74%	4.68%	-3.29	0.94%	14.60	5.98%
4/21/2014	9.50%	3.73%	4.66%	-3.29	0.93%	14.46	5.77%
4/22/2014	9.80%	3.73%	4.66%	-3.29	0.93%	14.46	6.07%
5/8/2014	9.10%	3.71%	4.64%	-3.29	0.93%	14.50	5.39%
5/8/2014	9.59%	3.71%	4.64%	-3.29	0.93%	14.50	5.88%
6/6/2014	10.40%	3.66%	4.59%	-3.31	0.93%	14.16	6.74%
6/12/2014	10.10%	3.66%	4.58%	-3.31	0.92%	14.10	6.44%
6/12/2014	10.10%	3.66%	4.58%	-3.31	0.92%	14.10	6.44%
6/12/2014	10.10%	3.66%	4.58%	-3.31	0.92%	14.10	6.44%
7/7/2014	9.30%	3.63%	4.54%	-3.32	0.91%	13.77	5.67%
7/25/2014	9.30%	3.60%	4.50%	-3.32	0.90%	13.54	5.70%
7/31/2014	9.90%	3.59%	4.49%	-3.33	0.90%	13.55	6.31%
9/4/2014	9.10%	3.50%	4.41%	-3.35	0.90%	13.57	5.60%
9/24/2014	9.35%	3.46%	4.37%	-3.36	0.91%	13.48	5.89%
9/30/2014	9.75%	3.44%	4.35%	-3.37	0.91%	13.53	6.31%
10/29/2014	10.80%	3.37%	4.29%	-3.39	0.92%	13.96	7.43%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
11/6/2014	10.20%	3.35%	4.28%	-3.40	0.93%	13.88	6.85%
11/14/2014	10.20%	3.33%	4.27%	-3.40	0.93%	13.84	6.87%
11/14/2014	10.30%	3.33%	4.27%	-3.40	0.93%	13.84	6.97%
11/26/2014	10.20%	3.30%	4.25%	-3.41	0.94%	13.78	6.90%
12/3/2014	10.00%	3.29%	4.24%	-3.42	0.95%	13.76	6.71%
1/13/2015	10.30%	3.16%	4.15%	-3.45	0.99%	14.14	7.14%
1/21/2015	9.05%	3.13%	4.12%	-3.46	1.00%	14.34	5.92%
1/21/2015	9.05%	3.13%	4.12%	-3.46	1.00%	14.34	5.92%
4/9/2015	9.50%	2.88%	3.95%	-3.55	1.07%	15.35	6.62%
5/11/2015	9.80%	2.82%	3.91%	-3.57	1.09%	15.29	6.98%
6/17/2015	9.00%	2.79%	3.93%	-3.58	1.14%	15.46	6.21%
8/21/2015	9.75%	2.78%	3.99%	-3.58	1.20%	15.08	6.97%
10/7/2015	9.55%	2.82%	4.06%	-3.57	1.24%	16.58	6.73%
10/13/2015	9.75%	2.83%	4.08%	-3.56	1.24%	16.49	6.92%
10/15/2015	9.00%	2.84%	4.08%	-3.56	1.25%	16.46	6.16%
10/30/2015	9.80%	2.87%	4.13%	-3.55	1.27%	16.28	6.93%
11/19/2015	10.00%	2.89%	4.18%	-3.54	1.28%	16.33	7.11%
12/3/2015	10.00%	2.91%	4.21%	-3.54	1.30%	16.40	7.09%
12/9/2015	9.60%	2.92%	4.22%	-3.53	1.30%	16.42	6.68%
12/11/2015	9.90%	2.92%	4.23%	-3.53	1.30%	16.50	6.98%
12/18/2015	9.50%	2.94%	4.24%	-3.53	1.31%	16.67	6.56%
1/6/2016	9.50%	2.97%	4.28%	-3.52	1.32%	16.86	6.53%
1/6/2016	9.50%	2.97%	4.28%	-3.52	1.32%	16.86	6.53%
