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Electric Company  
Case No.:ER-2019-0374  
Date Testimony Prepared: March 2020

**Before the Public Service Commission  
of the State of Missouri**

**Rebuttal Testimony**

**of**

**Robert B. Hevert**

**on behalf of**

**The Empire District Electric Company  
a Liberty Utilities Company**

**March 2020**



TABLE OF CONTENTS  
REBUTTAL TESTIMONY OF  
ROBERT B HEVERT  
THE EMPIRE DISTRICT ELECTRIC COMPANY  
BEFORE THE  
MISSOURI PUBLIC SERVICE COMMISSION  
CASE NO. ER-2019-0374

<b>SUB JECT</b>	<b>PAGE</b>
I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS .....	1
II. RESPONSE TO TESTIMONY OF STAFF WITNESS CHARI .....	5
A. <i>ROE Recommendation</i> .....	6
B. <i>Capital Market Conditions</i> .....	11
C. <i>Constant Growth Discounted Cash Flow Model</i> .....	15
D. <i>Capital Asset Pricing Model</i> .....	23
E. <i>Authorized Returns</i> .....	28
III. RESPONSE TO TESTIMONY OF OPC WITNESS MURRAY .....	34
A. <i>Multi-Stage Discounted Cash Flow Model</i> .....	34
B. <i>Capital Asset Pricing Model</i> .....	43
C. <i>“Rule of Thumb” Calculation</i> .....	47
D. <i>Constant Growth Discounted Cash Flow Model</i> .....	49
E. <i>Financial Integrity and ROE Determinations</i> .....	50
F. <i>Capital Structure</i> .....	56
IV. CONCLUSIONS AND RECOMMENDATION .....	68

**GLOSSARY OF FREQUENTLY USED TERMS**

<b>TERM</b>	<b>DESCRIPTION</b>
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 required 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 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.
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	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.

ROBERT B. HEVERT  
REBUTTAL TESTIMONY

<b>TERM</b>	<b>DESCRIPTION</b>
Proxy Group	A group of publicly traded companies used as the “proxy” for the subject company (in this case, Liberty-Empire). 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.

REBUTTAL TESTIMONY  
OF  
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THE EMPIRE DISTRICT ELECTRIC COMPANY  
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1 **I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS**

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

3 A. My name is Robert B. Hevert and my business address is ScottMadden, Inc., 1900 West  
4 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 Missouri Public  
7 Service Commission (“Commission”) on behalf of The Empire District Electric Company,  
8 a Liberty Utilities company (“Liberty-Empire” or the “Company”).

9 **Q. ARE YOU THE SAME ROBERT B. HEVERT WHO FILED DIRECT**  
10 **TESTIMONY IN THIS MATTER ON BEHALF OF LIBERTY-EMPIRE?**

11 A. Yes, I am.

12 **Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

13 A. My Rebuttal Testimony responds to the Revenue Requirement Cost of Service Report (the  
14 “Staff Cost of Service Report”) submitted in this proceeding by the Missouri Public Service  
15 Commission Utility Services Division (“Staff”), and the direct testimony of David Murray  
16 on behalf of the Office of the Public Counsel (“OPC”) (collectively, the “Opposing ROE  
17 Witnesses”), as they relate to the Company’s Return on Equity (“ROE” or “Cost of

1 Equity”) and capital structure. Mr. Peter Chari presents Staff’s ROE recommendation. My  
2 Rebuttal Testimony updates certain analyses contained in my Direct Testimony, and  
3 includes several additional analyses developed in response to issues raised by the Opposing  
4 ROE Witnesses. My analyses and conclusions are supported by the data presented in  
5 Schedules RBH-R1 through RBH-R13, which have been prepared by me or under my  
6 direction.

7 **Q. PLEASE SUMMARIZE THE KEY ISSUES AND RECOMMENDATIONS**  
8 **ADDRESSED IN YOUR REBUTTAL TESTIMONY.**

9 A. In my Direct Testimony I found the Company’s Cost of Equity to fall in the range of 9.80  
10 percent to 10.60 percent.<sup>1</sup> As my Direct Testimony discussed, my ROE recommendation  
11 considers a variety of factors, including capital market conditions in general and certain  
12 risks faced by the Company. Because the application of financial models and the  
13 interpretation of their results are often sources of disagreement among analysts in  
14 regulatory proceedings, it is important to review and consider a variety of data points; doing  
15 so enables us to put in context both quantitative analyses and the associated  
16 recommendations. As such, I have updated the Constant Growth Discounted Cash Flow  
17 (“DCF”) model, Capital Asset Pricing Model (“CAPM”), Empirical CAPM (“ECAPM”),  
18 Bond Yield Risk Premium, and Expected Earnings analyses based on data through January  
19 31, 2020,<sup>2</sup> and have provided additional analyses in response to issues raised by the  
20 Opposing ROE Witnesses.

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<sup>1</sup> Direct Testimony of Robert B. Hevert, at 2.

<sup>2</sup> See, Schedules RBH-R1 through RBH-R6.

1 **Q. PLEASE PROVIDE AN OVERVIEW OF YOUR RESPONSE TO THE OPPOSING**  
2 **ROE WITNESSES.**

3 A. Although I disagree with certain of Staff witness Mr. Chari’s analyses and conclusions, the  
4 high end of his recommended range, 9.80 percent, overlaps with my recommended range.<sup>3</sup>  
5 Mr. Chari’s 9.25 percent recommendation,<sup>4</sup> however, falls considerably below a  
6 reasonable estimate of the Company’s Cost of Equity.

7 Mr. Chari presents his analyses as of November 30, 2019 and June 30, 2017, the  
8 earlier date representing the analytical period underlying Staff’s analysis in Spire Missouri,  
9 Inc.’s (“Spire Missouri”) rate proceeding, the most recent fully litigated rate case in  
10 Missouri.<sup>5</sup> Mr. Chari bases his recommendation on the change in Staff’s analytical results  
11 from that case to this. As discussed throughout my Rebuttal Testimony, I do not agree  
12 with Staff’s premise, that the Cost of Equity has fallen during that period. Nor do I believe  
13 Mr. Chari’s analyses support a specific 55-basis point decrease from the 9.80 percent ROE  
14 authorized by the Commission in the Spire Missouri case, or that it is appropriate to  
15 compare the results of a natural gas proxy group as of mid-June 2017 to those of an electric  
16 proxy group based on more recent data to arrive at that conclusion.

17 Further, although Mr. Chari’s recommended range is 9.05 percent to 9.80 percent,  
18 his average results range from 4.63 percent to 8.14 percent.<sup>6</sup> I understand Mr. Chari’s  
19 recommendation does not rely on those results *per se*, but on how Staff’s results have  
20 changed over time. Nonetheless, it is difficult to see how changes in unreliable results

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<sup>3</sup> Staff Cost of Service Report, at 18.

<sup>4</sup> *Ibid.*

<sup>5</sup> *See*, File Nos. GR-2017-0215 and GR-2017-0216.

<sup>6</sup> Certain of those results are below Staff’s recommended rate of return (i.e., 7.14 percent). Staff Cost of Service Report, Schedule PC-12.

1 produce a reliable estimate of the Company's Cost of Equity. Simply, if the results are  
2 unambiguously unreliable estimates in the first instance, they should not be relied on to  
3 measure changes in the Cost of Equity in the second.

4 OPC witness Mr. Murray's recommendation is similarly disconnected from his  
5 analytical results. Although he recommends an ROE of 9.25 percent,<sup>7</sup> Mr. Murray's results  
6 range from 5.44 percent to 7.27 percent.<sup>8</sup> As discussed in Section III, there are numerous  
7 unreasonable assumptions underlying Mr. Murray's analyses that tend to reduce his ROE  
8 estimates.

9 **Q. HAVE YOU MADE ANY CHANGES TO THE PROXY GROUP PRESENTED IN**  
10 **YOUR DIRECT TESTIMONY?**

11 A. Yes, I have included Avista Corporation ("Avista"), which had been party to a proposed  
12 acquisition by Hydro One Limited; that transaction was terminated on January 23, 2019.<sup>9</sup>  
13 Because Avista meets all my screening criteria and enough time has passed that the model  
14 inputs no longer are affected by the proposed transaction, I included Avista in my proxy  
15 group. I refer to the resulting group as the "Updated Proxy Group".

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<sup>7</sup> Assuming his recommended common equity ratio of 46.00 percent.

<sup>8</sup> Direct Testimony of David Murray, Schedules DM-D-6 through DM-D-9.

<sup>9</sup> *See, Hydro One and Avista Mutually Agree to Terminate Merger Agreement*, Press Release, January 23, 2019.



1 **II. RESPONSE TO TESTIMONY OF STAFF WITNESS CHARI**

2 **Q. PLEASE BRIEFLY SUMMARIZE STAFF'S RECOMMENDATION**  
3 **REGARDING THE COMPANY'S COST OF EQUITY.**

4 A. Through its witness Mr. Chari, Staff recommends an ROE of 9.25 percent, within a range  
5 of 9.05 percent to 9.80 percent.<sup>10</sup> Mr. Chari estimates the ROE using the Constant Growth  
6 DCF model and the CAPM.<sup>11</sup> Mr. Chari reviews recently authorized returns for electric  
7 and natural gas utilities as a check on the reasonableness of his recommended ROE,<sup>12</sup> and  
8 considers current market conditions.<sup>13</sup> As noted earlier, Mr. Chari's recommendation rests  
9 on a relative analysis, comparing model results coincident with Spire Missouri's most  
10 recent rate cases to those produced using current data.<sup>14</sup>

11 **Q. WHAT ARE THE SPECIFIC AREAS IN WHICH YOU DISAGREE WITH MR.**  
12 **CHARI'S ANALYSES AND CONCLUSIONS?**

13 A. The areas in which I disagree with Mr. Chari include:  
14 1. The basis of his ROE recommendation;  
15 2. Mr. Chari's interpretation of capital market conditions;  
16 3. Mr. Chari's Constant Growth DCF analyses;  
17 4. Mr. Chari's application of the CAPM, the reasonableness of those results, and  
18 their relevance in determining the Company's ROE; and  
19 5. The relevance of authorized returns.

20 I discuss each in turn, below.

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<sup>10</sup> Staff Cost of Service Report, at 18.  
<sup>11</sup> *Ibid.*, at 14-17, and Schedule PC-12.  
<sup>12</sup> *Ibid.*, at 18.  
<sup>13</sup> *Ibid.*, at 9-11.  
<sup>14</sup> *Ibid.*, Schedule PC-10, PC-11, and PC-12.

1       **A.     ROE Recommendation**

2       **Q.     DO YOU HAVE ANY PRELIMINARY OBSERVATIONS REGARDING MR.**  
3       **CHARI'S RECOMMENDED RANGE?**

4       A.     Yes. Although I do not believe the low end of Mr. Chari's recommended range is a  
5       reasonable estimate of the Company's ROE, I recognize the upper end of his range, 9.80  
6       percent, overlaps with my recommended range.

7       **Q.     PLEASE SUMMARIZE MR. CHARI'S ROE RECOMMENDATION AND ITS**  
8       **DERIVATION.**

9       A.     Mr. Chari recommends an ROE of 9.25 percent, within a range of 9.05 percent to 9.80  
10      percent.<sup>15</sup> To determine his recommendation, Mr. Chari first:

- 11           1. Calculates the average of his Constant Growth DCF and CAPM results based on  
12           his *electric proxy group*;
- 13           2. Calculates the average of his Constant Growth DCF and CAPM results based on  
14           his *natural gas proxy group*; and
- 15           3. Calculates the average of the Constant Growth DCF and CAPM results based on  
16           the *natural gas proxy group* and data presented by Staff in Spire's 2017 rate  
17           proceeding (Docket Nos. GR-2017-0215 and GR-2017-0216).

18      Mr. Chari then calculates the difference in the average results for his electric and natural  
19      gas proxy groups (an increase of 18 basis points); and the difference in the average results  
20      for his natural gas proxy group, and the average results based on the data presented in the  
21      Spire Missouri rate case (a decrease of 75 basis points). He begins with the 9.80 percent  
22      ROE authorized in the Spire Missouri rate case and makes two adjustments: (1) adding 18

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<sup>15</sup> Staff Cost of Service Report, at 18.

1 basis points; and (2) subtracting 75 basis points. That process produces an estimate of 9.23  
2 percent, which Mr. Chari rounds to 9.25 percent.<sup>16</sup>

3 **Q. DO YOU HAVE ANY CONCERNS WITH THAT APPROACH?**

4 A. Yes, I do. Although Mr. Chari argues his approach reflects both the change in the results  
5 for the natural gas proxy group since the Spire Missouri rate case and the differential  
6 between the natural gas and electric proxy groups,<sup>17</sup> it simply reflects the difference in the  
7 average results in the Spire Missouri rate case (which was based on a *natural gas proxy*  
8 *group*), and the average results for his *electric proxy group* in the current proceeding. The  
9 calculation presented in Schedule PC-12 can be stated using the following formula:

10 
$$y = a - b + b - c \quad [1]$$

11 Where:

12  $y$  = the adjustment to the authorized ROE in the Spire Missouri Rate Case.

13  $a$  = the average current results based on the electric proxy group.

14  $b$  = the average current results based on the natural gas proxy group.

15  $c$  = the average results based on the natural gas proxy group from the Spire Missouri  
16 rate case.

17 Because it adds and subtracts  $b$ , Equation [1] can be simplified to:

18 
$$y = a - c \quad [2]$$

19 The current results of the natural gas proxy group therefore have no effect on Mr.  
20 Chari's adjustment to the 9.80 percent return authorized in the Spire Missouri rate case.

21 Whether the current natural gas proxy group results average 6.21 percent as Mr. Chari

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<sup>16</sup> Schedule PC-12.

<sup>17</sup> Staff Cost of Service Report, at 5.

1 estimates, zero percent, 100.00 percent, or any other value, the adjustment remains negative  
2 57 basis points (*see*, Schedule RBH-R8). That is, Mr. Chari’s approach assumes it is  
3 appropriate to compare the current results of an *electric proxy group* to the prior results of  
4 a *natural gas proxy group* to determine how the ROE has changed over time. I do not  
5 agree, and it appears neither does Mr. Chari, as he states “Staff’s current COE estimated  
6 for Staff’s electric proxy group of 6.39% implies that the COE for the electric proxy group  
7 is 18 bps higher than for the [current results of the] gas proxy group.”<sup>18</sup>

8 **Q. DO YOU AGREE IT IS APPROPRIATE TO CONSIDER THE RELATIVE**  
9 **CHANGES IN MODELS TO DETERMINE THE ROE?**

10 A. Although it may be informative to review changes in model results over time, it is most  
11 important that the proxy groups are comparable, the model inputs are reasonable, and the  
12 results are meaningful. Here, the results presented in Schedule PC-12 all are significantly  
13 below the lowest authorized return for a vertically integrated utility in at least 40 years.<sup>19</sup>  
14 In addition, as discussed in more detail in my response to Mr. Chari’s CAPM analysis,  
15 certain of those results suggest Liberty-Empire’s Cost of Equity is below Staff’s  
16 recommended (embedded) Cost of Debt, which is highly suspect given that equity investors  
17 face greater risks than debt investors, and require higher returns than debt investors. When  
18 models produce results so far removed from reasonable benchmarks, those results and the  
19 analyses that produced them should be viewed with considerable caution. That is the case  
20 even if they are being relied on solely to estimate changes over time.

---

<sup>18</sup> *Ibid.* [Clarification added]

<sup>19</sup> Source: Regulatory Research Associates.

1 Mr. Chari produces various analyses, but his recommendation is far removed from  
2 those results. Recognizing that the Commission would be skeptical of model results and  
3 ROE recommendations as low as 4.63 percent, Mr. Chari instead focuses on the “relative  
4 change” in Staff’s DCF and CAPM estimates. As discussed below, those analyses are  
5 highly flawed and cannot be relied on in either an absolute or a relative sense. That said,  
6 and assuming for the sake of argument Mr. Chari’s approach, certain reasonable  
7 adjustments to the DCF model indicate that the Cost of Equity has increased since the Spire  
8 Missouri rate case.

9 **Q. WHAT HAS STAFF RECOMMENDED RECENTLY FOR OTHER UTILITIES?**

10 A. In a recent electric rate case in Missouri for Kansas City Power & Light Company and  
11 KCP&L Greater Missouri Operations Company, Staff recommended an ROE of 9.85  
12 percent.<sup>20</sup> The Staff Cost of Service report in that case was filed on June 19, 2018. Staff  
13 did not change its recommended ROE in its Rebuttal Testimony (filed July 27, 2018)<sup>21</sup> or  
14 its Surrebuttal Testimony (filed September 4, 2018).<sup>22</sup>

15 In the most recent natural gas rate case in Missouri (for Ameren Missouri’s natural  
16 gas operations), Staff recommended an ROE of 9.50 percent.<sup>23</sup> The Staff Cost of Service  
17 report in that case was filed on April 17, 2019. Staff did not change its recommended ROE

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<sup>20</sup> See, Staff Report Cost of Service, Missouri Public Service Commission, Docket No. ER-2018-0145 and ER-2018-0146, June 19, 2018, at 2. I recognize that Staff recommended a 9.25 percent ROE for Union Electric Company d/b/a Ameren Missouri’s (“Ameren Missouri”) electric operations in its Staff Cost of Service Report filed on December 4, 2019 in Case No. ER-2019-0335.

<sup>21</sup> See, Rebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. ER-2018-0145 and ER-2018-0146, July 27, 2018.

<sup>22</sup> See, Surrebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. ER-2018-0145 and ER-2018-0146, September 4, 2018, at 13.

<sup>23</sup> See, Staff Report Cost of Service, Missouri Public Service Commission, Docket No. GR-2019-0077, April 17, 2019, at 2.

1 in its Rebuttal Testimony (filed June 7, 2019)<sup>24</sup> or its Surrebuttal Testimony (filed July 10,  
2 2019).<sup>25</sup>

3 As noted above, Mr. Chari's analyses focus on the relative change over time. Mr.  
4 Chari, however, has not explained why investors view electric utilities, such as Liberty-  
5 Empire, as so much less risky now than in mid-2018 to lower their required return by 60  
6 basis points. Similarly, Mr. Chari has not explained how market conditions have changed  
7 since mid-2019 that would cause Liberty-Empire's (a vertically integrated electric utility)  
8 ROE to be 25 basis points below the ROE for Ameren Missouri's natural gas operations.

9 **Q. ARE YOU AWARE OF AN INSTANCE IN WHICH THE FINANCIAL**  
10 **COMMUNITY REACTED NEGATIVELY TO A REGULATORY**  
11 **COMMISSION'S ORDER REGARDING THE ROE, CAPITAL STRUCTURE, OR**  
12 **OTHER CONSIDERATIONS?**

13 A. Yes, I am. CenterPoint Energy Houston Electric LLC ("CEHE") recently was authorized  
14 an ROE of 9.40 percent, together with an equity ratio of 42.50 percent.<sup>26</sup> Throughout the  
15 Public Utility Commission of Texas's ("PUC") deliberations in that proceeding, the  
16 financial community monitored the PUC's deliberations, which initially called for an  
17 ROE of 9.25 percent and an equity ratio of 40.00 percent. The real-time effect of those  
18 deliberations has been clear: the stock of the Company's parent, CenterPoint Energy, Inc.,  
19 significantly underperformed the utility sector, and its credit rating from Fitch has been

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<sup>24</sup> See, Rebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. GR-2019-0077, June 7, 2019, at 15.

<sup>25</sup> See, Surrebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. GR-2019-0077, July 10, 2019, at 20.

<sup>26</sup> See, S&P Global Market Intelligence, *Texas PUC OKs CenterPoint rate case settlement, adds no dividend restrictions*, February 14, 2020.

1           downgraded by one credit “notch.”<sup>27</sup> The equally clear result is that CEHE’s cost of capital  
2           has increased, to the detriment of its customers.

3   **Q.   DO YOU HAVE ANY OTHER CONCERNS WITH MR. CHARI’S**  
4   **RECOMMENDED ROE?**

5   A.   Yes, I do. As discussed in more detail later in my response to Mr. Chari, I have several  
6           concerns with Mr. Chari’s application of the DCF and CAPM methods, and the results they  
7           produce.

8           **B.   Capital Market Conditions**

9   **Q.   PLEASE SUMMARIZE MR. CHARI’S TESTIMONY AS IT RELATES TO**  
10   **CURRENT CAPITAL MARKET CONDITIONS?**

11   A.   Mr. Chari reviews current economic conditions, and concludes low interest rates and high  
12           utility stock prices suggest a lower Cost of Equity for utilities.<sup>28</sup> Mr. Chari also reviews  
13           the equity markets, noting that utility stock prices and price-to-earnings (“P/E”) ratios have  
14           risen since 2017, in conjunction with lower dividend yields. Mr. Chari concludes that those  
15           two factors suggest a lower ROE in the current market relative to 2017.<sup>29</sup>

16   **Q.   DO YOU AGREE WITH MR. CHARI’S CONCLUSION THAT THE CAPITAL**  
17   **MARKET ENVIRONMENT SUGGESTS A LOWER COST OF EQUITY FOR**  
18   **THE COMPANY?**

19   A.   No, I do not. In 2019, the 30-year Treasury yield fell by 119 basis points, a decline of  
20           about 38.00 percent, in 126 trading days. Looking back to 2001, only 124 of 4,803

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<sup>27</sup> Fitch Ratings, *Fitch Downgrades CenterPoint Energy Houston Electric to 'BBB+'; Affirms CNP; Outlooks Negative*, February 19, 2020.

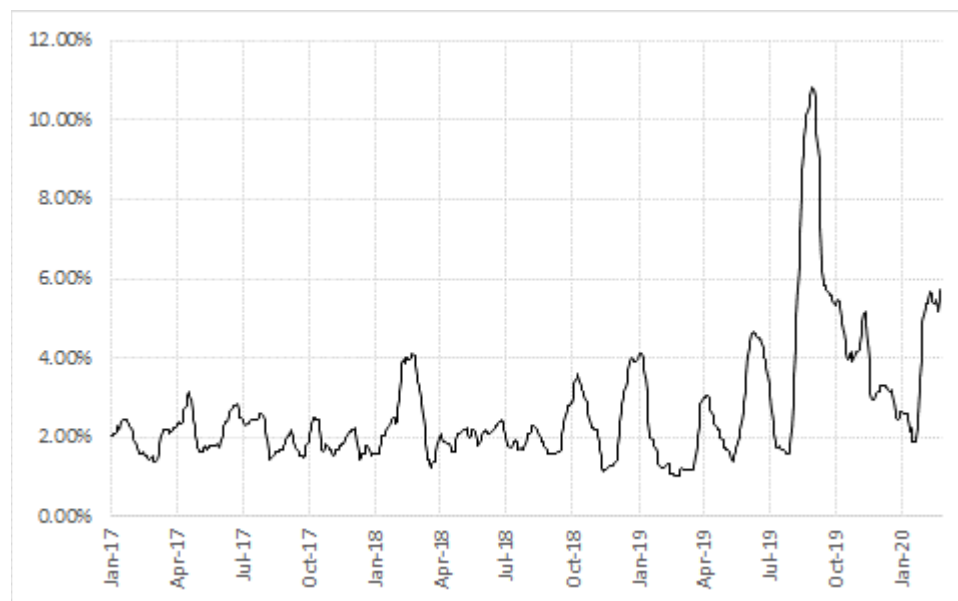
<sup>28</sup> Staff Cost of Service Report, at 10.

<sup>29</sup> *Ibid.*, at 10-11.

1 observations saw greater declines (only 13 saw greater percentage declines). On an  
2 absolute basis, 161 observations experienced greater basis point changes, and only 63 saw  
3 greater percentage changes.

4 One means of viewing the increasing volatility of Treasury yields is to view the  
5 Coefficient of Variation (“CoV”) over time. The CoV is the ratio of the standard deviation  
6 to the average; it is a means of standardizing variability. As Chart 1 (below) demonstrates,  
7 by that measure long-term Treasury yields became increasingly variable in 2019 and 2020,  
8 relative to 2017 (i.e., as of the Spire Missouri rate case).

9 **Chart 1: 30-Year Treasury Yields Coefficient of Variation<sup>30</sup>**



10  
11 At issue is the extent to which that volatility should be considered in assessing the  
12 relationship between Treasury yields and the Cost of Equity. If the variability in yields  
13 relates to something other than long-term fundamental market factors, we should question  
14 the extent to which changes in bond yields reflect changes in investor return requirements.

<sup>30</sup> Source: S&P Global Market Intelligence, through February 25, 2020.



1           As noted in my Direct Testimony, over time, significant and abrupt declines in  
2 Treasury yields have been associated with increases in equity market volatility.<sup>31</sup> That  
3 relationship makes intuitive sense; as investors see increasing risk their objectives may  
4 shift to capital preservation (that is, avoiding a capital loss), rather than capital  
5 appreciation. Consistent with that objective, investors may allocate capital to the relative  
6 safety of Treasury yields, in a “flight to safety.” Because bond yields are inversely related  
7 to bond prices, as investors bid up the prices of bonds, they bid down the yields. That  
8 pattern is seen in Chart 6 in my Direct Testimony, in which decreases in the 30-year  
9 Treasury yield coincided with increases in the Volatility Index (“VIX”). In those instances,  
10 the fall in yields does not reflect a reduction in required returns, it reflects an increase in  
11 risk aversion and, therefore, an increase in investor-required returns.

