

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

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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 underestimate 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>i.e.</i> , current market value of all outstanding shares) to the book value (<i>i.e.</i> , 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.

1

I. INTRODUCTION AND SUMMARY

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

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

5 **Q. On whose behalf are you submitting this testimony?**

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

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

11 A. Yes, I am.

12 **Q. What is the purpose of your Rebuttal Testimony?**

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

- 16 • Mr. Casey J. Coleman, who testifies on behalf of the Utah Department of
17 Commerce, Division of Public Utilities (the “Division”);
- 18 • Mr. Daniel J. Lawton, who testifies on behalf of the Utah Office Consumer
19 Services (“OCS”);
- 20 • Mr. Michael P. Gorman, who testifies on behalf of Federal Executive Agencies
21 (“FEA”);
- 22 • Mr. Bruce R. Oliver, who testifies on behalf of the American Natural Gas Council
23 (“ANGC”); and

24 • Mr. Kevin C. Higgins, who testifies on behalf of the Utah Association of Energy
25 Users Intervention Group (“UAE”).

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

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

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

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

39 A. Yes, I have updated my Constant Growth Discounted Cash Flow (“DCF”), Capital Asset
40 Pricing Model (“CAPM”), Empirical CAPM (“ECAPM”), Bond Yield Plus Risk
41 Premium, and Expected Earnings analyses to reflect data as of September 30, 2019.²

¹ Direct Testimony of Robert B. Hevert, at 2.

² See, DEU Exhibit 2.01R through DEU Exhibit 2.07R.

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

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

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

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

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

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

³ See, DEU Exhibit 2.08R.

58

Table 1: Summary of ROE Recommendations

Witness	ROE Range		ROE Recommendation
	Low	High	
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%

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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.

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

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

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

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

84 **II. RESPONSE TO DIVISION WITNESS MR. COLEMAN**

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

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

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

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

96 **Table 2: Summary of Mr. Coleman’s Analytical Results**
97 **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%

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

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

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.

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

109 **A. ROE Recommendation**

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

112 A. Mr. Coleman recommends an ROE of 9.25 percent, which is "on the high end" of the
113 calculated range of 8.09 percent to 9.55 percent,¹⁶ in part to reflect the principle of
114 gradualism.¹⁷ Mr. Coleman argues his 9.25 percent recommendation is "just and
115 reasonable", and is "comparable with the 9.60 [percent] average authorized rate of return
116 for natural gas companies in 2019."¹⁸ Despite the 43-basis point difference between his
117 median analytical estimate (8.82 percent) and his ROE recommendation (9.25 percent),
118 Mr. Coleman does not explain how 9.25 percent best satisfies his objective of
119 "gradualism", or why it is the most sensible measure of the Company's Cost of Equity.
120 Nor does he reconcile how his 9.25 percent recommendation is "comparable" to the
121 average authorized ROE for natural gas utilities in 2019. As shown in DEU Exhibit
122 2.09R (and discussed in more detail below), the average authorized ROE in 2019
123 (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.

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

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

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

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

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

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

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

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

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

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

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.

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

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

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

173 ***

174 Our assessment of a utility's regulatory regime rests on four pillars:
175 regulatory stability, efficiency of tariff-setting procedures, financial
176 stability, and regulatory independence... We believe these factors
177 strongly influence a utility's credit quality and its ability to recover its
178 costs and earn a timely return.²⁴

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

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

184 A. Yes, I do. First, Mr. Coleman points to the average authorized ROE of 9.60 percent for
185 six natural gas distribution rate cases completed in 2019, compared to 9.59 percent in
186 2018 and 9.72 percent in 2017.²⁶ However, Mr. Coleman's Exhibit DPU 3.10 only

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.

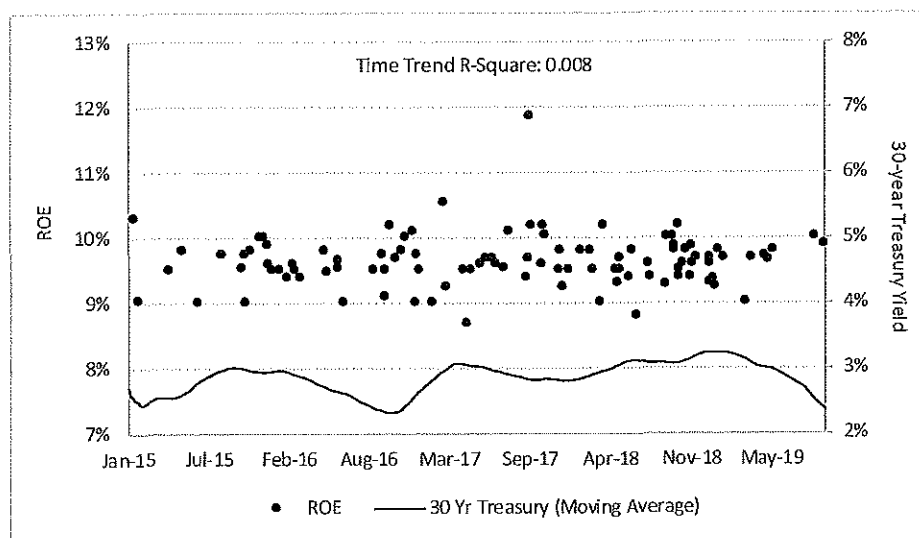
²⁵ The Commission's current authorized electric and natural gas ROEs include 9.80 percent for PacifiCorp and 9.85 percent for the Company. Source: Regulatory Research Associates.

²⁶ DPU Exhibit 3.10.

187 includes rate cases completed through May 7, 2019. Since May, there have been three
188 more rate cases completed, ranging from 9.80 percent to 10.00 percent. Mr. Coleman’s
189 9.25 percent recommendation, which reflects his application of “gradualism”, is lower
190 than all but one return authorized in 2019.²⁷

191 Second, average annual data may not be reasonable measures of trends, simply
192 because averages obscure variation in returns from case-to-case, and do not address the
193 number of cases or the jurisdictions issuing orders within a given year. For example, one
194 year may have relatively few cases decided, with a relatively large portion of those cases
195 decided by a single jurisdiction. As shown in Chart 1 below, if all authorized ROEs since
196 2015 are charted, rather than annual averages, we see there is no meaningful trend. That
197 is true even as the 30-year Treasury yield fluctuated; time explains less than 1.00 percent
198 of the change in ROEs, and the trend is statistically insignificant.

199 **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.

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

203 **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%

204

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

207 **B. Proxy Group Selection**

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

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

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.

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

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

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

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

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.

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

242 **C. Discounted Cash Flow Analysis**

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

244 A. Mr. Coleman performs two Constant Growth DCF analyses. His first analysis uses Value
245 Line projected dividend and earnings growth rate estimates, and his second analysis uses
246 the average projected earnings growth rates from of Zacks, Yahoo!,³⁵ and Value Line³⁶
247 (collectively "Consensus Earnings Growth Rates") and the projected dividend growth
248 rate from Value Line. He calculates a dividend yield for each of his proxy companies
249 using the average stock price over the 30-trading days as of October 1, 2019 reported by
250 Yahoo! Finance divided by the annualized dividend reported by Value Line.³⁷ For the
251 growth rate component, Mr. Coleman applies a 75.00 percent weight to the projected
252 earnings growth rate(s) and 25.00 percent to the Value Line projected dividend growth

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.

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

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

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

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

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

272
$$k_e = \frac{D_0(1+g)}{P_0} + g \quad [1]$$

273 Where: k_e is the cost of common equity,

³⁸ *Ibid.*; DPU Exhibit 3.04.

274 D_0 is the current dividend,
275 P_0 is the current stock price, and
276 g is the constant growth rate.

277 As shown in Equation [1] above, the growth rate used to calculate the expected dividend
278 yield is the same growth rate that is added to the dividend yield to estimate the ROE. Mr.
279 Coleman calculates his expected dividend yield component using Value Line's 3-5 year
280 projected dividend growth rate. For his long-term growth rate component, however, he
281 uses his weighted growth rate of 75.00 percent projected earnings growth and 25.00
282 percent projected dividend growth. The two growth rates should be the same and applied
283 consistently. That is, the dividend yield should be adjusted by the same growth rate
284 component as the perpetual, long-term growth rate. This inconsistency has the effect of
285 biasing Mr. Coleman's results downward. Additionally, as noted earlier, Mr. Coleman
286 erroneously transposed Southwest Gas and Spire, Inc.'s average stock price, annualized
287 dividend, and Value Line projected growth rates.³⁹ Correcting these errors increase his
288 mean and median ROE estimates in his analysis using only Value Line's growth rates to
289 10.37 percent and 10.54 percent respectively, and his mean and median ROE estimates in
290 his analysis using Consensus Earnings Growth Rates to 8.84 percent and 9.17 percent,
291 respectively.⁴⁰

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.

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

294 A. Mr. Coleman's second Constant Growth DCF analysis calculates an average earnings
295 growth rate using Value Line's 3-5 year projected earnings growth published August 30,
296 2019, and the Zacks and Yahoo! consensus growth rates from May 17, 2019 filed in DEU
297 Exhibit 2.01. That is, two of his projected earnings growth rate sources are inconsistent
298 with his more recent Value Line projected growth rates and with his average stock price
299 and annualized dividend data.

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

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

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

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

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

330 ***D. Capital Asset Pricing Model***

331 **Q. Please summarize Mr. Coleman’s CAPM analysis.**

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

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.

334 (“MRP”, which he refers to as the “Equity Risk Premium”, or “ERP”) of 5.20 percent and
335 5.50 percent, and Beta coefficients reported by Value Line, CFRA, Zacks, Yahoo!, and
336 Ned Davis Research.⁴⁴ Mr. Coleman’s CAPM estimates are approximately 210 to 410
337 basis points below his 9.25 percent recommendation, indicating he gives little weight to
338 his CAPM estimates.

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

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

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

346 A. Mr. Coleman calculates proxy group average Beta coefficients from five sources: (1)
347 Value Line, (2) CFRA, (3) Zacks, (4) Yahoo!, and (5) Ned Davis Research.⁴⁶ Of those
348 five sources, it appears only Value Line uses adjusted Beta coefficients. The other four
349 sources calculate “raw” or unadjusted Beta coefficients.⁴⁷ Because Beta coefficients tend
350 to regress to 1.00 over time, the use of “raw” Beta coefficients will understate the Beta
351 coefficient for companies with Beta coefficients less than 1.00. Stated differently, Mr.
352 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.

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

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

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

370 ***E. Bond Yield Plus Risk Premium Approach***

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

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

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

375 Yield of 3.91 percent. He adds that 5.09 percent estimate to DEU's current long-term
376 borrowing rate of 4.00 percent to calculate an ROE estimate of 9.09 percent.⁴⁹ Mr.
377 Coleman's second approach calculates a total market return of 8.70 percent based on Dr.
378 Damodaran's 5.20 percent ERP and Duff & Phelps' normalized 3.50 percent risk-free
379 rate. He then subtracts the Baa Corporate Bond Yield of 3.91 percent to produce an ERP
380 of 4.79 percent. Adding DEU's current long-term borrowing rate of 4.00 percent to his
381 4.79 percent ERP produces an ROE estimate of 8.79 percent.⁵⁰ The average of his two
382 Bond Yield Plus Risk Premium estimates is 8.94 percent.

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

385 A. My principal concern is that his analysis does not reflect the well-known principle that
386 the ERP is inversely related to the risk-free rate.⁵¹ Further, Mr. Coleman does not
387 explain why the Baa Corporate Bond yield is the appropriate risk-free rate for DEU,
388 which is rated A3 by Moody's. Substituting the Moody's A-rated utility index bond
389 yield of 3.33 percent as the risk-free rate⁵² increases his results to 9.38 percent to 9.67
390 percent (average of 9.53 percent).

391 ***F. Value Line Financial Strength Analysis***

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

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

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.

395 average Value Line Financial Strength rating for the comparable companies.⁵³ The
396 higher the rating, the lower the risks measured by that rating and, therefore, the lower the
397 expected return.⁵⁴ Although not explained in his testimony, as shown on DPU Exhibit
398 3.02, Mr. Coleman reports a Financial Strength Analysis ROE estimate of 9.52 percent.
399 That value, however, is not linked to DPU Exhibit 3.11, nor is 9.52 percent calculated
400 anywhere within that exhibit. Mr. Coleman's testimony provides no explanation as to the
401 inputs, assumptions, or calculations applied in arriving at his 9.52 percent estimate.

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

404 A. Yes, I do. First, the weighted average total market return of the Value Line companies
405 included in the analysis (*i.e.*, 15.62 percent "Mean Return" and 14.43 percent "Accepted
406 Median Return") support my expected market returns presented in DEU Exhibit 2.03 and
407 updated in DEU Exhibit 2.03R. Second, Value Line's expected return for the least risky
408 and highest rated A++ companies is approximately 10.00 percent,⁵⁵ considerably above
409 his 9.25 percent recommendation. Third, DPU Exhibit 3.11 calculates a proxy group
410 average Financial Strength rating between B++ and A (6.86 in numeric terms, which is
411 closer to A than B++). Applying the 6.86 numeric value of the proxy group's average
412 Financial Strength rating in the regression equation generated in DPU Exhibit 3.11 results
413 in an expected return of approximately 11.35 percent. Again, it is unclear how Mr.
414 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.

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

417 A. When corrected, Mr. Coleman's analytical estimates range from 9.41 percent to 11.35
418 percent, with mean and median results of 10.17 percent and 9.95 percent, respectively
419 (see Table 4 below). Those revised results clearly support my recommended range of
420 9.90 percent to 10.75 percent.

421 **Table 4: Summary of Mr. Coleman's Corrected Analytical Results**
422 **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%

423

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

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

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

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

430 A. Mr. Coleman notes four concerns with my Constant Growth DCF analysis. First, he
431 criticizes the fact that I do not give 25.00 percent weight to projected dividend growth

432 rates.⁵⁶ Second, he believes the Value Line earnings growth rate projection for
433 Northwest Natural Holdings is an outlier that should be excluded.⁵⁷ Third, Mr. Coleman
434 disagrees with the use of Retention Growth rates.⁵⁸ Lastly, Mr. Coleman erroneously
435 asserts I have applied a “5 percent adder” in my analysis.⁵⁹

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

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

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

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.

449 As shown in DEU Exhibit 2.10R, corrections to Mr. Coleman's DCF Analysis
450 produce ROE estimates nearly 60 basis points higher than the results presented in DPU
451 Exhibit 3.02.⁶¹ The midpoint of the average of his two corrected Constant Growth DCF
452 results is 9.89 percent, which is consistent with the low end of my recommended range.⁶²

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

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

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

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

468 That is, I apply the half-growth rate adjustment to the Current Dividend Yield to calculate
469 the Expected Dividend Yield. As explained in my Direct Testimony at page 48, because
470 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.

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

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

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

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

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

⁶⁴ Direct Testimony of Casey J. Coleman, at 12.

⁶⁵ *Ibid.*, at 11-12.

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

497 **Q. Mr. Coleman asserts the Company’s business risk is lower than “other utility**
498 **companies or the market in general”.**⁶⁸ **Do you agree?**

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

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

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.

511 **III. RESPONSE TO OCS WITNESS LAWTON**

512 **Q. Please provide a summary of Mr. Lawton’s testimony and recommendations.**

513 A. Mr. Lawton recommends an ROE estimate of 9.10 percent, based on the average
514 midpoint of his model results.”⁷¹ He also accepts the Company’s proposed capital
515 structure.⁷² Table 5, below, summarizes Mr. Lawton’s analytical results, and his overall
516 recommendation.

517 **Table 5: Summary of Mr. Lawton’s Analytical Results**
518 **and ROE Recommendation⁷³**

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%

519

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

521 A. First, I disagree that 9.10 percent is a reasonable estimate of the Company’s Cost of
522 Equity. As Mr. Lawton notes, the average authorized ROE for natural gas utilities in
523 2018 was 9.59 percent.⁷⁴ In 2019, the average has risen to 9.70 percent (*see* DEU Exhibit
524 2.09R). Mr. Lawton has not provided any evidence showing the Company is so much
525 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.

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

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

535 *A. Capital Market Conditions*

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

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

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

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

⁷⁵ Source: Regulatory Research Associates.

⁷⁶ Direct Rate of Return Testimony of Daniel J. Lawton, at 10.

547 Further, even though the Federal Reserve recently has reduced the overnight
548 lending rate (that is the Federal Funds rate), long-term Treasury yields have increased.
549 Since August 15, 2019, the 30-year Treasury yield increased more than 40 basis points⁷⁷
550 even as the Federal Reserve reduced the Federal Funds target rate 50 basis points (from
551 2.00 percent – 2.25 percent to 1.50 percent – 1.75 percent).⁷⁸

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

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

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

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

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

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

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

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.

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

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

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

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

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

589 higher than the Updated Proxy Group's average projected payout ratio for 2022-2024 of
590 54.00 percent. The effect of Mr. Lawton's assumption that the current low payout ratios
591 (compared to the historical average) will continue in perpetuity is to reduce projected
592 dividend payments, and therefore, reduce the calculated ROE.

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

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

607 **C. Capital Asset Pricing Model**

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

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

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

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

616 **Q. What is your concern with Mr. Lawton’s “more current” MRP?**

617 A. Mr. Lawton’s “more current” MRP still relies on historical returns for large companies.⁸⁴
618 It is important to consider the implications of substantially relying on the historical return
619 data, as Mr. Lawton has done, on the reasonableness of the CAPM results.

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

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

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

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.

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

638 **D. Risk Premium Analysis**

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

640 A. Mr. Lawton's analysis compares authorized returns for natural gas utilities to the 30-year
641 Treasury yield from 1981 to 2018.⁸⁷ Using the spot yield and a three-month average 30-
642 year Treasury yield, Mr. Lawton's Risk Premium-based ROE estimates range from 8.99
643 percent to 9.07 percent.⁸⁸

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

645 A. My concern is with Mr. Lawton's use of historical Treasury yields in his Risk Premium
646 analysis. As discussed throughout my Direct Testimony, the Cost of Equity is inherently
647 forward-looking.⁸⁹ Consequently, the Risk Premium analysis should include forward-
648 looking parameters. *Blue Chip Financial Forecasts'* long-term average projection of the
649 30-year Treasury yield is approximately 3.70 percent.⁹⁰ Using the 3.70 percent average
650 long-term forecast of the 30-year Treasury yield, Mr. Lawton's Risk Premium analysis
651 would produce an ROE estimate of 9.92 percent.⁹¹

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

652 ***E. Financial Integrity***

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

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

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

662 A. Yes, I do. Before discussing Mr. Lawton's testimony relative to credit metrics, it is
663 helpful to review rating agencies' perspectives (beginning with S&P) regarding their use
664 of credit metrics in rating determinations. On November 30, 2007, S&P released a
665 statement announcing that electric, gas, and water utility ratings would be "categorized
666 under the business/financial risk matrix used by the Corporate Ratings group".⁹⁴ S&P
667 also provided matrices of business and financial risk, based on "Financial Risk Indicative
668 Ratios": FFO/Debt; FFO/Interest; and Total Debt/Capital. In that announcement, S&P
669 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.

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

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

679 The rating matrix indicative outcomes are what we typically observe -
680 - but are not meant to be precise indications of guarantees of future
681 rating opinions. Positive and negative nuances in our analysis may
682 lead to a notch higher or lower than the outcomes indicated in the
683 various cells of the matrix... Still, it is essential to realize that the
684 financial benchmarks are guidelines, neither gospel nor guarantees...

685 Moreover, our assessment of financial risk is not as simplistic as
686 looking at a few ratios.⁹⁵

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

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

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.

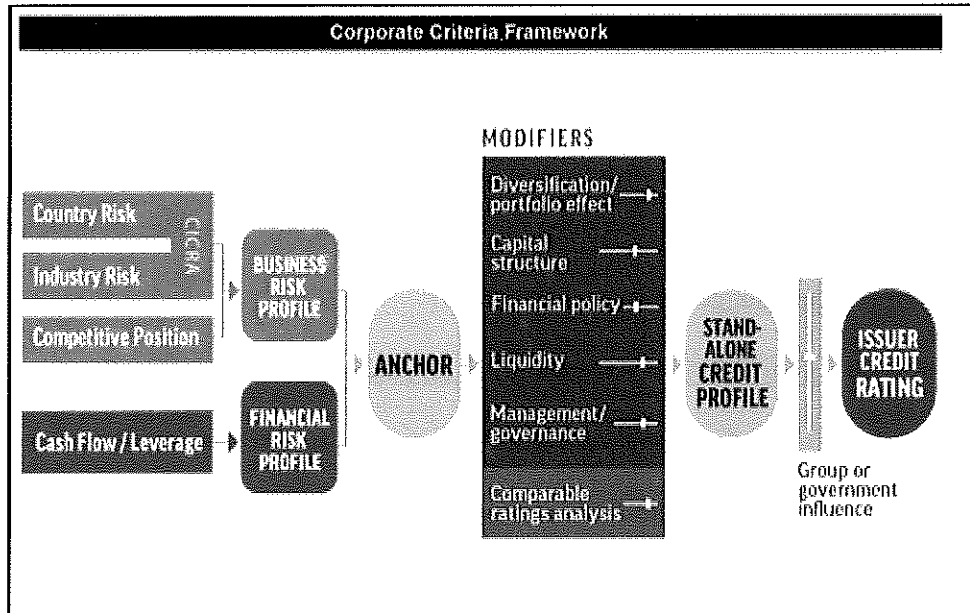
694 Metrics such as FFO interest coverage and Debt to EBITDA are derived from financial
695 statements, including the Income Statement, Balance Sheet and Cash Flow Statements.
696 For regulated utilities, those ratios are influenced by the overall rate of return allowed by
697 regulatory commissions,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

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

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

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Chart 2: Standard & Poor's Corporate Criteria Framework⁹⁷



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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.

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

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

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

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

⁹⁹

Ibid.