1/28/2016	9.40%	2.97%	4.32%	-3.52	1.35%	17.78	6.43%
2/10/2016	9.60%	2.95%	4.32%	-3.52	1.37%	18.23	6.65%
2/16/2016	9.50%	2.94%	4.32%	-3.53	1.38%	18.44	6.56%
2/29/2016	9.40%	2.92%	4.32%	-3.53	1.40%	18.79	6.48%
4/29/2016	9.80%	2.83%	4.25%	-3.57	1.42%	18.97	6.97%
5/5/2016	9.49%	2.82%	4.24%	-3.57	1.41%	19.02	6.67%
6/1/2016	9.55%	2.80%	4.21%	-3.58	1.41%	18.29	6.75%
6/3/2016	9.65%	2.79%	4.20%	-3.58	1.41%	18.15	6.86%
6/15/2016	9.00%	2.77%	4.18%	-3.59	1.40%	17.87	6.23%
6/15/2016	9.00%	2.77%	4.18%	-3.59	1.40%	17.87	6.23%
9/2/2016	9.50%	2.56%	3.95%	-3.66	1.39%	16.81	6.94%
9/23/2016	9.75%	2.52%	3.90%	-3.68	1.39%	16.49	7.23%
9/27/2016	9.50%	2.51%	3.90%	-3.69	1.39%	16.46	6.99%
9/29/2016	9.11%	2.50%	3.89%	-3.69	1.38%	16.40	6.61%
10/13/2016	10.20%	2.48%	3.86%	-3.70	1.38%	15.86	7.72%
10/28/2016	9.70%	2.47%	3.84%	-3.70	1.36%	15.37	7.23%
11/9/2016	9.80%	2.47%	3.83%	-3.70	1.35%	15.10	7.33%
11/18/2016	10.00%	2.49%	3.83%	-3.69	1.34%	14.85	7.51%
12/9/2016	10.10%	2.51%	3.83%	-3.68	1.32%	14.48	7.59%
12/15/2016	9.00%	2.53%	3.84%	-3.68	1.31%	14.45	6.47%
12/15/2016	9.00%	2.53%	3.84%	-3.68	1.31%	14.45	6.47%
12/20/2016	9.75%	2.53%	3.84%	-3.68	1.30%	14.40	7.22%
12/22/2016	9.50%	2.54%	3.84%	-3.67	1.30%	14.38	6.96%
1/24/2017	9.00%	2.59%	3.85%	-3.65	1.27%	14.15	6.41%
2/21/2017	10.55%	2.63%	3.88%	-3.64	1.25%	13.75	7.92%
3/1/2017	9.25%	2.65%	3.89%	-3.63	1.24%	13.70	6.60%
4/11/2017	9.50%	2.77%	3.96%	-3.59	1.20%	12.97	6.73%
4/20/2017	8.70%	2.79%	3.98%	-3.58	1.19%	13.06	5.91%
4/28/2017	9.50%	2.81%	4.00%	-3.57	1.18%	13.02	6.69%
5/23/2017	9.60%	2.88%	4.05%	-3.55	1.17%	12.92	6.72%
6/6/2017	9.70%	2.91%	4.07%	-3.54	1.16%	12.79	6.79%
6/22/2017	9.70%	2.93%	4.08%	-3.53	1.15%	12.50	6.77%
6/30/2017	9.60%	2.94%	4.09%	-3.53	1.15%	12.40	6.66%
7/20/2017	9.55%	2.97%	4.11%	-3.52	1.14%	12.12	6.58%
7/31/2017	10.10%	2.98%	4.12%	-3.51	1.14%	11.94	7.12%
9/13/2017	9.40%	2.93%	4.07%	-3.53	1.14%	11.50	6.47%
9/19/2017	9.70%	2.92%	4.06%	-3.53	1.14%	11.46	6.78%
9/22/2017	11.88%	2.92%	4.06%	-3.53	1.14%	11.43	8.96%
9/27/2017	10.20%	2.92%	4.05%	-3.53	1.14%	11.39	7.28%
10/20/2017	9.60%	2.90%	4.03%	-3.54	1.13%	11.20	6.70%