12           As also shown in my Direct Testimony, the Cboe Options Exchange (“Cboe”) VIX  
13 increased since the Spire Missouri rate case in 2017.<sup>32</sup> Looking to more recent data (*see*,  
14 Chart 2), the VIX continues to remain elevated relative to 2017. In addition, although the  
15 VIX traded in a relatively narrow range in 2017, it experienced greater variability since the  
16 beginning of 2018.

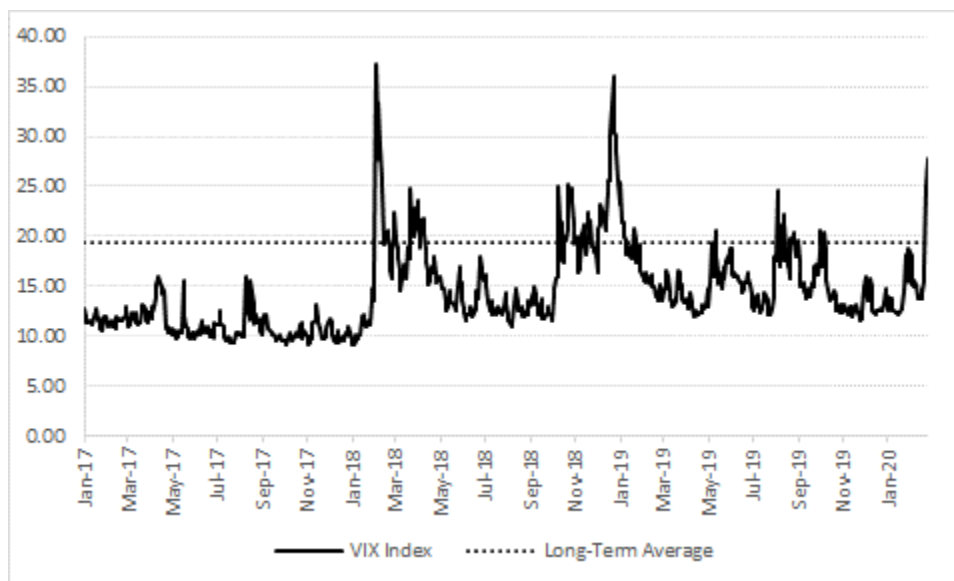
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<sup>31</sup> Direct Testimony of Robert B. Hevert, at 33.

<sup>32</sup> *Ibid.*, at 32.

1

**Chart 2: VIX Since January 2017<sup>33</sup>**



2

3

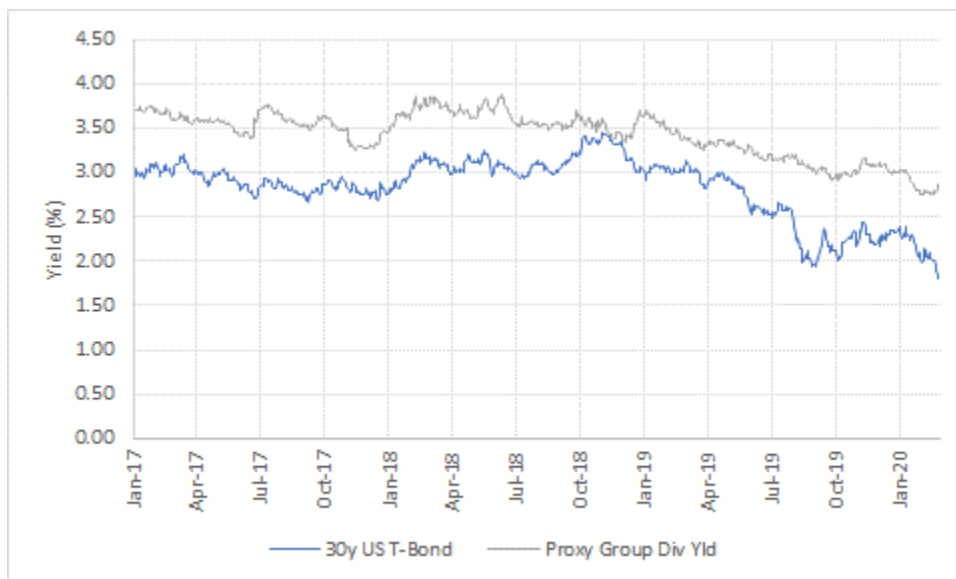
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6

As discussed in my Direct Testimony, since the 2008/2009 financial crisis, Treasury yields have generally remained below utility dividend yields.<sup>34</sup> As shown in Chart 3, below, that relationship remained similar in 2017 relative to the current market.

**Chart 3: Utility Dividend Yields and 30-Year Treasury Yields<sup>35</sup>**



7

<sup>33</sup> Source: Bloomberg Professional, through February 25, 2020.

<sup>34</sup> Direct Testimony of Robert B. Hevert, at 36.

<sup>35</sup> Source: S&P Global Market Intelligence, through February 25, 2020.

1 Further, although Mr. Chari suggests low interest rates, and relatively higher P/E  
2 ratios imply reduced required returns as discussed in my Direct Testimony, the greater  
3 variability in P/E ratios increases the risk of capital loss and a limit on valuation levels.<sup>36</sup>

4 As such, I do not agree that current market conditions imply a lower ROE.

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

6 **Q. PLEASE SUMMARIZE STAFF'S CONSTANT GROWTH DCF ANALYSIS.**

7 A. Mr. Chari calculates the Constant Growth DCF results using an electric proxy group and a  
8 natural gas proxy group. He calculates the dividend yield for each proxy company in his  
9 proxy groups by “dividing the consensus analysts’ expected dividend per share over the  
10 next four quarters (*see* Schedule PC-10-1) by the average daily closing stock prices for the  
11 three months ending November 30, 2019.”<sup>37</sup> Mr. Chari then reviews the five- and ten-year  
12 historical growth rates in earnings per share (“EPS”), as well as the projected EPS growth  
13 rates<sup>38</sup> from Standard & Poor’s (“S&P”) Global Market Intelligence for his electric proxy  
14 group.<sup>39</sup> After reviewing those growth rates, Mr. Chari concludes an appropriate growth  
15 rate range, for both proxy groups, is from 4.20 percent to 5.00 percent.<sup>40</sup>

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<sup>36</sup> Direct Testimony of Robert B. Hevert, at 38.

<sup>37</sup> Staff Cost of Service Report, at 14.

<sup>38</sup> I attempted to recreate the long-term projected EPS growth rates Mr. Chari cites from S&P Global Market Intelligence. Although Mr. Chari notes on page 14-15 of the Staff Cost of Service Report that his projected EPS growth rates are as of November 30, 2019, it appears that the data is as of September 30, 2019. That is, it appears there is a disconnect in the timing between his dividend yield estimates and the projected EPS growth rates.

<sup>39</sup> *Ibid.*, at 14-15. Mr. Chari also presents the ten- and five-year historical growth rates in dividend per share (“DPS”) and book value per share (“BVPS”) in Schedules PC-9-1 and PC-9-2. However, it does not appear he relies on that data to develop his assumed growth rate range.

<sup>40</sup> *Ibid.*, at 16.

1 **Q. TURNING TO THE DCF METHOD, DO YOU HAVE ANY CONCERNS WITH**  
2 **THE RANGE OF GROWTH RATES SELECTED BY MR. CHARI?**

3 A. Yes, I do. As noted above, Mr. Chari selects a range of growth rates of 4.20 percent to  
4 5.00 percent for both his electric and natural gas proxy groups. However, Mr. Chari notes  
5 that “Staff did not rely on 10- and 5-year historical and projected growth rates for the  
6 natural gas utilities to arrive at the growth rate range of 4.20% - 5.00%.”<sup>41</sup> That is, Mr.  
7 Chari has provided no support for his natural gas proxy group assumed growth rates other  
8 than “to maintain consistency with the growth rate range assumed in the Spire rate cases.”<sup>42</sup>

9 **Q. IS IT REASONABLE TO ATTEMPT “TO MAINTAIN CONSISTENCY WITH**  
10 **THE GROWTH RATE RANGE” USED IN PRIOR RATE CASES?**<sup>43</sup>

11 A. No, it is not. Mr. Chari notes on page 14 of the Staff Cost of Service Report, the Constant  
12 Growth DCF model estimates the Cost of Equity based on the expected dividend yield and  
13 the expected growth rate. By holding the growth rate constant, Mr. Chari’s approach  
14 assumes changes in DCF results relate only to changes in dividend yields. Clearly, that is  
15 an incorrect assumption. Under the fundamental assumptions of the Constant Growth DCF  
16 model, decreases in growth rates generally are associated with lower stock prices and,  
17 therefore, higher dividend yields. That is, higher growth expectations are reflected in  
18 higher stock prices and, therefore, lower dividend yields. The converse also is the case -  
19 lower growth expectations are associated with lower stock prices and higher dividend

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<sup>41</sup> Mr. Chari’s response to Liberty-Empire Data Request 0242.

<sup>42</sup> Staff Cost of Service Report, at 16.

<sup>43</sup> *Ibid.*

1 yields. Mr. Chari does not consider that fundamental relationship in his attempt “to  
2 maintain consistency with the growth rate range assumed in the Spire rate cases.”<sup>44</sup>

3 Further, Mr. Chari’s assumed growth rate does not reflect the current expectation  
4 of future growth. He has simply assumed that the expected growth rates for his proxy  
5 companies have not changed in over two years, since the June 30, 2017 DCF analysis  
6 presented by Staff in the Spire Missouri rate case. As noted above, he has done so without  
7 providing any evidence that his assumption is valid for his natural gas proxy group.

8 **Q. WHAT WERE THE EPS GROWTH RATES FOR MR. CHARI’S NATURAL GAS**  
9 **PROXY GROUP AS OF NOVEMBER 30, 2019?**

10 A. The EPS growth rates for Mr. Chari’s natural gas proxy group as of November 30, 2019  
11 are provided in Table 1, below. I have compared those growth rates to the same growth  
12 rates from the Spire Missouri rate case as of June 30, 2017.

13 **Table 1: Mr. Chari’s Natural Gas Proxy Group EPS Growth Rates**

<b>Growth Rate</b>	<b>June 30, 2017</b>	<b>November 30, 2019<sup>45</sup></b>	<b>Difference</b>
Five-Year Historical EPS	2.84%	7.14%	4.30%
Ten-Year Historical EPS <sup>46</sup>	4.12%	4.66%	0.54%
Projected EPS	5.19%	5.77%	0.58%

14 As shown in Table 1, each of the growth rates for Mr. Chari’s natural gas proxy  
15 groups have increased by at least 56 basis points. In fact, the lowest EPS growth rate is 46  
16 basis points above the low end of his assumed growth rate range. Assuming,  
17 conservatively, an increase of 50 basis points to the growth rate range<sup>47</sup> (i.e., to a range of

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<sup>44</sup> *Ibid.*

<sup>45</sup> Source: S&P Global Market Intelligence.

<sup>46</sup> The ten-year historical EPS growth rate excluding the negative growth rate for Northwest Natural Holding Company is 6.56 percent.

<sup>47</sup> 50 basis points is approximately equal to the increase from 4.20 percent to the 4.66 percent low end estimate and is somewhat below the lowest increase in growth rates since June 30, 2017 in Table 1.

1 4.70 percent to 5.50 percent), Mr. Chari's Constant Growth DCF results would be 7.15  
2 percent to 7.95 percent (using Mr. Chari's 2.45 percent expected dividend yield) relative  
3 to the 6.90 percent to 7.70 percent range in the Spire Missouri rate case.<sup>48</sup> That is, based  
4 on a conservative estimate of the increase in growth rates, the Constant Growth DCF results  
5 increase by 25 basis points. I do not agree the current Constant Growth DCF results suggest  
6 a decrease in the ROE.<sup>49</sup>

7 **Q. HOW DO THE ADJUSTED RESULTS BASED ON MR. CHARI'S NATURAL GAS**  
8 **PROXY GROUP AFFECT HIS ROE RECOMMENDATION?**

9 A. On a comparative basis, one reasonable adjustment to the range of growth rates indicates  
10 an increase in DCF estimates, not a decrease as Mr. Chari supposes.

11 **Q. DO YOU HAVE ANY CONCERNS WITH MR. CHARI'S ASSUMED GROWTH**  
12 **RATE RANGE FOR HIS ELECTRIC PROXY GROUP?**

13 A. Yes, I do. To develop his range of growth rates, Mr. Chari considers the five- and ten-year  
14 historical growth rates in EPS, along with the projected five-year EPS growth rates from  
15 S&P Global Market Intelligence. As noted on page 14 of the Staff Cost of Service Report,  
16 the five- and ten-year historical EPS growth rates average 3.11 percent and 3.66 percent  
17 for Mr. Chari's proxy group. However, as shown in Schedule PC-9-3, certain proxy  
18 companies experienced negative growth over those two periods. Because Mr. Chari is  
19 attempting to determine the growth rate in the DCF model, which is applied in perpetuity,  
20 it is inappropriate to include negative EPS growth rates. By assuming a negative growth

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<sup>48</sup> Schedule PC-10-3.

<sup>49</sup> Please note, I do not agree that DCF results of 7.15 percent to 7.95 percent are reasonable. However, based on Mr. Chari's methodology, they represent an increase, not a decrease, to the ROE since the Spire Missouri rate case.

1 rate, Mr. Chari assumes utility investors would willingly commit capital to a company  
2 expected to shrink, forever. Although Mr. Chari appears concerned with what he views as  
3 relatively high growth rates,<sup>50</sup> he has not considered the effect of negative growth rates on  
4 his DCF analysis.

5 As shown in Schedule RBH-R9, I have corrected Mr. Chari's Schedule PC-9-3, by  
6 removing negative growth rates. That results in average historical five- and ten-year EPS  
7 growth rates of 4.44 percent and 4.61 percent, respectively. Based on the corrected data,  
8 the low end of Mr. Chari's growth rate range is 24 basis points below the lowest average  
9 growth rate.<sup>51</sup> Had Mr. Chari relied on a growth rate range of 4.44 percent to 5.16 percent,  
10 more consistent with the average growth rates presented in Schedule RBH-R9, his Constant  
11 Growth DCF results would range from 7.58 percent to 8.30 percent.<sup>52</sup>

12 **Q. DO YOU HAVE ANY OTHER CONCERNS WITH MR. CHARI'S ASSUMED**  
13 **GROWTH RATE RANGE?**

14 A. Yes, I do. Although it appears Mr. Chari has attempted to maintain consistency between  
15 the growth rate ranges in the Spire Missouri rate case and this one, the range of growth  
16 rates Staff assumed in the Spire Missouri analysis was based on a review of five- and ten-  
17 year historical growth rates in DPS, BVPS, and EPS, and projected EPS growth rates for a  
18 natural gas proxy group.<sup>53</sup> That is, Staff in the Spire Missouri rate case and Mr. Chari rely  
19 on different datasets to arrive at their growth rate ranges. Mr. Chari has provided no  
20 evidence to suggest that comparing different datasets for different proxy groups is a

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<sup>50</sup> Staff Cost of Service Report, at 15.

<sup>51</sup> Schedule RBH-R9.

<sup>52</sup>  $7.58\% = 3.14\% + 4.44\%$ ;  $8.30\% = 3.14\% + 5.16\%$ . Please note, I am not suggesting 7.58 percent to 8.30 percent is a reasonable range of estimates.

<sup>53</sup> *Ibid.*, Schedule PC-10, and Missouri Public Service Commission, File Nos. GR-2017-0215 and GR-2017-0216, Staff Cost of Service Report, Schedule 9-4.

1 reasonable approach to estimate the change in growth rates (or as Mr. Chari does, assume  
2 there has been no change).

3 **Q. PLEASE SUMMARIZE YOUR CONCERN WITH THE GROWTH RATES USED**  
4 **IN STAFF'S DCF ANALYSIS.**

5 A. Whereas my DCF analysis relies on analysts' consensus earnings growth projections, Mr.  
6 Chari's analysis reflects, as noted above, historical and projected growth in EPS. Mr. Chari  
7 observes the consensus EPS growth estimates (provided by S&P Global Market  
8 Intelligence) average 5.16 percent for his electric proxy group,<sup>54</sup> and argues they are not  
9 reliable relative to Staff's "high-end" estimate of long-term GDP growth (approximately  
10 4.40 percent).<sup>55</sup>

11 **Q. WHAT IS THE RELEVANCE OF EXPECTED GROWTH RATES IN THE DCF**  
12 **MODEL?**

13 A. As discussed in my Direct Testimony at page 47, the Constant Growth DCF model assumes  
14 the current price of a share of stock represents the present value of the expected cash flows  
15 associated with owning that stock. The expected cash flows include the dividends received  
16 during the period in which the stock is held, and the price at which the stock eventually is  
17 sold. The Cost of Equity is the discount rate that sets the current price equal to the present  
18 value of the expected cash flows.

19 Because both dividends and stock prices are determined by earnings, analysts'  
20 consensus projected earnings growth rates are the proper measure of growth for the  
21 Constant Growth DCF model. As discussed in more detail below, there is long-standing

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<sup>54</sup> *Ibid.*, Schedules PC-9-3.

<sup>55</sup> *Ibid.*, at 15.



1 academic support for the use of earnings growth projections because they have a  
2 statistically meaningful relationship to utility stock prices. In summary, growth rates are  
3 important inputs to DCF analyses, and analysts' earnings growth rate projections are the  
4 appropriate measure of expected growth. Other measures, such as those proposed by Mr.  
5 Chari, often have the effect of unreasonably suppressing ROE estimates.

6 **Q. WHY DOES MR. CHARI EXPRESS CONCERN WITH THE USE OF ANALYSTS'**  
7 **FORECASTS OF EPS GROWTH IN HIS CONSTANT GROWTH DCF MODEL?**

8 A. Mr. Chari asserts that because they are higher than his 4.40 percent high-end GDP growth  
9 estimate, analysts' growth rate projections are unsustainable.<sup>56</sup>

10 **Q. IS THE USE OF ANALYSTS' EARNINGS GROWTH PROJECTIONS IN THE**  
11 **DCF MODEL SUPPORTED BY FINANCIAL LITERATURE?**

12 A. Yes, it is. As explained in my Direct Testimony, the relationship between various growth  
13 rates and stock valuation metrics has been the subject of much academic research,  
14 including published articles that support the use of analysts' earnings growth projections  
15 in the DCF model.<sup>57</sup>

16 **Q. DO YOU AGREE WITH MR. CHARI THAT LOAD GROWTH IS A**  
17 **REASONABLE MEASURE OF THE COMPANY'S EXPECTED GROWTH IN**  
18 **THE DCF MODEL?**<sup>58</sup>

19 A. No, I do not. Mr. Chari's position assumes there is a direct path from electric retail sales  
20 to earnings. As a practical matter, many variables enter that relationship. Rate design, for

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<sup>56</sup> *Ibid.*, at 15.

<sup>57</sup> *Ibid.*, at 49-51.

<sup>58</sup> *Ibid.*, at 15.

1 example, may affect the relationship between retail sales and revenues. The relationship  
2 between revenue and earnings likewise is a function of operating margins, which in turn,  
3 are influenced by a variety of operating factors, such as productivity improvements.

4 To that point, the U.S. Energy Information Administration’s (“EIA”) 2019 Annual  
5 Energy Outlook reports expected annual electricity sales to grow approximately 1.02  
6 percent per year over the next five years,<sup>59</sup> whereas the average electric proxy company  
7 expected earnings growth estimate reported in Schedule RBH R-1 is 5.49 percent.  
8 Analysts’ expectations for earnings growth are not limited by retail electric sales growth,  
9 and Mr. Chari’s focus on that factor is inconsistent with actual practice.

10 **Q. WHAT ARE STAFF’S DCF RESULTS BASED ON THE CHANGES NOTED**  
11 **ABOVE?**

12 A. As shown in Table 2, below, based on the reasonable adjustments to Staff’s growth rates  
13 noted above, the current results based on the natural gas and electric proxy group are higher  
14 in this proceeding than in the Spire Missouri rate case, indicating an increase rather than a  
15 decrease in the Company’s Cost of Equity relative to the Cost of Equity approved for Spire  
16 Missouri in 2017.

17 **Table 2: Adjusted DCF Results**

<b>Proxy Group</b>	<b>Low</b>	<b>High</b>
Natural Gas – Spire Missouri	6.90%	7.70%
Natural Gas – Current	7.15%	7.95%
Electric	7.58%	8.30%

18  

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<sup>59</sup> Source: U.S. Energy Information Administration (for the years 2019-2023). *Annual Energy Outlook 2019*, Table 8. Average of the year-over-year forecasted annual electricity sales growth for the years 2019 to 2024.

1           **D.     Capital Asset Pricing Model**

2   **Q.     PLEASE BRIEFLY DESCRIBE MR. CHARI’S CAPM ANALYSES.**

3   A.     Mr. Chari’s CAPM analyses assume a risk-free rate of 2.21 percent, an average calculated  
4           Beta coefficient of 0.54 for his electric proxy group and 0.60 for his natural gas proxy  
5           group, and historical Market Risk Premium (“MRP”) estimates of 6.00 percent (using the  
6           long-term arithmetic mean) and 4.50 percent (using the long-term geometric mean).<sup>60</sup>  
7           Based on those inputs, Mr. Chari’s CAPM calculations produce Cost of Equity estimates  
8           of 4.63 to 5.43 percent for his electric proxy group and 4.91 percent to 5.81 percent for his  
9           natural gas proxy group.<sup>61</sup> Again, Mr. Chari considers his results on a relative, not  
10          absolute, basis and compares the current results to those as of June 30, 2017. Mr. Chari  
11          reports the CAPM results as of June 30, 2017 to be in the range of 6.08 percent to 7.14  
12          percent.<sup>62</sup>

13   **Q.     DO YOU AGREE WITH MR. CHARI’S CAPM ANALYSIS?**

14   A.     No, I do not. The principal difference in our approaches is that Mr. Chari performs an  
15          historical, or *ex-post* analysis, whereas I perform a forward-looking, or *ex-ante* analysis.  
16          Because the purpose of this proceeding is to establish the Company’s Cost of Equity on a  
17          forward-looking basis, it is important to develop a CAPM analysis that reflects investors’  
18          expectations.

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<sup>60</sup> Staff Cost of Service Report, at 17, Schedule PC-11.

<sup>61</sup> *Ibid.*

<sup>62</sup> *Ibid.*

1 **Q. BEFORE TURNING TO THE MRP, DO YOU AGREE WITH MR. CHARI'S USE**  
2 **OF THE AVERAGE 30-YEAR TREASURY YIELD AS THE RISK-FREE RATE?**

3 A. Although I agree with Mr. Chari that it is appropriate to use the current average 30-year  
4 Treasury yield, I relied on both the current 30-day average 30-year Treasury yield and the  
5 (near-term) projected 30-year Treasury yield as reported in the *Blue Chip Financial*  
6 *Forecast*.<sup>63</sup>

7 **Q. HOW DID MR. CHARI CALCULATE HIS MRP ESTIMATES?**

8 A. Mr. Chari cites Duff & Phelps' 2019 SBBI Yearbook, and states he calculated his MRP  
9 estimates by taking the difference between the long-term average earned return on stocks  
10 and bonds from 1926 – 2018.<sup>64</sup>

11 **Q. IS IT APPROPRIATE TO RELY EXCLUSIVELY ON HISTORICAL DATA IN**  
12 **ESTIMATING THE MRP, AS MR. CHARI HAS DONE?**

13 A. No, it is not. The Market Risk Premium represents the additional return required by equity  
14 investors to assume the risks of owning the “market portfolio” of equity relative to long-  
15 term Treasury securities. As with other elements of Cost of Equity analyses, the MRP is  
16 meant to be a forward-looking parameter. Simply relying on the historical MRP may  
17 produce results that are inconsistent with investor sentiment and current conditions in  
18 capital markets. For example, Morningstar observes:

19 It is important to note that the expected equity risk premium, as it is used in  
20 discount rates and cost of capital analysis, is a forward-looking concept.  
21 That is, the equity risk premium that is used in the discount rate should be  
22 reflective of what investors think the risk premium will be going forward.<sup>65</sup>

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<sup>63</sup> Direct Testimony of Robert B. Hevert, Schedule RBH-D4.

<sup>64</sup> Staff Cost of Service Report, Schedule PC-11.

<sup>65</sup> Morningstar, Inc., Ibbotson Stocks, Bonds, Bills and Inflation 2013 Valuation Yearbook at 53.

1           The historical MRP, on the other hand, may not necessarily reflect investors'  
2 expectations or, for that matter, the relationship between market risk and returns. The  
3 relevant analytical issue in applying the CAPM is to ensure that all three components of  
4 the model (*i.e.*, the risk-free rate, the Beta coefficient, and the MRP) are consistent with  
5 market conditions and investor expectations. Therefore, the *ex-ante* CAPM analyses are  
6 the more appropriate method to estimate the Company's Cost of Equity.

7 **Q.   WHAT IS THE DIFFERENCE BETWEEN THE GEOMETRIC AND THE**  
8 **ARITHMETIC MEAN RISK PREMIUM?**

9 A.   The arithmetic mean is the simple average of single period rates of return, whereas the  
10 geometric mean is the compound rate that equates a beginning value to its ending value.  
11 The important distinction between the two methods is that the arithmetic mean assumes  
12 that each periodic return is an independent observation and, therefore, incorporates  
13 uncertainty in the calculation of the long-term average. The geometric mean, by contrast,  
14 is a backward-looking calculation that equates a beginning value to an ending value over a  
15 specific period of time. Geometric averages, therefore, provide a standardized basis of  
16 review of historical performance across investments or investment managers; they do not,  
17 however, reflect forward-looking uncertainty.