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Chart 3: Moody's Rating Factors and Associated Weights¹⁰⁰

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			

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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:

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...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.

754 indicated rating is not expected to match the actual rating of each
755 company.¹⁰²

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

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

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

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.

770 **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

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

777

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

782

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

783

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

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A. Mr. Lawton argues my estimated ROE is overstated because in his view, (1) my analyses
785 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.

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

790 **Q. Do you agree with Mr. Lawton’s position that your recommendation is “unreliable”**
791 **because you do not exclude what he views as “unreasonable” estimates?**¹¹⁰

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

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

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.*

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

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

816 A. Mr. Lawton's concern appears to apply to his analyses. The lowest ROE authorized for a
817 natural gas utility since 1980 is 8.70 percent.¹¹⁴ Mr. Lawton, however, excludes results
818 below 7.50 percent. There is no evidence to support the position that results of 7.50
819 percent to 8.69 percent are reasonable estimates of the Company's investor-required Cost
820 of Equity. Yet, Mr. Lawton does not exclude these results from his analysis, effectively
821 lowering his overall Constant Growth DCF range. When these unreasonable results are
822 excluded from Mr. Lawton's DCF results, his Constant Growth DCF range increases to
823 9.35 percent to 9.69 percent (with a midpoint of 9.52 percent).¹¹⁵ Applying the same low
824 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.

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

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

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

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

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

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

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

¹¹⁶ *Ibid.*

¹¹⁷ Direct Rate of Return Testimony of Daniel J. Lawton, at 36.

¹¹⁸ *Ibid.*, at 38.

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

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

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

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

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

¹¹⁹ *Ibid.*, at 38.

¹²⁰ *Ibid.*, at 39.

¹²¹ *Ibid.*

¹²² *Ibid.*

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

875 **IV. RESPONSE TO FEA WITNESS MR. GORMAN**

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

878 A. Mr. Gorman recommends an ROE of "no higher" than 9.00 percent.¹²⁴ He establishes his
879 recommended ROE by reference to: (1) his constant growth DCF model using both
880 consensus analyst growth rates and a Sustainable Growth rate (with results ranging from
881 8.28 percent to 10.77 percent);¹²⁵ (2) his Multi-Stage DCF method (with mean and
882 median results of 7.07 percent and 7.09 percent, respectively);¹²⁶ (3) his Risk Premium
883 study (ranging from 8.60 percent to 8.70 percent);¹²⁷ and (4) his CAPM analyses (ranging
884 from 6.90 percent to 8.73 percent).¹²⁸ Mr. Gorman's recommendation reflects his Risk

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.

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

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

890 A. First, Mr. Gorman's position that the Company's investor-required Cost of Equity is "no
891 higher" than 9.00 percent is unsupported and should be rejected. Mr. Gorman's
892 recommendation falls in the bottom 2nd percentile of ROEs authorized for natural gas
893 utilities since 2015.¹³¹ All authorized ROEs of 9.00 percent or lower between January
894 2015 and September 2019 were authorized by the New York Public Service Commission.
895 No other jurisdiction authorized ROEs in the range of Mr. Gorman's model-based
896 estimates or recommendation. As noted earlier, the average authorized ROE for natural
897 gas utilities in 2019 (*including New York*) is 9.70 percent, significantly above Mr.
898 Gorman's recommendation.

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

¹²⁹ *Ibid.*, at 68.

¹³⁰ *Ibid.*, at 3.

¹³¹ *See*, DEU Exhibit 2.09R.

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

909 **A. Market Conditions and Utility Risk Profiles**

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

912 A. If Mr. Gorman's point is that utilities are less risky than the broad market, I agree. The
913 fact that utilities tend to have Beta coefficients less than 1.00 shows that to be the case.
914 At the same time, the average historical Beta coefficient for Mr. Gorman's proxy group is
915 0.73,¹³³ suggesting a meaningful degree of risk. For example, in 2008, when the market
916 lost about 40.00 percent of its value, the SNL Gas Utility index lost about 32.00 percent
917 of its value.¹³⁴ In fact, from September through December 2008, when the overall market
918 lost about 28.00 percent of its value, the correlation between the SNL Gas Company
919 Index and the S&P 500 averaged approximately 79.00 percent.¹³⁵ That is, when the
920 capital markets became increasingly distressed, much like the overall market utility
921 valuations also decreased, although not to the same extent.

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

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.

924 **years and that “utilities have strong access to capital at attractive pricing”¹³⁶ do you**
925 **have a response to Mr. Gorman on that point?**

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

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

934 A. Mr. Gorman’s Figure 2 demonstrates utility capital investment has “increased
935 considerably” and is expected to “remain high” in the 2019-2021 forecast period relative
936 to the prior ten-year historical period.¹³⁸ All three rating agencies observed the negative
937 effects of the TCJA on utilities’ cash flow and the potential consequences for their credit
938 profiles.¹³⁹ It therefore is clear that efficient access to external capital at reasonable rates
939 will be important to fund capital expenditures. As Mr. Gorman’s FEA Exhibit 1.02, page
940 15 observes, natural gas utilities’ cash flow is not projected to cover planned capital
941 spending. It also is clear that the markets in which that capital will be raised reflect
942 greater volatility than those experienced even over the past two years.¹⁴⁰

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.

943 **B. Constant Growth DCF Model**

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

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

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

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

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.

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

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

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

973 ***C. Capital Asset Pricing Model***

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

975 A. Mr. Gorman's CAPM estimates (6.90 percent and 8.73 percent) reflect two measures of
976 principally historical MRP estimates, *Blue Chip Financial Forecasts'* projected 30-year
977 Treasury yield of 2.50 percent as the risk-free rate, and an average Beta coefficient of
978 0.73 as reported by Value Line.¹⁴⁶ Based on his assessment of risk premiums in the
979 current market Mr. Gorman relies on the higher CAPM result, 8.73 percent.¹⁴⁷ Mr.
980 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.*

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

987 **Q. Turning first to the expected total market return, do you agree with Mr. Gorman's**
988 **8.50 percent and 10.98 percent estimates?**

989 A. No, I do not. Mr. Gorman's 8.50 percent expected total market return estimate, which is
990 340 basis points below the long-term average market return, falls outside the range of
991 average returns during the period 1976-2018 using 50-year annual averages; his higher
992 10.98 percent estimate falls in the 13th percentile of the average return over the last fifty
993 years.¹⁵⁰ A helpful perspective on the historical market return is the rolling 50-year
994 average annual market return. As Mr. Gorman points out, from 1926 through 2018 the
995 arithmetic average market return was 11.90 percent.¹⁵¹ Over time, the rolling fifty-year
996 mean return has been quite consistent, in the range of approximately 12.00 percent.¹⁵²
997 Taken from that perspective, Mr. Gorman's 8.50 percent expected market return is well
998 below the long-term market experience and, therefore, is not reasonable.

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.

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

1000 A. No, I do not. The MRP represents the additional return required by equity investors to
1001 assume the risks of owning the "market portfolio" of equity relative to long-term
1002 Treasury securities. As with other elements of Cost of Equity analyses, the MRP is
1003 meant to be a forward-looking parameter. Relying on a MRP calculated using historical
1004 returns may produce results that are inconsistent with investor sentiment and current
1005 conditions in capital markets. The fundamental analytical issue in applying the CAPM is
1006 to ensure that all three components of the model (*i.e.*, the risk-free rate, Beta, and the
1007 MRP) are consistent with market conditions and investor expectations. As Morningstar
1008 observes:

1009 It is important to note that the expected equity risk premium, as it is
1010 used in discount rates and cost of capital analysis, is a forward-looking
1011 concept. That is, the equity risk premium that is used in the discount
1012 rate should be reflective of what investors think the risk premium will
1013 be going forward.¹⁵³

1014 Longstanding financial research has shown the MRP varies over time and with
1015 market conditions. French, Schwert, and Stambaugh, for example, found the MRP to be
1016 positively related to predictable market volatility.¹⁵⁴ Using forward-looking measures of
1017 the expected market return, Harris and Marston found "...strong evidence...that market
1018 risk premia change over time and, as a result, use of a constant historical average risk
1019 premium is not likely to mirror changes in investor return requirements."¹⁵⁵ Among their
1020 findings is that the MRP is inversely related to Government bond yields. That is, as

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

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

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

1021 interest rates fall, the MRP increases. Financial researchers therefore have found the
1022 MRP to be time-varying, and a function of economic parameters including interest
1023 rates.¹⁵⁶

1024 **D. Risk Premium Method**

1025 **Q. Please briefly describe Mr. Gorman's Risk Premium analyses.**

1026 A. Mr. Gorman defines the "Risk Premium" as the difference between average annual
1027 authorized equity returns for natural gas utilities and a measure of long-term interest rates
1028 each year from 1986 through June 2019.¹⁵⁷ Mr. Gorman's first approach calculates the
1029 annual risk premium by reference to the 30-year Treasury yield, and his second approach
1030 considers the average A-rated utility bond yield.¹⁵⁸ In each case, Mr. Gorman establishes
1031 his risk premium estimate by reference to five-year and ten-year rolling averages. The
1032 lower and upper bounds of Mr. Gorman's Risk Premium range are defined by the lowest
1033 and highest five-year rolling average, respectively, regardless of the year in which those
1034 observations occurred.¹⁵⁹

1035 Regarding the period over which he gathers and analyzes his data, Mr. Gorman
1036 argues his 34-year horizon is "appropriate"¹⁶⁰ for developing an Equity Risk Premium
1037 estimate. At pages 54-55 of his Direct Testimony, Mr. Gorman argues "it is reasonable
1038 to assume that averages of annual achieved returns over long time periods will generally
1039 converge on the investors' expected returns" and concludes his risk premium study is
1040 based on "investor expectations, not actual investment returns, and, thus, need not

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.

1041 encompass a very long historical time period.”¹⁶¹ Based on those assumptions, Mr.
1042 Gorman calculates a range of risk premium estimates of 4.17 percent to 6.75 percent
1043 using his Treasury bond analysis, and 2.80 percent to 5.54 percent using his A-rated
1044 utility bond analysis.¹⁶²

1045 Combined with a 2.50 percent projected Treasury yield and a 3.82 percent Baa-
1046 rated utility bond yield estimate, Mr. Gorman’s Risk Premium analysis produces results
1047 ranging from 6.62 percent to 9.36 percent.¹⁶³ To calculate his Risk Premium-based ROE
1048 recommended range, Mr. Gorman gives 75.00 percent weight to the high end of his risk
1049 premium estimates and 25.00 percent weight to the low end.¹⁶⁴ The 8.60 percent low end
1050 of his Risk Premium-based range reflects his weighted risk premium estimates using the
1051 projected Treasury bond yield of 2.50 percent.¹⁶⁵ Applying the same 75.00 percent and
1052 25.00 percent weighting to his high and low Baa-rated utility bond yield estimates,
1053 respectively, Mr. Gorman produces the upper bound of his range of 8.70 percent.¹⁶⁶ Mr.
1054 Gorman then concludes that the high end of his range (8.70 percent) is the appropriate
1055 Risk Premium-based ROE estimate.¹⁶⁷

1056 **Q. Do you have any general observations regarding Mr. Gorman’s Risk Premium**
1057 **estimates and how they weigh in his overall ROE recommendation?**

1058 **A.** Yes, I do. In determining his 9.00 percent DCF-based recommendation, Mr. Gorman
1059 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.

1060 several other results ranging from 7.07 percent to 7.09 percent.¹⁶⁸ In a similar fashion,
1061 Mr. Gorman relied on his high end CAPM result, discarding a 6.90 percent estimate.¹⁶⁹
1062 In his Risk Premium analysis, however, Mr. Gorman retained risk premiums that
1063 produced ROE estimates below the range of the DCF and CAPM estimates he discarded.
1064 Despite their low levels, Mr. Gorman gave those risk premium estimates (producing ROE
1065 results of 6.62 percent and 6.67 percent) weights of 25.00 percent in aggregate. Mr.
1066 Gorman does not explain why he would exclude DCF results of 7.09 percent and lower,
1067 but include Risk Premium results of 6.62 percent and 6.67 percent.

1068 **Q. What are your specific concerns with Mr. Gorman's Risk Premium analysis?**

1069 A. I have four concerns with his analysis: (1) Mr. Gorman's analysis does not include the
1070 most recent data; (2) his method understates the required risk premium in the current
1071 market because it fails to reasonably reflect the inverse relationship between the Equity
1072 Risk Premium and interest rates (whether measured by Treasury or utility bond yields);
1073 (3) the low end of Mr. Gorman's Risk Premium results is far lower than authorized
1074 ROEs, calling into question its usefulness in determining the Company's ROE; and (4)
1075 Mr. Gorman suggests a Market/Book ratio of 1.00 is a relevant benchmark for assessing
1076 authorized ROEs.¹⁷⁰

¹⁶⁸ *Ibid.*, at 51.

¹⁶⁹ *Ibid.*, at 67.

¹⁷⁰ *Ibid.*, at 52.

1077 **Q. Turning first to the issue of Market/Book ratios, do you agree with Mr. Gorman**
1078 **that Market/Book ratios should be used to assess the reasonableness of ROE**
1079 **recommendations?**

1080 **A.** No. Although Mr. Gorman frames his discussions in the context of authorized returns
1081 “sufficient to support market prices that at least exceeded book value,”¹⁷¹ he does not
1082 suggest whether the Market/Book ratio should exceed some level or even explain the
1083 relationship between authorized returns and Market/Book ratios.

1084 Regarding their fundamental relationship, book value per share is an accounting
1085 construct that reflects historical costs, whereas market value per share (*i.e.*, the stock
1086 price) is forward-looking, and a function of many variables, including (but not limited
1087 to): expected earnings and cash flow growth, expected payout ratios, measures of
1088 “earnings quality,” regulatory climate, equity ratio, expected capital expenditures, and
1089 earned return on common equity. It therefore follows that the Market/Book ratio likewise
1090 is a function of factors beyond the historical or expected earned Return on Average
1091 Common Equity.

1092 Lastly, any inferences drawn regarding the relationship between market and book
1093 values rely on the explicit acceptance of the Constant Growth DCF model, including its
1094 underlying assumptions.¹⁷² Investors, however, use multiple methods in establishing
1095 their return requirements (as does Mr. Gorman). That is one reason the Market/Book
1096 ratio typically is used as a measure or relative valuation (when comparing one stock to

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 , $M/B = 1.00$.

1097 another) rather than a measure of absolute valuation. Investors do this because there is no
1098 single, universally accepted method. Consequently, I do not believe Market/Book ratios
1099 should be used to assess the adequacy of authorized returns.

1100 **Q. What would be the result if regulatory commissions used Market/Book ratios to set**
1101 **a utility's ROE?**

1102 A. Looking to Mr. Gorman's data for the natural gas utility sector, the average capital loss
1103 for equity investors would be more than 52.00 percent.¹⁷³ That loss would not simply
1104 affect investors, it also would substantially diminish utilities' ability to attract external
1105 capital. If regulatory commissions were to set rates based on Market/Book ratios, that
1106 practice likely would impede the ability of a utility to attract the capital required to
1107 support its operations, especially in markets during which the Market/Book ratio for the
1108 overall market is significantly greater than 100.00 percent.

1109 **Q. What did your review of Mr. Gorman's Risk Premium analyses indicate?**

1110 A. Because Mr. Gorman did not reasonably reflect the inverse relationship between interest
1111 rates and the Equity Risk Premium, and because he uses data only through June 2019, his
1112 Risk Premium ROE estimates are biased downward.

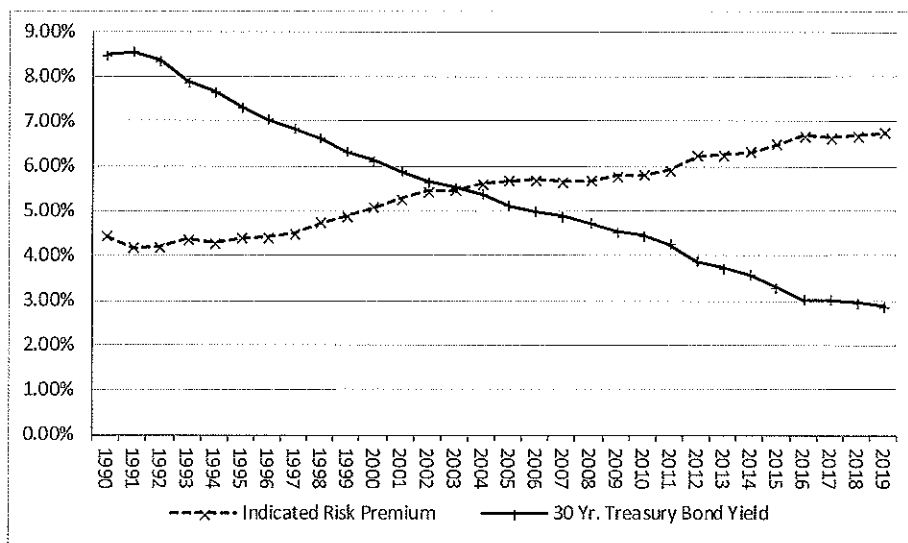
1113 Regarding his application of outdated data, using the average authorized ROE and
1114 Treasury and utility bond yields updated through September 30, 2019 to calculate the
1115 Risk Premium, combined with his 2.50 percent and 3.82 percent risk-free rates, produces

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.

1116 ROE estimates of 9.51 percent and 9.63 percent,¹⁷⁴ well above Mr. Gorman's 8.60
1117 percent to 8.70 percent estimates.

1118 With respect to the inverse relationship between the Equity Risk Premium and
1119 interest rates, considering first the Treasury yield-based analysis, I plotted the yields and
1120 Risk Premia over the 1986 to 2019 period included in Mr. Gorman's analysis. Chart 4
1121 (below) clearly indicates the inverse relationship between interest rates and the Equity
1122 Risk Premium, based on Mr. Gorman's data.

1123 **Chart 4: Mr. Gorman's Treasury Yield-Based Risk Premium Data**¹⁷⁵



1124
1125 There are several other points made clear in Chart 4. First, the low end of Mr.
1126 Gorman's Risk Premium range, 4.17 percent, was observed in the five-year period ending
1127 1991. There is little question that Risk Premium estimates associated with economic
1128 environments 28 years ago have little to do with the current market environment. For

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.

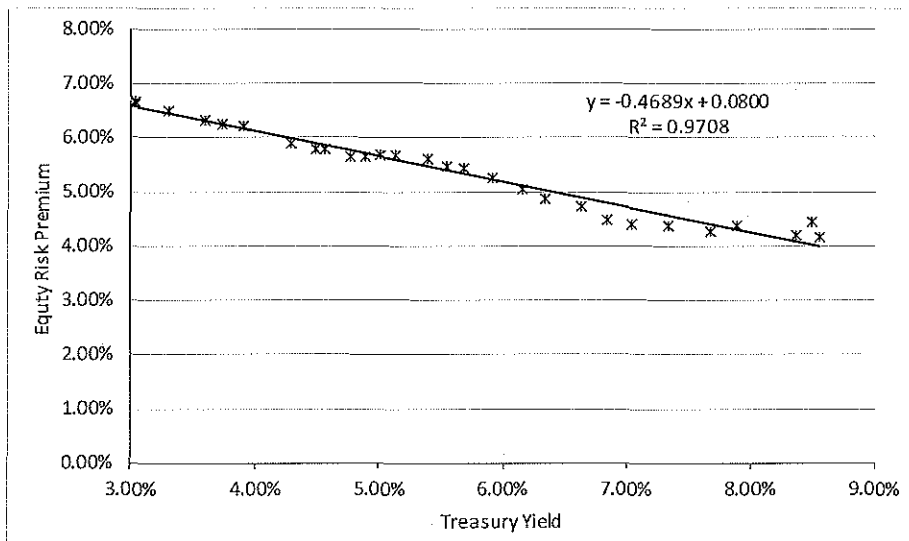
1129 example, prior to 2003, Treasury yields exceeded the Risk Premium (on a five-year
1130 average basis). As Chart 4 (*see also* DEU Exhibit 2.17R) demonstrates, since then the
1131 opposite has been true – the Risk Premium has consistently exceeded Treasury yields.

1132 **Q. Has the Risk Premium increased as Treasury yields decreased?**

1133 A. Yes, the relationship between the five-year average Equity Risk Premium and Treasury
1134 yields is very clear. A simple linear regression demonstrates the two are highly related,
1135 with a Coefficient of Determination (R-Square) of approximately 97.08 percent (*see*
1136 Chart 5, below).¹⁷⁶

1137 **Chart 5: Treasury Yield vs. Equity Risk Premium**

1138 **(Five-Year Rolling Average)¹⁷⁷**



1139
1140

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.

1141 Turning back to Mr. Gorman's data, a simple linear regression using annual
1142 (rather than the rolling-average data) demonstrates that for every 100-basis point decrease
1143 in Treasury yields, the Equity Risk Premium increases by approximately 45 basis points
1144 (see DEU Exhibit 2.18R).¹⁷⁸ Similarly, the Equity Risk Premium increases
1145 approximately 47 basis points for every 100-basis point decrease in utility bond yields.
1146 Those results are consistent with those reported by Maddox, Pippert, and Sullivan, who
1147 determined that the Risk Premium would increase by 37 basis points for every 100-basis
1148 point change in the 30-year Treasury yield.¹⁷⁹

1149 Lastly, contrary to Mr. Gorman's position, accounting for additional factors, such
1150 as credit spreads (taken from Mr. Gorman's exhibits), does not meaningfully change the
1151 sign, statistical significance, or magnitude of the slope coefficient.¹⁸⁰

1152 **Q. What are your conclusions regarding Mr. Gorman's Risk Premium analysis?**

1153 A. Although he argues more variables are at play, Mr. Gorman's data strongly supports the
1154 finding that the Equity Risk Premium is inversely related to interest rates. Taking that
1155 finding into account leads to ROE estimates of approximately 9.33 percent, 63 basis
1156 points above his high Risk Premium estimate and 33 basis points higher than his 9.00
1157 percent recommendation.¹⁸¹

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.