Date of Rate Case	Return on Equity	30-Year Treasury Yield	Moody's Utility A Yield	LN(30-Year Treasury)	Moody's Utility A Credit Spread	VIX	Risk Premium
10/26/2017	10.20%	2.90%	4.03%	-3.54	1.13%	11.20	7.30%
10/30/2017	10.05%	2.90%	4.02%	-3.54	1.13%	11.18	7.15%
12/5/2017	9.50%	2.86%	3.98%	-3.55	1.12%	11.06	6.64%
12/7/2017	9.80%	2.86%	3.97%	-3.56	1.12%	11.04	6.94%
12/13/2017	9.25%	2.85%	3.96%	-3.56	1.11%	11.01	6.40%
12/28/2017	9.50%	2.84%	3.94%	-3.56	1.10%	10.88	6.66%
1/31/2018	9.80%	2.83%	3.91%	-3.57	1.08%	10.69	6.97%
2/21/2018	9.80%	2.84%	3.90%	-3.56	1.06%	11.66	6.96%
2/21/2018	9.80%	2.84%	3.90%	-3.56	1.06%	11.66	6.96%
2/28/2018	9.50%	2.85%	3.90%	-3.56	1.05%	11.87	6.65%
3/15/2018	9.00%	2.87%	3.91%	-3.55	1.04%	12.29	6.13%
3/26/2018	10.19%	2.88%	3.92%	-3.55	1.04%	12.65	7.31%
4/26/2018	9.50%	2.91%	3.94%	-3.54	1.04%	13.66	6.59%
4/27/2018	9.30%	2.91%	3.94%	-3.54	1.04%	13.69	6.39%
5/2/2018	9.50%	2.91%	3.95%	-3.54	1.04%	13.78	6.59%
5/3/2018	9.70%	2.91%	3.95%	-3.54	1.04%	13.81	6.79%
5/29/2018	9.40%	2.95%	3.99%	-3.52	1.04%	13.92	6.45%
6/6/2018	9.80%	2.96%	4.00%	-3.52	1.04%	13.99	6.84%
6/14/2018	8.80%	2.97%	4.02%	-3.52	1.05%	14.04	5.83%
7/16/2018	9.60%	2.98%	4.06%	-3.51	1.07%	14.54	6.62%
7/20/2018	9.40%	2.99%	4.07%	-3.51	1.08%	14.59	6.41%
8/24/2018	9.28%	3.02%	4.12%	-3.50	1.10%	14.86	6.26%
8/28/2018	10.00%	3.03%	4.13%	-3.50	1.10%	14.88	6.97%
9/13/2018	10.00%	3.04%	4.15%	-3.49	1.11%	15.05	6.96%
9/14/2018	10.00%	3.05%	4.16%	-3.49	1.11%	15.07	6.95%
9/19/2018	9.85%	3.05%	4.17%	-3.49	1.11%	15.11	6.80%
9/20/2018	9.80%	3.05%	4.17%	-3.49	1.11%	15.12	6.75%
9/26/2018	9.40%	3.06%	4.18%	-3.49	1.12%	15.17	6.34%
9/26/2018	10.20%	3.06%	4.18%	-3.49	1.12%	15.17	7.14%
9/28/2018	9.50%	3.07%	4.19%	-3.48	1.12%	15.19	6.43%
9/28/2018	9.50%	3.07%	4.19%	-3.48	1.12%	15.19	6.43%
10/5/2018	9.61%	3.08%	4.20%	-3.48	1.12%	15.28	6.53%
10/15/2018	9.80%	3.09%	4.22%	-3.48	1.13%	15.59	6.71%
10/26/2018	9.40%	3.11%	4.25%	-3.47	1.14%	16.01	6.29%
10/29/2018	9.60%	3.11%	4.25%	-3.47	1.14%	16.07	6.49%
11/1/2018	9.87%	3.11%	4.26%	-3.47	1.15%	15.96	6.76%
11/8/2018	9.70%	3.12%	4.27%	-3.47	1.15%	15.70	6.58%
11/8/2018	9.70%	3.12%	4.27%	-3.47	1.15%	15.70	6.58%
12/11/2018	9.70%	3.14%	4.31%	-3.46	1.17%	15.91	6.56%
12/12/2018	9.30%	3.14%	4.31%	-3.46	1.17%	15.94	6.16%
12/13/2018	9.60%	3.14%	4.31%	-3.46	1.17%	15.95	6.46%
12/19/2018	9.30%	3.14%	4.32%	-3.46	1.17%	16.02	6.16%
12/21/2018	9.35%	3.14%	4.32%	-3.46	1.18%	16.10	6.21%
12/24/2018	9.25%	3.14%	4.32%	-3.46	1.18%	16.17	6.11%
12/24/2018	9.25%	3.14%	4.32%	-3.46	1.18%	16.17	6.11%
1/4/2019	9.80%	3.14%	4.33%	-3.46	1.18%	16.37	6.66%
1/18/2019	9.70%	3.14%	4.34%	-3.46	1.20%	16.47	6.56%
3/14/2019	9.00%	3.12%	4.34%	-3.47	1.22%	16.82	5.88%
3/27/2019	9.70%	3.12%	4.33%	-3.47	1.21%	16.82	6.58%
4/30/2019	9.73%	3.11%	4.31%	-3.47	1.20%	16.77	6.62%
5/7/2019	9.65%	3.10%	4.30%	-3.47	1.20%	16.87	6.55%
5/21/2019	9.80%	3.10%	4.29%	-3.48	1.19%	17.10	6.70%
9/4/2019	10.00%	2.76%	3.98%	-3.59	1.22%	16.82	7.24%
9/26/2019	9.90%	2.69%	3.89%	-3.62	1.21%	15.91	7.21%
		Average:			1.34%	18.85	5.59%
		Count:					683