18           Because there is no uncertainty regarding past returns, the use of geometric  
19 averages is appropriate when comparing investment performance on a retrospective basis.  
20 On a prospective basis, however, uncertainty exists and should be taken into consideration  
21 when developing return expectations and requirements. That is why investors and  
22 researchers commonly use the arithmetic mean when estimating the risk premium over  
23 historical periods for the purpose of estimating equity cost rates.

1           Lastly, investment risk or volatility is typically measured on the basis of the  
2 standard deviation. The standard deviation, in turn, is a function of the arithmetic, as  
3 opposed to the geometric mean. In that regard, the Beta coefficients applied in CAPM  
4 analyses are derived from the standard deviation of returns.<sup>66</sup> In any case, Morningstar  
5 notes that:

6           The arithmetic average equity risk premium can be demonstrated to be the  
7 most appropriate when discounting future cash flows. For use as the  
8 expected equity risk premium in either the CAPM or the building block  
9 approach, the arithmetic mean or the simple difference of the arithmetic  
10 means of the stock market returns and the riskless rates is the relevant  
11 number.<sup>67</sup>

12           Similarly, an article reviewing literature on the topic noted the following rationale  
13 for using the arithmetic mean:

14           Note that the arithmetic mean, not the geometric mean is the relevant value  
15 for this purpose. The quantity desired is the rate of return that investors  
16 expect over the next year for the random annual rate of return on the market.  
17 The arithmetic mean, or simple average, is the unbiased measure of the  
18 expected value of repeated observations of a random variable, not the  
19 geometric mean. ... [The] geometric mean underestimates the expected  
20 annual rate of return.<sup>68</sup>

21 **Q. PUTTING ASIDE THE ISSUE OF WHETHER IT IS MORE APPROPRIATE TO**  
22 **USE THE GEOMETRIC OR ARITHMETIC MEAN, DO YOU HAVE ANY**  
23 **CONCERNS WITH THE MANNER IN WHICH MR. CHARI CALCULATED HIS**  
24 **ASSUMED MARKET RISK PREMIUM?**

25 **A.** Yes, I do. Mr. Chari's estimates are based on the historical difference in the total returns  
26 on stocks and bonds. According to Morningstar, however, the historical MRP is

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<sup>66</sup> Direct Testimony of Robert B. Hevert at 54.

<sup>67</sup> Morningstar, Inc., Ibbotson Stocks, Bonds, Bills, and Inflation 2013 Valuation Yearbook at 56.

<sup>68</sup> Ian Cooper, *Arithmetic versus geometric mean estimators: Setting discount rates for capital budgeting*, European Financial Management Vol. 2, No. 2 at 158 (1996).

1 appropriately calculated by subtracting the *income only* portion of the government bond  
2 return from the total return on large company stocks:

3 Another point to keep in mind when calculating the equity risk premium is  
4 that the income return on the appropriate-horizon Treasury security, rather  
5 than the total return, is used in the calculation. The total return is comprised  
6 of three return components: the income return, the capital appreciation  
7 return, and the reinvestment return.... The income return is thus used in the  
8 estimation of the equity risk premium because it represents the truly riskless  
9 portion of the return.<sup>69</sup>

10 By subtracting the total return on government bonds from the total return on stocks,  
11 Mr. Chari has understated the historical MRP by 93 basis points (using the arithmetic  
12 mean).<sup>70</sup> Based on Mr. Chari's average Beta coefficients of 0.54 and 0.60, the effect on  
13 his mean CAPM estimate would be approximately 50 to 56 basis points. Even that  
14 correction, however, produces results that are far too low to be reasonable estimates of the  
15 Company's Cost of Equity.

16 **Q. DO YOU HAVE ANY CONCERNS WITH THE RESULTS OF MR. CHARI'S**  
17 **CAPM ANALYSIS?**

18 A. Yes, Mr. Chari's CAPM results are so far removed from observable benchmarks that they  
19 provide little, if any, value in determining the Company's ROE. For example, Mr. Chari's  
20 CAPM analysis suggests investors would be willing to receive an ROE ranging from 13  
21 basis points below the Company's embedded Cost of Debt (as recommended by Staff, 4.76  
22 percent) to only 67 basis points above.<sup>71</sup> Debt and equity are fundamentally different  
23 securities with different risk/return characteristics, different lives, and different investors.  
24 Debt investors have a contractual, senior claim on cash flows not available to equity

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<sup>69</sup> Morningstar, Inc., Ibbotson Stocks, Bonds, Bills, and Inflation 2013 Valuation Yearbook, at 55.

<sup>70</sup> See Duff & Phelps, CRSP Deciles Size Study – Supplementary Data Exhibits.

<sup>71</sup> Staff Cost of Service Report, at 13.

1 investors and as such, equity investors bear the residual risk of ownership in perpetuity.  
2 As such, no rational equity investor would have a required ROE equal to the Cost of Debt,  
3 as Mr. Chari's CAPM analysis suggests.<sup>72</sup>

4 In addition, a CAPM estimate of 4.63 percent is less than half of Liberty-Empire's  
5 currently authorized return. If the Company's authorized ROE were lowered by over half,  
6 it would certainly be viewed as extremely negative by investors and credit rating agencies.  
7 The notion that the Company's Cost of Equity now is 4.63 percent simply is implausible.

8 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING MR. CHARI'S CAPM**  
9 **ANALYSIS?**

10 A. As a practical matter, estimates as low as 4.63 percent have little, if any, practical meaning  
11 for the purpose of determining the Company's ROE, even if only used to assess the change  
12 in the ROE over time. Financial models must be applied giving due consideration to the  
13 reasonableness of the inputs, assumptions, and results.

14 **E. Authorized Returns**

15 **Q. DO YOU HAVE ANY OBSERVATIONS REGARDING THE AUTHORIZED**  
16 **RETURN DATA PRESENTED BY MR. CHARI?**

17 A. Although Mr. Chari does not provide any conclusions regarding the authorized return data  
18 presented on page 18 of the Staff Cost of Service Report, it is important to review that data  
19 in proper context. Average annual data obscures variation in returns and does not address  
20 the number of cases or the jurisdictions issuing orders within a given year. For example,  
21 one year may have fewer cases decided, and a relatively large portion of those cases  
22 decided by a single jurisdiction.

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<sup>72</sup> Based on the geometric MRP.



1 Mr. Chari only includes fully litigated rate cases in the average authorized returns  
2 he presents. Tables 3 and 4, below, show the number of natural gas and vertically  
3 integrated electric rate cases that were settled versus fully litigated (where an authorized  
4 return was disclosed), from 2015 through 2019.

5 **Table 3: Natural Gas Rate Cases<sup>73</sup>**

Year	Fully Litigated	Settled	Total
2015	5	11	16
2016	9	16	25
2017	6	17	23
2018	15	24	39
2019	5	15	20

6  
7 **Table 4: Vertically Integrated Electric Rate Cases<sup>74</sup>**

Year	Fully Litigated	Settled	Total
2015	13	4	17
2016	9	11	20
2017	8	20	28
2018	9	14	23
2019	6	13	19

8  
9 In 2015 and 2019 (through December 4) there were only five fully litigated rate  
10 cases for natural gas utilities, and in 2017 there were only six fully litigated rate cases. In  
11 2019 (through December 4) there were only six fully litigated rate cases for vertically  
12 integrated electric utilities and no more than nine in any year since 2015.

13 In addition, focusing solely on annual averages of authorized returns does not take  
14 into consideration the jurisdiction in which those returns were authorized. In the data  
15 presented by Mr. Chari, 2017 is the highest in terms of the average authorized ROE for

<sup>73</sup> Source: Regulatory Research Associates. Through December 4, 2019, consistent with data presented on page 18 of the Staff Cost of Service Report.

<sup>74</sup> Source: Regulatory Research Associates. Through December 4, 2019, consistent with data presented on page 18 of the Staff Cost of Service Report.

1 natural gas utilities. In 2017, of the six fully litigated authorized returns, two were in Above  
2 Average jurisdictions and another, ENSTAR Natural Gas in Alaska (which is considered a  
3 Below Average jurisdiction from an investor perspective), was authorized an 11.88 percent  
4 ROE. Interestingly, although there were 15 fully litigated rate cases for natural gas utilities  
5 in 2018, only one was in an Above Average jurisdiction. That is, given the small number  
6 of fully litigated cases in a given year, the jurisdiction in which returns are authorized can  
7 have a significant effect on the average result.

8 Further, although the 2019 average for electric utilities appears to be lower, that  
9 average is substantially biased by the 8.75 percent authorized return for Otter Tail Power  
10 in South Dakota. That return represents the lowest authorized return for a vertically  
11 integrated electric utility in at least the last 40 years.<sup>75</sup>

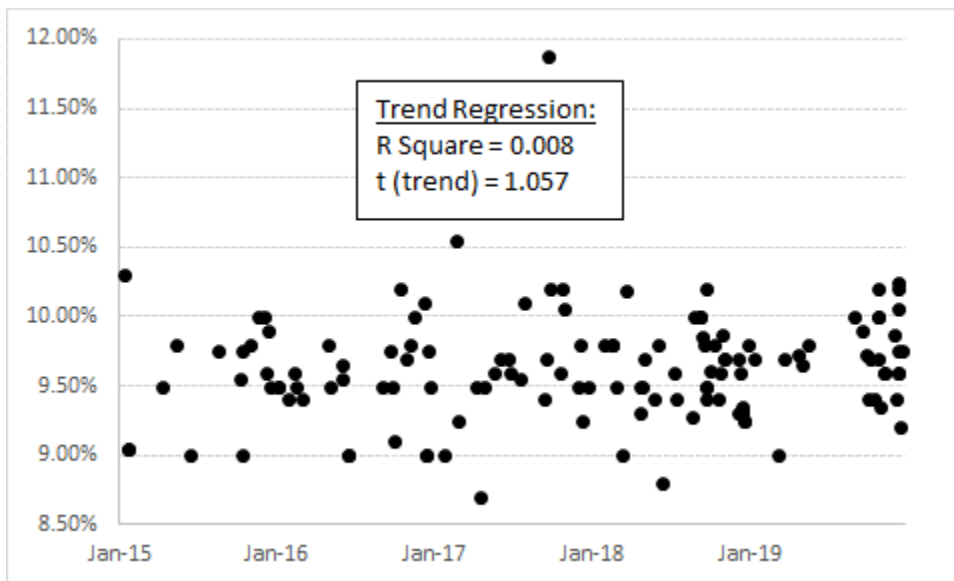
12 It is difficult to draw any conclusions regarding trends in authorized returns based  
13 on so few observations and on a simple review of annual averages. However, as shown in  
14 Charts 4 and 5, if all authorized ROEs (including both fully litigated and settled) are charted  
15 (rather than the simple average), there has been no meaningful trend since 2015; time  
16 explains no more than 1.00 percent of the change in ROEs, and the trend is statistically  
17 insignificant.

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<sup>75</sup> Source: Regulatory Research Associates.

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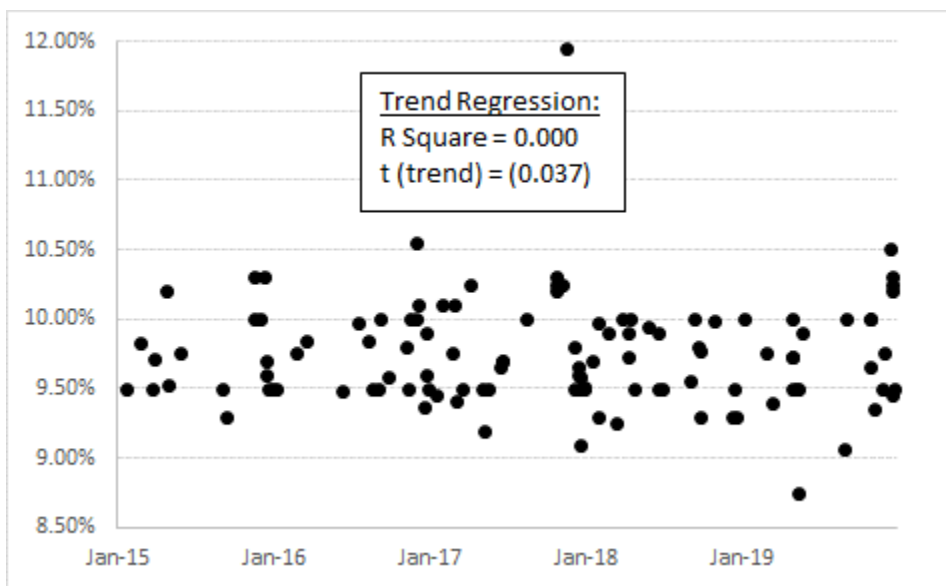
**Chart 4: Natural Gas Authorized Returns (2015-2020)<sup>76</sup>**



2

3

**Chart 5: Vertically Integrated Electric Authorized Returns (2015-2020)<sup>77</sup>**



4

5

<sup>76</sup> Source: Regulatory Research Associates.

<sup>77</sup> Source: Regulatory Research Associates.

1 **Q. DO YOU HAVE ANY OBSERVATIONS REGARDING THE 8.75 PERCENT ROE**  
2 **AUTHORIZED TO OTTER TAIL POWER?**

3 A. Yes, as note earlier the lowest authorized ROE for a vertically integrated electric utility  
4 (8.75 percent) was authorized to Otter Tail Power by the South Dakota Public Utilities  
5 Commission (“SDPUC”) on May 30, 2019.<sup>78</sup> In considering the effect of that order, there  
6 are several points to keep in mind. First, South Dakota represents 10.00 percent of Otter  
7 Tail Corporation’s (“OTTR”) retail electric revenues.<sup>79</sup> Yet, from May 6 to May 31, 2019,  
8 OTTR lost about 5.20 percent of its market value, even though the Dow Jones Utility  
9 Average gained about 1.00 percent.<sup>80</sup> I recognize that is a limited observation, but still, it  
10 appears OTTR meaningfully underperformed the utility sector around the time the SDPUC  
11 issued its order. My view that the SDPUC’s order was anomalously low relative to returns  
12 authorized in other jurisdictions seems to be consistent with OTTR’s price behavior.

13 **Q. EARLIER, YOU DISCUSSED THE EFFECT THE PUCT’S DELIBERATIONS IN**  
14 **CENTERPOINT ENERGY HOUSTON ELECTRIC’S RATE CASE HAD ON**  
15 **CENTERPOINT ENERGY’S STOCK PRICE. CONSIDERING BOTH THE**  
16 **OTTER TAIL POWER AND CENTERPOINT CASES, ARE THERE**  
17 **CONCLUSIONS TO BE DRAWN FROM THEM?**

18 A. Yes, there are. In the case of Otter Tail Power, it appears the market reacted adversely to  
19 an unfavorable regulatory decision, even though the operations affected by that decision  
20 represented only a small portion of the company’s consolidated operations. The case of

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<sup>78</sup> Public Utilities Commission of the State of South Dakota, In the Matter of the Application of Otter Tail Power Company Fore Authority to Increase its Electric Rates, Final Decision and Order; Notice of Entry, Docket No. EL18-021, May 30, 2019.

<sup>79</sup> Otter Tail Corporation, SEC Form 10-K for the fiscal year ended December 31, 2019, at 5.

<sup>80</sup> Source: Yahoo! Finance.

1 CenterPoint Energy is very clear. There, CenterPoint Energy Houston Electric represents  
2 about 45.00 percent of the company's combined net income.<sup>81</sup> In this proceeding, Liberty-  
3 Empire's Missouri electric operations are significant, representing about 37.00 percent of  
4 Liberty Utilities' planned capital investment through 2024.<sup>82</sup>

5 In my view, if the Commission were to adopt Mr. Chari's recommendation, the  
6 financial community's reaction would be adverse. An adverse reaction, whether  
7 manifested negative credit actions, or simply the perception on the part of investors and  
8 analysts that the regulatory environment has deteriorated, would impede the Company's  
9 ability to raise capital at reasonable costs.

10 Because utilities such as Liberty-Empire invest in long-lived assets, the stability,  
11 predictability, and supportiveness of the regulatory environment is a key concern to  
12 investors. As noted in my response to Mr. Murray (below), Moody's applies 50.00 percent  
13 weight to factors relating to the regulatory environment. Because equity investors do not  
14 have the same level of protections given debt investors, regulatory supportiveness and  
15 consistency is a significant concern. That concern is especially acute during periods of  
16 heightened market instability when utility stocks, like all stocks, are susceptible to  
17 devaluation. In the course of one week, from February 21, 2020 to February 28, 2020 the  
18 Dow Jones Utility Average lost about 11.50 percent, the same loss experienced by the S&P  
19 500.<sup>83</sup>

20 To summarize, we have seen the financial community react negatively to adverse  
21 regulatory decisions. A consequence of those reactions is a diminished ability to compete

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<sup>81</sup> CenterPoint Energy, Inc. SEC Form 10- for the fiscal year ended December 31, 2019, at 61, 63.

<sup>82</sup> Algonquin Power & Utilities Corporation, Investor Day Presentation, December 6, 2019, at A-1.

<sup>83</sup> Source: S&P Capital IQ.

1 for capital, and an increase in the cost of capital, to the detriment of customers. If Mr.  
2 Chari's ROE recommendation, which is far removed from the returns available to other  
3 utilities were to be adopted, the eventual result would be an increase in the Company's cost  
4 of capital.

5 **III. RESPONSE TO TESTIMONY OF OPC WITNESS MURRAY**

6 **Q. PLEASE BRIEFLY SUMMARIZE MR. MURRAY'S RECOMMENDATION**  
7 **REGARDING THE COMPANY'S COST OF EQUITY.**

8 A. Mr. Murray recommends an ROE of 9.25 percent, within a range of 8.50 percent to 9.25  
9 percent, assuming a common equity ratio of 46.00 percent.<sup>84</sup> Mr. Murray estimates the  
10 ROE using the Multi-Stage DCF model and the CAPM.<sup>85</sup> He also reviews his "rule of  
11 thumb" method, and his Constant Growth DCF analysis, as checks on the reasonableness  
12 of his ROE recommendation.<sup>86</sup>

13 **A. Multi-Stage Discounted Cash Flow Model**

14 **Q. PLEASE DESCRIBE MR. MURRAY'S MULTI-STAGE DCF MODEL.**

15 A. Mr. Murray's Multi-Stage DCF analysis includes three stages, the first two of which  
16 include five-year horizons, while the third assumes cash flows in perpetuity. In the first  
17 stage, he relies on estimates of cash flow (where available), an estimated dividend payout  
18 ratio, and analysts' growth projections. The second stage assumes a linear transition from  
19 analysts' growth projections to a 2.85 percent growth rate and an industry payout ratio of  
20 70.00 percent.<sup>87</sup> Since his final stage assumes his long-term growth rate will remain

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<sup>84</sup> Direct Testimony of David Murray, at 2.

<sup>85</sup> *Ibid.*, at 19.

<sup>86</sup> *Ibid.*

<sup>87</sup> *Ibid.*, at 35, Schedule DM-D-6.

1 constant in perpetuity, it essentially is equivalent to the “Gordon Growth” form of the  
2 Constant Growth DCF model. The “Gordon Growth” model represents the “terminal  
3 value,” or the expected price at which the stock may be sold at the end of the forecast  
4 horizon. Mr. Murray’s Multi-Stage DCF analysis produces average ROE estimates  
5 between 6.47 percent to 7.22 percent based on the nine proxy groups he presents.<sup>88</sup>

6 Mr. Murray also presents a Multi-Stage DCF analysis based on the same approach  
7 he used in prior rate cases.<sup>89</sup> That model also includes three stages but assumes a constant  
8 payout ratio. The first stage relies on analyst growth rates, and the second stage assumes  
9 a linear transition to a 3.00 percent third stage growth rate.<sup>90</sup>

10 **Q. HOW DID MR. MURRAY DEVELOP THE TERMINAL GROWTH ESTIMATES?**

11 A. Mr. Murray’s Schedule DM-D-6 estimates his 2.85 percent terminal growth rate based on  
12 the sustainable growth rate, calculated as the product of an assumed ROE of 9.50 percent  
13 and a 30.00 retention ratio.<sup>91</sup>

14 Mr. Murray does not explain how he determined 3.00 percent is an appropriate  
15 terminal growth rate in his Multi-Stage DCF analysis based on the approach he relied on  
16 in prior rate cases,<sup>92</sup> other than to note that he believes sustainable growth rates are in the  
17 2.00 percent to 3.00 percent range.<sup>93</sup>

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<sup>88</sup> *Ibid.*, Schedule DM-D-6.

<sup>89</sup> *Ibid.*, at 35.

<sup>90</sup> *Ibid.*, Schedule DM-D-6.

<sup>91</sup> *Ibid.*, at 35.

<sup>92</sup> *Ibid.*, Schedule DM-D-6.

<sup>93</sup> *Ibid.*, at 35.

1 **Q. DOES MR. MURRAY PROVIDE SUPPORT FOR A SUSTAINABLE GROWTH**  
2 **RATE OF APPROXIMATELY 2.00 PERCENT TO 3.00 PERCENT?**

3 A. Mr. Murray refers to analyses of historical industry growth based on the Moody's electric  
4 utility index, and historical growth for a sample group of electric utility companies based  
5 on Value Line data, and equity analyst reports.<sup>94</sup>

6 **Q. DO YOU HAVE ANY CONCERNS WITH MR. MURRAY'S ANALYSES?**

7 A. Yes, I do. First, Mr. Murray's analyses of historical growth do not include data from the  
8 past 20 years. His analysis of growth rates associated with the Moody's electric utility  
9 index is based on the period 1947 through 2000, and his analysis of growth rates associated  
10 with Value Line electric utilities is based on the period 1968 through 1999.<sup>95</sup> That is, Mr.  
11 Murray's approach assumes electric utility growth rates over the subsequent 20-year period  
12 are not relevant to a sustainable growth rate, which he assumes will be applied in  
13 perpetuity, starting in 2029.

14 Further, to calculate the long-term historical growth rate based on the Moody's  
15 electric utility index, Mr. Murray reviews the geometric mean of dividends, earnings, and  
16 book value. As discussed in my response to Mr. Chari, the geometric mean is a backward-  
17 looking calculation that equates a beginning value to an ending value over a specific period.  
18 Because the geometric mean does not consider uncertainty, as the arithmetic mean does, it  
19 is inappropriate for use in estimating a long-term sustainable growth.

20 The geometric mean also can be sensitive to the beginning and ending year chosen.  
21 For example, based on the data provided by Mr. Murray (see Chart 6, below), in 1999 the

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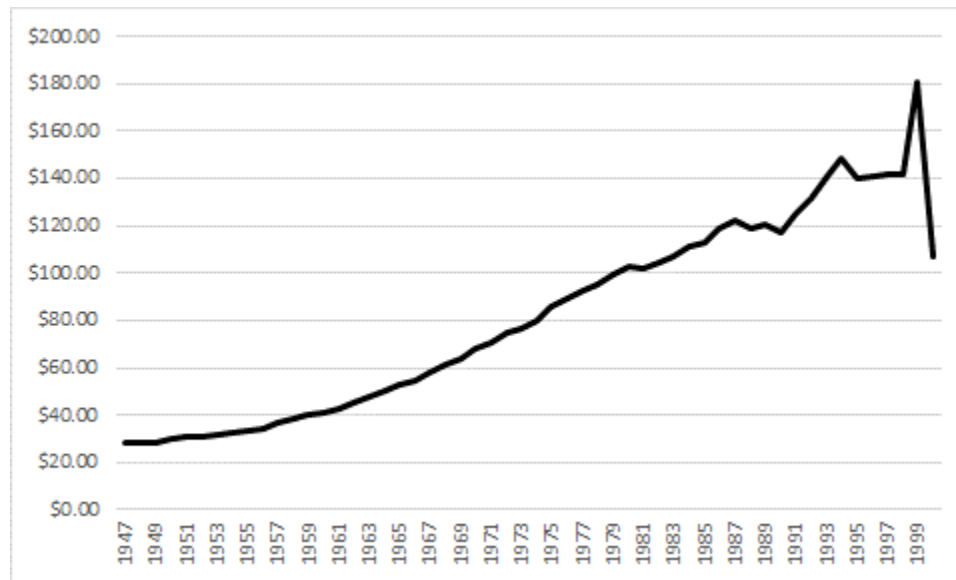
<sup>94</sup> *Ibid.*, at 32.

<sup>95</sup> *See*, Mr. Murray's response to Liberty-Empire's First Data Request 1.a and 2.a.



1 book value of the Moody's electric utility index increased approximately 28.00 percent in  
2 1999 and then decreased almost 41.00 percent in 2000. Mr. Murray's calculated geometric  
3 mean growth rate of 2.57 percent was based on the ending year 2000.<sup>96</sup> Had his analysis  
4 ended only one year early in 1999, the geometric mean growth rate would have been 3.66  
5 percent, 109 basis points higher.