1158 ***E. Response to Mr. Gorman's Criticisms of Company Analyses***

1159 **Q. Please summarize Mr. Gorman's criticisms of your Cost of Equity analyses.**

1160 A. Mr. Gorman argues my estimated ROE is overstated and should be rejected because: (1)
1161 the Constant Growth DCF results are based on growth rates he considers unsustainably
1162 high; (2) the CAPM results assume Market Risk Premia estimates he also believes are too
1163 high; (3) the ECAPM estimates are based on a flawed method; and (4) the Bond Yield
1164 Plus Risk Premium is based on an Equity Risk Premium that, again, he finds too high.¹⁸²
1165 Mr. Gorman further argues the Expected Earnings approach should be rejected and that a
1166 flotation cost adjustment is not appropriate.¹⁸³

1167 **Q. Does Mr. Gorman have any concerns with your proxy group?**

1168 A. He raises only one concern. Mr. Gorman adopts the proxy group used in my Direct
1169 Testimony, with the exception of Chesapeake.¹⁸⁴ As discussed above in Section I, I also
1170 have excluded Chesapeake in my Updated Proxy Group.

1171 **Q. Are the growth rates used in your Constant Growth DCF analysis "unsustainably
1172 high"?¹⁸⁵**

1173 A. No, they are not. A capital appreciation rate of 7.02 percent (*i.e.*, the average growth rate
1174 in the Constant Growth DCF analysis in my Direct Testimony) and higher has occurred
1175 quite often (*see* Chart 6 below).¹⁸⁶ That is, Chart 6 provides the frequency with which
1176 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.

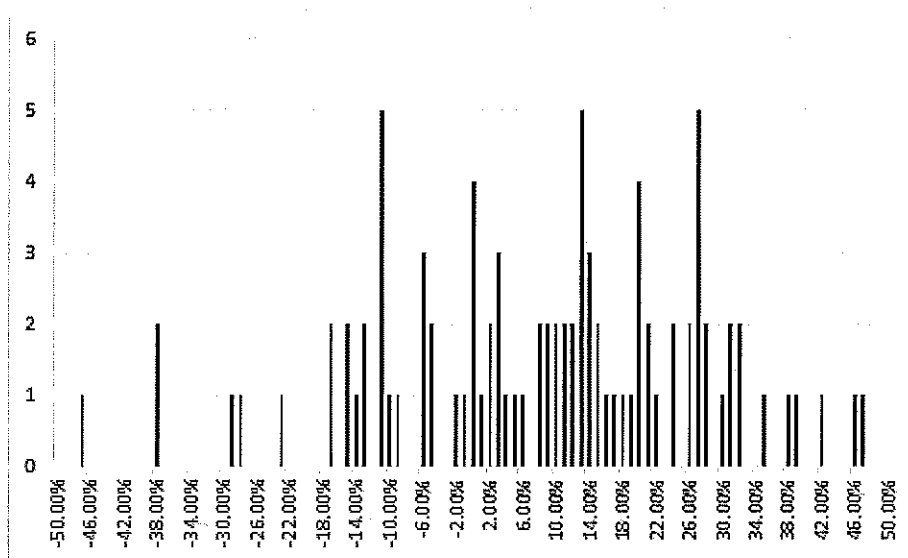
¹⁸⁵ *Ibid.*, at 74.

¹⁸⁶ Under the Constant Growth DCF model's assumptions, the growth rate equals the rate of capital appreciation.

1177 are “unsustainably high”¹⁸⁷ by historical standards represent approximately the 44th to
1178 49th percentile of the actual capital appreciation rates observed from 1926 to 2018. That
1179 is, observed capital appreciation rates of 9.63 percent and lower have occurred more than
1180 half the time. Consequently, the growth rates applied in my DCF analysis are consistent
1181 with actual capital appreciation rates and, therefore, are not too high.

1182 **Chart 6: Frequency Distribution of Capital Appreciation Returns,**

1183 **1926-2018**¹⁸⁸



1184

1185 **Q. Mr. Gorman criticizes your decision to not perform a Multi-Stage DCF analysis in**
1186 **this proceeding.**¹⁸⁹ **What is your response?**

1187 **A.** Simply, the multi-stage model did not provide additional information relative to the
1188 analyses I performed. Although Mr. Gorman’s position is that his Multi-Stage DCF
1189 model is “appropriate”¹⁹⁰ in this proceeding, his average and median Multi-Stage DCF

¹⁸⁷ Direct Testimony and Exhibits of Michael P. Gorman, at 74, 76.

¹⁸⁸ Duff & Phelps, 2019 SBBJ Yearbook, at A-3.

¹⁸⁹ Direct Testimony and Exhibits of Michael P. Gorman, at 76-77.

¹⁹⁰ *Ibid.*, at 77.

1190 results of 7.07 percent and 7.09 percent are well below his recommendation of 9.00
1191 percent. It is clear Mr. Gorman did not give his Multi-Stage DCF results much weight
1192 when determining the Company's ROE.

1193 **Q. Please summarize Mr. Gorman's concerns with your CAPM analysis.**

1194 A. Mr. Gorman's concerns lie primarily with my MRP estimates.¹⁹¹ In particular, Mr.
1195 Gorman argues the expected market returns applied in my analysis are "inflated."¹⁹²

1196 **Q. What is your response to Mr. Gorman?**

1197 A. I disagree. The market return estimates presented in my Direct Testimony, which Mr.
1198 Gorman asserts are "inflated,"¹⁹³ represent the approximately 50th and 52nd percentile of
1199 actual returns observed from 1926 to 2018. Moreover, because market returns
1200 historically have been volatile, my market return estimates are statistically
1201 indistinguishable from the long-term arithmetic average market data on which Mr.
1202 Gorman relies.¹⁹⁴

1203 Mr. Gorman also asserts the Market Risk Premia estimated from my projected
1204 market returns are "overstated."¹⁹⁵ I therefore gathered the annual Market Risk Premia
1205 reported by Duff & Phelps and produced a histogram of the observations (recall that Mr.
1206 Gorman includes historical data among the methods he uses to estimate the MRP). The
1207 results of that analysis, which are presented in Chart 7 below and DEU Exhibit 2.19R,
1208 demonstrate Market Risk Premia of at least 12.02 percent (the high end of the range of

¹⁹¹ Direct Testimony and Exhibits of Michael P. Gorman, at 78.

¹⁹² *Ibid.*, at 79.

¹⁹³ *Ibid.*

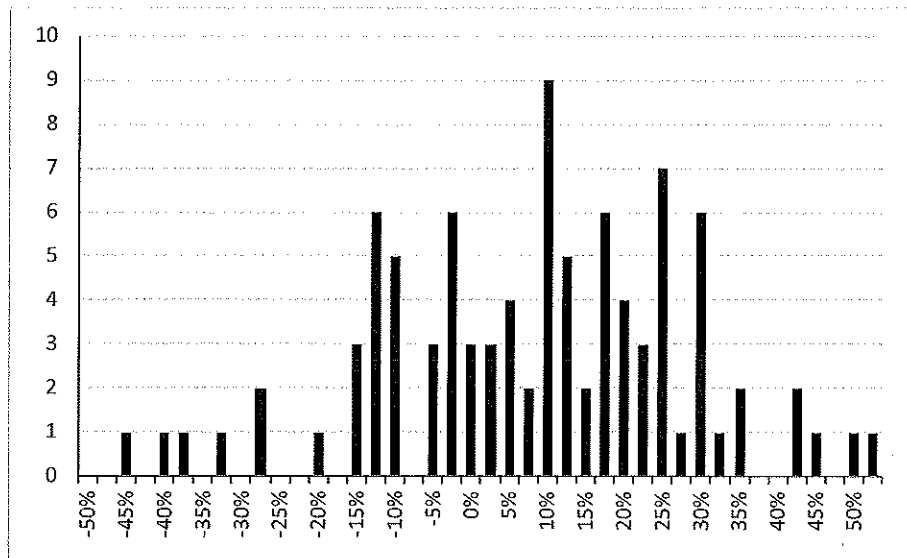
¹⁹⁴ Source: Duff & Phelps, 2019 SBBI Yearbook Appendix A-1. Even if we were to look at the standard error, my estimates are within two standard errors of the long-term average.

¹⁹⁵ Direct Testimony and Exhibits of Michael P. Gorman, at 78.

1209 the MRP estimates in my Direct Testimony) occur approximately 42.00 percent of the
1210 time.

1211 **Chart 7: Frequency Distribution of Observed Market Risk Premia,**

1212 **1926 – 2018¹⁹⁶**



1213

1214

1215 **Q. Please summarize Mr. Gorman's concerns with your ECAPM analysis.**

1216 A. Mr. Gorman's primary concern with my ECAPM analysis is the use of adjusted Beta
1217 coefficients published by Value Line and Bloomberg estimates.¹⁹⁷ As explained in my
1218 Direct Testimony, the use of adjusted Beta coefficients in the ECAPM is entirely
1219 consistent with academic research.¹⁹⁸ Because the ECAPM and adjusted Beta
1220 coefficients address two different aspects of security pricing it is entirely appropriate to
1221 apply both.

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.

1222 **Q. As a preliminary matter, please explain what adjusted Beta coefficients are.**

1223 A. Beta coefficients are measured using an Ordinary Least Squares regression, in which the
1224 dependent variable is the return of the subject security, and the independent variable is
1225 the return on the market as measured by a given index (Value Line, for example, uses the
1226 New York Stock Exchange Index). The Beta coefficient is represented by the slope term
1227 of the regression estimates; that term is the same as Equation [8] in my Direct Testimony.
1228 Intuitively, the Beta coefficient measures the change in the subject company's returns
1229 relative to the change in the market return.

1230 The resulting Beta coefficient is considered "raw", or unadjusted. Blume studied
1231 the stability of Beta coefficients over time, and found that "[n]o economic variable
1232 including the beta coefficient is constant over time."¹⁹⁹ Consistent with that finding,
1233 Blume observed a tendency of raw Beta coefficients to change gradually over time.
1234 Blume then proposed a correction for this tendency, also known as "regression bias",
1235 which is inherent in the calculation of all Beta coefficients. Based on Blume's results, a
1236 typical adjustment to Beta coefficients is given by the following formula:

$$\beta_{\text{adjusted}} = 0.33 + 0.67 \beta_{\text{unadjusted}} \quad [2]^{200}$$

1237 Commercial providers of Beta coefficients, including Value Line and Bloomberg,
1238 provide adjusted Beta coefficients, consistent with the Blume adjustment.²⁰¹

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

1239 **Q. Are you aware of other studies that conclude it is appropriate to use adjusted Beta**
1240 **coefficients in the ECAPM?**

1241 A. Yes, I am. A 1980 study by Litzenberger, *et al.* concluded that the CAPM
1242 underestimates the Cost of Equity for companies with Beta coefficients less than 1.00,
1243 such as public utilities.²⁰² In that study, the authors applied adjusted Beta coefficients
1244 and still found the CAPM to underestimate the Cost of Equity for low-Beta companies.

1245 Similarly, in *Risk and Return for Regulated Industries*, the Brattle Group's Bente
1246 Villadsen, *et al.* (2017) support the use of adjusted Beta coefficients in the ECAPM:

1247 Note that the ECAPM and the Blume adjustment are attempting to
1248 correct for different empirical phenomena and therefore both may be
1249 applicable. It is not inconsistent to use both, as illustrated by the fact
1250 that the Litzenberger *et al.* (1980) study relied on Blume adjusted
1251 betas and estimated an alpha of 2% points in a short-term
1252 version of the ECAPM. This issue sometimes arises in regulatory
1253 proceedings.²⁰³

1254 Dr. Villadsen's observation is consistent with the conclusion that the Blume
1255 adjustment should not be conflated with the empirical effects addressed by the ECAPM.
1256 My Direct Testimony included a citation to Dr. Morin regarding this specific issue:

1257 Some have argued that the use of the ECAPM is inconsistent with the
1258 use of adjusted betas, such as those supplied by Value Line and
1259 Bloomberg. This is because the reason for using the ECAPM is to
1260 allow for the tendency of betas to regress toward the mean value of
1261 1.00 over time, and, since Value Line betas are already adjusted for
1262 such trend, an ECAPM analysis results in double-counting. This
1263 argument is erroneous. Fundamentally, the ECAPM is not an
1264 adjustment, increase or decrease, in beta. This is obvious from the fact
1265 that the expected return on high beta securities is actually lower than
1266 that produced by the CAPM estimate. The ECAPM is a formal
1267 recognition that the observed risk-return tradeoff is flatter than

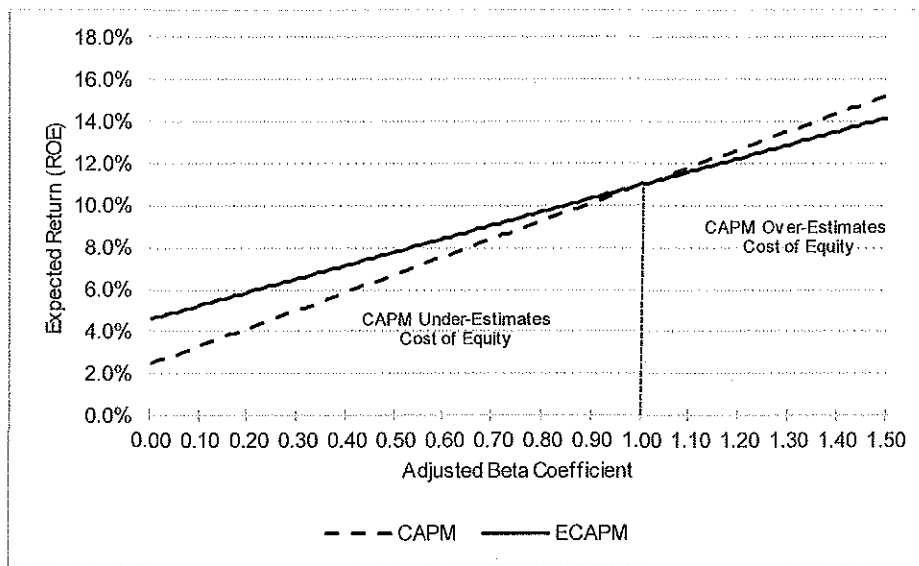
²⁰² Robert Litzenberger, Krishna Ramaswamy and Howard Sosin, *On the CAPM Approach to the Estimation of A Public Utility's Cost of Equity Capital*, The Journal of Finance, Vol. XXXV, No. 2, May 1980.

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

1268 predicted by the CAPM based on myriad empirical evidence. The
1269 ECAPM and the use of adjusted betas comprised two separate features
1270 of asset pricing. Even if a company's beta is estimated accurately, the
1271 CAPM still understates the return for low-beta stocks. Even if the
1272 ECAPM is used, the return for low-beta securities is understated if the
1273 betas are understated. Referring back to Figure 6-1, the ECAPM is a
1274 return (vertical axis) adjustment and not a beta (horizontal axis)
1275 adjustment. Both adjustments are necessary.²⁰⁴

1276 The relationship between expected returns under the CAPM and ECAPM can be
1277 seen in the "Security Market Line" ("SML") provided in Chart 8, below.²⁰⁵ As Chart 8
1278 demonstrates, and as Dr. Morin explained, the ECAPM increases the SML's vertical
1279 intercept, and decreases its slope. Those effects are distinct from the regression bias
1280 addressed by the Blume adjustment.

1281 **Chart 8: CAPM and ECAPM Expected Returns**²⁰⁶



1282

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.

1283 **Q. What is your response to Mr. Gorman's position that it is improper to include**
1284 **adjusted Beta coefficients in the ECAPM.**

1285 A Mr. Gorman's position is that the 0.75 and 0.25 weighting factors in the ECAPM are
1286 "mathematically the same as adjusting beta".²⁰⁷ He further observes the SML of the
1287 CAPM using adjusted Beta coefficients is "the most similar" to the ECAPM using "raw"
1288 Beta coefficients and concludes that the ECAPM using adjusted Beta coefficients is
1289 therefore, less "accurate".²⁰⁸ Mr. Gorman's position, however, assumes the CAPM and
1290 the resulting SML is properly specified in the first instance. As discussed in my Direct
1291 Testimony and Rebuttal Testimony, I disagree. Evidence has shown that the CAPM
1292 understates the required return for companies whose Beta coefficient is less than 1.00 and
1293 overstates the return for companies whose Beta coefficient is greater than 1.00. The
1294 ECAPM mitigates that tendency. Consequently, I disagree that because the slope of the
1295 ECAPM using adjusted Beta coefficients is different than the CAPM, it somehow
1296 "proves" it is not accurate.

1297 As to Mr. Gorman's position that the Blume adjustment and ECAPM factors are
1298 "mathematically the same", algebraic equivalency is not the same as empirical
1299 equivalency, and it should not be considered as such. As Drs. Morin and Villadsen point
1300 out, the ECAPM addresses security pricing issues outside the regression bias addressed
1301 by the Blume adjustment. It does so by applying econometrically derived alpha factors,²⁰⁹
1302 distinct from those applied in Bloomberg's and Value Line's adjustment. There is no

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.

1303 empirical or theoretical reason the ECAPM and Blume adjustment factors should be the
1304 same; Mr. Gorman has provided none.

1305 **Q. Mr. Gorman suggests only “raw”, or unadjusted Beta coefficients should be applied**
1306 **in the ECAPM.²¹⁰ Have you considered the effect of doing so on the model’s**
1307 **results?**

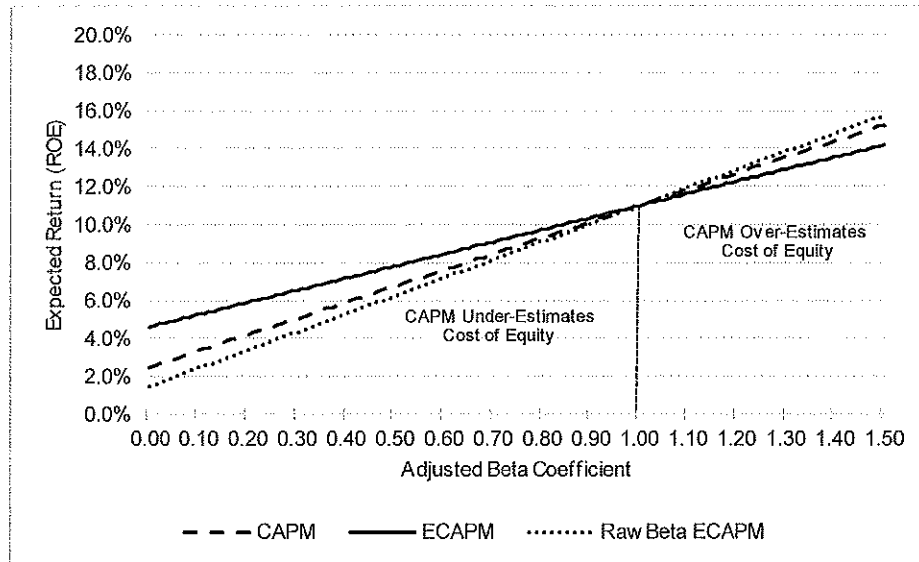
1308 A. Yes, I have. Using the adjustment factors noted in Equation 2 above (0.33 and 0.67), I
1309 calculated “raw” Beta coefficients,²¹¹ which I then applied in the ECAPM (based on the
1310 0.25 and 0.75 factors discussed in my Direct Testimony). As Chart 9 (below)
1311 demonstrates, doing so decreases the SML’s intercept, and increases its slope. In short,
1312 not only does that approach negate the ECAPM’s intended effect, it magnifies the
1313 CAPM’s tendency to underestimate the Cost of Equity for relatively low-Beta coefficient
1314 firms.

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

²¹¹ $\beta_r = (\beta_a - 0.33)/0.67$

1315

Chart 9: CAPM, ECAPM, and Adjusted CAPM Expected Returns²¹²



1316

1317 Q. What are your conclusions regarding the use of adjusted Beta coefficients in the
1318 ECAPM?

1319 A. Because the ECAPM and the Blume adjustment address different empirical issues, there
1320 is no concern with applying adjusted Beta coefficients in the ECAPM structure. Mr.
1321 Gorman's mathematical equivalency requires us to assume the two are fundamentally
1322 similar, but they are not. His proposed solution, applying unadjusted Beta coefficients in
1323 the ECAPM, has the counterproductive effect of further decreasing expected returns for
1324 low Beta coefficient companies relative to the CAPM, and increasing expected returns
1325 for relatively high Beta coefficient companies. Mr. Gorman's arguments have not
1326 changed my position regarding the use of adjusted Beta coefficients in the ECAPM.

1327

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

1328 **Q. Please summarize Mr. Gorman’s criticisms of your Bond Yield Plus Risk Premium**
1329 **analysis.**

1330 A. Mr. Gorman’s concern with my Bond Yield Plus Risk Premium analysis is my
1331 “contention” of a “simplistic inverse relationship” between the Equity Risk Premium and
1332 interest rates, which he suggests is not supported by academic research.²¹³ He argues the
1333 relevant factor explaining changes in the Equity Risk Premiums is the change to equity
1334 risk relative to debt risk, not changes in interest rates alone. Lastly, Mr. Gorman suggests
1335 that authorized returns reflect commission policy and “are not directly adjusted by market
1336 forces.”²¹⁴

1337 **Q. What is your response to Mr. Gorman’s position that authorized returns used in the**
1338 **Bond Yield Plus Risk Premium do not directly reflect “market forces”.**

1339 A. I disagree. Authorized returns and their associated proceedings reflect the same type of
1340 market-based analyses at issue in this proceeding. Because authorized returns are
1341 publicly available (the proxy companies disclose authorized returns, by jurisdiction, in
1342 their 2018 SEC Form 10-Ks),²¹⁵ it therefore is reasonable to conclude that data is
1343 reflected, at least to some degree, in investors’ return expectations and requirements.
1344 From that perspective, ROE recommendations such as Mr. Gorman’s, that are far
1345 removed from prevailing levels should be reconciled to differences in risk. I do not
1346 believe Mr. Gorman’s recommendation does so.