Hypothetical Example: Flotation Cost Recovery

Return on Equity	10.50%
Flotation Costs	2.66%
Market Value	$ 25.00
Dividend Yield	4.25%
Growth Rate	6.25%
Adjusted ROE	10.62%
Flotation Cost Recovery:	**No**
DCF Estimate	**10.38%**

	Common Stock	Retained Earnings	Book Value	Market Price	Market/ Book Value	Earnings Per Share	Dividends Per Share	Payout Ratio
1	$ 24.33		$ 24.33	$ 25.00	1.0274	$ 2.56	$ 1.06	41.58%
2	$ 24.33	$ 1.49	$ 25.83	$ 26.53	1.0274	$ 2.71	$ 1.13	41.58%
3	$ 24.33	$ 3.08	$ 27.41	$ 28.16	1.0274	$ 2.88	$ 1.20	41.58%
4	$ 24.33	$ 4.76	$ 29.09	$ 29.89	1.0274	$ 3.05	$ 1.27	41.58%
5	$ 24.33	$ 6.54	$ 30.88	$ 31.72	1.0274	$ 3.24	$ 1.35	41.58%
6	$ 24.33	$ 8.44	$ 32.77	$ 33.67	1.0274	$ 3.44	$ 1.43	41.58%
7	$ 24.33	$ 10.45	$ 34.78	$ 35.73	1.0274	$ 3.65	$ 1.52	41.58%
8	$ 24.33	$ 12.58	$ 36.91	$ 37.92	1.0274	$ 3.88	$ 1.61	41.58%
9	$ 24.33	$ 14.84	$ 39.18	$ 40.25	1.0274	$ 4.11	$ 1.71	41.58%
10	$ 24.33	$ 17.25	$ 41.58	$ 42.72	1.0274	$ 4.37	$ 1.82	41.58%
	Growth Rate		6.13%	6.13%		6.13%	6.13%	

Return on Equity	10.50%
Flotation Costs	2.66%
Market Value	$ 25.00
Dividend Yield	4.25%
Growth Rate	6.25%
Adjusted ROE	10.62%
Flotation Cost Recovery:	**Yes**
DCF Estimate	**10.50%**

	Common Stock	Retained Earnings	Book Value	Market Price	Market/ Book Value	Earnings Per Share	Dividends Per Share	Payout Ratio
1	$ 24.33		$ 24.33	$ 25.00	1.0274	$ 2.58	$ 1.06	41.13%
2	$ 24.33	$ 1.52	$ 25.85	$ 26.56	1.0274	$ 2.74	$ 1.13	41.13%
3	$ 24.33	$ 3.14	$ 27.47	$ 28.22	1.0274	$ 2.92	$ 1.20	41.13%
4	$ 24.33	$ 4.85	$ 29.19	$ 29.99	1.0274	$ 3.10	$ 1.27	41.13%
5	$ 24.33	$ 6.68	$ 31.01	$ 31.86	1.0274	$ 3.29	$ 1.35	41.13%
6	$ 24.33	$ 8.62	$ 32.95	$ 33.85	1.0274	$ 3.50	$ 1.44	41.13%
7	$ 24.33	$ 10.68	$ 35.01	$ 35.97	1.0274	$ 3.72	$ 1.53	41.13%
8	$ 24.33	$ 12.86	$ 37.20	$ 38.22	1.0274	$ 3.95	$ 1.62	41.13%
9	$ 24.33	$ 15.19	$ 39.52	$ 40.60	1.0274	$ 4.20	$ 1.73	41.13%
10	$ 24.33	$ 17.66	$ 41.99	$ 43.14	1.0274	$ 4.46	$ 1.83	41.13%
	Growth Rate		6.25%	6.25%		6.25%	6.25%	