6 **Chart 6: Moody's Electric Utility Index Book Value 1947-2000<sup>97</sup>**



7  
8 Similarly, had Mr. Murray considered an ending year of 1999, instead of 2000, his  
9 calculated growth rate in earnings would be 3.02 percent instead of 1.66 percent. Mr.  
10 Murray also reports the average of the rolling ten-year average dividends, earnings, and  
11 book value compound growth rates to be 3.74 percent, 3.18 percent, and 3.63 percent,  
12 respectively. Each result is above Mr. Murray's assumed range of sustainable growth rates.

<sup>96</sup> See, attachment "2.b. Moody's Utility Index Data.xls" to Mr. Murray's response to Liberty-Empire First Data Request 2.b.

<sup>97</sup> Source: Attachment "1.a. Moody's Utility Index Data.xls" to Mr. Murray's response to Liberty-Empire's First Data Request 1.a.

1           Given the arbitrary nature of the analysis and the period chosen by Mr. Murray, his  
2 review of calculated historical growth rates based on Moody's Utility Index data does not  
3 provide support for his assertion that the long-term sustainable growth rate is in the 2.00  
4 percent to 3.00 percent range.

5 **Q. DO YOU HAVE ANY CONCERNS WITH MR. MURRAY'S ANALYSIS OF**  
6 **HISTORICAL VALUE LINE GROWTH RATES?**

7 A. Yes, Mr. Murray's analysis of historical growth rates from Value Line is similarly  
8 outdated; of the ten companies in his historical analysis, only two remain as publicly traded  
9 entities. In addition, Mr. Murray calculates the average of the rolling ten-year average  
10 DPS, EPS, and BVPS, reporting those results as 3.99 percent, 3.62 percent, and 3.18  
11 percent.<sup>98</sup> Although I do not agree those are reasonable estimates of long-term growth, it  
12 is unclear how they support Mr. Murray's assertion that the long-term growth rate is  
13 between 2.00 percent and 3.00 percent.

14 **Q. DO YOU AGREE WITH MR. MURRAY'S ESTIMATE OF LONG-TERM**  
15 **GROWTH?**

16 A. No, I do not. The terminal growth rate is intended to reflect expected growth in perpetuity.  
17 By assuming a long-term growth rate in the range of 2.85 to 3.00 percent, Mr. Murray has  
18 assumed the "sustainable growth rate" is lower than all but three of the five-year consensus  
19 growth rates for the 39 companies in his broad proxy group.

20           Further, although I recognize the *Blue Chip Financial Forecast* long-range  
21 consensus estimates end in 2030, based on those estimates the Consumer Price Index is

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<sup>98</sup> See, Mr. Murray's response to Liberty-Missouri's First Data Request 2.a.

1 expected to be between 2.10 and 2.20 percent over the next ten years.<sup>99</sup> That is, a terminal  
2 growth rate of 3.00 percent is less than 100 basis points above the expected rate of  
3 inflation.<sup>100</sup> Under that assumption, utility stocks would provide a dividend yield and a  
4 measure of protection against inflation, but little more than that. At the same time,  
5 investors would remain exposed to the risk of capital losses associated with equity  
6 ownership. Because other investments, such as Treasury Inflation Protected Securities  
7 provide inflation protection and carry a minimal risk of capital loss (if held to maturity),  
8 Mr. Murray's position assumes that investors would require the difference in yields as  
9 compensation for the additional risk of capital loss, as well as minimal additional growth,  
10 an unreasonable and unsupported assumption.

11 If Mr. Murray is correct that expected long-term growth is only somewhat greater  
12 than expected inflation, electric utilities would offer investors little prospects for real  
13 capital appreciation or dividend growth. Under that scenario, the industry would not be  
14 able to attract equity capital at reasonable terms, and would not be able to generate the cash  
15 flow needed to maintain appropriate credit metrics, or the liquidity needed to fund day-to-  
16 day operations. Utilities then would fund increasing amounts of capital investments with  
17 long-term debt. That scenario suggests a downward spiral in which leverage increases,  
18 creditworthiness decreases, and access to both debt and equity becomes increasingly  
19 constrained. In the long run, utilities would not be able to fund the investments needed to  
20 provide safe and reliable service in an efficient and cost-effective manner.

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<sup>99</sup> Source: *Blue Chip Financial Forecast*, Vol. 38, No. 12, December 1, 2019, at 14.

<sup>100</sup> Or only 50 basis points based on Mr. Murray's stated 2.70 percent terminal growth rate.

1           In short, Mr. Murray has not meaningfully supported his assumption that investors  
2 would expect significantly lower growth rates in perpetuity, despite that assumption's  
3 significant effect on the model's result.

4 **Q. DO YOU HAVE ANY OTHER CONCERNS WITH MR. MURRAY'S ASSUMED**  
5 **TERMINAL GROWTH RATE?**

6 A. Yes, I disagree with Mr. Murray's assumption that the historical payout ratios have been  
7 70.00 percent. As shown in Schedule RBH-R10, since 1990 utilities have averaged a  
8 payout ratio closer to 65.00 percent.<sup>101</sup> Had Mr. Murray assumed a 35.00 percent retention  
9 ratio,<sup>102</sup> the terminal growth rate would increase from 2.85 percent to 3.33 percent.  
10 Although I continue to believe 3.33 percent is unreasonably low, that change illustrates  
11 how Mr. Murray's subjective assumptions may affect his analysis.

12 **Q. DO YOU AGREE WITH MR. MURRAY'S SPECIFICATION OF THE**  
13 **SUSTAINABLE GROWTH RATE?**

14 A. No, I do not. The basic form of the model assumes growth is the product of (1) expected  
15 earnings ("R"), and (2) the extent to which it retains earnings to invest in the enterprise (the  
16 "retention ratio", or "B"). Mr. Murray relies on that basic form, which defines growth  
17 solely as a function of internally generated funds.

18           Although I do not believe it is appropriate to use "sustainable growth" as a measure  
19 of terminal growth, the more complete form should be used. That structure, sometimes

---

<sup>101</sup> As noted in his response to Liberty-Empire First Data Request 3.a, Mr. Murray stated that in determining the electric utility payout ratios are approximately 70.00 percent he reviewed historical payout ratios. However, his analysis covered the period 1968 through 1999, whereas my analysis included the period 1990 through 2018. Mr. Murray also calculated the payout ratio for the Moody's electric utility index over the period 1947 through 1999. Again, a period that ended approximately 20 years ago.

<sup>102</sup>  $0.35 = 1.00 - 0.65$ .

1 referred to as “BR + SV” form, models growth from internally generated funds (i.e., the  
2 “BR” term) and issuances of equity (i.e., the “SV” term). As noted above, the “BR” term  
3 represents growth from retained earnings. The “SV” term is represented as:

$$\left(\frac{m}{b} - 1\right) \times \text{Common shares growth rate [3]}$$

4 where:

$$\left(\frac{m}{b}\right) = \text{the Market – to – Book ratio.}$$

6 The “SV” term models an additional element of growth resulting from the issuance of  
7 shares at a price above book value.  
8

9 **Q. ARE THERE ANY OTHER METHODS FOR ESTIMATING THE TERMINAL**  
10 **GROWTH RATE IN A MULTI-STAGE DCF MODEL?**

11 A. Yes, there are. For example, a brief survey of finance texts demonstrates that the use of  
12 long-term GDP growth is a reasonable estimate for the terminal period. For example, Dr.  
13 Roger Morin notes that “[i]t is useful to remember that eventually all company growth  
14 rates, especially utility services growth rates, converge to a level consistent with the growth  
15 rate of the aggregate economy.”<sup>103</sup> Similarly, Morningstar describes a Multi-Stage DCF  
16 model in which the terminal growth rate is based on the long-term historical growth in real  
17 GDP and the rate of inflation.<sup>104</sup> As shown in Schedule RBH-R11, had Mr. Murray relied  
18 on the method described by Morningstar, the long-term growth rate would be 5.09 percent.  
19 As shown in Schedule RBH-R12, making that change increases Mr. Murray’s Multi-Stage  
20 DCF results by approximately 180 basis points. Although still unreasonably low (all  
21 results, except the average of all companies in Mr. Murray’s universe of companies and

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<sup>103</sup> Roger A. Morin, New Regulatory Finance, at 308 (2006).

<sup>104</sup> See, Morningstar, Inc., Ibbotson Stocks, Bonds, Bills and Inflation 2013 Valuation Yearbook, at 52.

1 Mr. Murray's group "Average Regulated EEI", are below the lowest authorized ROE for a  
2 vertically integrated electric utility since at least 1980), they are significantly higher than  
3 Mr. Murray's unreasonably low results. The point simply is that the terminal growth rate  
4 has a significant effect on the model's results, and Mr. Murray's assumption tends to  
5 produce unreasonably low estimates of the Company's Cost of Equity.

6 **Q. HAVE YOU ASSESSED THE REASONABLENESS OF MR. MURRAY'S**  
7 **TERMINAL GROWTH ESTIMATE?**

8 A. Yes, I have. As Mr. Murray noted in Docket No. ER-2014-0258, "[c]ost of equity estimates  
9 using multi-stage DCF methodologies are **extremely sensitive** to the assumed perpetual  
10 growth rate."<sup>105</sup> That sensitivity is due to the fact that the long-term growth rate used in  
11 the DCF model extends indefinitely into the future. It is an important parameter,  
12 accounting for approximately 73.00 percent of the model's results.<sup>106</sup>

13 Because they are perpetual, terminal growth rates that substantially deviate from  
14 the long-term historical average should be viewed with considerable caution. That is the  
15 case with Mr. Murray's estimates. As a point of reference, the long-term compound  
16 average GDP growth rate has been 6.09 percent, approximately 310 to 325 basis points  
17 above Mr. Murray's estimate.<sup>107</sup>

18 To assess the terminal growth rates used in Mr. Murray's Multi-Stage DCF  
19 analyses, I calculated the average five-year annual growth rates from 1929 to 2019. I then  
20 arranged that data in histograms to provide a perspective of how frequently various levels  
21 of growth have occurred. As Chart 7 demonstrates, average annual growth as low as 2.85

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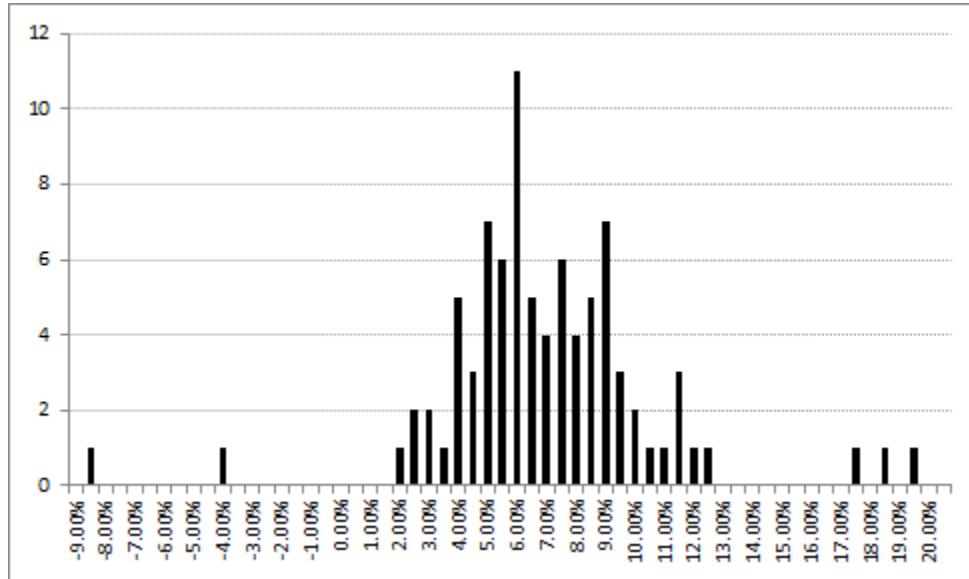
<sup>105</sup> Staff Revenue Requirement Cost of Service Report, Docket No. ER-2014-0258, at 33 (original emphasis).

<sup>106</sup> Schedule RBH-R13.

<sup>107</sup> Source: Bureau of Economic Analysis.

1 percent and 3.00 percent have been observed very infrequently. In fact, average annual  
2 growth *exceeded* 3.00 percent in 79 of 86 five-year periods.

3 **Chart 7: Average Annual GDP Growth Measured Over Five-Year Periods<sup>108</sup>**



4  
5 **Q. WHAT ARE YOUR CONCLUSIONS RELATED TO MR. MURRAY'S MULTI-**  
6 **STAGE DCF MODEL?**

7 A. Mr. Murray's extremely low estimate of the terminal growth rate is inconsistent with  
8 market data and results in estimates that are unreasonably low. As such, Mr. Murray's  
9 application of the Multi-Stage DCF model should be given no weight in estimating the  
10 Company's ROE.

11 **B. Capital Asset Pricing Model**

12 **Q. PLEASE BRIEFLY DESCRIBE MR. MURRAY'S CAPM ANALYSES.**

13 A. Mr. Murray presents three CAPM analyses based on various estimates of the risk-free rate  
14 and MRP. His first CAPM analysis assumes a risk-free rate of 2.10 percent, based on a

---

<sup>108</sup> *Ibid.*

1 20-year Treasury yield, average calculated five-year Beta coefficients of 0.542 to 0.577  
2 based on five proxy groups, and an historical MRP estimate of 6.00 percent.<sup>109</sup> Based on  
3 those inputs, Mr. Murray's CAPM calculations produce Cost of Equity estimates of 5.35  
4 percent to 5.56 percent.<sup>110</sup> His second CAPM analysis relies on the same approach, but he  
5 relies on the 30-year Treasury yield (instead of the 20-year Treasury yield) of 2.26  
6 percent.<sup>111</sup> Those results range from 5.51 percent to 5.72 percent.<sup>112</sup>

7 Mr. Murray's third approach assumes the same Beta coefficients, but relies on the  
8 normalized risk-free rate (3.00 percent) and MRP (5.50 percent) from Duff & Phelps.<sup>113</sup>  
9 Those results range from 5.98 percent to 6.17 percent.<sup>114</sup>

10 **Q. WHAT IS YOUR POSITION AS TO THE APPROPRIATE RISK-FREE RATE?**

11 A. I disagree with Mr. Murray's use of the 20-year Treasury yield and continue to support use  
12 of the 30-year Treasury yield. As stated in my Direct Testimony, utility assets represent  
13 long-term investments.<sup>115</sup> Therefore, the maturity of the risk-free security should  
14 approximate the life, or duration, of the underlying investment. Moreover, equity  
15 ownership represents a perpetual claim on the subject company's cash flows.<sup>116</sup> Because  
16 the 30-year Treasury bond is the longest duration risk-free security, it most closely matches  
17 the horizon of equity and, therefore, is the appropriate security for the CAPM. As noted  
18 by Morningstar:

19 The traditional thinking regarding the time horizon of the chosen Treasury  
20 security is that it should match the time horizon of whatever is being valued.

---

<sup>109</sup> Direct Testimony of David Murray, Schedule DM-D-7.

<sup>110</sup> *Ibid.*

<sup>111</sup> *Ibid.*, Schedule DM-D-8.

<sup>112</sup> *Ibid.*

<sup>113</sup> *Ibid.*, Schedule DM-D-9.

<sup>114</sup> *Ibid.*

<sup>115</sup> Direct Testimony of Robert B. Hevert, at 55.

<sup>116</sup> The Constant Growth DCF model, for example, reflects the perpetual nature of equity investments.



1 When valuing a business that is being treated as a going concern, the  
2 appropriate Treasury yield should be that of a long-term Treasury bond.  
3 Note that the horizon is a function of the investment, not the investor. If an  
4 investor plans to hold stock in a company for only five years, the yield on a  
5 five-year Treasury note would not be appropriate since the company will  
6 continue to exist beyond those five years.<sup>117</sup>

7 The Chartered Financial Analyst program also notes the risk-free rate used in the  
8 CAPM should match the timing of the expected asset's cash flows:

9 A risk-free asset is defined here as an asset that has no default risk. A  
10 common proxy for the risk-free rate is the yield on a default-free  
11 government debt instrument. In general, the selection of the appropriate  
12 risk-free rate should be guided by the duration of projected cash flows. If  
13 we are evaluating a project with an estimated useful life of 10 years, we may  
14 want to use the rate on the 10-year Treasury bond.<sup>118</sup>

15 Pratt and Grabowski likewise recommend matching the horizon of the investment  
16 with the maturity of the risk-free security: "In theory, when determining the risk-free rate  
17 and the matching ERP [Equity Risk Premium] you should be matching the risk-free  
18 security and the ERP with the period in which the investment cash flows are expected."<sup>119</sup>

19 If interest rate risk is a concern, the shortest-term Treasury bill should be used as  
20 the risk-free rate, but Mr. Murray rightly has not recommended that approach. The  
21 appropriate approach is to recognize that the term of the risk-free security should match  
22 the life of the asset being financed which, in this case, is the common equity of electric  
23 utility companies. Because common equity is perpetual, the appropriate security is the  
24 longest-lived (i.e., 30-year) Treasury bond.

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<sup>117</sup> Morningstar, Inc., 2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook, at 44.

<sup>118</sup> 2011 CFA Curriculum Level I, Volume 4 at 52.

<sup>119</sup> Shannon Pratt and Roger Grabowski, Cost of Capital: Applications and Examples, 3rd Ed. (Hoboken, NJ: John Wiley & Sons, Inc., 2008) at 92. "ERP" is the Equity Risk Premium. [clarification added]

1 **Q. HOW DID MR. MURRAY CALCULATE HIS MRP ESTIMATES?**

2 A. Mr. Murray reviews MRPs from Duff & Phelps' 2019 Valuation Handbook, Bank of  
3 America Merrill Lynch, and a survey from the Philadelphia Federal Reserve, concluding  
4 that a 6.00 percent MRP is reasonable.<sup>120</sup> As noted above, Mr. Murray relied on estimates  
5 of the MRP from Duff & Phelps.

6 **Q. DO YOU AGREE WITH MR. MURRAY'S ESTIMATE OF THE MRP?**

7 A. No, I do not. As to Mr. Murray's use of historical data, as discussed in my response to Mr.  
8 Chari, the MRP is meant to be forward-looking. Simply relying on the historical MRP  
9 may produce results that are inconsistent with investor sentiment and current conditions in  
10 capital markets.

11 Regarding Mr. Murray's position that expected market returns "are as low as in the  
12 5% to 6% range,"<sup>121</sup> as reported by the Federal Bank of Philadelphia, looking to the Federal  
13 Bank of Philadelphia's First Quarter 2019 survey, only 16 of 38 participants responded to  
14 the question regarding the expected return for the S&P 500 over the next ten years.<sup>122</sup>

15 Further, Mr. Murray's estimate of the MRP (i.e., 6.00 percent) implies a market  
16 return of 8.26 percent (assuming Mr. Murray's 2.26 percent risk-free rate). That return,  
17 which is for the overall market, is lower than Liberty-Empire's currently authorized return,  
18 my recommended return and the recommended returns of the Opposing ROE Witnesses,  
19 and the lowest authorized return for a vertically integrated electric utility since at least  
20 1980. Because utilities generally are viewed as less risky than the market, I do not agree  
21 that an expected market return of 8.26 percent is reasonable.

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<sup>120</sup> Direct Testimony of David Murray, at 38-39.

<sup>121</sup> *Ibid.*, at 38.

<sup>122</sup> *See*, Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters, First Quarter of 2019 at 19.

1 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING MR. MURRAY'S CAPM**  
2 **ANALYSIS?**

3 A. As a practical matter, estimates as low as 5.35 percent have little, if any, practical meaning  
4 for the purpose of determining the Company's ROE. Mr. Murray's view that his 5.35  
5 percent to 6.17 percent CAPM results have any analytical meaning is misplaced on its face.  
6 Equally important, Mr. Murray's position demonstrates the difficulty in applying financial  
7 models without giving due consideration to the reasonableness of the inputs, assumptions,  
8 and results.

9 **C. "Rule of Thumb" Calculation**

10 **Q. PLEASE BRIEFLY SUMMARIZE MR. MURRAY'S "RULE OF THUMB"**  
11 **CALCULATION.**

12 A. Mr. Murray's calculation adds "a 3% risk premium to recent average BBB rated and 'A'-  
13 rated utility bond yields of 3.4% to 3.75%."<sup>123</sup> Based on that approach, Mr. Murray  
14 presents an ROE estimate of 6.40 percent to 6.75 percent.<sup>124</sup>

15 **Q. ARE MR. MURRAY'S CONCLUSIONS VALID?**

16 A. No, his "rule of thumb" approach ignores the finding that the Equity Risk Premium is  
17 inversely related to interest rates. That relationship, which was demonstrated with respect  
18 to long-term Treasury yields in my Direct Testimony,<sup>125</sup> and is consistent with published

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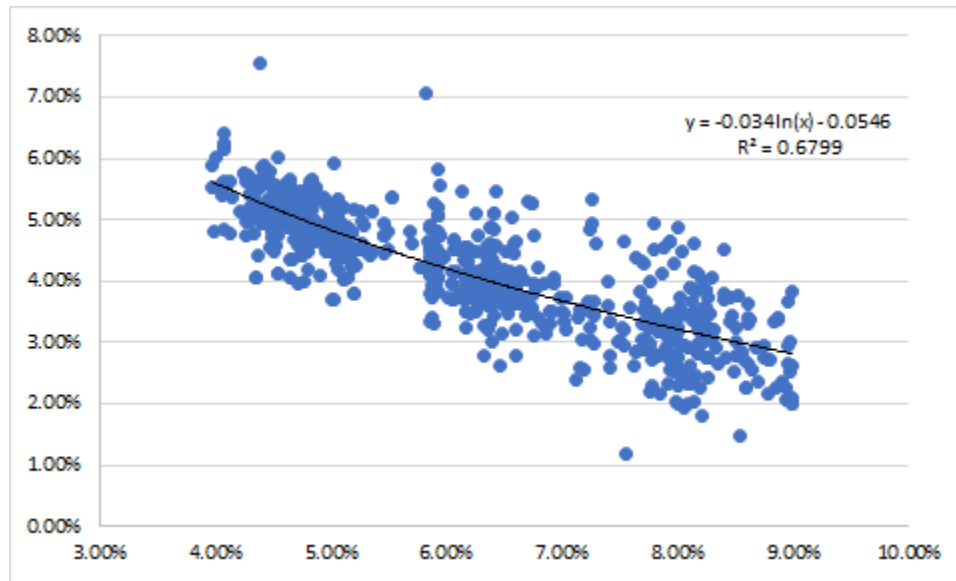
<sup>123</sup> Direct Testimony of David Murray, at 40.

<sup>124</sup> *Ibid.*

<sup>125</sup> Direct Testimony of Robert B. Hevert at 63.

1 research,<sup>126</sup> also applies to utility bond yields. As Chart 8 (below), demonstrates, there is  
2 a significant, negative relationship between the Moody's Baa Utility Bond Index yield and  
3 the Equity Risk Premium (defined by reference to authorized ROEs).

4 **Chart 8: Equity Risk Premium vs. Moody's Utility Baa Index Yield<sup>127</sup>**



5  
6 Applying the 30-day average Moody's utility bond yield of 3.64 percent to the  
7 regression equation provided in Chart 8 produces a Risk Premium estimate of  
8 approximately 5.92 percent, and an ROE of 9.56 percent, well above Mr. Murray's "rule  
9 of thumb" estimate.

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<sup>126</sup> See, Robert S. Harris and Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management at 63-70 (Summer 1992); Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management at 33-45 (Spring 1985); and Farris M. Maddox, Donna T. Pippert, and Rodney N. Sullivan, *An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry*, Financial Management at 89-95 (Autumn 1995).

<sup>127</sup> Source: S&P Global Market Intelligence.

1           **D.     Constant Growth Discounted Cash Flow Model**

2   **Q.     PLEASE BRIEFLY SUMMARIZE MR. MURRAY’S CONSTANT GROWTH DCF**  
3   **MODEL.**

4   A.     Mr. Murray performs his generic Constant Growth DCF analysis based on a dividend yield  
5           of 3.00 percent, and adds to that a 3.00 percent to 4.00 percent growth rate, which he bases  
6           on “long-term industry averages and economic logic.”<sup>128</sup>

7   **Q.     DO YOU HAVE ANY CONCERNS WITH MR. MURRAY’S CONSTANT**  
8   **GROWTH DISCOUNTED CASH FLOW MODEL?**

9   A.     Yes, I do. Mr. Murray does not perform his Constant Growth DCF analysis on a proxy  
10           group, as he does his Multi-Stage DCF and CAPM analyses. Rather, he applies the model  
11           based on what he believes to be utility industry dividend yields and growth rates. As noted  
12           in my Direct Testimony, the use of a proxy group is consistent with the economic principle  
13           of “opportunity costs”, which is fundamental to the Cost of Equity.<sup>129</sup> Further, because  
14           Mr. Murray’s Constant Growth DCF analysis is entirely subjective, it is impossible to  
15           recreate his analysis or to determine how new data may change the results. Although he  
16           recognized the importance of relying on a proxy group in his Multi-Stage DCF and CAPM  
17           analyses, Mr. Murray did not do so in his Constant Growth DCF analysis.

18           Moreover, Mr. Murray’s Constant Growth DCF analysis does not reflect company-  
19           specific dividend yields or growth factors - it relies on what he considers reasonable  
20           dividend yields and growth rates for the industry in general. That is, it does not consider  
21           the risks of the Company or similar companies (i.e., proxy companies).

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<sup>128</sup> Direct Testimony of David Murray, at 40.