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.

1347 Lastly, although there is no disagreement that every case has its unique set of
1348 issues and circumstances, reviewing over 1,100 cases over many economic cycles and
1349 using that data to develop the relationship between the Equity Risk Premium and interest
1350 rates mitigates that concern. As such, Mr. Gorman's concerns that authorized returns
1351 may be influenced by factors other than objective market drivers is unfounded.

1352 **Q. Did you perform any additional analyses to address Mr. Gorman's concern**
1353 **regarding the effect of expected market volatility and interest rate environments on**
1354 **your results?**

1355 A. Yes, I did. Although I continue to believe the Risk Premium is properly specified, I
1356 performed an additional analysis to specifically include the effect of equity market
1357 volatility and credit spreads (*see* DEU Exhibit 2.21R). As with my original Bond Yield
1358 Plus Risk Premium analysis, I defined the Risk Premium as the dependent variable and
1359 the prevailing 30-year Treasury yield as an independent variable. I then included two
1360 additional explanatory variables: (1) the VIX (the Chicago Board Options Exchange's
1361 one-month volatility index, which is a common measure of volatility); and (2) the credit
1362 spread between the 30-year Treasury yield and the Moody's A Utility Index (as a
1363 measure of incremental risk).²¹⁶ In both instances, the statistically significant inverse
1364 relationship between Treasury yields and the Equity Risk Premium remains, and the
1365 resulting ROE estimates are generally consistent with those of my original and updated
1366 Bond Yield Plus Risk Premium analysis.²¹⁷ Applying Mr. Gorman's projected 2.50
1367 percent 30-year Treasury yield to the alternative Bond Yield Plus Risk Premium Analysis

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.

1368 discussed above produces an ROE estimate of 9.73 percent relative to Mr. Gorman's 9.00
1369 percent recommendation (*see* DEU Exhibit 2.21R).²¹⁸

1370 **Q. What are Mr. Gorman's concerns regarding your Expected Earnings analysis?**

1371 A. In Mr. Gorman's view, the "approach does not measure the market required
1372 return...[r]ather, it measures the book accounting return."²¹⁹ Although I agree economic
1373 and financial factors, and the market-based models that depend on them are important, I
1374 do not agree those factors invalidate the Expected Earnings approach. As discussed in
1375 my Direct Testimony, no single method best captures investor expectations at all times
1376 and under all conditions.²²⁰ Market-based models necessarily require us to draw
1377 inferences from market data based on the assumptions and construction of methods such
1378 as the DCF and CAPM approaches. The simplicity of the Expected Earnings approach is
1379 a benefit, not a detriment.

1380 In addition, the standard revenue requirements formula applied by the
1381 Commission explicitly recognizes the validity of the book value of equity by choosing to
1382 measure capital structures based on book values, rather than market value. Moreover,
1383 although many factors affect stock returns and market to book ratios, the accounting-
1384 based ROE is one of them and therefore cannot be ignored.²²¹ As a practical matter, the
1385 Economic Value Added consulting practices²²² (Stern Stewart & Company) and related

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.

1386 value-based-management systems²²³ encourage financial managers to focus on elements
1387 of the Return on Net Assets, and Return on Invested Capital.

1388 Dr. Morin summarizes the issue by noting that the method “is easily understood,
1389 and is firmly anchored in regulatory tradition,” and concluding “because the investment
1390 base for ratemaking purposes is expressed in book value terms, a rate of return on book
1391 value, as is the case with [Expected] Earnings, is highly meaningful.”²²⁴ The Expected
1392 Earnings approach provides a direct measure of the expected opportunity cost of book
1393 equity. Further, because the approach looks to the expected earnings of comparable risk
1394 companies, it is consistent with the *Hope* and *Bluefield* “comparable return” standard. In
1395 my view, Mr. Gorman’s argument that the Expected Earnings approach rejects the long-
1396 standing practice of setting authorized returns is without merit.²²⁵

1397 Lastly, although Mr. Gorman suggests I use the Expected Earnings approach to
1398 “place”²²⁶ my recommendation within my recommended range, I used the approach to
1399 corroborate my recommended range.²²⁷ Again, Mr. Gorman’s concerns are misplaced.

1400 **Q. Please summarize Mr. Gorman’s testimony as it relates to flotation costs.**

1401 A. Mr. Gorman argues a flotation cost adjustment is unreasonable because it is “not based
1402 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.

1403 **Q. What is your response to Mr. Gorman regarding the need to recover flotation costs?**

1404 A. As explained in my Direct Testimony, flotation costs are not current expenses and are not
1405 reflected on the income statement. Rather they are part of the invested costs of the utility
1406 and are reflected on the balance sheet under “paid in capital.”²²⁹ Whether paid directly or
1407 via an underwriting discount, the cost results in net proceeds that are less than the gross
1408 proceeds. Because flotation costs permanently reduce the equity portion of the balance
1409 sheet, an adjustment must be made to the ROE to ensure that the authorized return
1410 enables investors to realize their required return.

1411 I have provided an illustrative example of the effect of flotation costs on the ROE
1412 in DEU Exhibit 2.22R.²³⁰ As shown in that exhibit, due to the effect of flotation costs, an
1413 authorized return of 10.62 percent would be required to realize an ROE of 10.50 percent
1414 (*i.e.*, a 12-basis point flotation cost adjustment). If flotation costs are not recovered, the
1415 growth rate falls and the ROE decreases to 10.38 percent (*i.e.*, below the required
1416 return).²³¹

1417 **F. Mr. Gorman’s Financial Integrity Analyses**

1418 **Q. Please briefly summarize Mr. Gorman’s assessment of his recommendation as it**
1419 **affects measures of DEU’s financial integrity.**

1420 A. Mr. Gorman evaluates the reasonableness of his ROE recommendation by calculating
1421 two *pro forma* ratios – Debt to EBITDA, and Funds From Operations (“FFO”) to Total
1422 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.

1423 investment grade rating.²³² In FEA Exhibit 1.18, Mr. Gorman develops those ratios,
1424 based on DEU's retail cost of service, his recommended ROE of 9.00 percent, and his
1425 proposed capital structure of 52.00 percent common equity and 48.00 percent long-term
1426 debt. Based on his *pro forma* analysis, Mr. Gorman argues his recommended ROE and
1427 capital structure support DEU's investment grade bond rating.²³³ As with Mr. Lawton's
1428 *pro forma* assessment, Mr. Gorman's analysis assumes DEU actually will earn the
1429 entirety of its authorized ROE on a going-forward basis.

1430 **Q. Are credit ratings determined principally by the types of pro forma metrics Mr.**
1431 **Gorman calculates in FEA Exhibit 1.18?**

1432 A. No, as discussed in my response to Mr. Lawton, S&P's ratings process considers a range
1433 of both quantitative and qualitative data. Cash Flow/Leverage considerations are one
1434 element of a broad set of criteria.²³⁴ Unlike Mr. Gorman's *pro forma* analysis, S&P's
1435 assessment does not look to a single period or assume static relationships among
1436 variables. Consequently, even if we assume credit determinations fundamentally are
1437 driven by two *pro forma* metrics, the actual assessment of those metrics is far more
1438 complex than Mr. Gorman's analysis suggests.

1439 **Q. Did Mr. Gorman use the correct credit metric benchmarks reported by S&P in his**
1440 **analysis?**

1441 A. It does not appear so. In FEA Exhibit 1.18, Mr. Gorman notes he applied S&P's "Medial
1442 Volatility" benchmarks. However, Mr. Gorman appears to have used S&P's "Standard
1443 Volatility" benchmarks for his Debt to EBITDA ratio, and the "Medial Volatility"

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.

1444 benchmark for the FFO to Total Debt ratio. That is, he did not apply S&P’s benchmarks
1445 consistently when evaluating his *pro forma* metrics. S&P’s benchmarks for the ratios
1446 Mr. Gorman used in his analysis are shown in Table 7 below.

1447 **Table 7: S&P’s Credit Metric Benchmarks**²³⁵

S&P Benchmark Ranges	Standard Volatility		Medial Volatility	
	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%

1448

1449 **Q. Do you agree with the premise of Mr. Gorman’s analysis and conclusions he draws**
1450 **from it?**

1451 A. No, I do not. Simply maintaining an “investment grade” rating is an inappropriate
1452 standard. According to S&P, only two of 252 utilities currently have below investment
1453 grade long-term issuer ratings.²³⁶ Because the Company must compete for capital within
1454 the utility sector in the first instance, and with companies beyond utilities in the second,
1455 the Company must have a strong financial profile. Such a profile enables the Company
1456 to acquire capital even during constrained markets.

1457 Second, relying on *pro forma* credit metrics to assess the credit implications of
1458 any specific ROE or equity ratio is a partial analysis that may lead to incorrect
1459 conclusions. That concern arises not only because the credit rating process is complex,
1460 but also because a wide range of assumed ROEs and equity ratios produce *pro forma*

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.

1461 metrics within the benchmark ranges for a given credit rating. As shown in Table 8
1462 (below, and DEU Exhibit 2.23R), for example, Mr. Gorman’s *pro forma* analysis
1463 suggests an ROE as low as 7.39 percent, and as high as 12.09 percent, would produce *pro*
1464 *forma* Debt to EBITDA and FFO to Total Debt ratios in the “Significant” financial risk
1465 range identified in his analysis (using the “Medial Volatility” benchmarks noted in Table
1466 7 above).

1467 That is, even if we assume an unreasonably low ROE in Mr. Gorman’s analysis,
1468 the *pro forma* Debt to EBITDA ratios remain in the “Significant” financial risk range.
1469 Clearly, a return as low as 7.39 percent, which is 224 basis points below the average 2019
1470 authorized return value of 9.63 percent cited by Mr. Gorman²³⁷ is an unrealistic estimate
1471 of the Company’s Cost of Equity, just as 12.09 percent is unreasonably high.

1472 **Table 8: Mr. Gorman’s Financial Integrity Test Using Alternate Assumptions²³⁸**

	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

1473

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.

1474 **G. Capital Structure**

1475 **Q. What is Mr. Gorman’s proposal with respect to the Company’s capital structure?**

1476 A. Mr. Gorman recommends a capital structure of 52.00 percent common equity and 48.00
1477 percent long-term debt.²³⁹ Mr. Gorman asserts his recommendation is appropriate
1478 because it is “reasonably consistent” with authorized common equity ratios for natural
1479 gas utilities and supports the Company’s credit rating and financial integrity.²⁴⁰ For the
1480 reasons discussed earlier, I do not agree Mr. Gorman’s Financial Integrity analyses
1481 demonstrate the reasonableness of his ROE and capital structure recommendation.

1482 **Q. Do you agree with Mr. Gorman’s position that his recommended capital structure is**
1483 **“consistent” with those authorized for natural gas utilities?**

1484 A. No, I do not. In his Table 5, Mr. Gorman provides authorized capital structure for natural
1485 gas and electric utilities over the years 2013 to 2018, as reported by RRA. However, Mr.
1486 Gorman does not include common equity ratios authorized in 2019. Through September
1487 30, 2019, the average authorized common equity ratio in natural gas distribution
1488 proceedings was 54.34 percent, with a median of 53.43 percent.²⁴¹ That is, in 2019, the
1489 average and median authorized common equity ratio increased more than 200 basis
1490 points over the 2018 authorized common equity ratios reported by Mr. Gorman. That
1491 result is not surprising given the reduced cash flow as a result of the TCJA. From that
1492 perspective, the Company’s proposed common equity ratio is consistent with common
1493 equity ratios authorized in 2019 for natural gas utilities in other jurisdictions.

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.

1494 V. RESPONSE TO ANGC WITNESS MR. OLIVER

1495 Q. Please provide a summary of Mr. Oliver's testimony as it relates to the Company's
1496 Cost of Equity.

1497 A. Mr. Oliver calculates an ROE of 9.00 percent, based on his Constant Growth DCF,
1498 CAPM, ECAPM, and Bond Yield Plus Risk Premium methods after applying a 20 basis
1499 point downward "adjustment" to account for his view of DEU's reduced risk relative to
1500 the proxy group.²⁴² Despite those results, he recommends an ROE of 9.50 percent,
1501 reflecting his application of "gradualism".²⁴³

1502 In applying his DCF analyses, which produce an average result of 8.46 percent,
1503 Mr. Oliver relies on earnings growth projections from Zacks, CNN, and Yahoo!
1504 Finance.²⁴⁴ His CAPM and ECAPM analyses, for which he reports estimates between
1505 8.61 percent and 10.10 percent,²⁴⁵ assume risk-free rates of 2.16 percent and 2.45
1506 percent, the average Beta coefficients from Bloomberg presented in DEU Exhibit 2.04,
1507 and an MRP based on the difference between the Bloomberg expected market return
1508 presented in DEU Exhibit 2.03 and his 2.16 percent risk-free rate.²⁴⁶ Although he
1509 devotes several pages of his testimony criticizing my Bond Yield Plus Risk Premium

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 contain 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.

1510 analysis,²⁴⁷ Mr. Oliver performs a similar analysis using a shortened set of my data to
1511 develop a Risk Premium-based ROE estimate of 9.78 percent.²⁴⁸

1512 The reported average of Mr. Oliver's three methods (*i.e.*, DCF, CAPM/ECAPM,
1513 and the Bond Yield Plus Risk Premium) is 9.00 percent,²⁴⁹ which he appears to consider
1514 a reasonable estimate of the Company's Cost of Equity.²⁵⁰ Rather than recommend that
1515 return, however, for the sake of "gradualism" Mr. Oliver assumes a 35-basis point
1516 downward adjustment from the Company's currently authorized ROE of 9.85 percent,²⁵¹
1517 arriving at his recommended ROE of 9.50 percent.

1518 As discussed below, Mr. Oliver's view that 9.00 percent is a reasonable estimate
1519 of the Cost of Equity rests on fundamentally flawed analyses and fails to reconcile itself
1520 with the authorized returns available to other natural gas utilities. For the reasons
1521 discussed in my response to Mr. Coleman, I disagree that Mr. Oliver's 9.50 percent
1522 recommendation for the sake of gradualism mitigates those concerns.

1523 **Q. What are the principal areas in which you disagree with Mr. Oliver's ROE**
1524 **analyses?**

1525 A. There are several areas in which I disagree with Mr. Oliver, specifically: (1) his view that
1526 my ROE recommendation is overstated; (2) the Company's relative risk; (3) the
1527 application of the DCF method; (4) the application of the CAPM, in particular his
1528 application of my MRP estimates filed in my Direct Testimony with his more recent risk-
1529 free rates; (5) his broad assertions regarding my DCF and CAPM analyses; and (6) the

²⁴⁷ Direct Testimony of Bruce R. Oliver, at 28-31.

²⁴⁸ ANG C 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.

1530 effect of certain risks on the Company's ROE, including the need to consider flotation
1531 costs when estimating the Company's Cost of Equity. Lastly, I respond to Mr. Oliver's
1532 recommended capital structure.

1533 **A. *Overstated Return of Equity Recommendation***

1534 **Q. What is your response to Mr. Oliver's belief that your ROE recommendation is**
1535 **overstated?**²⁵²

1536 A. Mr. Oliver's concern is misplaced. I have presented results using five common and
1537 widely accepted ROE estimation methods, including the DCF, CAPM, ECAPM, Bond
1538 Yield Plus Risk Premium, and Expected Earnings approaches. As discussed in my Direct
1539 Testimony, I provide well-documented and supported criteria for my application of those
1540 methods. Any suggestion on his part that I somehow have systematically overstated my
1541 estimates is wrong, has no merit, and should be given no weight.

1542 To that point, Mr. Oliver argues that I have "overstated" my ROE
1543 recommendation by an average of 78 basis points compared to the ROEs authorized by
1544 regulatory commissions in the last three years.²⁵³ Although Mr. Oliver asserts his
1545 presentation of the "Regulators' Adjustment Factor" simply is an "illustration"²⁵⁴ of the
1546 difference between my recommendations and ROEs authorized by regulatory
1547 commissions, he has provided no compelling argument or method by which that data may
1548 be used. If regulatory commissions did set the ROE simply by subtracting a set number
1549 of basis points from the requested return, it could create a dynamic in which petitioning
1550 companies would increase their request, simply to receive the result that they believe

²⁵² *Ibid.*, at 11-12.

²⁵³ *Ibid.*

²⁵⁴ *Ibid.*, at 12.

1551 represents the investor-required return. That is not, and has not been my practice.
1552 Rather, my practice is to propose a return I view as representing investors' return
1553 requirements, and to respond to opposing witnesses on methodological points on which
1554 we disagree. That is what I have done, and what I do in more detail, below.

1555 **Q. Please summarize Mr. Oliver's position that your use of Value Line data**
1556 **"introduces a significant upward bias".²⁵⁵**

1557 A. In several instances, Mr. Oliver criticizes the Value Line data applied in my analyses. In
1558 particular, he argues that the Value Line earnings growth projections "differ
1559 significantly" from analysts' consensus growth rate projections from Zacks or Yahoo!
1560 and affects the range of my DCF results.²⁵⁶ For similar reasons, he also rejects my
1561 Sustainable Growth (or Retention Growth) estimates because they are calculated using
1562 Value Line Data.²⁵⁷ Lastly, he argues Value Line's projected earnings growth rates
1563 affect my Expected Earnings analysis.²⁵⁸

1564 **Q. What is your response to Mr. Oliver on those points?**

1565 A. Although Mr. Oliver may disagree with Value Line's data, the relevant question is
1566 whether investors rely on Value Line's data. Value Line is a leading, independent
1567 provider of financial data covering over 6,000 stocks, 18,000 mutual funds, 200,000
1568 options, and other securities. In my experience, Value Line is a common data source
1569 used in regulatory proceedings and is widely relied on by investors. Mr. Oliver has not
1570 provided any evidence to the contrary. His position should be rejected.

²⁵⁵ *Ibid.*, at 7.

²⁵⁶ *Ibid.*, at 17.

²⁵⁷ *Ibid.*, at 22.

²⁵⁸ *Ibid.*, at 32.

1571 **B. Relative Risk**

1572 **Q. Mr. Oliver suggests your Cost of Equity analyses do not reflect the risk and return**
1573 **requirements of DEU's distribution utility operations because the analyses are**
1574 **based on holding companies.²⁵⁹ What is your response?**

1575 **A.** Mr. Oliver relies on the same group of comparable companies I used in my Direct
1576 Testimony.²⁶⁰ As Mr. Oliver acknowledges, it is not possible to select a proxy group of
1577 comparable publicly traded natural gas distribution utilities.²⁶¹ However, by carefully
1578 choosing screening criteria, the proxy group developed in my Direct Testimony generally
1579 is comparable in terms of business and financial risk to the Company. For that reason, it
1580 is my view that those companies can be used to estimate the Cost of Equity for DEU in
1581 this proceeding. For example, DEU's credit rating is similar to its peers' (see Table 9
1582 below). Although not a full measure of equity risk, credit ratings suggest that the
1583 Company's business risk is not dissimilar to its peers.

1584 **Table 9: Credit Rating Comparison²⁶²**

	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.

1585

1586 **Q. Do you agree with Mr. Oliver's 20-basis point downward adjustment to his DCF**
1587 **and CAPM analyses?**²⁶³

1588 A. No, I do not. Mr. Oliver has not provided any empirical evidence to support a deduction
1589 of any amount is required, particularly in light of the proxy group's similarity in credit
1590 ratings discussed above. Nor has he provided evidence that 20-basis points reflects the
1591 investors' risk perception of DEU relative to the proxy group. As much as Mr. Oliver
1592 criticizes my "judgment" in analytical approaches, he is willing to apply his own, without
1593 any empirical basis.

1594 **C. Constant Growth Discounted Cash Flow Model**

1595 **Q. What is your response to Mr. Oliver's suggestion that stock prices averaged over an**
1596 **annual period is "more common" in a DCF analysis than your 30-, 90-, and 180-**
1597 **trading day averaging periods?**²⁶⁴

1598 A. Mr. Oliver asserts his approach is "more common", but he provides no support for that
1599 assertion. As discussed in my Direct Testimony, I used multiple averaging periods to
1600 ensure short-term anomalous events do not affect the model's results.²⁶⁵ The 180-trading
1601 day averaging period in my Direct Testimony includes over eight months of data from
1602 August 29, 2018 through May 17, 2019. Mr. Oliver provides no evidence to
1603 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.

1604 by investors”²⁶⁶ than my eight-and-one-half-month averaging period (*i.e.*, 180-trading
1605 days).

1606 Although Mr. Oliver believes his annual stock price averaging period is “more
1607 traditional” and my approach is inconsistent with industry practice, he is the only witness
1608 in this proceeding that relied on an annual stock price averaging period.²⁶⁷ Division
1609 Witness Mr. Coleman relied on a 30-trading day average stock price,²⁶⁸ OCS Witness
1610 Mr. Lawton relied on a three-month average,²⁶⁹ and FEA Witness Mr. Gorman relied on
1611 a 13-week averaging period.²⁷⁰ Simply, Mr. Oliver’s suggestion that the averaging
1612 periods I relied on in my DCF analysis are “untraditional” is unsupported and
1613 inconsistent with every other ROE witness in this proceeding.

1614 ***D. Capital Asset Pricing Model and Empirical CAPM***

1615 **Q. Please summarize Mr. Oliver’s application of the CAPM.**

1616 A. Mr. Oliver’s CAPM and ECAPM analyses assume risk-free rates of 2.16 percent and
1617 2.45 percent, my proxy group average Bloomberg coefficient of 0.573 filed in DEU
1618 Exhibit 2.04, and an MRP based on the difference between the Bloomberg expected
1619 market return presented in DEU Exhibit 2.03 and his 2.16 percent risk-free rate.²⁷¹ He
1620 applies those inputs to derive Cost of Equity estimates of 8.61 percent and 10.10

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 ANGCE Exhibit 1.04, page 1.