Mr. Gorman's Financial Integrity Analysis (FEA Exhibit 1.18, As Filed)

Line	Description		Retail Cost of Service Amount (1)	S&P Benchmark (Medial Volatility) Intermediate (2)	Significant (3)	Aggressive (4)	Reference (5)
1	Rate Base (Total Company - 2020 Test Year)	$	1,816,213,951				DEU Exhibit 3.02
2	Weighted Common Return		4.68%				FEA Exhibit 1.18 Page 2, Line 2, Col. 3.
3	Pre-Tax Rate of Return		8.30%				FEA Exhibit 1.18 Page 2, Line 3, Col. 4.
4	Income to Common	$	84,998,813				Line 1 x Line 2.
5	EBIT	$	150,796,830				Line 1 x Line 3.
6	Depreciation & Amortization	$	85,423,490				DEU Exhibit 3.02
7	AFUDC Debt Interest	$	(2,264,375)				FEA Exhibit 1.18 Page 2, Line 9, Col. 1.
8	Deferred Income Taxes and ITC	$	-				DEU Exhibit 3.02
9	Funds from Operations (FFO)	$	168,157,927				Sum of Line 4 and Lines 6 through 8.
10	EBITDA	$	236,220,320				Sum of Lines 5 through 7 and Line 11.
11	Total Adjusted Debt Ratio		50%				FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 2
12	Debt to EBITDA		4.07x	2.0x - 3.0x	3.0x - 4.0x	4.0x - 5.0x	(FEA Exhibit 1.18 Page 2, Line 5 + Line 6)/ Line 10, Col. 1
13	FFO to Total Debt		17.47%	23% - 35%	13% - 23%	9% - 13%	Line 9 / (FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 1)
14	Indicative Credit Rating			AA	A	A-	S&P Methodology, November 19, 2013

S&P's Credit Metrics - ROE to Meet Upper Bound Debt/EBITDA Significant Test (7.39% ROE)

Line	Description	Retail Cost of Service Amount (1)	S&P Benchmark (Medial Volatility) Intermediate (2)	Significant (3)	Aggressive (4)	Reference (5)
1	Rate Base (Total Company - 2020 Test Year)	$ 1,816,213,951				DEU Exhibit 3.02
2	Weighted Common Return	3.85%				FEA Exhibit 1.18 Page 2, Line 2, Col. 3.
3	Pre-Tax Rate of Return	7.20%				FEA Exhibit 1.18 Page 2, Line 3, Col. 4.
4	Income to Common	$ 69,838,553				Line 1 x Line 2.
5	EBIT	$ 130,695,841				Line 1 x Line 3.
6	Depreciation & Amortization	$ 85,423,490				DEU Exhibit 3.02
7	AFUDC Debt Interest	$ (2,264,375)				FEA Exhibit 1.18 Page 2, Line 9, Col. 1.
8	Deferred Income Taxes and ITC	$ -				DEU Exhibit 3.02
9	Funds from Operations (FFO)	$ 152,997,667				Sum of Line 4 and Lines 6 through 8.
10	EBITDA	$ 216,119,331				Sum of Lines 5 through 7 and Line 11.
11	Total Adjusted Debt Ratio	50%				FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 2
12	Debt to EBITDA	4.45x	2.5x - 3.5x	3.5x - 4.5x	4.5x - 5.5x	(FEA Exhibit 1.18 Page 2, Line 5 + Line 6)/ Line 10, Col. 1
13	FFO to Total Debt	15.90%	23% - 35%	13% - 23%	9% - 13%	Line 9 / (FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 1)
14	Indicative Credit Rating		AA	A	A-	S&P Methodology, November 19, 2013

S&P's Credit Metrics - ROE to Meet Lower Bound Debt/EBITDA Significant Test (12.09% ROE)