<sup>129</sup> *Direct Testimony of Robert B. Hevert, at*

1 **Q. WHAT ARE YOUR CONCLUSIONS REGARDING MR. MURRAY'S**  
2 **CONSTANT GROWTH DCF MODEL?**

3 A. Because Mr. Murray's Constant Growth DCF model is based solely on his view of what a  
4 reasonable dividend yield and growth rate are for the utility industry in general, and does  
5 not consider company-specific factors, I do not believe the analysis has any meaningful  
6 value, and believe it should be disregarded.

7 **E. Financial Integrity and ROE Determinations**

8 **Q. DID MR. MURRAY QUANTIFY THE POTENTIAL EFFECT OF HIS ROE**  
9 **RECOMMENDATION ON LIBERTY-EMPIRE'S FINANCIAL INTEGRITY?**

10 A. Mr. Murray develops a *pro forma* analysis in which he considers Liberty-Empire's Funds  
11 from Operations ("FFO") to debt ratio assuming a 46.00 percent common equity ratio  
12 together with a 9.25 percent ROE.<sup>130</sup> Mr. Murray states those assumptions support an S&P  
13 credit rating of BBB for Liberty-Empire.<sup>131</sup>

14 **Q. DO YOU HAVE ANY GENERAL OBSERVATIONS REGARDING MR.**  
15 **MURRAY'S APPROACH TO ASSESSING HIS RECOMMENDATION BY**  
16 **REFERENCE TO *PRO FORMA* CREDIT METRICS?**

17 A. Yes, I do. It is helpful to review rating agencies' perspectives regarding their use of credit  
18 metrics in rating determinations. On November 30, 2007, S&P released a statement  
19 announcing that electric, gas, and water utility ratings would be "categorized under the  
20 business/financial risk matrix used by the Corporate Ratings group".<sup>132</sup> S&P also provided

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<sup>130</sup> Direct Testimony of David Murray, at 16-17.

<sup>131</sup> *Ibid.*

<sup>132</sup> Standard & Poor's Ratings Services, *U.S. Utilities Ratings Analysis Now Portrayed In The S&P Corporate Ratings Matrix*, Nov. 30, 2007, at 2.

1 matrices of business and financial risk, based on “Financial Risk Indicative Ratios”:  
2 FFO/Debt; FFO/Interest; and Total Debt/Capital. In that announcement, S&P noted:

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

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

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

17 Moreover, our assessment of financial risk is not as simplistic as looking  
18 at a few ratios.<sup>133</sup>

19 Later, on September 18, 2012, S&P further expanded its matrix, confirming “[s]till, it is  
20 essential to realize that the financial benchmarks are guidelines, neither gospel nor  
21 guarantees.”<sup>134</sup>

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

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<sup>133</sup> Standard & Poor’s Ratings Services, *Criteria Methodology: Business Risk/Financial Risk Matrix Expanded*, May 27, 2009.

<sup>134</sup> Standard & Poor’s Ratings Services, *Methodology: Business Risk/Financial Risk Matrix Expanded*, September 18, 2012.

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

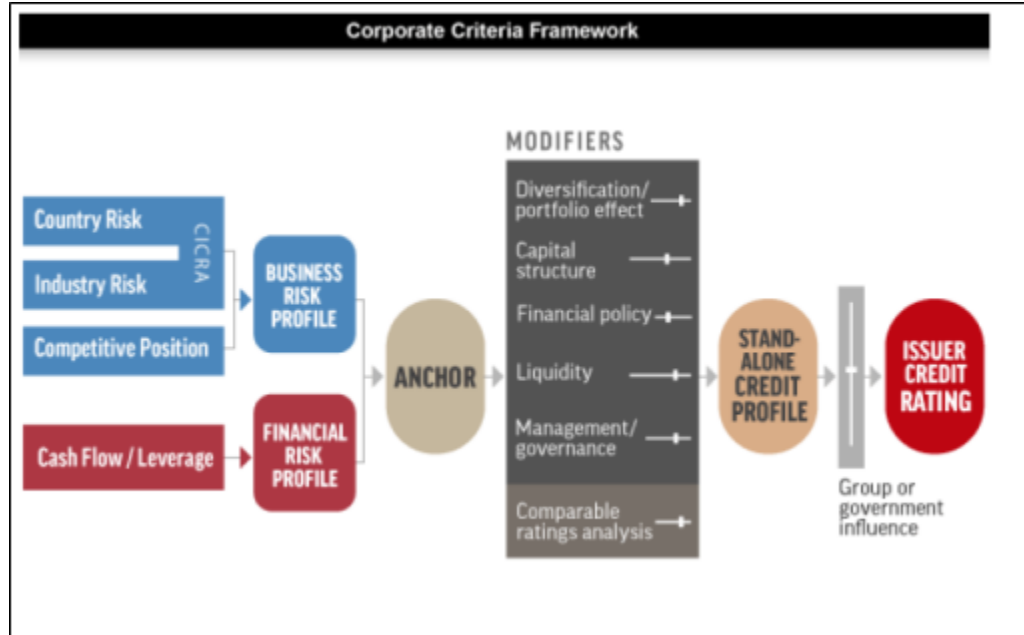
10 **Q. ARE CREDIT RATINGS DETERMINED LARGELY BY THE FFO/DEBT**  
11 **METRIC?**

12 A. No, they are not. S&P's ratings process considers a range of both quantitative and  
13 qualitative data. As Chart 9 (below) demonstrates, Cash Flow/Leverage considerations are  
14 but one element of a broad set of criteria. The FFO/debt metric therefore represent only a  
15 portion of the factors considered by S&P. Again, a *pro forma* assessment of certain ratios  
16 does not address the complex assessments considered by either debt or equity investors.



1

Chart 9: Standard & Poor's Corporate Criteria Framework<sup>135</sup>



2

3

S&P notes it is the regulatory regime which is one of the most important factors in

4

its bond/credit rating analyses. S&P states:

5

For a regulated utility company, the regulatory regime in which it operates will influence its performance in profound ways. As such, Standard & Poor's Ratings Services' regulatory advantage assessment - which informs both our business and financial risk scores - is one of the most important factors in our credit analysis of regulated utilities.<sup>136</sup>

6

7

8

9

10

Consequently, even if we were to assume credit determinations are distilled to Mr.

11

Murray's *pro forma* metrics, the actual assessment of those metrics is far more complex

12

than his analysis suggests.

<sup>135</sup> Standard & Poor's Ratings Services, *Corporate Methodology*, November 19, 2013, at 5.

<sup>136</sup> Standard & Poor's Ratings Services, *How Regulatory Advantage Scores Can Affect Ratings On Regulated Utilities*, April 23, 2015 at 2.

1 **Q. DOES MOODY’S CONSIDER SIMILAR FACTORS IN ITS RATINGS**  
2 **DETERMINATIONS?**

3 A. Yes, it does. Moody’s also considers a broad range of factors, many of which are  
4 qualitative in nature. Of the four general categories considered, the nature of regulation  
5 (including the Regulatory Framework, and the Ability to Recover Costs) accounts for about  
6 one-half of the weight Moody’s applies in its rating determinations. The financial metric  
7 calculated in Mr. Murray’s *pro forma* analysis, on the other hand, account for 15.00 percent  
8 of the weight applied (*see* Chart 10, below).

9 **Chart 10: Moody’s Rating Factors and Associated Weights<sup>137</sup>**

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%
Notching Adjustment			
Holding Company Structural Subordination			0 to -3
*10% weight for issuers that lack generation; **0% weight for issuers that lack generation			

10  
11 Moody’s ratings process is not mechanical and does not rely on *pro forma*  
12 assessments of financial metrics. As Moody’s explains, “...the four rating factors and the  
13 notching factor in the grid do not constitute an exhaustive treatment of all of the

<sup>137</sup> Moody’s Investors Service, *Rating Methodology, Regulated Electric and Gas Utilities*, June 23, 2017, at 4.

1 considerations that are important for ratings of companies in the regulated electric and gas  
2 utility sector.”<sup>138</sup> More generally, Moody’s notes that its rating grid:

3           ...provides summarized guidance for the factors that are generally most  
4 important in assigning ratings to companies in the regulated electric and  
5 gas utility industry. However, the grid is a summary that does not  
6 include every rating consideration. The weights shown for each factor  
7 in the grid represent an approximation of their importance for rating  
8 decisions but actual importance may vary substantially. In addition, the  
9 grid in this document uses historical results while ratings are based on  
10 our forward-looking expectations. As a result, the grid-indicated rating  
11 is not expected to match the actual rating of each company.<sup>139</sup>

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

15 **Q. DO YOU AGREE WITH MR. MURRAY THAT HIS ROE RECOMMENDATION**  
16 **IS HIGHER THAN LIBERTY-EMPIRE’S ACTUAL COST OF EQUITY, AND**  
17 **THAT IT IS COMMON PRACTICE FOR UTILITY COMMISSIONS TO SET THE**  
18 **AUTHORIZED ROE ABOVE THE ACTUAL COST OF EQUITY?**<sup>140</sup>

19 A. No, I do not. Mr. Murray argues his analysis suggests an ROE of 6.00 percent, but his  
20 recommendation considers capital market conditions, investor expectations, and recently  
21 authorized returns. He ultimately recommends an ROE of 9.25 percent.<sup>141</sup> Mr. Murray’s  
22 position, however, fails to recognize that regulatory commissions in other jurisdictions  
23 consider the same *Hope* and *Bluefield* standards he cites,<sup>142</sup> and base their decisions on the  
24 same type of market-based analyses that have been presented by the ROE witnesses in this

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<sup>138</sup> *Ibid.* at 24.

<sup>139</sup> *Ibid.*, at 1.

<sup>140</sup> Direct Testimony of David Murray, at 2.

<sup>141</sup> *Ibid.*, at 2, 4.

<sup>142</sup> *Ibid.*, at 17.

1 proceeding. The *Hope* and *Bluefield* standards require the authorized ROE to be  
2 comparable to the returns available from companies with similar business and financial  
3 risks. To that point, the Commission has determined that authorized ROEs in other  
4 jurisdictions are a relevant benchmark in developing a zone of reasonableness against  
5 which it may test the authorized ROE.<sup>143</sup>

6 **F. Capital Structure**

7 **Q. PLEASE BRIEFLY SUMMARIZE MR. MURRAY'S PROPOSED CAPITAL**  
8 **STRUCTURE.**

9 A. Mr. Murray recommends a capital structure including 46.00 percent common equity and  
10 54.00 percent long-term debt.<sup>144</sup> Mr. Murray's recommended capital structure considers  
11 the capital structure of Liberty-Empire's immediate parent company and the "amount of  
12 leverage APUC targets as reasonable for the lower business risk associated with LUCo's  
13 regulated utilities."<sup>145</sup>

14 **Q. WHAT FACTORS DO UTILITIES GENERALLY CONSIDER IN DEVELOPING**  
15 **THEIR TARGET CAPITAL STRUCTURES?**

16 A. Capital structure management is dynamic and complex, looking to satisfy multiple  
17 objectives subject to multiple constraints. Utilities must focus on the nature of the assets  
18 providing utility service, and recognize the constraints brought about by the obligation to  
19 serve. It therefore is important to understand utility financing practice, including the  
20 principles and constraints that drive financing decisions, and how that practice is reflected  
21 in the cost of capital.

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<sup>143</sup> See, for example, Report and Order, Case No. ER-2011-0028 at 67.

<sup>144</sup> Direct Testimony of David Murray, at 5.

<sup>145</sup> *Ibid.*

1           In many ways, the nature of regulation determines the nature of utility assets, and  
2           how they are financed. In exchange for the obligation to serve, equity investors expect  
3           utilities to have the opportunity to earn a fair return on prudent investments. As the  
4           regulated rate of return granted to utilities is below that expected from unregulated  
5           enterprises, the nature of regulation is such that the variation in returns (that is, the expected  
6           risk) for utilities is expected to be less than those of unregulated companies. It is the nature  
7           of regulation that enables utilities to finance large, essentially irreversible, investments that  
8           are recovered over decades. Financing practice therefore must address the nature of  
9           investments made under the regulatory compact.

10           It also is important to keep in mind that capital structures, and the financial strength  
11           they support, are set not only to ensure capital access during normal markets, but to enable  
12           access when markets are constrained. The reason is straightforward: the obligation to serve  
13           is not contingent on capital market conditions. When markets are constrained, only those  
14           utilities with sufficient financial strength are able to attract capital at reasonable terms.  
15           That ability provides those utilities with critically important financing flexibility.

16           The requirement to access the capital markets in all market conditions can be  
17           contrasted with the financial needs of other entities without the legal obligation to serve.  
18           Because of that obligation, the financial flexibility brought about by the access to both  
19           long-term capital and short-term liquidity is critical for utilities' financial integrity, and  
20           their ability to continually attract capital. Unregulated firms have options to choose  
21           whether, where, and when to make investments; what services or products will be offered;  
22           whether to invest in expansions; and whether to cease operations in a given location. That  
23           is, unregulated companies may adjust the timing and amount of their major capital

1 expenditures to align with economic cycles, and to defer decisions and investments to  
2 better match market conditions. Regulated companies have limited options to do so.  
3 Ensuring the financial strength to access capital because of the reduced spending flexibility  
4 therefore is critically important to utilities, their investors, and their customers.

5 As noted above, an appropriate capital structure is important not only to ensure  
6 long-term financial integrity, it also is critical to enabling access to capital during  
7 constrained markets, or when near-term liquidity is needed to fund extraordinary  
8 requirements. In that important respect, the capital structure, and the financial strength it  
9 engenders, must support both normal circumstances and periods of market uncertainty.  
10 Optimizing the capital structure therefore is a very complex process, which balances the  
11 need to maintain an appropriate financial profile while ensuring reasonable capital cost  
12 rates.

13 **Q. IS THERE A GENERAL FINANCING PRACTICE TYPICALLY USED BY**  
14 **UTILITIES?**

15 A. Yes, there is. As discussed in my Direct Testimony,<sup>146</sup> although capital structure  
16 optimization is complex, there are certain principles that commonly apply among utilities.  
17 In my experience, the financing practice sometimes referred to as “maturity matching” is  
18 chief among those principles. That practice aligns the average life of the securities in the  
19 capital structure with the average lives of the assets being financed.<sup>147</sup>

20 The perpetual nature of common equity makes it an important component of the  
21 capital structure. Because long-term debt generally has a duration shorter than the average

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<sup>146</sup> Direct Testimony of Robert B. Hevert, at 39-40.

<sup>147</sup> This is not to say that an individual dollar may be traced from its source to its use.

1 life of the rate base, common equity is needed to extend the capital structure's duration to  
2 more closely match that of the rate base. That is, owing to its perpetual life, common equity  
3 extends the weighted average life of the capital structure, and mitigates financing risk.  
4 Conversely, relying more heavily on debt increases the risk of refinancing maturing  
5 obligations during less accommodating market environments.

6 **Q. WHAT WOULD BE THE EFFECT OF INCREASING THE DEBT COMPONENT**  
7 **AND REDUCING THE COMMON EQUITY COMPONENT OF LIBERTY-**  
8 **EMPIRE'S CAPITAL STRUCTURE AS MR. MURRAY SUGGESTS?**

9 A. Lowering Liberty-Empire's equity ratio would put upward pressure on its cost of capital,  
10 to the long-term detriment of its customers. As noted earlier, rating agencies such as S&P  
11 consider the regulatory environment, including the extent to which the presiding regulatory  
12 commission is supportive of issues affecting credit quality, to be an important determinant  
13 of the subject company's credit profile. Based on criteria established by S&P, a company's  
14 credit rating is the result of the combination of the company's "Business Risk" rating and  
15 its "Financial Risk" rating. A decision by the Commission to increase Liberty-Empire's  
16 debt ratio (*i.e.*, increase Liberty-Empire's financial leverage) could adversely affect both  
17 the Company's Business Risk rating and investors' perception of the regulatory  
18 environment in Missouri.

19 In a similar fashion, Moody's considers the regulatory structure to be so important  
20 that 50.00 percent of the factors that weigh in a ratings determination are related to the

1 nature of regulation.<sup>148</sup> Among the factors considered by Moody's in assessing the  
2 regulatory framework are the predictability and consistency of regulatory actions:

3 As the revenues set by the regulator are a primary component of a utility's  
4 cash flow, the utility's ability to obtain predictable and supportive treatment  
5 within its regulatory framework is one of the most significant factors in  
6 assessing a utility's credit quality. The regulatory framework generally  
7 provides more certainty around a utility's cash flow and typically allows the  
8 company to operate with significantly less cushion in its cash flow metrics  
9 than comparably rated companies in other industrial sectors.

10 \*\*\*

11 In situations where the regulatory framework is less supportive, or is more  
12 contentious, a utility's credit quality can deteriorate rapidly.<sup>149</sup>

13 **Q. MR. MURRAY ARGUES LIBERTY UTILITIES COMPANY (THE COMPANY'S**  
14 **PARENT COMPANY) "IS USING A MORE ECONOMICAL CAPITAL**  
15 **STRUCTURE THAN EMPIRE'S IMPLIED HIGHER COST CAPITAL**  
16 **STRUCTURE."<sup>150</sup> AS A RESULT, HE SUGGESTS LIBERTY-EMPIRE'S**  
17 **PARENT COMPANY ADJUSTED CAPITAL STRUCTURE SHOULD BE RELIED**  
18 **ON. WHAT IS YOUR RESPONSE?**

19 **A.** Mr. Murray's position appears to suggest the Company is engaging in double leverage, to  
20 the detriment of customers.<sup>151</sup> I have several concerns with that position. First, as  
21 discussed above, in my experience utilities typically apply the prudent financing principle  
22 of maturity, or duration matching. Under that principle, long-lived assets are financed with  
23 correspondingly long-lived securities. As discussed earlier, due to its perpetual life  
24 common equity has a long duration. Adding equity to the capital structure therefore

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<sup>148</sup> See, Moody's Investors Service, *Rating Methodology; Regulated Gas and Electric Utilities*, page 4 (June 23, 2017).

<sup>149</sup> Moody's Investors Service, *Regulatory Frameworks – Ratings and Credit Quality for Investor-Owned Utilities*, page 2 (June 18, 2010).

<sup>150</sup> Direct Testimony of David Murray, at 11. See, also, Direct Testimony of David Murray, at 10.

<sup>151</sup> *Ibid.*



1 extends the capital structure's weighted average duration, more closely aligning it with the  
2 assets that form the rate base.

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

8 Consistent with the stand-alone principle, the ownership structure does not affect  
9 the operating utility's capital structure or cost of capital. Parent entities, like other  
10 investors, have capital constraints and must consider the attractiveness of the expected risk-  
11 adjusted return of each investment alternative as part of their capital budgeting process.  
12 This opportunity cost concept applies regardless of the source of the funding. When  
13 funding is provided by a parent entity, the return on that financing must still be sufficient  
14 to provide an incentive to the parent entity to allocate equity capital to the subsidiary or  
15 business unit rather than other internal or external investment opportunities. That is, the  
16 regulated subsidiary must compete for capital with its affiliates and with other, similarly  
17 situated utility companies.

18 From an external investor's perspective, the combined company must provide a  
19 return reflecting the risks of the company's constituent parts. Investors therefore value  
20 combined entities on a sum-of-the-parts basis, expecting each operating segment to provide  
21 its appropriate risk-adjusted return. That practical financial principle is consistent with the  
22 regulatory principle of treating utilities as stand-alone entities. From both perspectives, it

1 is the utility's operating risk that defines the capital structure and cost of capital, not  
2 investors' sources of funds.

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

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

16 Carrying the double leverage standard to its logical conclusion leads to  
17 even more unreasonable prescriptions. If the common shares of a  
18 subsidiary were held by both the parent and by individual investors, the  
19 equity contributed by the parent would have one cost under the double  
20 leverage computation while the equity contributed by the public would  
21 have another.<sup>152</sup>

22 The double leverage argument also requires every affiliate within the corporate  
23 family to have the same cost of capital, regardless of differences in risk. Algonquin Power  
24 & Utilities Corp. reports three operating segments: Regulated Services Group, Renewable

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<sup>152</sup> Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 523.

1 Energy Group, Corporate.<sup>153</sup> Because they are separately reported, we reasonably can  
2 assume those segments face different risks. And because they face different risks, we  
3 reasonably may assume they require different returns. Dr. Morin further noted:

4 Just as individual investors require different returns from different  
5 assets in managing their personal affairs, why should regulation cause  
6 parent companies making investment decisions on behalf of their  
7 shareholders to act any differently? A parent company normally invests  
8 money in many operating companies of varying sizes and varying risks.  
9 These operating subsidiaries pay different rates for the use of investor  
10 capital, such as long-term debt capital, because investors recognize the  
11 differences in capital structure, risk, and prospects between the  
12 subsidiaries. Yet, the double leverage calculation would assign the  
13 same return to each activity, based on the parent's cost of capital.  
14 Investors recognize that different subsidiaries are exposed to different  
15 risks, as evidenced by the different bond ratings and cost rates of  
16 operating subsidiaries. The same argument carries over to common  
17 equity. If the cost rate for debt is different because the risk is different,  
18 the cost rate for common equity is also different, and the double leverage  
19 adjustment shouldn't obscure this fact.<sup>154</sup>

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

- 22 1. Pettway and Jordan (1983), and Beranek and Miles (1988) point out the flaws in the double  
23 leverage argument, particularly the excess return argument, and also demonstrate that the  
24 "stand-alone" method is the superior approach.<sup>155</sup>
- 25 2. Rozeff (1983) discusses the ratepayer cross-subsidies of one subsidiary by another when  
26 employing double leverage.<sup>156</sup>

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<sup>153</sup> See, Algonquin Power & Utilities Corp., Consolidated Financial Statements, for the years ended December 31, 2019 and 2018, at 56.

<sup>154</sup> Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 524-525.

<sup>155</sup> Richard H. Pettway and Bradford D. Jordan, *Diversification, Double Leverage, and the Cost of Capital*, The Journal of Financial Research, Vol. VI, No. 4, Winter 1983; William Beranek and James A. Miles, *The Excess Return Argument and Double Leverage*, The Financial Review, Vo. 23, No. 2, May 1988.

<sup>156</sup> Michael S. Rozeff, "Modified Double Leverage – A New Approach," *Public Utilities Fortnightly*, March 31, 1983.

1 3. Lerner (1973) concludes that the returns granted to equity investors must be based on the  
2 risks to which the investors' capital is exposed and not the investors' source of funds.<sup>157</sup>

3 Basic finance texts reach the same conclusions. In Principles of Corporate Finance, 8<sup>th</sup>  
4 edition, Brealey, Myers, and Allen state:

5 In principle, each project should be evaluated at its own opportunity cost  
6 of capital; the true cost of capital depends on the use to which the capital  
7 is put. If we wish to estimate the cost of capital for a particular project,  
8 it is project risk that counts.<sup>158</sup>

9 Likewise, in Modern Corporate Finance, 1<sup>st</sup> edition, Shapiro states:

10 Each project has its own required return, reflecting three basic elements:  
11 (1) the real or inflation-adjusted risk-free interest rate; (2) an inflation  
12 premium approximately equal to the amount of expected inflation; and  
13 (3) a premium for risk. The first two cost elements are shared by all  
14 projects and reflect the time value of money, whereas the third  
15 component varies according to the risks borne by investors in the  
16 different projects. For a project to be acceptable to the firm's  
17 shareholders, its return must be sufficient to compensate them for all  
18 three cost components. This minimum or required return is the project's  
19 cost of capital and is sometimes referred to as a hurdle rate.

20 The preceding paragraph bears a crucial message: The cost of capital  
21 for a project depends on the riskiness of the assets being financed, not  
22 on the identity of the firm undertaking the project.<sup>159</sup>

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

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

27 We reject People's Counsel's proposed capital structure [reflecting a  
28 double leverage adjustment] because it suffers from numerous flaws.  
29 First, it assumes that the rate of return depends on the source of capital

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<sup>157</sup> Eugene M. Lerner, "What are the Real Double Leverage Problems?" Public Utilities Fortnightly, June 7, 1973.

<sup>158</sup> Richard A. Brealey, Steward C. Meyers, Franklin Allen, Principles of Corporate Finance, McGraw-Hill Irwin, 8th Ed., 2006, at 234.

<sup>159</sup> Alan C. Shapiro, Modern Corporate Finance, Wiley, 1st Ed., 1990, at 276.

1           rather than the risks faced by the capital.<sup>160</sup>

2           In 2016, the Federal Energy Regulatory Commission (“FERC”) reiterated its  
3           previous position on “double leveraging,”<sup>161</sup> stating that “the motivations of a parent  
4           company are irrelevant”<sup>162</sup> so long as the operating company passes the FERC’s three-part  
5           test: (i) it issues its own debt without guarantees; (2) it has its own bond rating; and (3) it  
6           has a capital structure within the range of capital structures approved by the commission.<sup>163</sup>  
7           Under FERC guidance, the capital structure of Duke Energy Corporation is not applicable  
8           to DE Carolinas.