1621 percent.²⁷² Mr. Oliver ultimately calculates the average of his CAPM and ECAPM
1622 results percent of 9.36 percent (before his 20-basis point risk adjustment).²⁷³

1623 **Q. What is your concern with Mr. Oliver's CAPM and ECAPM analyses?**

1624 A. My concern is that Mr. Oliver applies a Beta coefficient and MRP based on data from
1625 May 2019 with a more recent average risk-free rate from the month of September 2019.
1626 That is, in calculating his 11.26 percent MRP, Mr. Oliver subtracted the average 30-year
1627 Treasury yield over the month of September 2019 from the Bloomberg expected total
1628 market return of 13.42 percent as of May 17, 2019 presented in DEU Exhibit 2.03. If his
1629 CAPM and ECAPM analyses were corrected to apply more recent data for the
1630 Bloomberg MRP and Beta coefficient shown in DEU Exhibits 2.03R and 2.04R,
1631 respectively, his average CAPM and ECAPM-based result would be 9.85 percent (*see*
1632 DEU Exhibit 2.24R).²⁷⁴

1633 **E. Relevance of Bond Yield Plus Risk Premium Analysis**

1634 **Q. Please briefly summarize Mr. Oliver's observations regarding your Bond Yield Plus**
1635 **Risk Premium Analysis.**

1636 A. Mr. Oliver argues my analysis does not "account for changes in risk profiles of the
1637 utilities for which ROE determinations are rendered."²⁷⁵

1638 **Q. What is your response to Mr. Oliver's criticisms?**

1639 A. I disagree. As my Direct Testimony explains, the Equity Risk Premium is not stable, but
1640 moves inversely to interest rates.²⁷⁶ That relationship, or change in the Equity Risk

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.

1641 Premium, is captured in the regression analysis contained in DEU Exhibit 2.06 to my
1642 Direct Testimony and updated in DEU Exhibit 2.06R to my Rebuttal Testimony.
1643 Further, as discussed in my response to Mr. Gorman above, authorized returns and their
1644 associated proceedings reflect the same type of market-based analyses at issue in this
1645 proceeding. That is, changes in risk profiles are indeed captured in authorized returns
1646 over time as commissions set returns based on their assessment of utilities' risk-adjusted
1647 required return.

1648 Although not discussed in his testimony, it appears Mr. Oliver performed a
1649 similar analysis using a subset of my data from the last ten years, producing ROE
1650 estimates of 9.65 percent and 9.90 percent.²⁷⁷ The average of those results (9.78 percent)
1651 represent one-third of his of overall model-based ROE estimate.

1652 **Q. Do you agree with Mr. Oliver's application of a shortened data set?**

1653 A. No, I do not. Mr. Oliver has not provided any evidence to support his shortened data set,
1654 nor has he demonstrated that the relationship between Treasury yields and the Equity
1655 Risk Premium prior to 2009 is inconsistent with the structure of the model. The data
1656 used in my analyses cover several capital market and macroeconomic cycles and captures
1657 the relationship between the Equity Risk Premium and interest rates over those cycles.
1658 By ignoring those observations, Mr. Oliver's analysis unnecessarily makes the model less
1659 robust.

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

1660 *F. Asserted Shortcomings in the DCF and CAPM Analyses*

1661 **Q. What shortcomings does Mr. Oliver suggest in your analyses?**

1662 A. First, Mr. Oliver observes that I adjust the MRP for the S&P 500 by Beta coefficients,
1663 and asserts that calculation has two shortcomings. First, he argues the Beta coefficient
1664 only addresses the risk related to the volatility of company's stock price relative to the
1665 broader market, and does not address "other forms of financial risk, operating risk, and
1666 market risk that a company may face".²⁷⁸ Second, he argues "there are numerous
1667 alternative methods for computing Beta coefficients, and some of those alternatives can
1668 noticeably alter the ROE estimates that are derived from CAPM and ECAPM models".²⁷⁹
1669 Mr. Oliver's assertions are fundamentally incorrect and entirely misplaced.

1670 Regarding Mr. Oliver's first point, the CAPM assumes investors are
1671 compensated for the non-diversifiable or "systematic" risk of a security.²⁸⁰ Systematic
1672 risk is represented by the Beta coefficient, which is a measure of the subject company's
1673 risk relative to the overall market. Equation [8] to my Direct Testimony demonstrate that
1674 the Beta coefficient relates the subject company's systematic risk to that of the overall
1675 market. The relationship among the Cost of Equity, Beta coefficients, and the risk-free
1676 rate can be shown on the "Security Market Line", which falls from Modern Portfolio
1677 Theory.

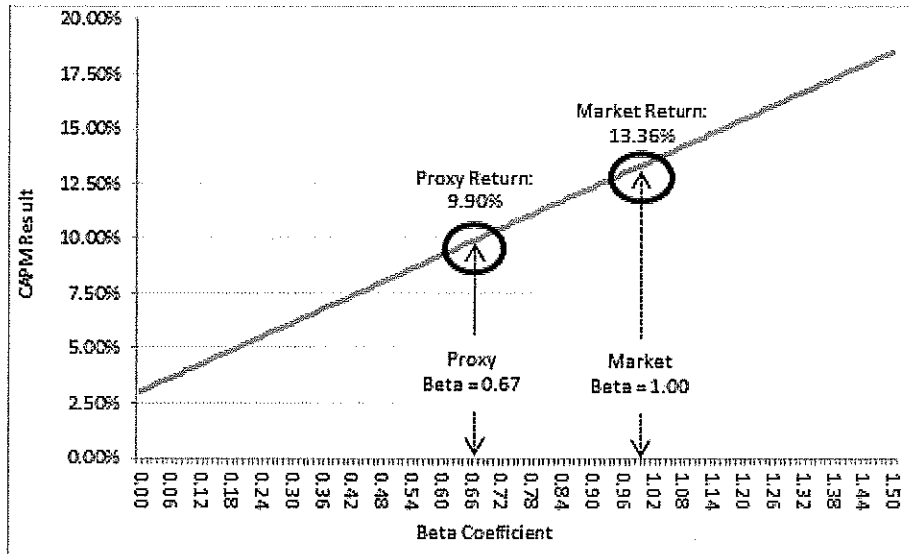
²⁷⁸ Direct Testimony of Bruce R. Oliver, at 28.

²⁷⁹ *Ibid.*

²⁸⁰ *See*, Direct Testimony of Robert B. Hevert, at 21, 53.

1678

Chart 10: Security Market Line²⁸¹



1679

1680

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.

1681

1682 **Q. What is your response to Mr. Oliver's argument that there are other risks not**
1683 **addressed by Beta coefficients?**

1684

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

1685

...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

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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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1694

²⁸¹

For illustrative purposes only.

²⁸²

Direct Testimony of Bruce R. Oliver, at 28.

1695 diversifiable” risk.²⁸³ Whereas DCF models focus on expected cash flows, Risk
1696 Premium-based models such as the CAPM focus on the additional return that investors
1697 require for taking on additional risk.

1698 Mr. Oliver seems to argue that the CAPM is mis-specified, that it should capture
1699 “other forms of risk” that may be diversifiable. But that is not the intent of the CAPM.
1700 The point of applying different methods is to capture different perspectives on security
1701 pricing. The information captured by the CAPM is important to investors, regardless of
1702 Mr. Oliver’s view regarding its specification. Moreover, if Mr. Oliver felt other variables
1703 reflecting diversifiable risk should be added, he could have applied Arbitrage Pricing
1704 Theory, but he did not.

1705 Equally concerning is Mr. Oliver’s statement that Beta coefficients do not reflect
1706 “financial risk”. Here again, he simply is incorrect. As Copeland, Koller, and Murrin
1707 explain, “Beta is a measure of the systematic risk of the levered equity of the comparison
1708 companies”.²⁸⁴ That is, Beta coefficients reflect the effect of financial risk to equity
1709 investors. In fact, the authors discuss a method to remove the effect of financial leverage
1710 by “unlevering” the Beta coefficient. Mr. Oliver’s assertion that Beta coefficients do not
1711 reflect financial risk is fundamentally incorrect.

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.

1712 **Q. Does Mr. Oliver provide any support for his position that alternative Beta**
1713 **coefficient calculations “can noticeably alter the ROE estimates that are derived**
1714 **from CAPM and ECAPM models”²⁸⁵?**

1715 A. No, he does not. Mr. Oliver provides no explanation as to what “alternative methods for
1716 computing Beta coefficients” he refers, nor does he provide any support to his position
1717 that these alternatives “can noticeably alter the ROE estimates that are derived from
1718 CAPM and ECAPM models.”²⁸⁶ Despite his concern regarding my Beta coefficients,
1719 Mr. Oliver appears to accept them as he applies my Bloomberg-based proxy group
1720 average Beta coefficient in his CAPM and ECAPM analyses.²⁸⁷

1721 **G. Other Business Risks and Considerations**

1722 **Q. Please provide a brief summary of Mr. Oliver’s recommendation as it relates to**
1723 **flotation costs.**

1724 A. Mr. Oliver does not recommend adjusting the ROE to reflect flotation costs because: (1)
1725 after DEU’s merger with Dominion Energy, the Company no longer directly incurs
1726 flotation costs; and (2) he argues the flotation cost is small and within the margin of error
1727 in my analysis.²⁸⁸

1728 **Q. Is the need to consider flotation costs eliminated because DEU is a wholly-owned**
1729 **subsidiary of Dominion Energy?**

1730 A. No. The acquisition of DEU by Dominion Energy does not negate the need to recover
1731 flotation costs. Any issuance of equity by Dominion Energy will incur issuance costs.

²⁸⁵ Direct Testimony of Bruce R. Oliver, at 28.

²⁸⁶ *Ibid.*

²⁸⁷ *Ibid.*, at 39; ANGCE Exhibit 1.04, page 1.

²⁸⁸ *See*, Direct Testimony of Bruce R. Oliver, at 35-36.

1732 Dominion Energy's net proceeds will then be allocated to its subsidiaries, including
1733 DEU. This allocation to the Company reflects the net proceeds received by Dominion
1734 Energy such that DEU indirectly incurs these costs.

1735 **Q. Do you believe the flotation cost is small and within the margin of error in my**
1736 **analysis?**

1737 A. No. None of the methods I applied directly reflect flotation costs.²⁸⁹ I believe flotation
1738 costs are a distinct measure of value that should be reflected in a company's awarded
1739 ROE so that the company has a reasonable opportunity to earn a fair return.

1740 **Q. What is Mr. Oliver's position as it relates to electrification?**

1741 A. Mr. Oliver acknowledges that electrification (or "deep decarbonization") is a risk factor,
1742 but does not believe it is a risk factor for DEU because its system is young compared to
1743 other natural gas distribution systems.²⁹⁰ In my view, a younger system might be at a
1744 higher risk relative to older systems because the risk of stranded assets is higher relative
1745 to older systems in which more of the assets are depreciated should electrification efforts
1746 prevail.

1747 **H. Capital Structure**

1748 **Q. What is Mr. Oliver's proposal with respect to the Company's capital structure?**

1749 A. Mr. Oliver recommends a capital structure of 50.00 percent common equity and 50.00
1750 percent long-term debt.²⁹¹ Mr. Oliver disagrees with the capital structure analysis I
1751 presented in DEU Exhibit 2.10 because he believes they are at the holding company level

²⁸⁹ Direct Testimony of Robert B. Hevert, at 32.

²⁹⁰ Direct Testimony of Bruce Oliver, at 33.

²⁹¹ *Ibid.*, at 47.

1752 and in his view do not represent regulated distribution utility operations.²⁹² Lastly, Mr.
1753 Oliver suggests DEU's parent company Dominion Energy is inappropriately leveraging
1754 its regulated utility capital structure raising costs to utility ratepayers.²⁹³ As discussed
1755 below, I disagree with Mr. Oliver's characterization.

1756 **Q. What is your response to Mr. Oliver's argument that your proxy group capital**
1757 **structure analysis is not informative because it is at the holding company level?**

1758 A. I disagree. First, the data is only available at the holding company level as not every
1759 proxy company reports capital structure data at the regulated operating company level.
1760 For the proxy companies that do report capital structure data at the regulated operating
1761 company level, however, the average common equity ratio in place at those regulated
1762 operating subsidiaries has been 57.59 percent (*see*, Table 10 below). From that
1763 perspective, the Company's proposed capital structure consisting of 55.00 percent
1764 common equity is reasonable.

1765 **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%

1766

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.

1767 **Q. Mr. Oliver observes DEU's parent Dominion Energy had "substantially less**
1768 **Common Equity and noticeably more Long-Term Debt" and asserts that "[u]tility**
1769 **holding companies often seek higher equity ratios in the capital structures of their**
1770 **regulated utilities to enable the holding company to finance non-utility activities at**
1771 **lower costs."²⁹⁵ What is your response?**

1772 **A. Mr. Oliver's position appears to suggest the Company is engaging in double leverage, to**
1773 **the detriment of customers.²⁹⁶ I have several concerns with that position. First, in my**
1774 **experience utilities typically apply the prudent financing principle of maturity, or**
1775 **duration, matching. Under that principle, long-lived assets are financed with**
1776 **correspondingly long-lived securities. As discussed earlier, due to its perpetual life**
1777 **common equity has a long duration. Adding equity to the capital structure therefore**
1778 **extends the capital structure's weighted average duration, more closely aligning it with**
1779 **the assets that form the rate base.**

1780 Mr. Oliver's position also runs counter to the to the widely accepted "stand-
1781 alone" regulatory principle, which treats each utility subsidiary as its own company.
1782 Under the stand-alone approach, the cost of capital is determined using the subsidiary's
1783 capital structure and cost of debt and equity; the Cost of Equity is generally estimated by
1784 reference to a proxy group of firms of comparable risk.

1785 Consistent with the stand-alone principle, the ownership structure does not affect
1786 the operating utility's capital structure or cost of capital. Parent entities, like other
1787 investors, have capital constraints and must consider the attractiveness of the expected

²⁹⁵ Direct Testimony of Bruce R. Oliver, at 44. Emphasis included in original quotation.

²⁹⁶ *Ibid.*, at 44-45.

1788 risk-adjusted return of each investment alternative as part of their capital budgeting
1789 process. This opportunity cost concept applies regardless of the source of the funding.
1790 When funding is provided by a parent entity, the return on that financing must still be
1791 sufficient to provide an incentive to the parent entity to allocate equity capital to the
1792 subsidiary or business unit rather than other internal or external investment opportunities.
1793 That is, the regulated subsidiary must compete for capital with its affiliates and with
1794 other, similarly situated utility companies.

1795 From an external investor's perspective, the combined company must provide a
1796 return reflecting the risks of the company's constituent parts. Investors therefore value
1797 combined entities on a sum-of-the-parts basis, expecting each operating segment to
1798 provide its appropriate risk-adjusted return. That practical financial principle is
1799 consistent with the regulatory principle of treating utilities as stand-alone entities. From
1800 both perspectives, it is the utility's operating risk that defines the capital structure and
1801 cost of capital, not investors' sources of funds.

1802 Contrary to those basic principles, Mr. Oliver's double leverage argument
1803 assumes the required return depends on the source of financing, not on the risks of the
1804 underlying utility operations. The position that a company would have a different cost
1805 rate depending on how its investors fund their equity investments violates the widely
1806 acknowledged economic "law of one price", which states that in an efficient market,
1807 identical assets would have the same value. In other words, two utilities, identical in all
1808 respects but for their form of ownership, should have the same common equity cost rates.

1809 Moreover, if the common equity of a subsidiary were held by both the parent and
1810 an external investor, the equity held by the parent would have one required return, and

1811 the equity held by outside investors would have another. To the extent the required
1812 returns differ, so would the value of the equity. But in an efficient market, identical
1813 assets must have the same price (value). If not, the difference quickly would be
1814 arbitrated away. As Dr. Roger A. Morin in New Regulatory Finance (at page 523) notes:

1815 Carrying the double leverage standard to its logical conclusion leads to
1816 even more unreasonable prescriptions. If the common shares of a
1817 subsidiary were held by both the parent and by individual investors,
1818 the equity contributed by the parent would have one cost under the
1819 double leverage computation while the equity contributed by the
1820 public would have another.

1821 The double leverage argument also requires every affiliate within the corporate
1822 family to have the same cost of capital, regardless of differences in risk. Dominion
1823 Energy reports five operating segments: Power Delivery; Gas Infrastructure; Southeast
1824 Energy; and Corporate and Other.²⁹⁷ Because they are separately reported, we
1825 reasonably can assume those segments face different risks. And because they face
1826 different risks, we reasonably may assume they require different returns. Dr. Morin
1827 further noted:

1828 Just as individual investors require different returns from different
1829 assets in managing their personal affairs, why should regulation cause
1830 parent companies making investment decisions on behalf of their
1831 shareholders to act any differently? A parent company normally
1832 invests money in many operating companies of varying sizes and
1833 varying risks. These operating subsidiaries pay different rates for the
1834 use of investor capital, such as long-term debt capital, because
1835 investors recognize the differences in capital structure, risk, and
1836 prospects between the subsidiaries. Yet, the double leverage
1837 calculation would assign the same return to each activity, based on the
1838 parent's cost of capital. Investors recognize that different subsidiaries
1839 are exposed to different risks, as evidenced by the different bond
1840 ratings and cost rates of operating subsidiaries. The same argument
1841 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.

1842 because the risk is different, the cost rate for common equity is also
1843 different, and the double leverage adjustment shouldn't obscure this
1844 fact.²⁹⁸

1845 Longstanding academic literature has thoroughly discussed the flaws associated
1846 with the double leverage approach. For example:

1847 1. Pettway and Jordan (1983), and Beranek and Miles (1988) point out the flaws in the
1848 double leverage argument, particularly the excess return argument, and also
1849 demonstrate that the "stand-alone" method is the superior approach.

1850 2. Rozef (1983) discusses the ratepayer cross-subsidies of one subsidiary by another
1851 when employing double leverage.

1852 3. Lerner (1973) concludes that the returns granted to equity investors must be based on
1853 the risks to which the investors' capital is exposed and not the investors' source of
1854 funds.

1855 Basic finance texts reach the same conclusions. In Principles of Corporate Finance, 8th
1856 edition, Brealey, Myers, and Allen state (at page 234):

1857 In principle, each project should be evaluated at its own opportunity
1858 cost of capital; the true cost of capital depends on the use to which the
1859 capital is put. If we wish to estimate the cost of capital for a particular
1860 project, it is project risk that counts.

1861 Likewise, in Modern Corporate Finance, 1st edition, Shapiro states (at page 276):

1862 Each project has its own required return, reflecting three basic
1863 elements: (1) the real or inflation-adjusted risk-free interest rate; (2) an
1864 inflation premium approximately equal to the amount of expected
1865 inflation; and (3) a premium for risk. The first two cost elements are
1866 shared by all projects and reflect the time value of money, whereas the
1867 third component varies according to the risks borne by investors in the
1868 different projects. For a project to be acceptable to the firm's
1869 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.

1870 three cost components. This minimum or required return is the
1871 project's cost of capital and is sometimes referred to as a hurdle rate.

1872 The preceding paragraph bears a crucial message: The cost of capital
1873 for a project depends on the riskiness of the assets being financed, not
1874 on the identity of the firm undertaking the project.

1875 Simply, the notion of double leverage runs counter to both financial and regulatory
1876 principles.

1877 Lastly, double leverage arguments have been rejected by several regulatory
1878 commissions, including the Maryland Public Service Commission:

1879 We reject People's Counsel's proposed capital structure [reflecting a
1880 double leverage adjustment] because it suffers from numerous flaws.
1881 First, it assumes that the rate of return depends on the source of capital
1882 rather than the risks faced by the capital.²⁹⁹

1883 In 2016, the Federal Energy Regulatory Commission ("FERC") reiterated its
1884 previous position on "double leveraging,"³⁰⁰ stating that "the motivations of a parent
1885 company are irrelevant"³⁰¹ so long as the operating company passes the Commission's
1886 three-part test: (1) it issues its own debt without guarantees; (2) it has its own bond rating;
1887 and (3) it has a capital structure within the range of capital structures approved by the
1888 commission.³⁰² Under FERC guidance, the capital structure of Dominion Energy is not
1889 applicable to DEU.

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").

1890 The Washington Utilities and Transportation Commission (“WUTC”) has cited to
1891 FERC’s position on the use of double leverage in support of its decision in Docket No.
1892 UE 050684:

1893 The FERC does not embrace the concept of double leverage. For
1894 purposes of calculating rate of return for wholly owned subsidiaries,
1895 FERC uses the stand-alone capital structure and return on equity of the
1896 subsidiary so long as the subsidiary issues its own debt, maintains its
1897 own credit ratings and meets other standards related to equity ratio.
1898 The courts have upheld this policy. *See Missouri Pub. Serv. Comm’n*
1899 *v. Federal Energy Reg Comm’n*, 215 F.3d 1, 342 U. S. App. DC. 1
1900 (D.C. Cir. June 27, 2000).³⁰³

1901 In that same Order, the WUTC considered the effects of ring fencing in protecting
1902 ratepayers against financial leverage at the parent level:

1903 The ring fencing provisions required by our final order in Docket UE-
1904 051090 insulate PacifiCorp and its customers from risks and financial
1905 distress at the MEHC level. Nonetheless, after having insulated
1906 PacifiCorp and its customers from the risks of leveraged financing at
1907 the parent, Staff and Public Counsel seek to secure for customers the
1908 cost and tax benefits of that financing. The Company’s expert witness
1909 argues this may violate the familiar principle in utility law that
1910 financial benefits should follow burden of risks. We agree. If the risks
1911 and costs of activities at the parent-level are born exclusively by
1912 shareholders—because customers are insulated from them by the ring
1913 fence—then it is fair and appropriate for the shareholders, and not the
1914 customers, to receive the benefits that result from those activities.³⁰⁴

1915

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

1916 **VI. RESPONSE TO UAE WITNESS MR. HIGGINS**

1917 **Q. Please summarize Mr. Higgins' testimony regarding the Company's ROE?**

1918 A. Mr. Higgins opposes the Company's proposed ROE based on his review of authorized
1919 ROEs nationwide over the past twelve months.³⁰⁵ Although Mr. Higgins did not
1920 undertake an independent, market-based analysis of the Company's Cost of Equity, his
1921 review of ROEs nationwide is intended to supplement the Cost of Capital analyses
1922 submitted in this proceeding.³⁰⁶

1923 **Q. Mr. Higgins observes the median ROE authorized for natural gas utilities over the**
1924 **last twelve months is 9.70 percent. Do you have any additional observations?**

1925 A. Yes, I do. Although Mr. Higgins does not provide the underlying data supporting his
1926 9.70 percent median, as shown in DEU Exhibit 2.09R, his calculation is consistent with
1927 the average and median authorized ROE in 2019 through September 30, 2019, compared
1928 to the median authorized ROE of 9.60 percent in 2017 and 2018.³⁰⁷ Further, the
1929 authorized ROE was equal to or greater than 9.70 percent seven out of nine natural gas
1930 distribution rate cases so far in 2019.