Description	Retail Cost of Service Amount (1)	S&P Benchmark (Medial Volatility) Intermediate (2)	Significant (3)	Aggressive (4)	Reference (5)
Rate Base (Total Company - 2020 Test Year)	$ 1,816,213,951				DEU Exhibit 3.02
Weighted Common Return	6.29%				FEA Exhibit 1.18 Page 2, Line 2, Col. 3.
Pre-Tax Rate of Return	10.44%				FEA Exhibit 1.18 Page 2, Line 3, Col. 4.
Income to Common	$ 114,211,559				Line 1 x Line 2.
EBIT	$ 189,530,009				Line 1 x Line 3.
Depreciation & Amortization	$ 85,423,490				DEU Exhibit 3.02
AFUDC Debt Interest	$ (2,264,375)				FEA Exhibit 1.18 Page 2, Line 9, Col. 1.
Deferred Income Taxes and ITC	$ -				DEU Exhibit 3.02
Funds from Operations (FFO)	$ 197,370,673				Sum of Line 4 and Lines 6 through 8.
EBITDA	$ 274,953,499				Sum of Lines 5 through 7 and Line 11.
Total Adjusted Debt Ratio	50%				FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 2
Debt to EBITDA	3.50x	2.5x - 3.5x	3.5x - 4.5x	4.5x - 5.5x	(FEA Exhibit 1.18 Page 2, Line 5 + Line 6)/ Line 10, Col. 1
FFO to Total Debt	20.51%	23% - 35%	13% - 23%	9% - 13%	Line 9 / (FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 1)
Indicative Credit Rating		AA	A	A-	S&P Methodology, November 19, 2013

S&P's Credit Metrics - ROE to Meet Upper Bound Debt/EBITDA Significant Test at Company's Proposed 10.50% ROE

Description	Retail Cost of Service Amount (1)	S&P Benchmark (Medial Volatility) Intermediate (2)	S&P Benchmark (Medial Volatility) Significant (3)	S&P Benchmark (Medial Volatility) Aggressive (4)	Reference (5)
Rate Base (Total Company - 2020 Test Year)	$ 1,816,213,951				DEU Exhibit 3.02
Weighted Common Return	5.46%				FEA Exhibit 1.18 Page 2, Line 2, Col. 3.
Pre-Tax Rate of Return	9.34%				FEA Exhibit 1.18 Page 2, Line 3, Col. 4.
Income to Common	$ 99,165,282				Line 1 x Line 2.
EBIT	$ 169,580,151				Line 1 x Line 3.
Depreciation & Amortization	$ 85,423,490				DEU Exhibit 3.02
AFUDC Debt Interest	$ (2,264,375)				FEA Exhibit 1.18 Page 2, Line 9, Col. 1.
Deferred Income Taxes and ITC	$ -				DEU Exhibit 3.02
Funds from Operations (FFO)	$ 182,324,396				Sum of Line 4 and Lines 6 through 8.
EBITDA	$ 255,003,641				Sum of Lines 5 through 7 and Line 11.
Total Adjusted Debt Ratio	50%				FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 2
Debt to EBITDA	3.77x	2.5x - 3.5x	3.5x - 4.5x	4.5x - 5.5x	(FEA Exhibit 1.18 Page 2, Line 5 + Line 6)/ Line 10, Col. 1
FFO to Total Debt	20.08%	23% - 35%	13% - 23%	9% - 13%	Line 9 / (FEA Exhibit 1.18 Page 2, Line 5 + Line 6, Col. 1)
Indicative Credit Rating		AA	A	A-	S&P Methodology, November 19, 2013

Source: FEA Exhibit 1.18.

Mr. Oliver's CAPM and ECAPM Analysis
ANGC Exhibit 1.04, page 1
Updated Market Risk Premia and Beta Coefficient

		30-Year US Treasury Bond Yields *(Risk Free Rate Assumptions)*		
		Current	**Near-Term**	**Average**
1	Assumed Risk Free Rate	2.16% **[1]**	2.28% **[2]**	
2	Bloomberg DCF Derived Ex-Ante Total Market Return	14.20%	14.20% **[3]**	
3	Bloomberg DCF Derived Ex-Ante Market Risk Premium	12.04%	12.04% **[4]**	
4	Bloomberg Proxy Group Average Beta Coefficient	0.581	0.581 **[5]**	
5	CAPM Results	9.16%	9.28%	9.22%
6	ECAPM Results	10.42%	10.54%	10.48%
7	**Average of CAPM and ECAPM Results**			**9.85%**

[1] Based on daily average yield for the month of September 2019 as reported on *Treasury Bonds.gov*. ANGC Exhibit 1.01
[2] Reflects the October 1, 2019 Blue Chip Financial Forecast - Near-Term Average 30-year Treasury yield (Q4:2019 through Q1:2021)
[3] DEU Exhibit 2.03R
[4] Equals Line 2 - Line 1
[5] DEU Exhibit 2.04R