9           The Washington Utilities and Transportation Commission (“WUTC”) has cited to  
10          FERC’s position on the use of double leverage in support of its decision in Docket No. UE  
11          050684:

12           The FERC does not embrace the concept of double leverage. For  
13           purposes of calculating rate of return for wholly owned subsidiaries,  
14           FERC uses the stand-alone capital structure and return on equity of the  
15           subsidiary so long as the subsidiary issues its own debt, maintains its  
16           own credit ratings and meets other standards related to equity ratio. The  
17           courts have upheld this policy. *See Missouri Pub. Serv. Comm’n v.*  
18           *Federal Energy Reg Comm’n, 215 F.3d 1, 342 U. S. App. DC. 1* (D.C.  
19           Cir. June 27, 2000).<sup>164</sup>

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

22           The ring fencing provisions required by our final order in Docket UE-  
23           051090 insulate PacifiCorp and its customers from risks and financial  
24           distress at the MEHC level. Nonetheless, after having insulated  
25           PacifiCorp and its customers from the risks of leveraged financing at the

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<sup>160</sup> 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]

<sup>161</sup> *See, Transcontinental Gas Pipe Line Corp.*, 80 FERC ¶ 61,157, 61,657 (1997) (“Opinion No. 414”).

<sup>162</sup> *See*, 154 FERC ¶ 61,004, Docket No. ER15-945-001, at 15.

<sup>163</sup> *Ibid.* *See, also, Transcontinental Gas Pipe Line Corp.*, 80 FERC ¶ 61,157, 61,657 (1997) (“Opinion No. 414”).

<sup>164</sup> Washington Utilities and Transportation Commission, Docket No. UE 050684, Order No. 4, at 117.

1 parent, Staff and Public Counsel seek to secure for customers the cost  
2 and tax benefits of that financing. The Company's expert witness  
3 argues this may violate the familiar principle in utility law that financial  
4 benefits should follow burden of risks. We agree. If the risks and costs  
5 of activities at the parent-level are born exclusively by shareholders—  
6 because customers are insulated from them by the ring fence—then it is  
7 fair and appropriate for the shareholders, and not the customers, to  
8 receive the benefits that result from those activities.<sup>165</sup>

9 **Q. DOES MR. MURRAY CONSIDER WHETHER HIS PROPOSED CAPITAL**  
10 **STRUCTURE IS CONSISTENT WITH INDUSTRY PRACTICE?**

11 A. No, he does not. As noted above, Mr. Murray reviews the Company's capital structure  
12 relative to its immediate and ultimate parent companies, but does not consider how it  
13 compares to the companies in his proxy groups.

14 **Q. IS MR. MURRAY'S PROPOSED CAPITAL STRUCTURE CONSISTENT WITH**  
15 **INDUSTRY PRACTICE?**

16 A. No, it is not. As shown in Schedule RBH-R7, Mr. Murray's proposed equity ratio of 46.00  
17 percent is below the average equity ratio of all but one company in my proxy group, and is  
18 over two standard deviations below the average equity ratio for the proxy group of 53.59  
19 percent. On that basis it appears that Mr. Murray's proposed equity ratio is inconsistent  
20 with industry practice and significantly differs from the Company's peers.

21 On the other hand, Liberty-Empire's proposed equity ratio updated as of September  
22 30, 2019 of 52.93 percent continues to be within the range of its peers'. On that basis, I  
23 believe it is reasonable and appropriate, and should be approved by the Commission.

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<sup>165</sup> *Ibid.*, at 54.

1 **Q. WHAT IS THE IMPLICATION OF A CAPITAL STRUCTURE THAT IS TOO**  
2 **HEAVILY WEIGHTED WITH DEBT FOR THE COMPANY'S COST OF**  
3 **CAPITAL?**

4 A. Simply, adding additional debt, as Mr. Murray suggests, creates additional degrees of  
5 financial risk. Financial risk, which is the additional risk that the subject company may  
6 not have adequate cash flows to meet its financial obligations, is created by the introduction  
7 of senior capital, i.e., debt and preferred stock, into the capital structure. Intuitively, as the  
8 degree of financial leverage increases, the risk of financial distress also increases. Even if  
9 two firms face the same business risks, the company with meaningfully higher levels of  
10 debt in its capital structure is likely to have greater financial risk and, therefore, higher  
11 costs of both debt and equity. As Brigham and Gapenski point out, "...the use of debt, or  
12 financial leverage, concentrates the firm's business risk on its stockholders."

13 Because the capital structure affects the subject company's overall level of risk, it  
14 is an important consideration in establishing a fair rate of return: The higher the proportion  
15 of senior debt capital in the capital structure, the higher the financial risk that must be  
16 factored into the Cost of Equity. Mr. Murray's recommendation, if adopted, would lead to  
17 increased capital costs, to the detriment of customers.

18 **Q. WHAT IS YOUR CONCLUSION REGARDING AN APPROPRIATE CAPITAL**  
19 **STRUCTURE FOR THE COMPANY**

20 A. Considering the average actual common equity ratios in place at the proxy companies, I  
21 believe that Liberty-Empire's proposed common equity ratio as updated at September 30,  
22 2019 of 52.93 percent is reasonable. Mr. Murray's proposed equity ratio, however, is

1 inconsistent with the equity ratios of comparable companies, would add unnecessary and  
2 unproductive levels of financial risk, and should be rejected.

3 **IV. CONCLUSIONS AND RECOMMENDATION**

4 **Q. WHAT ARE YOUR OVERALL CONCLUSIONS AND RECOMMENDATIONS?**

5 A. Based on the analyses discussed throughout my Rebuttal Testimony, I conclude that the  
6 reasonable range of ROE estimates remains from 9.80 percent to 10.60 percent. I continue  
7 to believe an ROE of 9.95 percent is reasonable for Liberty-Empire.

8 In addition, the Company's updated at September 30, 2019 proposed capital  
9 structure of 52.93 percent common equity and 47.07 percent long-term debt is consistent  
10 with industry practice.

11 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

12 A. Yes, it does.



Constant Growth Discounted Cash Flow Model  
30 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Average Earnings Growth	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.47	\$81.90	3.02%	3.11%	NA	7.00%	5.00%	6.00%	8.09%	9.11%	10.12%
Alliant Energy Corporation	LNT	\$1.52	\$55.93	2.72%	2.80%	5.70%	5.75%	6.50%	5.98%	8.50%	8.78%	9.31%
Ameren Corporation	AEE	\$1.98	\$77.93	2.54%	2.61%	6.20%	4.60%	6.50%	5.77%	7.20%	8.38%	9.12%
American Electric Power Company, Inc.	AEP	\$2.80	\$96.74	2.89%	2.97%	5.60%	6.05%	4.00%	5.22%	6.95%	8.19%	9.03%
Avangrid, Inc.	AGR	\$1.76	\$51.41	3.42%	3.55%	7.50%	6.40%	8.50%	7.47%	9.93%	11.02%	12.07%
Avista Corporation	AVA	\$1.55	\$48.54	3.19%	3.25%	3.50%	3.50%	3.50%	3.50%	6.75%	6.75%	6.75%
CMS Energy Corporation	CMS	\$1.63	\$64.28	2.54%	2.62%	6.10%	7.50%	7.00%	6.87%	8.71%	9.49%	10.13%
DTE Energy Company	DTE	\$4.05	\$130.59	3.10%	3.19%	6.00%	6.00%	4.50%	5.50%	7.67%	8.69%	9.19%
Duke Energy Corporation	DUK	\$3.78	\$92.56	4.08%	4.19%	4.90%	4.61%	6.00%	5.17%	8.79%	9.36%	10.21%
Evergy, Inc	EVRG	\$2.02	\$66.49	3.04%	3.14%	6.50%	6.50%	NMF	6.50%	9.64%	9.64%	9.64%
Hawaiian Electric Industries, Inc.	HE	\$1.28	\$47.05	2.72%	2.77%	4.20%	3.40%	2.50%	3.37%	5.25%	6.13%	6.98%
NextEra Energy, Inc.	NEE	\$5.00	\$249.63	2.00%	2.09%	7.80%	7.74%	10.50%	8.68%	9.82%	10.77%	12.61%
NorthWestern Corporation	NWE	\$2.30	\$73.06	3.15%	3.19%	3.50%	3.22%	2.00%	2.91%	5.18%	6.10%	6.70%
OGE Energy Corp.	OGE	\$1.55	\$44.77	3.46%	3.54%	4.20%	3.50%	6.50%	4.73%	7.02%	8.28%	10.08%
Otter Tail Corporation	OTTR	\$1.40	\$52.40	2.67%	2.77%	NA	9.00%	5.00%	7.00%	7.74%	9.77%	11.79%
Pinnacle West Capital Corporation	PNW	\$3.13	\$92.02	3.40%	3.48%	4.70%	4.41%	4.00%	4.37%	7.47%	7.85%	8.18%
PNM Resources, Inc.	PNM	\$1.23	\$51.31	2.40%	2.47%	5.80%	6.30%	7.00%	6.37%	8.27%	8.84%	9.48%
Portland General Electric Company	POR	\$1.54	\$57.46	2.68%	2.74%	4.90%	4.80%	4.50%	4.73%	7.24%	7.48%	7.65%
Southern Company	SO	\$2.48	\$65.51	3.79%	3.85%	4.50%	2.10%	3.50%	3.37%	5.93%	7.22%	8.37%
WEC Energy Group, Inc.	WEC	\$2.53	\$94.44	2.68%	2.76%	6.20%	6.08%	6.00%	6.09%	8.76%	8.85%	8.96%
Xcel Energy Inc.	XEL	\$1.62	\$64.52	2.51%	2.58%	5.70%	6.10%	5.50%	5.77%	8.08%	8.35%	8.69%
Proxy Group Mean				2.95%	3.03%	5.45%	5.46%	5.43%	5.49%	7.76%	8.53%	9.29%
Proxy Group Median				2.89%	2.97%	5.70%	6.00%	5.25%	5.77%	7.74%	8.69%	9.19%

## Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of January 31, 2020

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Equals Average([5], [6], [7])

[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Model  
90 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Average Earnings Growth	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.47	\$82.91	2.98%	3.07%	NA	7.00%	5.00%	6.00%	8.05%	9.07%	10.08%
Alliant Energy Corporation	LNT	\$1.52	\$53.99	2.82%	2.90%	5.70%	5.75%	6.50%	5.98%	8.60%	8.88%	9.41%
Ameren Corporation	AEE	\$1.98	\$76.84	2.58%	2.65%	6.20%	4.60%	6.50%	5.77%	7.24%	8.42%	9.16%
American Electric Power Company, Inc.	AEP	\$2.80	\$93.76	2.99%	3.06%	5.60%	6.05%	4.00%	5.22%	7.05%	8.28%	9.13%
Avangrid, Inc.	AGR	\$1.76	\$50.32	3.50%	3.63%	7.50%	6.40%	8.50%	7.47%	10.01%	11.09%	12.15%
Avista Corporation	AVA	\$1.55	\$47.93	3.23%	3.29%	3.50%	3.50%	3.50%	3.50%	6.79%	6.79%	6.79%
CMS Energy Corporation	CMS	\$1.63	\$63.08	2.58%	2.67%	6.10%	7.50%	7.00%	6.87%	8.76%	9.54%	10.18%
DTE Energy Company	DTE	\$4.05	\$128.14	3.16%	3.25%	6.00%	6.00%	4.50%	5.50%	7.73%	8.75%	9.26%
Duke Energy Corporation	DUK	\$3.78	\$92.33	4.09%	4.20%	4.90%	4.61%	6.00%	5.17%	8.80%	9.37%	10.22%
Evergy, Inc	EVRG	\$2.02	\$64.82	3.12%	3.22%	6.50%	6.50%	NMF	6.50%	9.72%	9.72%	9.72%
Hawaiian Electric Industries, Inc.	HE	\$1.28	\$45.40	2.82%	2.87%	4.20%	3.40%	2.50%	3.37%	5.35%	6.23%	7.08%
NextEra Energy, Inc.	NEE	\$5.00	\$237.98	2.10%	2.19%	7.80%	7.74%	10.50%	8.68%	9.92%	10.87%	12.71%
NorthWestern Corporation	NWE	\$2.30	\$72.61	3.17%	3.21%	3.50%	3.22%	2.00%	2.91%	5.20%	6.12%	6.72%
OGE Energy Corp.	OGE	\$1.55	\$43.74	3.54%	3.63%	4.20%	3.50%	6.50%	4.73%	7.11%	8.36%	10.16%
Otter Tail Corporation	OTTR	\$1.40	\$52.22	2.68%	2.77%	NA	9.00%	5.00%	7.00%	7.75%	9.77%	11.80%
Pinnacle West Capital Corporation	PNW	\$3.13	\$91.33	3.43%	3.50%	4.70%	4.41%	4.00%	4.37%	7.50%	7.87%	8.21%
PNM Resources, Inc.	PNM	\$1.23	\$50.61	2.43%	2.51%	5.80%	6.30%	7.00%	6.37%	8.30%	8.87%	9.52%
Portland General Electric Company	POR	\$1.54	\$56.44	2.73%	2.79%	4.90%	4.80%	4.50%	4.73%	7.29%	7.53%	7.70%
Southern Company	SO	\$2.48	\$63.00	3.94%	4.00%	4.50%	2.10%	3.50%	3.37%	6.08%	7.37%	8.53%
WEC Energy Group, Inc.	WEC	\$2.53	\$92.40	2.74%	2.82%	6.20%	6.08%	6.00%	6.09%	8.82%	8.91%	9.02%
Xcel Energy Inc.	XEL	\$1.62	\$63.28	2.56%	2.63%	5.70%	6.10%	5.50%	5.77%	8.13%	8.40%	8.74%
Proxy Group Mean				3.01%	3.09%	5.45%	5.46%	5.43%	5.49%	7.82%	8.58%	9.35%
Proxy Group Median				2.98%	3.06%	5.70%	6.00%	5.25%	5.77%	7.75%	8.75%	9.26%

## Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of January 31, 2020

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Equals Average([5], [6], [7])

[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Model  
180 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Average Earnings Growth	Low ROE	Mean ROE	High ROE
ALLETE, Inc.	ALE	\$2.47	\$83.98	2.94%	3.03%	NA	7.00%	5.00%	6.00%	8.01%	9.03%	10.04%
Alliant Energy Corporation	LNT	\$1.52	\$52.14	2.92%	3.00%	5.70%	5.75%	6.50%	5.98%	8.70%	8.99%	9.51%
Ameren Corporation	AEE	\$1.98	\$76.48	2.59%	2.66%	6.20%	4.60%	6.50%	5.77%	7.25%	8.43%	9.17%
American Electric Power Company, Inc.	AEP	\$2.80	\$91.78	3.05%	3.13%	5.60%	6.05%	4.00%	5.22%	7.11%	8.35%	9.19%
Avangrid, Inc.	AGR	\$1.76	\$50.34	3.50%	3.63%	7.50%	6.40%	8.50%	7.47%	10.01%	11.09%	12.15%
Avista Corporation	AVA	\$1.55	\$46.57	3.33%	3.39%	3.50%	3.50%	3.50%	3.50%	6.89%	6.89%	6.89%
CMS Energy Corporation	CMS	\$1.63	\$61.24	2.66%	2.75%	6.10%	7.50%	7.00%	6.87%	8.84%	9.62%	10.26%
DTE Energy Company	DTE	\$4.05	\$128.63	3.15%	3.24%	6.00%	6.00%	4.50%	5.50%	7.72%	8.74%	9.24%
Duke Energy Corporation	DUK	\$3.78	\$90.91	4.16%	4.27%	4.90%	4.61%	6.00%	5.17%	8.86%	9.44%	10.28%
Evergy, Inc	EVRG	\$2.02	\$63.32	3.19%	3.29%	6.50%	6.50%	NMF	6.50%	9.79%	9.79%	9.79%
Hawaiian Electric Industries, Inc.	HE	\$1.28	\$44.59	2.87%	2.92%	4.20%	3.40%	2.50%	3.37%	5.41%	6.29%	7.13%
NextEra Energy, Inc.	NEE	\$5.00	\$224.52	2.23%	2.32%	7.80%	7.74%	10.50%	8.68%	10.05%	11.00%	12.84%
NorthWestern Corporation	NWE	\$2.30	\$72.31	3.18%	3.23%	3.50%	3.22%	2.00%	2.91%	5.21%	6.13%	6.74%
OGE Energy Corp.	OGE	\$1.55	\$43.38	3.57%	3.66%	4.20%	3.50%	6.50%	4.73%	7.14%	8.39%	10.19%
Otter Tail Corporation	OTTR	\$1.40	\$52.07	2.69%	2.78%	NA	9.00%	5.00%	7.00%	7.76%	9.78%	11.81%
Pinnacle West Capital Corporation	PNW	\$3.13	\$93.03	3.36%	3.44%	4.70%	4.41%	4.00%	4.37%	7.43%	7.81%	8.14%
PNM Resources, Inc.	PNM	\$1.23	\$50.30	2.45%	2.52%	5.80%	6.30%	7.00%	6.37%	8.32%	8.89%	9.53%
Portland General Electric Company	POR	\$1.54	\$55.77	2.76%	2.83%	4.90%	4.80%	4.50%	4.73%	7.32%	7.56%	7.73%
Southern Company	SO	\$2.48	\$59.81	4.15%	4.22%	4.50%	2.10%	3.50%	3.37%	6.29%	7.58%	8.74%
WEC Energy Group, Inc.	WEC	\$2.53	\$89.84	2.82%	2.90%	6.20%	6.08%	6.00%	6.09%	8.90%	9.00%	9.10%
Xcel Energy Inc.	XEL	\$1.62	\$62.17	2.61%	2.68%	5.70%	6.10%	5.50%	5.77%	8.18%	8.45%	8.79%
Proxy Group Mean				3.06%	3.14%	5.45%	5.46%	5.43%	5.49%	7.87%	8.63%	9.39%
Proxy Group Median				2.94%	3.03%	5.70%	6.00%	5.25%	5.77%	7.76%	8.74%	9.24%

## Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals indicated number of trading day average as of January 31, 2020

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [8])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Equals Average([5], [6], [7])

[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])

[10] Equals [4] + [8]

[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

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

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-day	Implied Market
Market Return	average)	Risk Premium
13.44%	2.25%	11.18%

[4]	[5]	[6]	[7]	[8]	[9]		
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Agilent Technologies Inc	A	25,608.74	0.09%	0.87%	10.40%	11.32%	0.0105%
American Airlines Group Inc	AAL	11,757.48	0.04%	1.53%	6.23%	7.81%	0.0033%
Advance Auto Parts Inc	AAP	9,124.93	0.03%	0.18%	15.34%	15.54%	0.0051%
Apple Inc	AAPL	1,354,254.81	4.89%	1.04%	11.97%	13.07%	0.6392%
AbbVie Inc	ABBV	119,814.09	0.43%	5.30%	4.77%	10.19%	0.0441%
AmerisourceBergen Corp	ABC	17,616.10	0.06%	1.95%	12.35%	14.41%	0.0092%
ABIOMED Inc	ABMD	8,411.95	0.03%	0.00%	24.00%	24.00%	0.0073%
Abbott Laboratories	ABT	154,103.23	0.56%	1.60%	10.12%	11.80%	0.0657%
Accenture PLC	ACN	130,514.21	0.47%	1.56%	10.43%	12.07%	0.0569%
Adobe Inc	ADBE	169,295.47	0.61%	0.00%	16.22%	16.22%	0.0992%
Analog Devices Inc	ADI	40,492.75	0.15%	2.07%	12.53%	14.73%	0.0215%
Archer-Daniels-Midland Co	ADM	24,917.28	0.09%	3.25%	9.20%	12.60%	0.0113%
Automatic Data Processing Inc	ADP	73,998.36	0.27%	1.99%	12.55%	14.66%	0.0392%
Alliance Data Systems Corp	ADS	4,734.12	0.02%	2.47%	10.44%	13.04%	0.0022%
Autodesk Inc	ADSK	43,313.50	0.16%	0.00%	46.89%	46.89%	0.0734%
Ameren Corp	AEE	20,186.74	0.07%	2.35%	5.76%	8.18%	0.0060%
American Electric Power Co Inc	AEP	51,479.66	0.19%	2.60%	6.03%	8.71%	0.0162%
AES Corp/VA	AES	13,184.91	0.05%	2.77%	8.47%	11.36%	0.0054%
Aflac Inc	AFL	37,853.31	0.14%	2.10%	3.41%	5.55%	0.0076%
Allergan PLC	AGN	61,269.68	0.22%	1.58%	5.50%	7.13%	0.0158%
American International Group Inc	AIG	43,723.77	0.16%	2.56%	11.00%	13.70%	0.0216%
Apartment Investment & Management Co	AIV	7,847.71	0.03%	3.08%	3.99%	7.14%	0.0020%
Assurant Inc	AIZ	7,916.61	N/A	1.90%	N/A	N/A	N/A
Arthur J Gallagher & Co	AJG	19,293.42	0.07%	1.74%	9.79%	11.62%	0.0081%
Akamai Technologies Inc	AKAM	15,085.47	0.05%	0.00%	13.20%	13.20%	0.0072%
Albemarle Corp	ALB	8,512.33	0.03%	1.79%	8.10%	9.96%	0.0031%
Align Technology Inc	ALGN	20,262.81	0.07%	0.00%	20.31%	20.31%	0.0149%
Alaska Air Group Inc	ALK	7,955.77	0.03%	2.31%	23.69%	26.28%	0.0076%
Allstate Corp/The	ALL	38,401.76	0.14%	1.63%	9.00%	10.71%	0.0149%
Allegion PLC	ALLE	12,015.97	0.04%	0.83%	10.63%	11.51%	0.0050%
Alexion Pharmaceuticals Inc	ALXN	21,994.08	0.08%	0.00%	11.72%	11.72%	0.0093%
Applied Materials Inc	AMAT	53,270.00	0.19%	1.54%	12.42%	14.05%	0.0270%
Amcor PLC	AMCR	17,157.30	0.06%	4.84%	8.60%	13.65%	0.0085%
Advanced Micro Devices Inc	AMD	52,340.49	0.19%	0.00%	17.67%	17.67%	0.0334%
AMETEK Inc	AME	22,207.80	0.08%	0.58%	10.50%	11.11%	0.0089%
Amgen Inc	AMGN	127,685.55	0.46%	2.92%	7.88%	10.91%	0.0503%
Ameriprise Financial Inc	AMP	20,956.72	0.08%	2.48%	6.00%	8.55%	0.0065%
American Tower Corp	AMT	102,647.02	0.37%	1.62%	20.34%	22.13%	0.0821%
Amazon.com Inc	AMZN	999,961.80	3.61%	0.00%	33.19%	33.19%	1.1987%
Arista Networks Inc	ANET	17,062.96	0.06%	0.00%	17.95%	17.95%	0.0111%
ANSYS Inc	ANSS	23,479.83	0.08%	0.00%	10.65%	10.65%	0.0090%
Anthem Inc	ANTM	67,265.38	0.24%	1.42%	13.01%	14.53%	0.0353%
Aon PLC	AON	51,109.34	0.18%	0.86%	10.99%	11.90%	0.0220%
AO Smith Corp	AOS	6,963.25	0.03%	2.46%	8.00%	10.56%	0.0027%
Apache Corp	APA	10,318.44	0.04%	3.64%	-29.00%	-25.88%	-0.0096%
Air Products & Chemicals Inc	APD	52,678.16	0.19%	2.13%	12.67%	14.94%	0.0284%
Amphenol Corp	APH	29,492.03	0.11%	0.99%	9.81%	10.85%	0.0116%
Aptiv PLC	APTIV	21,645.88	0.08%	1.13%	5.95%	7.10%	0.0056%
Alexandria Real Estate Equities Inc	ARE	21,134.40	0.08%	2.45%	4.13%	6.63%	0.0051%
Arconic Inc	ARNC	12,966.58	0.05%	0.28%	80.40%	80.79%	0.0378%
Atmos Energy Corp	ATO	14,308.01	0.05%	1.96%	7.15%	9.18%	0.0047%
Activision Blizzard Inc	ATVI	44,927.85	0.16%	0.64%	10.01%	10.68%	0.0173%
AvalonBay Communities Inc	AVB	30,263.31	0.11%	2.80%	6.21%	9.10%	0.0099%
Broadcom Inc	AVGO	121,390.29	0.44%	4.26%	10.33%	14.81%	0.0649%
Avery Dennison Corp	AVY	10,958.92	0.04%	1.84%	5.35%	7.24%	0.0029%
American Water Works Co Inc	AWK	24,621.71	0.09%	1.45%	8.52%	10.03%	0.0089%
American Express Co	AXP	106,268.83	0.38%	1.38%	9.39%	10.83%	0.0416%
AutoZone Inc	AZO	24,960.14	0.09%	0.00%	10.80%	10.80%	0.0097%
Boeing Co/The	BA	179,234.45	0.65%	2.63%	29.38%	32.40%	0.2097%
Bank of America Corp	BAC	290,090.77	1.05%	2.41%	9.75%	12.28%	0.1286%
Baxter International Inc	BAX	45,551.79	0.16%	1.08%	11.74%	12.89%	0.0212%
Best Buy Co Inc	BBY	21,915.86	0.08%	2.36%	7.78%	10.23%	0.0081%
Becton Dickinson and Co	BDX	74,577.01	0.27%	1.31%	10.42%	11.80%	0.0318%
Franklin Resources Inc	BEN	12,571.51	0.05%	4.28%	10.00%	14.49%	0.0066%
Brown-Forman Corp	BF/B	31,751.84	0.11%	1.02%	7.08%	8.13%	0.0093%
Biogen Inc	BIIB	48,511.80	0.18%	0.00%	2.02%	2.02%	0.0035%
Bank of New York Mellon Corp/The	BK	40,332.58	0.15%	2.91%	6.30%	9.30%	0.0136%
Booking Holdings Inc	BKNG	76,618.95	0.28%	0.00%	16.37%	16.37%	0.0453%
Baker Hughes Co	BKR	22,251.25	0.08%	3.37%	30.98%	34.87%	0.0280%
BlackRock Inc	BLK	81,917.15	0.30%	2.68%	9.76%	12.58%	0.0372%
Ball Corp	BLL	23,612.31	0.09%	0.68%	5.50%	6.20%	0.0053%
Bristol-Myers Squibb Co	BYM	147,365.90	0.53%	2.61%	14.78%	17.59%	0.0936%
Broadridge Financial Solutions Inc	BR	13,678.72	0.05%	1.82%	7.50%	9.39%	0.0046%
Berkshire Hathaway Inc	BRK/B	548,282.67	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	58,359.39	0.21%	0.00%	7.00%	7.00%	0.0148%
BorgWarner Inc	BWA	7,077.78	0.03%	1.99%	4.90%	6.94%	0.0018%