³⁰⁵ Direct Testimony of Kevin C. Higgins, at 23.

³⁰⁶ *Ibid.*

³⁰⁷ *See*, DEU Exhibit 2.09R.

1931 **VII. CONCLUSIONS AND RECOMMENDATION**

1932 **Q. What is your conclusion regarding the Company's Cost of Equity and capital**
1933 **structure?**

1934 A. Based on the analyses discussed throughout my Direct and Rebuttal Testimony, I
1935 continue to believe the reasonable range of ROE estimates is from 9.90 percent to 10.75
1936 percent, and within that range, 10.50 percent is a reasonable and appropriate estimate of
1937 DEU's Cost of Equity. The results of my updated Constant Growth DCF, CAPM,
1938 ECAPM, and Bond Yield Plus Risk Premium analyses, along with the Expected Earnings
1939 results, support the reasonableness of my range of ROE estimates and my
1940 recommendation.³⁰⁸ As to the Company's proposed capital structure, I continue to
1941 believe a capital structure consisting of 55.00 percent common equity and 45.00 percent
1942 long-term debt is reasonable and appropriate. My updated results are provided in Table
1943 11, below.

³⁰⁸ DEU Exhibit 2.01R through DEU Exhibit 2.07R.

1944

Table 11: Summary of Updated Analytical Results³⁰⁹

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
<i>Average Bloomberg Beta Coefficient</i>			
Current 30-Year Treasury (2.11%)		9.14%	9.30%
Near Term Projected 30-Year Treasury (2.28%)		9.31%	9.47%
<i>Average Value Line Beta Coefficient</i>			
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
<i>Average Bloomberg Beta Coefficient</i>			
Current 30-Year Treasury (2.11%)		10.40%	10.59%
Near Term Projected 30-Year Treasury (2.28%)		10.57%	10.76%
<i>Average Value Line Beta Coefficient</i>			
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%

1945

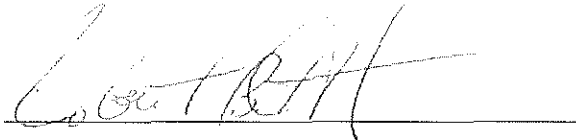
1946 **Q. Does this conclude your Rebuttal Testimony?**

1947 **A. Yes, it does.**

³⁰⁹ DEU Exhibit 2.01R through DEU Exhibit 2.07R.

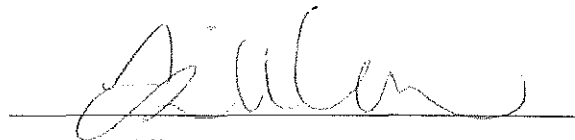
Commonwealth of Massachusetts)
) ss.
County of Worcester)

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.

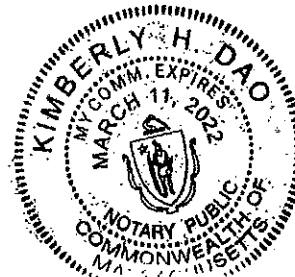


Robert B. Hevert

SUBSCRIBED AND SWORN TO this November 14, 2019.



Notary Public



Constant Growth Discounted Cash Flow Model
30 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$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

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Retention Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$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

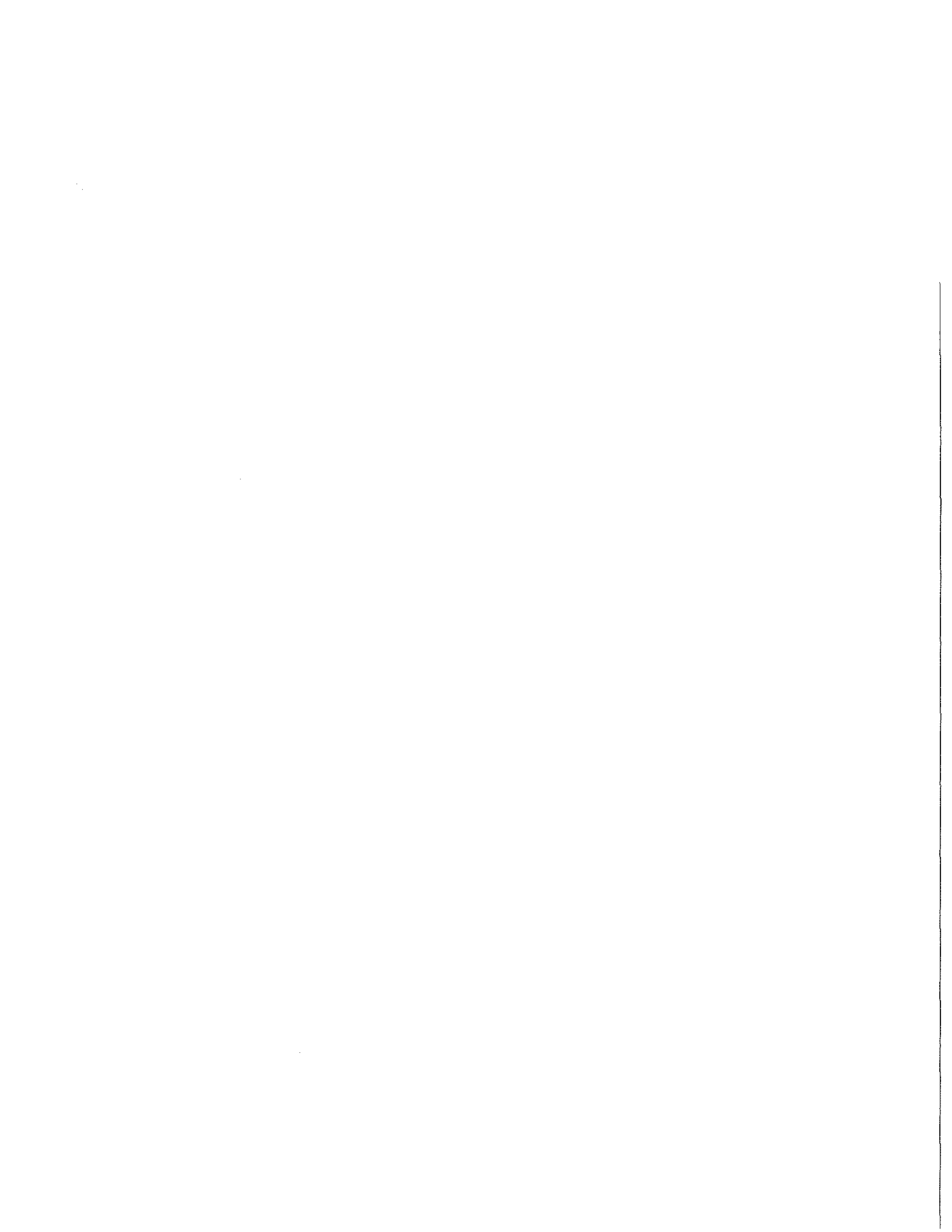
[8] Source: Schedule RBH-2, Value Line

[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

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	
Company	Ticker	Projected Earnings per share 2022-2024	Projected Dividend Declared per share 2022-24	Retention Ratio (B)	Projected Book Value per Share 2022-24	Return on Book Value (R)	B x R	Projected Common Shares Outstanding 2019	Projected Common Shares Outstanding 2022-24	Common Shares Growth Rate	2019 High Price	2019 Low Price	2019 Price Midpoint	Projected Book Value per Share 2019	Market/Book Ratio	"S"	"V"	S x V	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	46.80%	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]	[2]	[3]
S&P 500 Est. Required Market Return	Current 30-Year Treasury (30- day average)	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%
Ailliance 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%
Alleghion 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%
Amcpr 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	ACN	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	BIB	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	BLI	24,173.23	0.09%	0.69%	6.70%	7.41%	0.0068%
Bristol-Myers Squibb Co	BMJ	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%	0.0168%
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%	2.18%	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	0.88%	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%
VW Grainger Inc	GWV	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%	0.1089%
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%

Company	Ticker	Market Capitalization	Weight In Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
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	LWV	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	0.08%	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	20,053.80	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%	0.0265%
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	SYU	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	UA	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%	4.04%	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]	[2]	[3]
S&P 500 Est. Required Market Return	Current 30-Year Treasury (30- day average)	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%
Altegra 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%
Ampheon Corp	APH	28,673.98	0.12%	1.04%	9.50%	10.59%	0.0125%
Aptiv PLC	APTIV	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	BMJ	81,739.28	0.34%	3.28%	9.00%	12.43%	0.0419%
Broadridge Financial Solutions Inc	BR	14,666.07	0.08%	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%	2.36%	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%
Flowerserve 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%
Coming 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%
Harford 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	12,078.68	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	PFGB	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%
Phillip Morris International Inc	PM	117,136.30	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%	27.88%	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	SYU	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	JAL	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%
Ultra 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	VERSN	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	249,985.60	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]

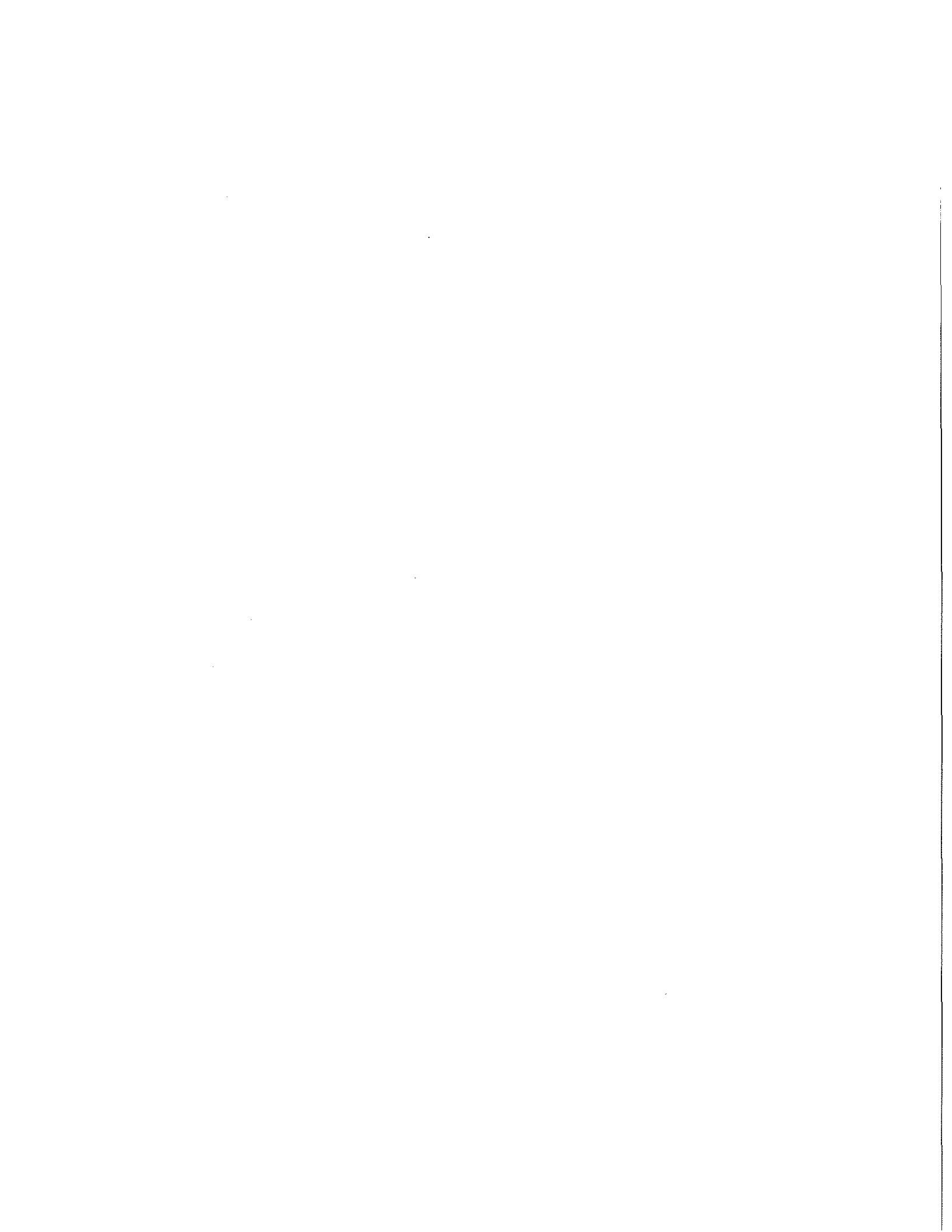
Bloomberg and Value Line Beta Coefficients

Company	Ticker	[1]	[2]
		Bloomberg	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])

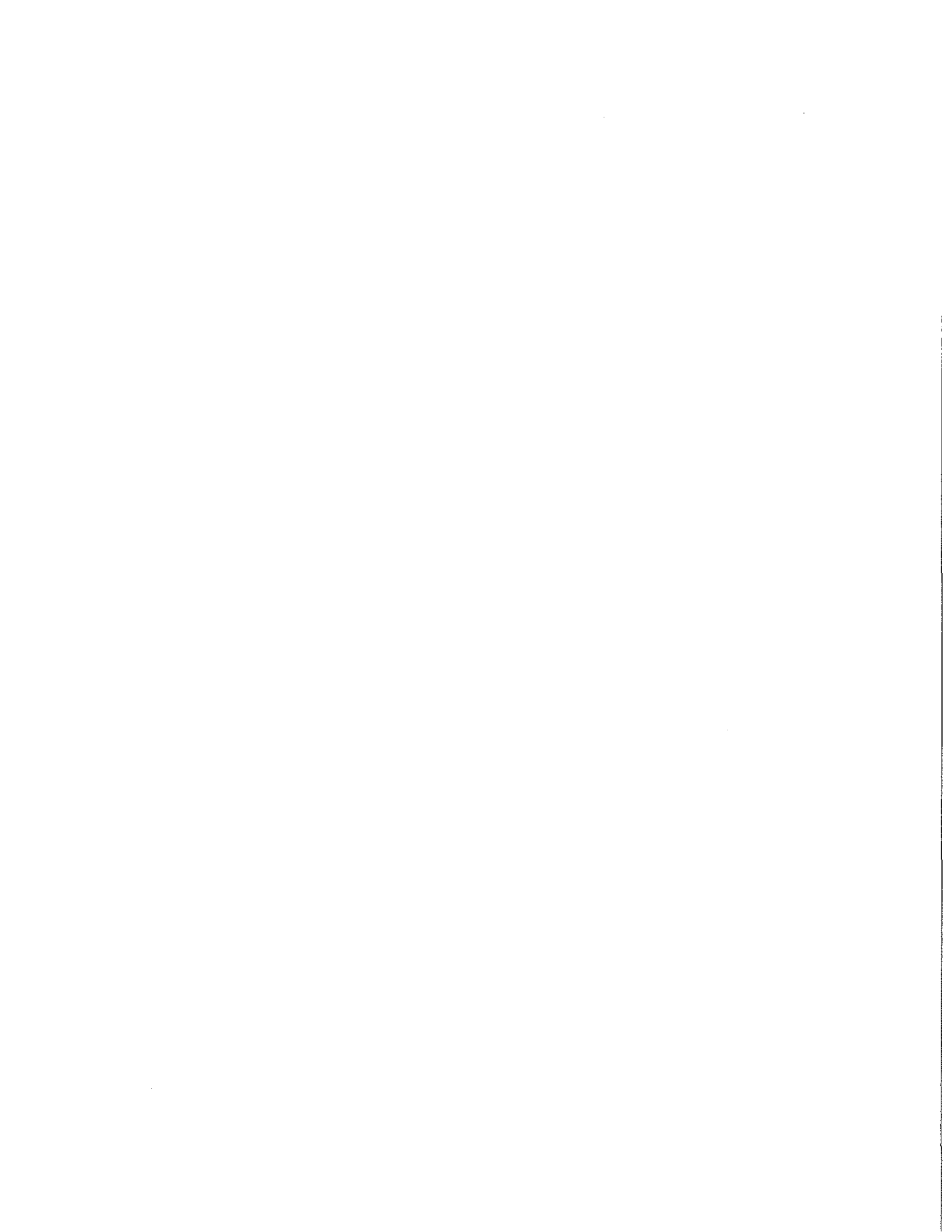
[6] Equals Col. [1] + (Col. [2] x Col. [4])

[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])

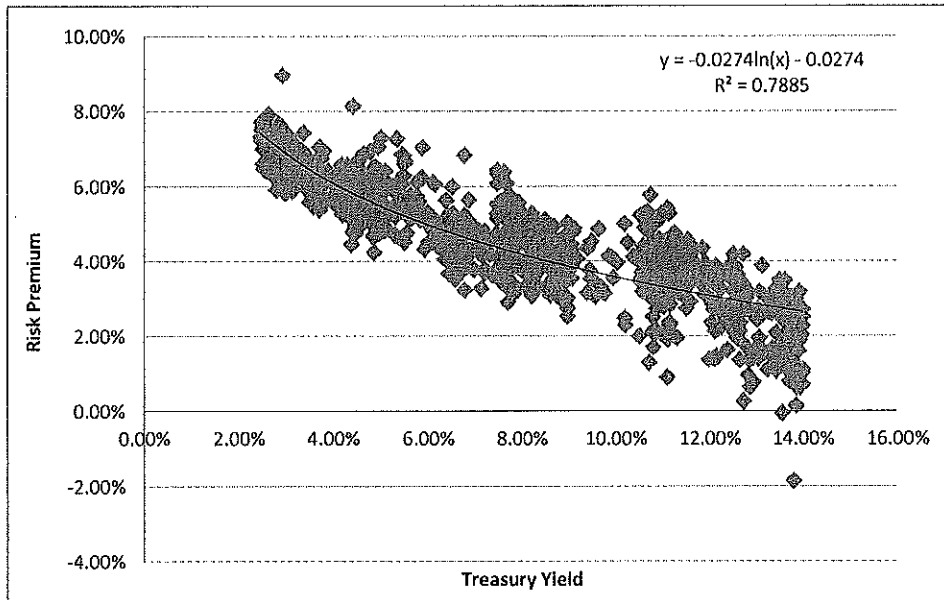
[9] Source: Bloomberg Professional

[10] Source: Blue Chip Financial Forecasts, Vol. 38, No. 10, October 1, 2019, at 2.