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Boston Properties Inc	BXP	22,189.19	0.08%	2.88%	2.17%	5.08%	0.0041%
Citigroup Inc	C	157,310.18	0.57%	2.91%	13.50%	16.61%	0.0944%
Conagra Brands Inc	CAG	16,025.91	0.06%	2.58%	7.97%	10.65%	0.0062%
Cardinal Health Inc	CAH	14,978.33	0.05%	3.95%	1.37%	5.35%	0.0029%
Caterpillar Inc	CAT	72,591.68	0.26%	3.18%	8.97%	12.29%	0.0322%
Chubb Ltd	CB	68,882.22	0.25%	1.98%	10.73%	12.82%	0.0319%
Cboe Global Markets Inc	CBOE	13,660.33	0.05%	1.08%	5.91%	7.03%	0.0035%
CBRE Group Inc	CBRE	20,436.59	0.07%	0.00%	11.00%	11.00%	0.0081%
Crown Castle International Corp	CCI	62,298.75	0.23%	3.06%	17.70%	21.03%	0.0473%
Carnival Corp	CCL	29,392.75	0.11%	4.66%	8.31%	13.16%	0.0140%
Cadence Design Systems Inc	CDNS	20,233.56	0.07%	0.00%	9.35%	9.35%	0.0068%
CDW Corp/DE	CDW	18,743.14	0.07%	0.96%	13.10%	14.12%	0.0096%
Celanese Corp	CE	12,510.47	0.05%	2.67%	4.08%	6.80%	0.0031%
Cerner Corp	CERN	22,561.62	0.08%	0.36%	15.49%	15.88%	0.0129%
CF Industries Holdings Inc	CF	8,758.15	0.03%	2.98%	18.80%	22.06%	0.0070%
Citizens Financial Group Inc	CFG	16,206.32	0.06%	4.15%	5.74%	10.01%	0.0059%
Church & Dwight Co Inc	CHD	18,213.73	0.07%	1.32%	8.17%	9.54%	0.0063%
CH Robinson Worldwide Inc	CHRW	9,767.79	0.04%	2.89%	6.90%	9.89%	0.0035%
Charter Communications Inc	CHTR	125,037.91	0.45%	0.00%	34.30%	34.30%	0.1549%
Cigna Corp	CI	71,839.57	0.26%	0.02%	12.11%	12.13%	0.0315%
Cincinnati Financial Corp	CINF	17,146.10	N/A	2.25%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	63,232.72	0.23%	2.44%	3.39%	5.86%	0.0134%
Clorox Co/The	CLX	19,742.95	0.07%	2.69%	3.44%	6.17%	0.0044%
Comerica Inc	CMA	8,816.48	0.03%	4.62%	9.15%	13.98%	0.0045%
Comcast Corp	CMCSA	196,645.57	0.71%	2.12%	9.34%	11.55%	0.0820%
CME Group Inc	CME	77,804.34	0.28%	2.42%	8.65%	11.17%	0.0314%
Chipotle Mexican Grill Inc	CMG	24,091.77	0.09%	0.00%	28.57%	28.57%	0.0249%
Cummins Inc	CMI	24,507.98	0.09%	3.07%	4.71%	7.85%	0.0070%
CMS Energy Corp	CMS	19,446.05	0.07%	2.39%	7.16%	9.63%	0.0068%
Centene Corp	CNC	36,674.97	0.13%	0.00%	15.03%	15.03%	0.0199%
CenterPoint Energy Inc	CNP	13,271.27	0.05%	4.38%	4.66%	9.13%	0.0044%
Capital One Financial Corp	COF	45,568.68	0.16%	1.65%	5.97%	7.67%	0.0126%
Cabot Oil & Gas Corp	COG	5,747.66	0.02%	2.48%	27.68%	30.50%	0.0063%
Cooper Cos Inc/The	COO	17,019.24	0.06%	0.03%	5.90%	5.93%	0.0036%
ConocoPhillips	COP	65,210.68	0.24%	2.23%	0.80%	3.04%	0.0071%
Costco Wholesale Corp	COST	134,965.79	0.49%	0.89%	8.91%	9.84%	0.0480%
Coty Inc	COTY	7,775.97	0.03%	4.20%	8.64%	13.02%	0.0037%
Campbell Soup Co	CPB	14,597.10	0.05%	2.93%	7.07%	10.10%	0.0053%
Capri Holdings Ltd	CPRI	4,543.00	0.02%	0.00%	4.07%	4.07%	0.0007%
Copart Inc	CPRT	23,584.80	N/A	0.00%	N/A	N/A	N/A
salesforce.com Inc	CRM	161,708.97	0.58%	0.00%	22.38%	22.38%	0.1307%
Cisco Systems Inc	CSCO	195,016.81	0.70%	3.13%	5.40%	8.61%	0.0607%
CSX Corp	CSX	59,723.57	0.22%	1.35%	13.40%	14.84%	0.0320%
Cintas Corp	CTAS	28,943.36	0.10%	0.91%	10.25%	11.21%	0.0117%
CenturyLink Inc	CTL	14,892.53	0.05%	7.32%	3.97%	11.43%	0.0061%
Cognizant Technology Solutions Corp	CTSH	33,609.59	0.12%	1.30%	10.60%	11.97%	0.0145%
Corteva Inc	CTVA	21,648.85	0.08%	1.88%	16.20%	18.23%	0.0143%
Citrix Systems Inc	CTXS	15,785.25	0.06%	1.15%	9.17%	10.37%	0.0059%
CVS Health Corp	CVS	88,231.38	0.32%	2.95%	5.35%	8.37%	0.0267%
Chevron Corp	CVX	202,588.05	0.73%	4.67%	1.89%	6.60%	0.0483%
Concho Resources Inc	CXO	15,233.95	0.06%	0.66%	7.88%	8.57%	0.0047%
Dominion Energy Inc	D	71,086.75	0.26%	4.27%	4.56%	8.92%	0.0229%
Delta Air Lines Inc	DAL	36,049.45	0.13%	2.97%	11.25%	14.38%	0.0187%
DuPont de Nemours Inc	DD	37,799.74	0.14%	2.44%	5.25%	7.75%	0.0106%
Deere & Co	DE	49,922.25	0.18%	2.09%	6.08%	8.24%	0.0148%
Discover Financial Services	DFS	23,290.30	0.08%	2.39%	11.17%	13.69%	0.0115%
Dollar General Corp	DG	39,058.21	0.14%	0.84%	11.03%	11.91%	0.0168%
Quest Diagnostics Inc	DGX	14,906.93	0.05%	2.04%	6.42%	8.52%	0.0046%
DR Horton Inc	DHI	21,688.73	0.08%	1.18%	14.54%	15.81%	0.0124%
Danaher Corp	DHR	111,885.09	0.40%	0.44%	13.01%	13.48%	0.0545%
Walt Disney Co/The	DIS	249,685.43	0.90%	1.34%	6.40%	7.79%	0.0702%
Discovery Inc	DISCA	20,130.70	0.07%	1.20%	11.50%	12.77%	0.0093%
DISH Network Corp	DISH	19,221.67	0.07%	0.00%	5.40%	5.40%	0.0037%
Digital Realty Trust Inc	DLR	26,778.76	0.10%	3.51%	41.20%	45.43%	0.0439%
Dollar Tree Inc	DLTR	20,606.19	0.07%	0.00%	6.42%	6.42%	0.0048%
Dover Corp	DOV	16,538.58	0.06%	1.80%	10.80%	12.70%	0.0076%
Dow Inc	DOW	34,239.78	0.12%	6.25%	-1.28%	4.93%	0.0061%
Duke Realty Corp	DRE	13,346.49	0.05%	2.58%	4.80%	7.44%	0.0036%
Darden Restaurants Inc	DRI	14,147.42	0.05%	3.03%	8.10%	11.25%	0.0057%
DTE Energy Co	DTE	25,475.05	0.09%	2.89%	5.87%	8.84%	0.0081%
Duke Energy Corp	DUK	71,175.48	0.26%	3.88%	4.78%	8.75%	0.0225%
DaVita Inc	DVA	10,232.29	0.04%	0.00%	14.20%	14.20%	0.0052%
Devon Energy Corp	DVN	8,342.65	0.03%	1.61%	11.40%	13.10%	0.0039%
DXC Technology Co	DXC	8,161.20	0.03%	2.60%	-1.44%	1.15%	0.0003%
Electronic Arts Inc	EA	31,510.36	0.11%	0.00%	7.79%	7.79%	0.0089%
eBay Inc	EBAY	26,716.47	0.10%	1.88%	12.25%	14.25%	0.0137%
Ecolab Inc	ECL	56,527.61	0.20%	0.94%	12.37%	13.36%	0.0273%
Consolidated Edison Inc	ED	31,248.46	0.11%	3.15%	3.58%	6.78%	0.0077%
Equifax Inc	EFX	18,150.40	0.07%	1.04%	11.67%	12.78%	0.0084%
Edison International	EIX	27,450.92	0.10%	3.23%	5.29%	8.60%	0.0085%
Estee Lauder Cos Inc/The	EL	70,221.21	0.25%	0.94%	11.84%	12.84%	0.0326%
Eastman Chemical Co	EMN	9,691.24	0.04%	3.73%	5.87%	9.71%	0.0034%
Emerson Electric Co	EMR	43,633.69	0.16%	2.80%	8.03%	10.94%	0.0172%
EOG Resources Inc	EOG	42,416.42	0.15%	1.40%	6.00%	7.44%	0.0114%
Equinix Inc	EQIX	50,291.50	0.18%	1.67%	18.00%	19.82%	0.0360%
Equity Residential	EQR	30,878.42	0.11%	2.87%	8.78%	11.78%	0.0131%
Eversource Energy	ES	29,928.50	0.11%	2.32%	6.67%	9.06%	0.0098%
Essex Property Trust Inc	ESS	20,469.45	0.07%	2.65%	8.22%	10.98%	0.0081%

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
E*TRADE Financial Corp	ETFC	9,488.16	0.03%	1.36%	3.38%	4.76%	0.0016%
Eaton Corp PLC	ETN	39,053.90	0.14%	2.99%	8.44%	11.55%	0.0163%
Entergy Corp	ETR	26,185.91	0.09%	2.80%	-0.94%	1.85%	0.0017%
Every Inc	EVRG	16,445.49	0.06%	2.67%	6.51%	9.27%	0.0055%
Edwards Lifesciences Corp	EW	45,856.20	0.17%	0.00%	14.32%	14.32%	0.0237%
Exelon Corp	EXC	46,160.02	0.17%	3.04%	2.97%	6.06%	0.0101%
Expeditors International of Washington I	EXPD	12,438.80	0.04%	1.35%	9.73%	11.15%	0.0050%
Expedia Group Inc	EXPE	15,712.92	0.06%	1.22%	12.35%	13.65%	0.0077%
Extra Space Storage Inc	EXR	14,334.22	0.05%	3.22%	4.88%	8.18%	0.0042%
Ford Motor Co	F	34,970.39	0.13%	6.80%	3.59%	10.51%	0.0133%
Diamondback Energy Inc	FANG	11,937.08	0.04%	0.90%	24.41%	25.42%	0.0110%
Fastenal Co	FAST	20,025.62	0.07%	2.70%	14.25%	17.15%	0.0124%
Facebook Inc	FB	575,534.49	2.08%	0.00%	22.27%	22.27%	0.4629%
Fortune Brands Home & Security Inc	FBHS	9,561.08	0.03%	1.35%	8.96%	10.38%	0.0036%
Freeport-McMoRan Inc	FCX	16,105.14	0.06%	1.80%	-1.93%	-0.15%	-0.0001%
FedEx Corp	FDX	37,768.26	0.14%	1.81%	20.40%	22.40%	0.0306%
FirstEnergy Corp	FE	27,442.43	0.10%	2.99%	0.69%	3.69%	0.0037%
F5 Networks Inc	FFIV	7,425.26	0.03%	0.00%	8.50%	8.50%	0.0023%
Fidelity National Information Services I	FIS	88,293.48	0.32%	0.98%	11.94%	12.98%	0.0414%
Fiserv Inc	FISV	80,642.35	0.29%	0.00%	17.36%	17.36%	0.0506%
Fifth Third Bancorp	FITB	20,168.66	0.07%	3.84%	3.80%	7.71%	0.0056%
FLIR Systems Inc	FLIR	6,914.25	0.02%	1.31%	13.10%	14.50%	0.0036%
Flowerserve Corp	FLS	6,108.55	0.02%	1.65%	11.39%	13.13%	0.0029%
FleetCor Technologies Inc	FLT	27,356.03	0.10%	0.00%	15.57%	15.57%	0.0154%
FMC Corp	FMC	12,389.93	0.04%	1.68%	10.20%	11.97%	0.0054%
Fox Corp	FOXA	22,815.36	0.08%	1.12%	6.02%	7.18%	0.0059%
First Republic Bank/CA	FRC	18,962.92	0.07%	0.71%	10.22%	10.97%	0.0075%
Federal Realty Investment Trust	FRT	9,441.86	0.03%	3.32%	5.70%	9.11%	0.0031%
TechnipFMC PLC	FTI	7,381.04	0.03%	3.28%	7.00%	10.39%	0.0028%
Fortinet Inc	FTNT	19,730.45	0.07%	0.00%	16.82%	16.82%	0.0120%
Fortive Corp	FTV	25,161.81	0.09%	0.39%	8.57%	8.97%	0.0082%
General Dynamics Corp	GD	50,755.86	0.18%	2.51%	7.78%	10.39%	0.0190%
General Electric Co	GE	108,732.69	0.39%	0.32%	8.13%	8.47%	0.0333%
Gilead Sciences Inc	GILD	79,957.20	0.29%	3.97%	1.27%	5.26%	0.0152%
General Mills Inc	GIS	31,583.53	0.11%	3.75%	6.50%	10.38%	0.0118%
Globe Life Inc	GL	11,290.14	0.04%	0.65%	8.07%	8.75%	0.0036%
Corning Inc	GLW	20,337.78	0.07%	3.43%	8.48%	12.06%	0.0089%
General Motors Co	GM	47,707.10	0.17%	4.59%	10.51%	15.34%	0.0264%
Alphabet Inc	GOOGL	988,702.25	3.57%	0.00%	15.76%	15.76%	0.5628%
Genuine Parts Co	GPC	13,595.08	0.05%	3.23%	4.47%	7.77%	0.0038%
Global Payments Inc	GPN	58,742.11	0.21%	0.14%	18.27%	18.42%	0.0391%
Gap Inc/The	GPS	6,499.14	0.02%	5.59%	4.63%	10.36%	0.0024%
Garmin Ltd	GRMN	18,430.49	0.07%	2.30%	6.70%	9.07%	0.0060%
Goldman Sachs Group Inc/The	GS	87,655.68	0.32%	2.20%	7.78%	10.07%	0.0319%
WW Grainger Inc	GWW	16,303.70	0.06%	1.97%	9.28%	11.33%	0.0067%
Halliburton Co	HAL	19,144.91	0.07%	3.33%	12.26%	15.80%	0.0109%
Hasbro Inc	HAS	13,939.21	0.05%	2.65%	10.93%	13.73%	0.0069%
Huntington Bancshares Inc/OH	HBAN	13,841.45	0.05%	4.56%	5.84%	10.53%	0.0053%
Hanesbrands Inc	HBI	4,976.95	0.02%	4.36%	4.94%	9.41%	0.0017%
HCA Healthcare Inc	HCA	47,077.95	0.17%	0.92%	9.72%	10.68%	0.0182%
Home Depot Inc/The	HD	248,818.56	0.90%	2.37%	9.38%	11.87%	0.1067%
Hess Corp	HES	17,237.23	0.06%	1.83%	4.40%	6.27%	0.0039%
HollyFrontier Corp	HFC	7,249.63	0.03%	2.99%	-4.59%	-1.66%	-0.0004%
Hartford Financial Services Group Inc/Th	HIG	21,365.77	0.08%	2.05%	9.50%	11.65%	0.0090%
Huntington Ingalls Industries Inc	HII	10,674.99	0.04%	1.33%	40.00%	41.60%	0.0160%
Hilton Worldwide Holdings Inc	HLT	30,417.17	0.11%	0.56%	12.00%	12.59%	0.0138%
Harley-Davidson Inc	HOG	5,153.37	0.02%	4.56%	7.70%	12.44%	0.0023%
Hologic Inc	HOLX	14,091.92	0.05%	0.00%	10.37%	10.37%	0.0053%
Honeywell International Inc	HON	123,771.49	0.45%	2.08%	7.24%	9.39%	0.0420%
Helmerich & Payne Inc	HP	4,444.45	0.02%	6.50%	4.47%	11.11%	0.0018%
Hewlett Packard Enterprise Co	HPE	18,010.46	0.07%	3.47%	5.41%	8.98%	0.0058%
HP Inc	HPQ	30,981.96	0.11%	3.30%	-1.30%	1.98%	0.0022%
H&R Block Inc	HRB	4,529.71	0.02%	4.44%	10.00%	14.66%	0.0024%
Hormel Foods Corp	HRL	25,271.66	0.09%	1.96%	4.62%	6.62%	0.0060%
Henry Schein Inc	HSIC	10,116.27	0.04%	0.00%	3.21%	3.21%	0.0012%
Host Hotels & Resorts Inc	HST	11,718.69	0.04%	5.04%	16.32%	21.78%	0.0092%
Hershey Co/The	HSY	32,418.33	0.12%	2.05%	7.90%	10.03%	0.0117%
Humana Inc	HUM	44,526.93	0.16%	0.65%	13.52%	14.22%	0.0229%
International Business Machines Corp	IBM	127,292.67	0.46%	4.66%	4.57%	9.34%	0.0429%
Intercontinental Exchange Inc	ICE	55,540.17	0.20%	1.12%	9.80%	10.97%	0.0220%
IDEXX Laboratories Inc	IDXX	23,247.93	0.08%	0.00%	19.19%	19.19%	0.0161%
IDEX Corp	IEX	12,462.41	0.05%	1.27%	12.23%	13.58%	0.0061%
International Flavors & Fragrances Inc	IFF	13,999.43	0.05%	2.23%	9.57%	11.90%	0.0060%
Illumina Inc	ILMN	42,640.29	0.15%	0.00%	13.96%	13.96%	0.0215%
Incyte Corp	INCY	15,739.08	0.06%	0.00%	40.60%	40.60%	0.0231%
IHS Markit Ltd	INFO	30,987.93	0.11%	0.54%	12.00%	12.57%	0.0141%
Intel Corp	INTC	273,428.61	0.99%	2.04%	6.22%	8.32%	0.0821%
Intuit Inc	INTU	72,984.77	0.26%	0.74%	13.96%	14.75%	0.0389%
International Paper Co	IP	15,966.98	0.06%	5.05%	6.10%	11.31%	0.0065%
Interpublic Group of Cos Inc/The	IPG	8,801.52	0.03%	4.14%	6.11%	10.37%	0.0033%
IPG Photonics Corp	IPGP	6,775.45	0.02%	0.00%	-10.17%	-10.17%	-0.0025%
IQVIA Holdings Inc	IQV	30,124.33	0.11%	0.00%	17.60%	17.60%	0.0191%
Ingersoll-Rand PLC	IR	31,750.95	0.11%	1.70%	8.97%	10.75%	0.0123%
Iron Mountain Inc	IRM	9,076.60	0.03%	7.78%	4.42%	12.37%	0.0041%
Intuitive Surgical Inc	ISRG	64,695.74	0.23%	0.00%	12.24%	12.24%	0.0286%
Gartner Inc	IT	14,382.25	0.05%	0.00%	12.77%	12.77%	0.0066%
Illinois Tool Works Inc	ITW	56,239.64	0.20%	2.33%	6.87%	9.28%	0.0188%
Invesco Ltd	IVZ	7,852.36	0.03%	7.41%	6.09%	13.72%	0.0039%