Bond Yield Plus Risk Premium

	[1]	[2]	[3]	[4]	[5]
	Constant	Slope	30-Year Treasury Yield	Risk Premium	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] + $\ln([3]) \times [2]$
- [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]	[2]	[3]	[4]	[5]	[6]
		Expected ROE 2022-24	2019	Shares Outstanding 2022-24	% Increase	Adjustment Factor	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

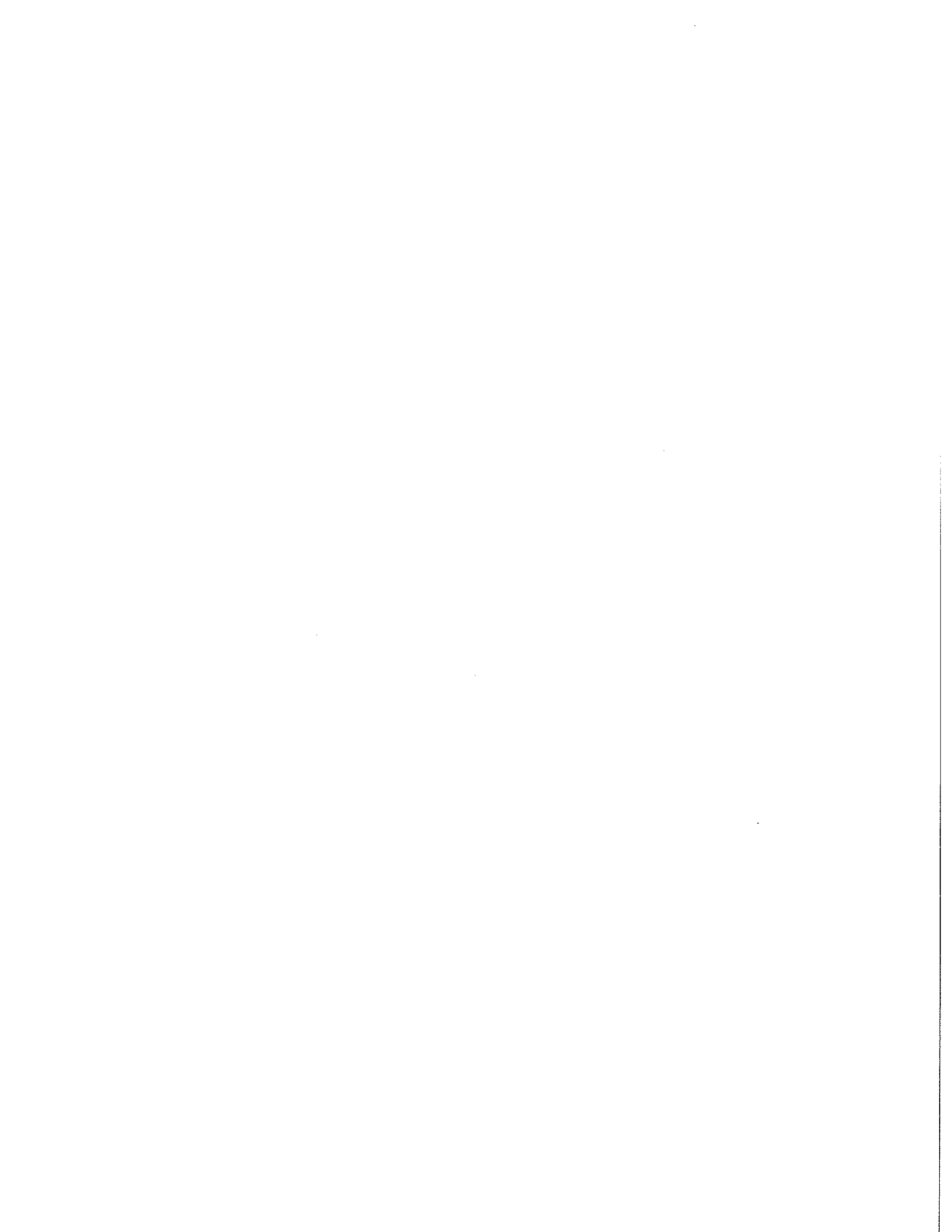
[2] Source: Value Line

[3] Source: Value Line

[4] Equals $= ([3] / [2])^{(1/4)} - 1$

[5] Equals $(2 \times (1 + [4])) / (2 + [4])$

[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 Utilts 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 Ults 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

Source: Regulatory Research Associates

	Median	2019 Average	Average	2019 Median	Median
			9.70		9.60
				9.73	8.70
2015	9.68	2019 # >9.50%	8	Maximum	11.88
2016	9.50	Total 2019	9		
2017	9.60	%	88.89%		
2018	9.60	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%

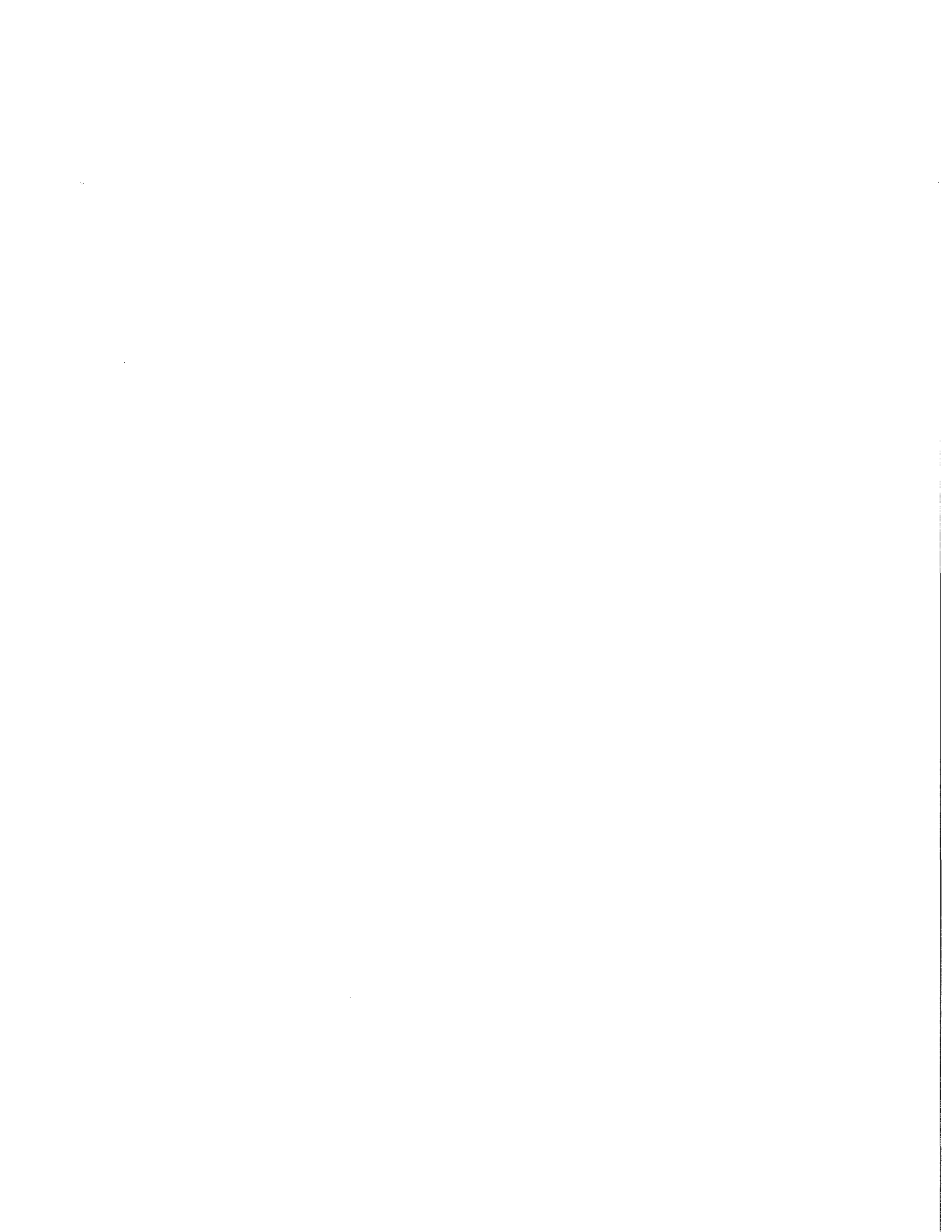
Mr. Coleman's Constant Growth DCF Analysis - Updated Zacks and First Call Growth Rates, Removing NWN

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%	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%	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%	6.00%
Retained Earnings based on difference between EPS and Div/S	Earnings retained to book val	\$ 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%	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

CPK US Equity

Date	TRAIL_12M_DILUTED_EQY_DP	EQY_DP	Payout %	Date	TRAIL_12M_DILUTED_EQY_DP	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%
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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_DP	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				OGS US Equity			
Date	TRAIL_12M_EQY_DPS	Payout %		Date	TRAIL_12M_DILUTED_EEQY_DP	Payout %	
12/31/1990	1.5867	1.1	0.6932627	12/31/2013	#N/A N/A	0	
12/31/1991	0.6733	1.1267	1.6733997	12/31/2014		2.07	0.84 0.4057971
12/31/1992	0.74	1.1467	1.5495946	12/31/2015		2.24	1.2 0.5357143
12/31/1993	1.74	1.1667	0.6705172	12/30/2016		2.65	1.4 0.5283019
12/30/1994	1.6267	1.1733	0.7212762	12/29/2017		3.08	1.68 0.5454545
12/29/1995	1.6133	1.18	0.7314201	12/31/2018		3.25	1.84 0.5661538
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	Median			0.5357143

SJI US Equity				SWX US Equity			
Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %	Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %
12/31/1990	0.3333	0.3505	1.0516052	12/31/1992	0.81	0.7	0.86419753
12/31/1991	0.3186	0.3529	1.1076585	12/31/1993	0.71	0.74	1.04225352
12/31/1992	0.3946	0.3529	0.8943234	12/30/1994	1.22	0.8	0.6557377
12/31/1993	0.3975	0.3582	0.9011321	12/29/1995	-0.66	0.82	-1.2424242
12/30/1994	0.3025	0.36	1.1900826	12/31/1996	0.25	0.82	3.28
12/29/1995	0.4125	0.36	0.8727273	12/31/1997	0.25	0.82	3.28
12/31/1996	0.7105	0.36	0.5066854	12/31/1998	1.65	0.82	0.4969697
12/31/1997	0.367	0.36	0.9809264	12/31/1999	1.27	0.82	0.64566929
12/31/1998	0.255	0.36	1.4117647	12/29/2000	1.21	0.82	0.67768595
12/31/1999	0.4975	0.36	0.7236181	12/31/2001	1.15	0.82	0.71304348
12/29/2000	0.53	0.365	0.6886792	12/31/2002	1.32	0.82	0.62121212
12/31/2001	0.565	0.37	0.6548673	12/31/2003	1.13	0.82	0.72566372
12/31/2002	0.5975	0.375	0.6276151	12/31/2004	1.6	0.82	0.5125
12/31/2003	0.66	0.39	0.5909091	12/30/2005	1.14	0.82	0.71929825
12/31/2004	0.765	0.41	0.5359477	12/29/2006	2.05	0.82	0.4
12/30/2005	0.69	0.43	0.6231884	12/31/2007	1.95	0.86	0.44102564
12/29/2006	1.22	0.46	0.3770492	12/31/2008	1.39	0.9	0.64748201
12/31/2007	1.05	0.505	0.4809524	12/31/2009	1.94	0.95	0.48969072
12/31/2008	1.29	0.555	0.4302326	12/31/2010	2.27	1	0.44052863
12/31/2009	0.97	0.61	0.628866	12/30/2011	2.43	1.06	0.43621399
12/31/2010	1.11	0.68	0.6126126	12/31/2012	2.86	1.18	0.41258741
12/30/2011	1.485	0.75	0.5050505	12/31/2013	3.11	1.32	0.4244373
12/31/2012	1.485	0.825	0.5555556	12/31/2014	3.01	1.46	0.48504983
12/31/2013	1.275	0.9	0.7058824	12/31/2015	2.92	1.62	0.55479452
12/31/2014	1.46	0.96	0.6575342	12/30/2016	3.18	1.8	0.56603774
12/31/2015	1.52	1.02	0.6710526	12/29/2017	4.04	2.475	0.61262376
12/30/2016	1.56	1.07	0.6858974	12/31/2018	3.68	2.08	0.56521739
12/29/2017	-0.04	1.1	-27.5				
12/31/2018	0.21	1.13	5.3809524				
	Median		0.6575342		Median		0.56603774

SR US Equity				UGI US Equity			
Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %	Date	TRAIL_12M_DILUTED_E	EQY_DP	Payout %
12/31/1990	1.185	1.18	0.9957806	12/31/1992	0.2444	0.2822	1.1546645
12/31/1991	1.28	1.2	0.9375	12/31/1993	0.2089	0.2933	1.4040211
12/31/1992	1.165	1.2	1.0300429	12/30/1994	0.3111	0.3022	0.9713918
12/31/1993	1.61	1.215	0.7546584	12/29/1995	-0.0578	0.2322	-4.017301
12/30/1994	1.42	1.22	0.8591549	12/31/1996	0.2644	0.3133	1.184947
12/29/1995	1.27	1.24	0.976378	12/31/1997	0.3489	0.3178	0.9108627
12/31/1996	1.87	1.26	0.6737968	12/31/1998	0.2711	0.3222	1.1884913
12/31/1997	1.84	1.3	0.7065217	12/31/1999	0.3867	0.3267	0.844841
12/31/1998	1.58	1.32	0.835443	12/29/2000	0.3644	0.3389	0.930022
12/31/1999	1.43	1.34	0.9370629	12/31/2001	0.4578	0.35	0.764526
12/29/2000	1.37	1.34	0.9781022	12/31/2004	0.7667	0.39	0.5086735
12/31/2001	1.61	1.34	0.8322981	12/30/2005	1.18	0.4333	0.3672034
12/31/2002	1.18	1.34	1.1355932	12/29/2006	1.1	0.46	0.4181818
12/31/2003	1.82	1.34	0.7362637	12/31/2007	1.26	0.482	0.3825397
12/31/2004	1.82	1.355	0.7445055	12/31/2008	1.3267	0.5033	0.3793623
12/30/2005	1.9	1.375	0.7236842	12/31/2009	1.5733	0.5233	0.332613
12/29/2006	2.3	1.41	0.6130435	12/31/2010	1.5733	0.6	0.381364
12/31/2007	2.31	1.46	0.6320346	12/30/2011	1.3733	0.68	0.4951576
12/31/2008	3.58	1.5	0.4189944	12/31/2012	1.2333	0.7067	0.5730155
12/31/2009	2.92	1.54	0.5273973	12/31/2013	1.6067	0.7367	0.4585175
12/31/2010	2.43	1.58	0.6502058	12/31/2014	1.92	0.791	0.4119792
12/30/2011	2.86	1.62	0.5664336	12/31/2015	1.6	0.89	0.55625
12/31/2012	2.79	1.66	0.5949821	12/30/2016	2.08	0.93	0.4471154
12/31/2013	2.02	1.7	0.8415842	12/29/2017	2.46	0.975	0.3963415
12/31/2014	2.35	1.76	0.7489362	12/31/2018	4.06	1.02	0.2512315
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		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 Value Line	\$2.24	\$1.68	\$1.21	\$1.97	\$2.16	\$1.25	\$2.46	\$2.30		
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%		
End of Year Dividends:										
Cost of Equity (XIRR)	13.86%	13.42%	8.22%	10.27%	8.09%	11.80%	8.19%	8.88%		
Mid-Year Dividends:										
Cost of Equity (XIRR)	14.00%	13.56%	8.33%	10.41%	8.20%	12.01%	8.31%	8.99%		

10.35%	9.58%	
10.34%	9.57%	
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	\$ 13.65	\$ 14.55	\$ 13.00	\$ 16.57

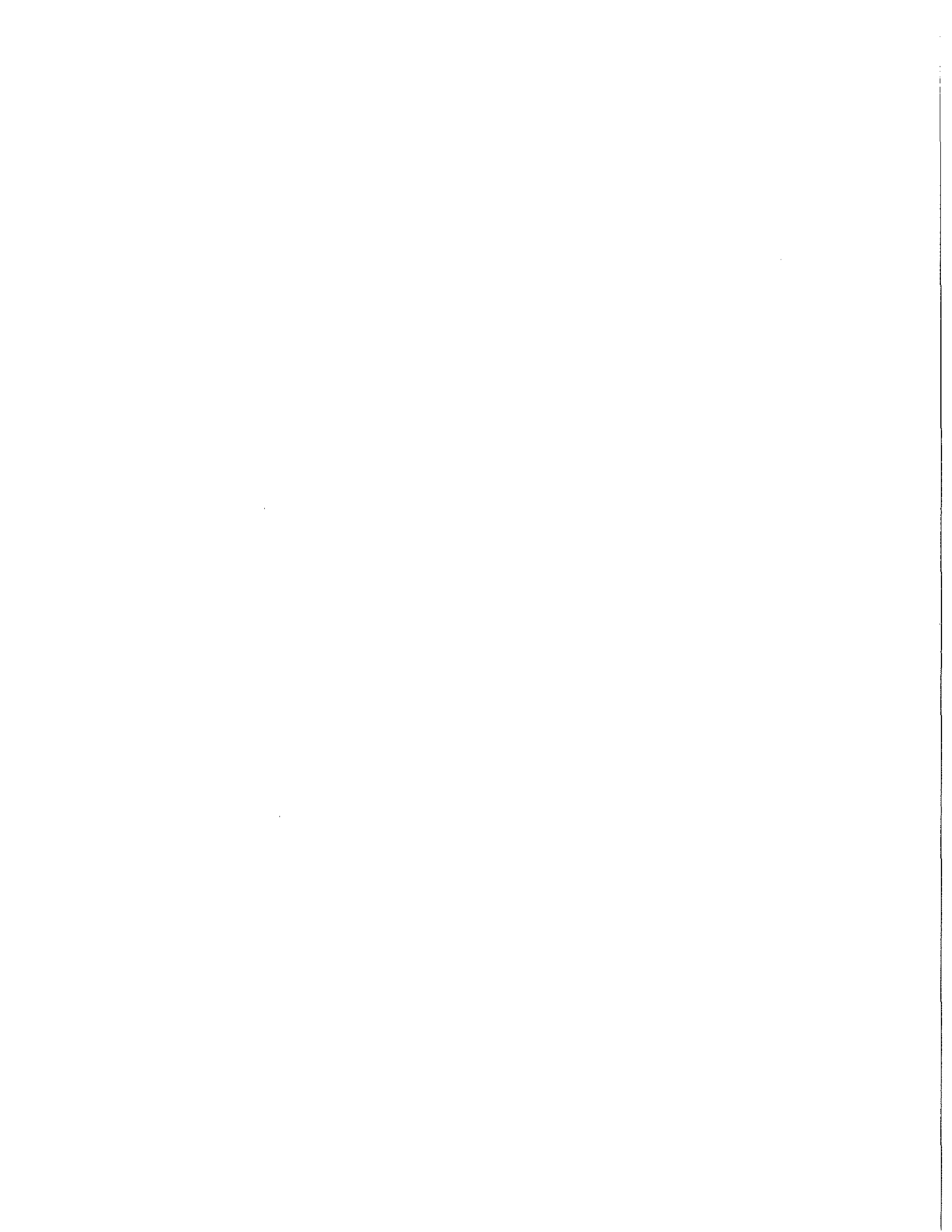
Mid-Year	End-of-Year	ATO	CPK	NJR	NWN	OGS	SJI	SR	SWX
7/1/2053	12/31/2053	\$ 89.58	\$ 65.98	\$ 7.23	\$ 21.56	\$ 14.44	\$ 15.77	\$ 13.73	\$ 17.67
7/1/2054	12/31/2054	\$ 100.67	\$ 73.96	\$ 7.65	\$ 23.26	\$ 15.28	\$ 17.10	\$ 14.50	\$ 18.83
7/1/2055	12/31/2055	\$ 113.13	\$ 82.90	\$ 8.09	\$ 25.10	\$ 16.17	\$ 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	\$ 7,108.50	\$ 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	\$ 366,039.58	\$ 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	\$ 7,641.38	\$ 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	\$ 3,010,769.89	\$ 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	\$ 108,065.70	\$ 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 implicitly 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/		Return	Return & Taxes
					FIT	FIT		
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	Amount	Ratio	Cost Rate	Weighted Cost	Weighted Cost W/		Return	Return & Taxes
					FIT	FIT		
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	Mr. Lawton's		
	Company Filed Case	Adjustment	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
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%

[2]

Taxes

Taxes	Company Filed Case	Mr. Lawton's Recommendation
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	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%	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	Minimum		Benchmark Case
	Company Filed Case	Adjustment	
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	Moody's "A" Benchmarks
CFO/ Debt (%)	24.00%	7.85%	20.76% 19% - 27%
CFO-Dividends/Debt (%)	16.30%		15.00% 15% - 23%
Debt Percentage	45.00%	45.00%	35% - 45%

[2]

Taxes

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

		[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	\$101.11	2.08%	2.16%	6.50%	6.45%	7.50%	10.09%	7.64%	8.58%	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	NWVN	\$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%
Proxy Group Median				2.50%	2.58%	6.10%	5.95%	8.75%	6.73%	7.23%	8.75%	9.75%	11.32%

midpoint

9.83%

9.93%

9.93%

9.83%

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

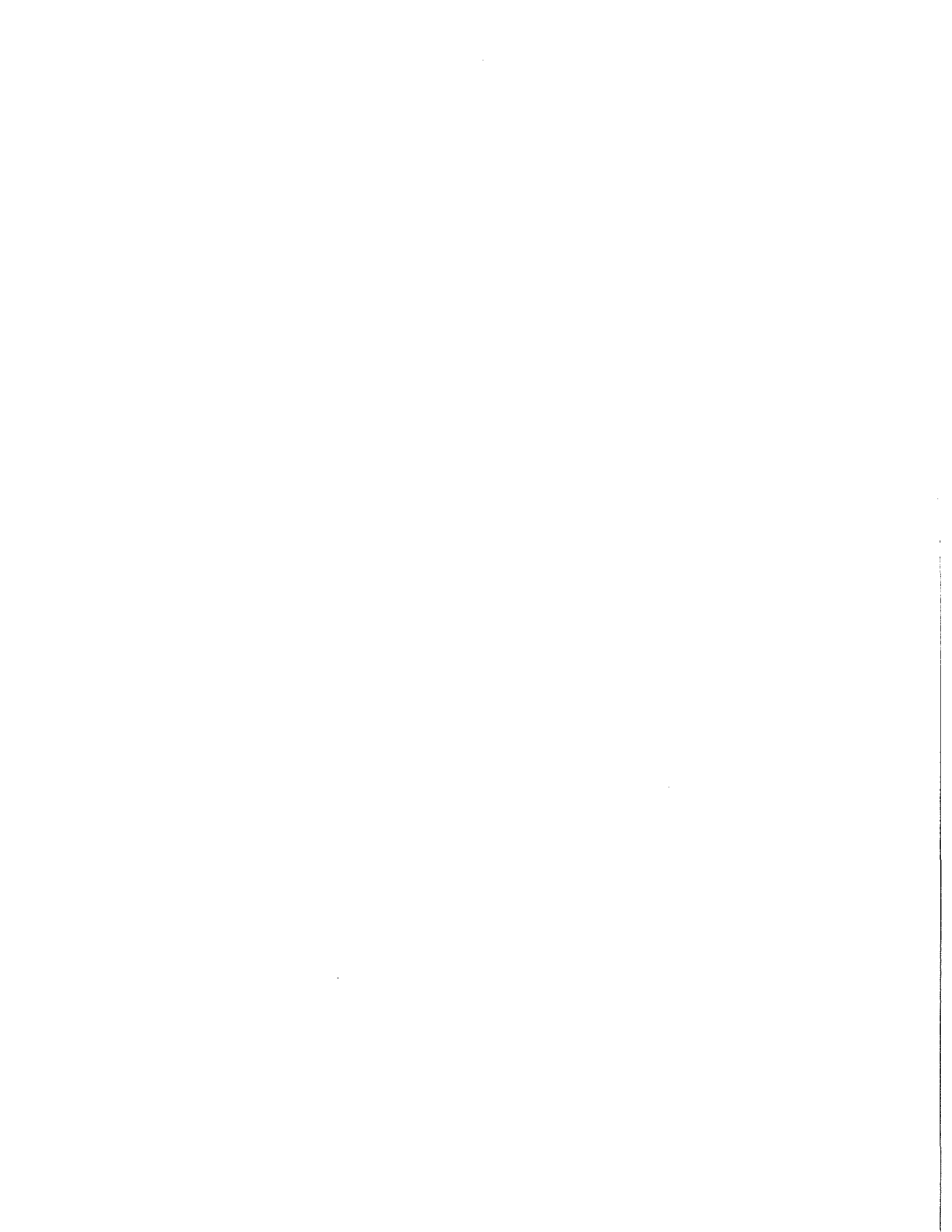
[8] Source: Schedule RBH-2, Value Line

[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]	[2]	[3]	[4]	[5]	[6]	[7]
		Average Stock Price	Annualized Dividend	Dividend Yield	Expected Dividend Yield	Growth Rate	Mean ROE	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:

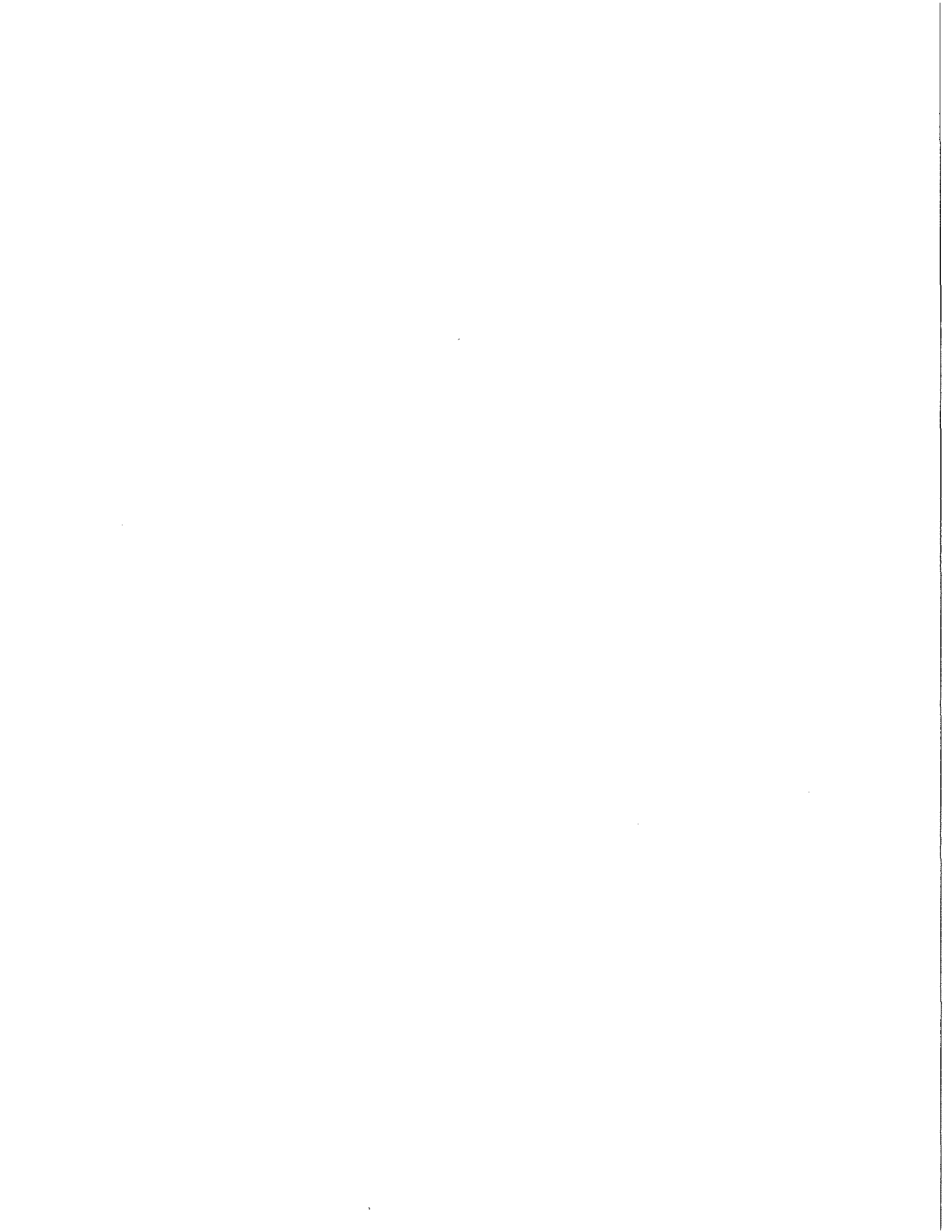
[1] Source: Exhibit (OCS-3.7)

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	CURREN T PRICE	YEAR 1 DIVIDEND	YEAR 2 DIVIDEND	YEAR 3 DIVIDEND	YEAR 4 DIVIDEND	YEAR 5 DIVIDEND	GROWT H YEARS 5-150	TWO- STAGE ROE	ADJUSTE D TWO- STAGE ROE
				IN DIVIDEND									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

<i>Regression Statistics</i>		MRP:	6.83%	Rf:	2.50%
Multiple R	0.985302989			ROE:	9.33%
R Square	0.97082198				
Adjusted R Square	0.969779908				
Standard Error	0.001470495				
Observations	30				

ANOVA

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

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
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

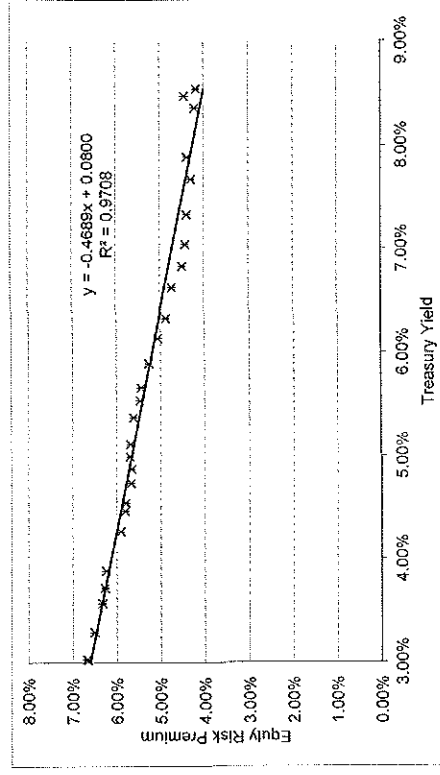
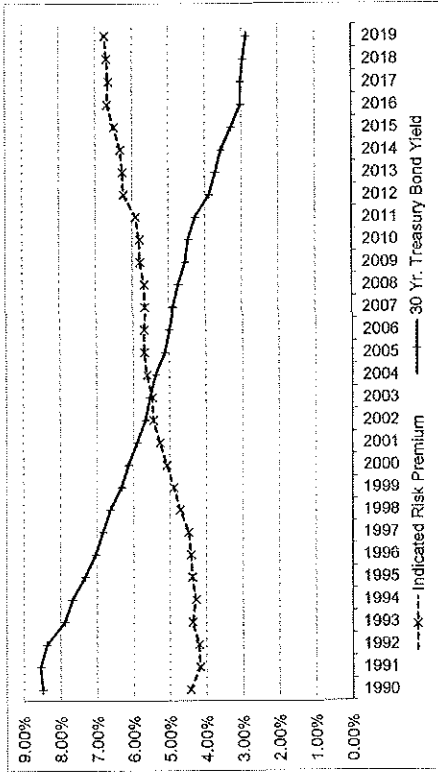
SUMMARY OUTPUT

<i>Regression Statistics</i>		MRP:	5.56%	Rf:	3.70%
Multiple R	0.982775964			ROE:	9.26%
R Square	0.965848595				
Adjusted R Square	0.964628902				
Standard Error	0.00162191				9.29%
Observations	30				

ANOVA

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

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
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



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	$(e_i - e_{(i-1)})^2$	$(e_i)^2$
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			

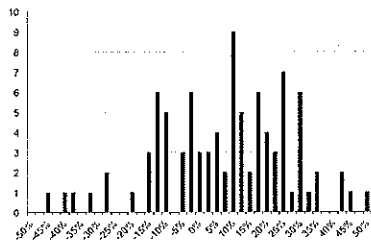
	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.075565806	0.002429599	31.10217749	6.11561E-25	0.070610607	0.080521005
Treasury Yield	-0.458426639	0.028294367	-16.2020462	1.10533E-16	-0.51613338	-0.400719897
Credit Spread	0.315148477	0.138555791	2.274524039	0.030006017	0.032562079	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	-0.000211445	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



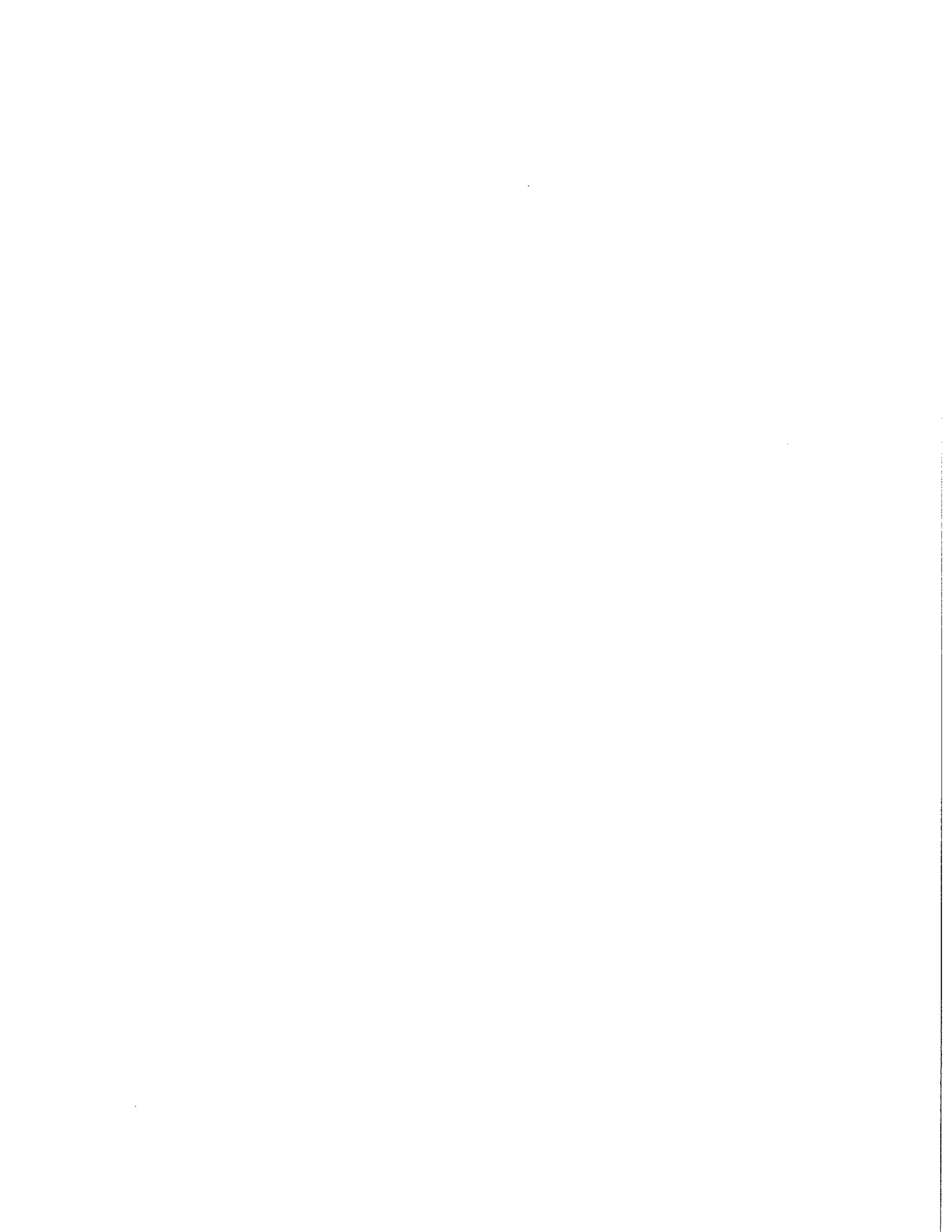
Year	Large Company Stocks	Long-Term Government	MRP	MRP		
	Total Returns	Bond Income Returns		Bin	Frequency	Cumulative %
1926	0.1162	0.0373	0.0789	-50.00%	0	0.0%
1927	0.3749	0.0341	0.3408	-47.50%	0	0.0%
1928	0.4361	0.0322	0.4039	-45.00%	1	1.1%
1929	-0.0842	0.0347	-0.1169	-42.50%	0	1.1%
1930	-0.2490	0.0332	-0.2822	-40.00%	1	2.2%
1931	-0.4334	0.0333	-0.4667	-37.50%	1	3.2%
1932	-0.0819	0.0369	-0.1168	-35.00%	0	3.2%
1933	0.5399	0.0312	0.5087	-32.50%	1	4.3%
1934	-0.0144	0.0318	-0.0462	-30.00%	0	4.3%
1935	0.4767	0.0281	0.4486	-27.50%	2	6.5%
1936	0.3392	0.0277	0.3115	-25.00%	0	6.5%
1937	-0.3503	0.0266	-0.3769	-22.50%	0	6.5%
1938	0.3112	0.0264	0.2848	-20.00%	1	7.6%
1939	-0.0041	0.0240	-0.0281	-17.50%	0	7.6%
1940	-0.0978	0.0223	-0.1201	-15.00%	3	10.8%
1941	-0.1159	0.0194	-0.1353	-12.50%	6	17.2%
1942	0.2034	0.0246	0.1788	-10.00%	5	22.6%
1943	0.2590	0.0244	0.2346	-7.50%	0	22.6%
1944	0.1975	0.0246	0.1728	-5.00%	3	25.8%
1945	0.3644	0.0234	0.3410	-2.50%	6	32.3%
1946	-0.0807	0.0204	-0.1011	0.00%	3	35.5%
1947	0.0571	0.0213	0.0359	2.50%	3	38.7%
1948	0.0650	0.0240	0.0310	5.00%	4	43.0%
1949	0.1879	0.0225	0.1654	7.50%	2	45.2%
1950	0.3171	0.0212	0.2959	10.00%	9	54.8%
1951	0.2402	0.0238	0.2164	12.50%	5	60.2%
1952	0.1837	0.0266	0.1971	15.00%	2	62.4%
1953	-0.0099	0.0284	-0.0383	17.50%	6	68.0%
1954	0.5262	0.0279	0.4983	20.00%	4	73.1%
1955	0.3156	0.0275	0.2881	22.50%	3	76.3%
1956	0.0656	0.0299	0.0357	25.00%	7	83.9%
1957	-0.1079	0.0344	-0.1422	27.50%	1	84.9%
1958	0.4336	0.0327	0.4009	30.00%	6	91.4%
1959	0.1196	0.0401	0.0795	32.50%	1	92.5%
1960	0.0047	0.0426	-0.0379	35.00%	2	94.6%
1961	0.2689	0.0383	0.2306	37.50%	0	94.6%
1962	-0.0873	0.0400	-0.1273	40.00%	0	94.6%
1963	0.2280	0.0389	0.1891	42.50%	2	96.8%
1964	0.1648	0.0415	0.1233	45.00%	1	97.8%
1965	0.1245	0.0419	0.0826	47.50%	0	97.8%
1966	-0.1006	0.0449	-0.1455	50.00%	1	98.9%
1967	0.2398	0.0459	0.1939	51.00%	1	100.0%
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	0.0865			
1983	0.2256	0.1038	0.1218			
1984	0.0627	0.1174	-0.0547			
1985	0.3173	0.1125	0.2048			
1986	0.1887	0.0898	0.0969			
1987	0.0525	0.0792	-0.0287			
1988	0.1661	0.0897	0.0764			
1989	0.3169	0.0881	0.2268			
1990	-0.0310	0.0819	-0.1129			
1991	0.3047	0.0822	0.2226			
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	0.0657	0.1647			
2000	-0.0910	0.0650	-0.1950			
2001	-0.1189	0.0553	-0.1742			
2002	-0.2210	0.0559	-0.2769			
2003	0.2658	0.0490	0.2388			
2004	0.1088	0.0502	0.0686			
2005	0.0491	0.0469	0.0022			
2006	0.1579	0.0468	0.1111			
2007	0.0549	0.0495	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	0.1186	0.0230	0.0966			
2017	0.2183	0.0267	0.1916			
2018	-0.0438	0.0282	-0.0720			
Average	0.1168	0.0497	0.0691			
Std. Dev.	0.1976	0.0263	0.1985			

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	7.6%
-17.50%	0	7.6%
-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	68.0%
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%

Bin	Rank	Count
12.02%	58.30%	41.70%

Historical Market Return	Event	% Rank	Occurrence
14.93%	51.90%	45	
13.42%	49.70%	47	
		93	

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



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

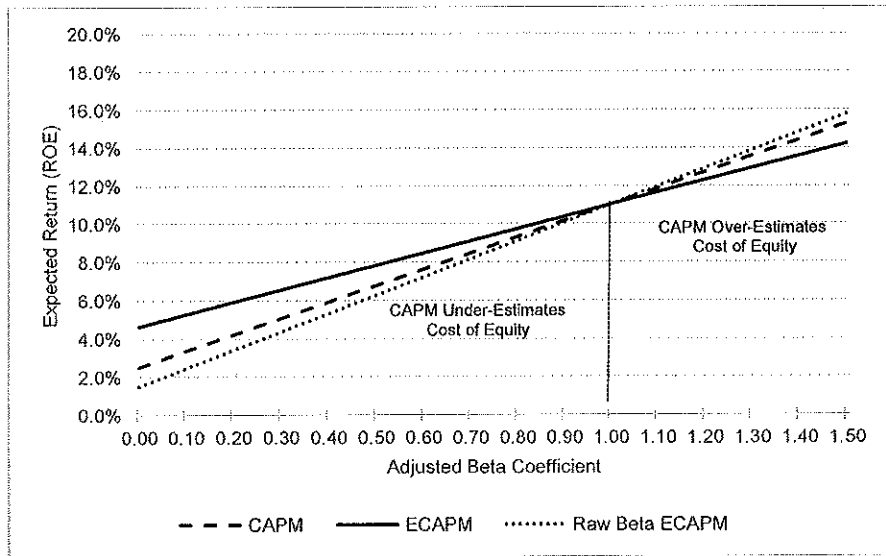
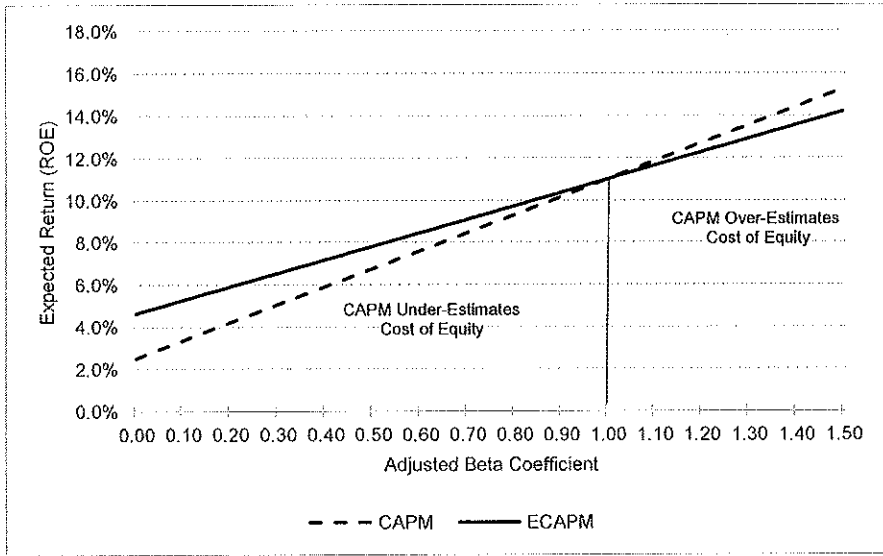
Risk-Free Rate 2.50% ECAPM 0.33 0.25
MRP 8.50% ECAPM alpha Factors 0.67 0.75

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



Alternative Bond Yield Plus Risk Premium Analyses

	[1]	[2]	[3]	[4]
	Constant	LN(30-Year Treasury)	Moody's Utility Baa Credit Spread	VIX
Long Term Average [5]	-0.026	-0.025	0.459	0.000
			1.34%	18.85
			30-Yr. Treasury Yield [6]	Risk Premium [7]
			Current 30-Year Treasury	2.11%
			Near-Term Projected 30-Year Treasury	2.28%
			Long-Term Projected 30-Year Treasury	3.70%
			Mr. Gorman's Projected 30-Year Treasury	2.50%
				Return on Equity [8]
				Current 30-Year Treasury
				Near-Term Projected 30-Year Treasury
				Long-Term Projected 30-Year Treasury
				Mr. Gorman's Projected 30-Year Treasury

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 Testimony of Michael P. Gorman, at 59.

[7] Equals [1] + ([2] x [3]) + ([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]	[10]	[11]	[12]	[13]	[14]	[15]	[16]
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
1/9/1990	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	S&P Benchmark (Medial Volatility)			Reference
		Cost of Service	Intermediate	Significant	Aggressive	
		Amount (1)	(2)	(3)	(4)	
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	S&P Benchmark (Medial Volatility)			Reference
		Cost of Service	Intermediate	Significant	Aggressive	
		Amount	(2)	(3)	(4)	(5)
		(1)				
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	S&P Benchmark (Medial Volatility)			Reference
	Cost of Service Amount (1)	Intermediate (2)	Significant (3)	Aggressive (4)	
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

<u>Description</u>	Retail	<u>S&P Benchmark (Medial Volatility)</u>			<u>Reference</u>
	<u>Cost of Service</u>	<u>Intermediate</u>	<u>Significant</u>	<u>Aggressive</u>	
	<u>Amount</u>	(2)	(3)	(4)	(5)
	(1)				
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](https://www.treasury.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