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Jacobs Engineering Group Inc	J	12,329.57	0.04%	0.78%	11.99%	12.81%	0.0057%
JB Hunt Transport Services Inc	JBHT	11,502.95	0.04%	1.00%	11.83%	12.90%	0.0054%
Johnson Controls International plc	JCI	30,141.66	0.11%	2.79%	9.67%	12.59%	0.0137%
Jack Henry & Associates Inc	JKHY	11,505.14	0.04%	1.08%	12.65%	13.80%	0.0057%
Johnson & Johnson	JNJ	391,806.84	1.42%	2.69%	5.55%	8.32%	0.1177%
Juniper Networks Inc	JNPR	7,678.18	0.03%	3.43%	8.66%	12.24%	0.0034%
JPMorgan Chase & Co	JPM	415,145.14	1.50%	2.84%	6.80%	9.74%	0.1460%
Nordstrom Inc	JWN	5,722.63	0.02%	4.02%	6.00%	10.14%	0.0021%
Kellogg Co	K	23,266.03	0.08%	3.32%	1.65%	5.00%	0.0042%
KeyCorp	KEY	18,428.56	0.07%	4.18%	11.45%	15.87%	0.0106%
Keysight Technologies Inc	KEYS	17,523.74	0.06%	0.00%	8.19%	8.19%	0.0052%
Kraft Heinz Co/The	KHC	35,657.89	0.13%	5.48%	-2.88%	2.52%	0.0033%
Kimco Realty Corp	KIM	8,226.07	0.03%	5.92%	4.47%	10.52%	0.0031%
KLA Corp	KLAC	26,152.86	0.09%	1.98%	13.90%	16.02%	0.0151%
Kimberly-Clark Corp	KMB	49,103.47	0.18%	2.98%	5.09%	8.15%	0.0145%
Kinder Morgan Inc/DE	KMI	47,269.83	0.17%	5.97%	3.10%	9.16%	0.0156%
CarMax Inc	KMX	15,854.89	0.06%	0.00%	10.31%	10.31%	0.0059%
Coca-Cola Co/The	KO	250,214.30	0.90%	2.86%	8.20%	11.18%	0.1010%
Kroger Co/The	KR	21,503.78	0.08%	2.24%	5.07%	7.38%	0.0057%
Kohl's Corp	KSS	6,693.28	0.02%	6.38%	8.00%	14.64%	0.0035%
Kansas City Southern	KSU	16,219.70	0.06%	0.94%	11.10%	12.09%	0.0071%
Loews Corp	L	15,303.24	N/A	0.49%	N/A	N/A	N/A
L Brands Inc	LB	6,403.15	0.02%	5.19%	11.50%	16.98%	0.0039%
Leidos Holdings Inc	LDOS	14,222.92	0.05%	1.34%	10.00%	11.40%	0.0059%
Leggett & Platt Inc	LEG	6,262.98	0.02%	3.32%	10.00%	13.49%	0.0031%
Lennar Corp	LEN	20,437.69	0.07%	0.50%	12.59%	13.11%	0.0097%
Laboratory Corp of America Holdings	LH	17,031.34	0.06%	0.00%	5.32%	5.32%	0.0033%
L3Harris Technologies Inc	LHX	48,928.24	N/A	1.30%	N/A	N/A	N/A
Linde PLC	LIN	109,116.56	0.39%	1.76%	9.50%	11.34%	0.0447%
LKQ Corp	LKQ	10,016.70	0.04%	0.00%	14.20%	14.20%	0.0051%
Eli Lilly & Co	LLY	134,072.66	0.48%	2.06%	10.49%	12.65%	0.0613%
Lockheed Martin Corp	LMT	120,760.42	0.44%	2.29%	8.89%	11.27%	0.0492%
Lincoln National Corp	LNC	10,805.05	0.04%	2.76%	9.00%	11.89%	0.0046%
Alliant Energy Corp	LNT	14,487.99	0.05%	2.40%	5.78%	8.24%	0.0043%
Lowe's Cos Inc	LOW	89,095.10	0.32%	1.81%	14.88%	16.83%	0.0541%
Lam Research Corp	LRCX	42,483.59	0.15%	1.51%	14.14%	15.76%	0.0242%
Southwest Airlines Co	LUV	28,934.66	0.10%	1.36%	7.70%	9.11%	0.0095%
Las Vegas Sands Corp	LVS	50,160.47	0.18%	4.85%	4.45%	9.41%	0.0170%
Lamb Weston Holdings Inc	LW	13,339.67	0.05%	0.95%	8.97%	9.96%	0.0048%
LyondellBasell Industries NV	LYB	25,959.37	0.09%	5.81%	6.40%	12.40%	0.0116%
Live Nation Entertainment Inc	LYV	14,566.85	N/A	0.00%	N/A	N/A	N/A
Macy's Inc	M	4,928.00	0.02%	9.46%	-1.93%	7.44%	0.0013%
Mastercard Inc	MA	318,151.58	1.15%	0.45%	17.42%	17.91%	0.2058%
Mid-America Apartment Communities Inc	MAA	15,650.98	N/A	2.92%	N/A	N/A	N/A
Marriott International Inc/MD	MAR	45,790.83	0.17%	1.32%	7.32%	8.69%	0.0144%
Masco Corp	MAS	13,594.21	0.05%	1.01%	9.60%	10.66%	0.0052%
McDonald's Corp	MCD	161,139.38	0.58%	2.37%	8.99%	11.47%	0.0667%
Microchip Technology Inc	MCHP	23,295.54	0.08%	1.50%	9.31%	10.88%	0.0092%
McKesson Corp	MCK	25,696.60	0.09%	1.16%	-15.55%	-14.49%	-0.0134%
Moody's Corp	MCO	48,481.95	0.18%	0.82%	11.33%	12.20%	0.0214%
Mondelez International Inc	MDLZ	82,617.12	0.30%	2.07%	8.32%	10.48%	0.0313%
Medtronic PLC	MDT	154,733.18	0.56%	1.84%	7.62%	9.53%	0.0533%
MetLife Inc	MET	45,714.87	0.17%	3.50%	9.96%	13.64%	0.0225%
MGM Resorts International	MGM	15,995.41	0.06%	1.67%	1.97%	3.66%	0.0021%
Mohawk Industries Inc	MHK	9,431.22	0.03%	0.00%	8.35%	8.35%	0.0028%
McCormick & Co Inc/MD	MKC	21,719.80	0.08%	1.50%	5.00%	6.54%	0.0051%
MarketAxess Holdings Inc	MKTX	13,431.76	N/A	0.67%	N/A	N/A	N/A
Martin Marietta Materials Inc	MLM	16,487.64	0.06%	0.78%	13.85%	14.69%	0.0087%
Marsh & McLennan Cos Inc	MMC	56,452.19	0.20%	1.71%	11.17%	12.98%	0.0265%
3M Co	MMM	91,237.54	0.33%	3.75%	6.65%	10.53%	0.0347%
Monster Beverage Corp	MNST	35,809.60	0.13%	0.00%	12.50%	12.50%	0.0162%
Altria Group Inc	MO	88,309.86	0.32%	7.29%	7.23%	14.79%	0.0472%
Mosaic Co/The	MOS	7,514.65	0.03%	0.97%	4.45%	5.44%	0.0015%
Marathon Petroleum Corp	MPC	35,388.03	0.13%	4.28%	11.58%	16.10%	0.0206%
Merck & Co Inc	MRK	217,528.89	0.79%	2.58%	10.44%	13.15%	0.1033%
Marathon Oil Corp	MRO	9,095.19	0.03%	1.76%	0.20%	1.96%	0.0006%
Morgan Stanley	MS	84,587.93	0.31%	2.88%	10.85%	13.88%	0.0424%
MSCI Inc	MSCI	24,209.34	0.09%	1.00%	13.75%	14.82%	0.0130%
Microsoft Corp	MSFT	1,294,777.38	4.68%	1.16%	11.88%	13.11%	0.6130%
Motorola Solutions Inc	MSI	30,326.48	0.11%	1.30%	7.10%	8.44%	0.0092%
M&T Bank Corp	MTB	22,237.91	0.08%	2.69%	5.46%	8.22%	0.0066%
Mettler-Toledo International Inc	MTD	18,440.51	0.07%	0.00%	11.79%	11.79%	0.0079%
Micron Technology Inc	MU	58,976.28	0.21%	0.00%	6.19%	6.19%	0.0132%
Maxim Integrated Products Inc	MXIM	16,195.98	0.06%	3.20%	6.73%	10.03%	0.0059%
Mylan NV	MYL	11,055.56	0.04%	0.00%	2.90%	2.90%	0.0012%
Noble Energy Inc	NBL	9,455.95	0.03%	2.36%	8.65%	11.11%	0.0038%
Norwegian Cruise Line Holdings Ltd	NCLH	11,456.99	0.04%	0.10%	8.21%	8.32%	0.0034%
Nasdaq Inc	NDAQ	19,089.55	0.07%	1.70%	7.83%	9.60%	0.0066%
NextEra Energy Inc	NEE	131,089.70	0.47%	2.10%	7.97%	10.15%	0.0481%
Newmont Corp	NEM	37,590.79	0.14%	1.83%	7.70%	9.60%	0.0130%
Netflix Inc	NFLX	151,427.79	0.55%	0.00%	29.57%	29.57%	0.1617%
NiSource Inc	NI	10,948.57	0.04%	2.74%	4.68%	7.48%	0.0030%
NIKE Inc	NKE	149,975.00	0.54%	0.97%	14.25%	15.29%	0.0828%
NortonLifeLock Inc	NLOK	17,712.68	0.06%	1.41%	4.67%	6.11%	0.0039%
Nielsen Holdings PLC	NLSN	7,258.53	0.03%	5.48%	8.75%	14.47%	0.0038%
Northrop Grumman Corp	NOC	62,791.84	0.23%	1.49%	16.49%	18.11%	0.0411%
National Oilwell Varco Inc	NOV	7,952.00	0.03%	0.98%	54.53%	55.77%	0.0160%
ServiceNow Inc	NOW	63,790.18	0.23%	0.00%	36.26%	36.26%	0.0835%

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
NRG Energy Inc	NRG	9,281.31	0.03%	0.33%	37.98%	38.37%	0.0129%
Norfolk Southern Corp	NSC	53,698.39	0.19%	1.83%	11.20%	13.13%	0.0255%
NetApp Inc	NTAP	12,187.28	0.04%	3.59%	5.54%	9.22%	0.0041%
Northern Trust Corp	NTRS	20,724.14	0.07%	2.97%	9.42%	12.53%	0.0094%
Nucor Corp	NUE	14,399.69	0.05%	3.39%	6.80%	10.31%	0.0054%
NVIDIA Corp	NVDA	144,695.16	0.52%	0.27%	9.17%	9.46%	0.0494%
NVR Inc	NVR	13,866.18	0.05%	0.00%	12.23%	12.23%	0.0061%
Newell Brands Inc	NWL	8,269.00	0.03%	4.71%	-12.53%	-8.11%	-0.0024%
News Corp	NWSA	8,080.98	0.03%	1.42%	-1.25%	0.17%	0.0000%
Realty Income Corp	O	25,555.32	0.09%	3.46%	4.95%	8.50%	0.0078%
Old Dominion Freight Line Inc	ODFL	15,663.77	0.06%	0.34%	12.87%	13.23%	0.0075%
ONEOK Inc	OKE	30,927.65	0.11%	4.76%	12.31%	17.36%	0.0194%
Omnicom Group Inc	OMC	16,397.40	0.06%	3.45%	4.16%	7.68%	0.0045%
Oracle Corp	ORCL	168,241.19	0.61%	1.78%	8.18%	10.04%	0.0610%
O'Reilly Automotive Inc	ORLY	30,725.08	0.11%	0.00%	11.95%	11.95%	0.0133%
Occidental Petroleum Corp	OXY	35,482.57	0.13%	7.82%	4.80%	12.81%	0.0164%
Paycom Software Inc	PAYC	18,580.23	0.07%	0.00%	26.00%	26.00%	0.0174%
Paychex Inc	PAYX	30,738.81	0.11%	2.92%	7.25%	10.28%	0.0114%
People's United Financial Inc	PBCT	6,835.29	0.02%	4.65%	2.00%	6.70%	0.0017%
PACCAR Inc	PCAR	25,698.92	0.09%	3.56%	4.47%	8.11%	0.0075%
Healthpeak Properties Inc	PEAK	18,353.23	0.07%	4.11%	3.64%	7.83%	0.0052%
Public Service Enterprise Group Inc	PEG	29,939.01	0.11%	3.17%	5.22%	8.48%	0.0092%
PepsiCo Inc	PEP	198,037.71	0.72%	2.67%	5.08%	7.81%	0.0559%
Pfizer Inc	PFE	206,090.72	0.74%	3.99%	2.77%	6.81%	0.0507%
Principal Financial Group Inc	PFGE	14,702.73	0.05%	4.30%	8.34%	12.82%	0.0068%
Procter & Gamble Co/The	PG	307,743.22	1.11%	2.40%	7.44%	9.93%	0.1104%
Progressive Corp/The	PGR	47,171.37	0.17%	3.33%	6.23%	9.67%	0.0165%
Parker-Hannifin Corp	PH	25,139.26	0.09%	1.74%	7.82%	9.62%	0.0087%
PulteGroup Inc	PHM	12,054.39	0.04%	1.08%	11.97%	13.10%	0.0057%
Packaging Corp of America	PKG	9,063.50	0.03%	3.39%	10.00%	13.56%	0.0044%
PerkinElmer Inc	PKI	10,274.60	0.04%	0.30%	7.67%	7.98%	0.0030%
Prologis Inc	PLD	58,679.26	0.21%	2.41%	7.38%	9.87%	0.0209%
Philip Morris International Inc	PM	128,670.83	0.46%	5.58%	6.04%	11.79%	0.0548%
PNC Financial Services Group Inc/The	PNC	64,322.15	0.23%	3.26%	7.57%	10.96%	0.0255%
Pentair PLC	PNR	7,216.23	0.03%	1.76%	7.96%	9.79%	0.0026%
Pinnacle West Capital Corp	PNW	10,981.41	0.04%	3.09%	4.67%	7.83%	0.0031%
PPG Industries Inc	PPG	28,337.75	0.10%	1.78%	5.52%	7.35%	0.0075%
PPL Corp	PPL	26,166.57	0.09%	4.56%	1.38%	5.97%	0.0056%
Perrigo Co PLC	PRGO	7,763.69	0.03%	1.41%	-1.60%	-0.20%	-0.0001%
Prudential Financial Inc	PRU	36,606.12	0.13%	4.40%	9.00%	13.60%	0.0180%
Public Storage	PSA	39,086.51	0.14%	3.58%	3.51%	7.15%	0.0101%
Phillips 66	PSX	40,600.95	0.15%	4.21%	-0.04%	4.17%	0.0061%
PVH Corp	PVH	6,359.78	0.02%	0.17%	6.27%	6.45%	0.0015%
Quanta Services Inc	PWR	5,589.83	0.02%	0.33%	14.50%	14.85%	0.0030%
Pioneer Natural Resources Co	PXD	22,362.28	0.08%	0.62%	20.13%	20.81%	0.0168%
PayPal Holdings Inc	PYPL	133,592.97	0.48%	0.00%	18.81%	18.81%	0.0908%
QUALCOMM Inc	QCOM	97,451.84	0.35%	3.00%	12.26%	15.44%	0.0544%
Qorvo Inc	QRVO	12,246.37	0.04%	0.24%	13.24%	13.49%	0.0060%
Royal Caribbean Cruises Ltd	RCL	24,543.62	0.09%	2.49%	10.06%	12.68%	0.0112%
Everest Re Group Ltd	RE	11,279.11	0.04%	2.07%	10.00%	12.17%	0.0050%
Regency Centers Corp	REG	10,405.95	0.04%	3.77%	4.78%	8.64%	0.0032%
Regeneron Pharmaceuticals Inc	REGN	37,104.38	0.13%	0.00%	9.59%	9.59%	0.0129%
Regions Financial Corp	RF	15,019.43	0.05%	4.19%	7.16%	11.50%	0.0062%
Robert Half International Inc	RHI	6,753.34	0.02%	2.23%	1.83%	4.08%	0.0010%
Raymond James Financial Inc	RJF	12,699.63	0.05%	1.58%	9.85%	11.51%	0.0053%
Ralph Lauren Corp	RL	8,468.96	0.03%	2.40%	6.05%	8.52%	0.0026%
ResMed Inc	RMD	22,989.76	0.08%	1.00%	12.61%	13.67%	0.0114%
Rockwell Automation Inc	ROK	22,267.76	0.08%	2.13%	8.08%	10.30%	0.0083%
Rollins Inc	ROL	12,426.41	N/A	1.40%	N/A	N/A	N/A
Roper Technologies Inc	ROP	39,714.75	0.14%	0.54%	13.10%	13.68%	0.0196%
Ross Stores Inc	ROST	40,263.01	0.15%	0.91%	9.83%	10.79%	0.0157%
Republic Services Inc	RSG	30,334.71	0.11%	1.64%	8.38%	10.09%	0.0111%
Raytheon Co	RTN	61,527.15	0.22%	1.83%	7.41%	9.31%	0.0207%
SBA Communications Corp	SBAC	28,100.71	0.10%	0.28%	28.40%	28.72%	0.0292%
Starbucks Corp	SBUX	99,564.97	0.36%	1.95%	13.65%	15.74%	0.0566%
Charles Schwab Corp/The	SCHW	58,512.59	0.21%	1.64%	3.63%	5.30%	0.0112%
Sealed Air Corp	SEE	5,485.31	0.02%	1.81%	5.08%	6.93%	0.0014%
Sherwin-Williams Co/The	SHW	51,415.32	0.19%	0.96%	11.25%	12.26%	0.0228%
SVB Financial Group	SIVB	12,414.39	0.04%	0.02%	11.50%	11.52%	0.0052%
JM Smucker Co/The	SJM	11,817.38	0.04%	3.32%	1.27%	4.61%	0.0020%
Schlumberger Ltd	SLB	46,395.11	0.17%	5.97%	26.04%	32.78%	0.0549%
SL Green Realty Corp	SLG	7,481.07	0.03%	3.89%	7.58%	11.62%	0.0031%
Snap-on Inc	SNA	8,755.12	0.03%	2.41%	6.62%	9.11%	0.0029%
Synopsys Inc	SNPS	22,205.40	0.08%	0.00%	13.77%	13.77%	0.0110%
Southern Co/The	SO	73,830.87	0.27%	3.50%	4.10%	7.68%	0.0205%
Simon Property Group Inc	SPG	40,859.60	0.15%	6.25%	4.30%	10.68%	0.0158%
S&P Global Inc	SPGI	71,787.61	0.26%	0.77%	11.47%	12.29%	0.0319%
Sempra Energy	SRE	45,283.76	0.16%	2.42%	10.00%	12.53%	0.0205%
STERIS PLC	STE	12,775.97	0.05%	0.95%	10.10%	11.10%	0.0051%
State Street Corp	STT	27,500.83	0.10%	2.88%	8.61%	11.61%	0.0115%
Seagate Technology PLC	STX	14,971.91	0.05%	4.50%	5.37%	9.99%	0.0054%
Constellation Brands Inc	STZ	36,138.73	0.13%	1.59%	5.17%	6.80%	0.0089%
Stanley Black & Decker Inc	SWK	24,220.04	0.09%	1.78%	8.65%	10.50%	0.0092%
Skyworks Solutions Inc	SWKS	19,253.06	0.07%	1.37%	17.23%	18.72%	0.0130%
Synchrony Financial	SYF	19,961.32	0.07%	2.84%	-0.43%	2.40%	0.0017%
Stryker Corp	SYK	78,879.08	0.28%	1.10%	9.36%	10.51%	0.0299%
Sysco Corp	SYI	41,910.03	0.15%	2.05%	9.43%	11.57%	0.0175%
AT&T Inc	T	272,933.10	0.99%	5.55%	5.58%	11.29%	0.1113%



Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Molson Coors Beverage Co	TAP	12,109.45	0.04%	3.53%	-4.74%	-1.29%	-0.0006%
TransDigm Group Inc	TDG	34,446.58	0.12%	0.00%	11.86%	11.86%	0.0148%
TE Connectivity Ltd	TEL	30,801.22	0.11%	2.00%	9.98%	12.08%	0.0134%
Truist Financial Corp	TFC	69,215.50	0.25%	3.63%	8.93%	12.72%	0.0318%
Teleflex Inc	TFX	17,199.40	0.06%	0.36%	15.48%	15.87%	0.0099%
Target Corp	TGT	56,116.07	0.20%	2.39%	9.55%	12.05%	0.0244%
Tiffany & Co	TIF	16,234.06	0.06%	1.74%	6.77%	8.57%	0.0050%
TJX Cos Inc/The	TJX	71,035.97	0.26%	1.56%	11.13%	12.78%	0.0328%
Thermo Fisher Scientific Inc	TMO	125,586.44	0.45%	0.26%	12.57%	12.84%	0.0583%
T-Mobile US Inc	TMUS	67,752.97	0.24%	0.73%	6.00%	6.75%	0.0165%
Tapestry Inc	TPR	7,110.86	0.03%	5.27%	9.30%	14.81%	0.0038%
T Rowe Price Group Inc	TROW	31,202.93	0.11%	2.43%	10.66%	13.22%	0.0149%
Travelers Cos Inc/The	TRV	33,628.91	0.12%	2.57%	11.75%	14.47%	0.0176%
Tractor Supply Co	TSCO	11,004.00	0.04%	1.59%	10.78%	12.45%	0.0049%
Tyson Foods Inc	TSN	30,191.01	0.11%	2.04%	10.33%	12.48%	0.0136%
Take-Two Interactive Software Inc	TTWO	14,127.56	0.05%	0.00%	7.60%	7.60%	0.0039%
Twitter Inc	TWTR	25,216.07	0.09%	0.00%	42.67%	42.67%	0.0389%
Texas Instruments Inc	TXN	112,780.66	0.41%	3.01%	8.12%	11.25%	0.0458%
Textron Inc	TXT	10,484.11	0.04%	0.17%	11.17%	11.35%	0.0043%
Under Armour Inc	UAA	8,566.16	0.03%	0.00%	28.88%	28.88%	0.0089%
United Airlines Holdings Inc	UAL	18,927.67	0.07%	0.00%	11.23%	11.23%	0.0077%
UDR Inc	UDR	14,040.19	0.05%	2.86%	5.31%	8.25%	0.0042%
Universal Health Services Inc	UHS	12,008.40	0.04%	0.44%	6.15%	6.60%	0.0029%
Ulta Beauty Inc	ULTA	15,314.10	0.06%	0.00%	16.68%	16.68%	0.0092%
UnitedHealth Group Inc	UNH	258,123.20	0.93%	1.73%	13.53%	15.38%	0.1434%
Unum Group	UNM	5,505.31	0.02%	4.11%	9.00%	13.30%	0.0026%
Union Pacific Corp	UNP	124,553.34	0.45%	2.18%	8.40%	10.68%	0.0480%
United Parcel Service Inc	UPS	88,801.80	0.32%	3.87%	7.95%	11.97%	0.0384%
United Rentals Inc	URI	10,092.01	0.04%	0.00%	10.80%	10.80%	0.0039%
US Bancorp	USB	81,639.48	0.29%	3.29%	6.40%	9.79%	0.0289%
United Technologies Corp	UTX	129,662.99	0.47%	2.04%	8.90%	11.03%	0.0516%
Visa Inc	V	390,480.01	1.41%	0.58%	15.53%	16.15%	0.2278%
Varian Medical Systems Inc	VAR	12,779.10	0.05%	0.00%	10.63%	10.63%	0.0049%
VF Corp	VFC	33,136.03	0.12%	2.14%	10.05%	12.29%	0.0147%
ViacomCBS Inc	VIAC	21,200.06	0.08%	2.02%	7.00%	9.09%	0.0070%
Valero Energy Corp	VLO	34,622.13	0.13%	4.65%	17.78%	22.84%	0.0286%
Vulcan Materials Co	VMC	18,745.38	0.07%	0.86%	19.05%	19.99%	0.0135%
Vornado Realty Trust	VNO	12,552.23	0.05%	4.77%	5.15%	10.05%	0.0046%
Verisk Analytics Inc	VRSK	26,623.93	0.10%	0.54%	9.90%	10.46%	0.0101%
VeriSign Inc	VRSN	24,437.51	0.09%	0.00%	10.30%	10.30%	0.0091%
Vertex Pharmaceuticals Inc	VRTX	58,804.36	0.21%	0.00%	38.78%	38.78%	0.0824%
Ventas Inc	VTR	21,566.51	0.08%	5.49%	4.23%	9.84%	0.0077%
Verizon Communications Inc	VZ	245,843.84	0.89%	4.12%	2.84%	7.02%	0.0623%
Westinghouse Air Brake Technologies Corp	WAB	14,157.67	0.05%	0.66%	11.42%	12.12%	0.0062%
Waters Corp	WAT	14,419.77	0.05%	0.00%	9.32%	9.32%	0.0049%
Walgreens Boots Alliance Inc	WBA	45,046.06	0.16%	3.63%	8.23%	12.00%	0.0195%
Western Digital Corp	WDC	19,480.00	0.07%	3.05%	2.77%	5.87%	0.0041%
WEC Energy Group Inc	WEC	31,508.86	0.11%	2.52%	6.69%	9.30%	0.0106%
Welltower Inc	WELL	34,456.44	0.12%	4.10%	2.87%	7.03%	0.0087%
Wells Fargo & Co	WFC	194,068.74	0.70%	4.47%	10.31%	15.00%	0.1051%
Whirlpool Corp	WHR	9,237.91	0.03%	3.41%	4.73%	8.22%	0.0027%
Willis Towers Watson PLC	WLTW	27,166.13	0.10%	1.21%	10.00%	11.27%	0.0111%
Waste Management Inc	WM	51,630.15	0.19%	1.68%	7.50%	9.24%	0.0172%
Williams Cos Inc/The	WMB	25,077.29	0.09%	7.35%	5.00%	12.53%	0.0113%
Walmart Inc	WMT	324,828.16	1.17%	1.88%	4.18%	6.10%	0.0716%
WR Berkley Corp	WRB	13,486.28	0.05%	1.55%	6.95%	8.56%	0.0042%
Westrock Co	WRK	10,079.79	0.04%	5.52%	4.45%	10.09%	0.0037%
Western Union Co/The	WU	11,277.99	0.04%	2.97%	4.22%	7.26%	0.0030%
Weyerhaeuser Co	WY	21,571.87	0.08%	4.70%	3.80%	8.59%	0.0067%
Wynn Resorts Ltd	WYNN	13,543.86	0.05%	2.97%	13.10%	16.27%	0.0080%
Cimarex Energy Co	XEC	4,468.45	0.02%	1.69%	19.35%	21.20%	0.0034%
Xcel Energy Inc	XEL	36,282.41	0.13%	2.46%	5.78%	8.31%	0.0109%
Xilinx Inc	XLNX	21,021.71	0.08%	1.75%	9.05%	10.88%	0.0083%
Exxon Mobil Corp	XOM	262,836.31	0.95%	5.76%	6.33%	12.28%	0.1165%
DENTSPLY SIRONA Inc	XRAY	12,455.17	0.04%	0.63%	12.72%	13.39%	0.0060%
Xerox Holdings Corp	XRX	7,689.82	N/A	2.82%	N/A	N/A	N/A
Xylem Inc/NY	XYL	14,705.24	0.05%	1.18%	12.28%	13.52%	0.0072%
Yum! Brands Inc	YUM	31,991.42	0.12%	1.59%	11.67%	13.35%	0.0154%
Zimmer Biomet Holdings Inc	ZBH	30,420.72	0.11%	0.65%	6.39%	7.06%	0.0078%
Zebra Technologies Corp	ZBRA	12,888.31	0.05%	0.00%	11.80%	11.80%	0.0055%
Zions Bancorp NA	ZION	7,508.44	0.03%	3.13%	5.24%	8.45%	0.0023%
Zoetis Inc	ZTS	63,924.12	0.23%	0.49%	11.40%	11.91%	0.0275%
Total Market Capitalization:		27,688,228					13.44%

## Notes:

[1] Equals sum of Col. [9]

[2] Source: Bloomberg Professional

[3] Equals [1] - [2]

[4] Source: Bloomberg Professional

[5] Equals weight in S&amp;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	Current 30-Year	
Est. Required	Treasury (30-day	Implied Market
Market Return	average)	Risk Premium
14.51%	2.25%	12.25%

[4]	[5]	[6]	[7]	[8]	[9]		
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Agilent Technologies Inc	A	27,575.81	0.10%	0.81%	11.00%	11.85%	0.0121%
American Airlines Group Inc	AAL	12,615.41	0.05%	1.39%	7.00%	8.44%	0.0040%
Advance Auto Parts Inc	AAP	10,372.55	0.04%	0.16%	14.00%	14.17%	0.0055%
Apple Inc	AAPL	1,418,414.00	5.26%	1.01%	12.50%	13.57%	0.7146%
AbbVie Inc	ABBV	126,095.80	0.47%	5.54%	10.50%	16.33%	0.0764%
AmerisourceBergen Corp	ABC	18,995.92	0.07%	1.84%	8.00%	9.91%	0.0070%
ABIOMED Inc	ABMD	8,344.79	0.03%	0.00%	12.50%	12.50%	0.0039%
Abbott Laboratories	ABT	160,452.00	0.60%	1.59%	10.00%	11.67%	0.0695%
Accenture PLC	ACN	133,905.90	0.50%	1.52%	9.00%	10.59%	0.0526%
Adobe Inc	ADBE	170,569.50	0.63%	0.00%	21.00%	21.00%	0.1329%
Analog Devices Inc	ADI	44,512.98	0.17%	1.79%	9.00%	10.87%	0.0180%
Archer-Daniels-Midland Co	ADM	25,048.29	0.09%	3.29%	9.50%	12.95%	0.0120%
Automatic Data Processing Inc	ADP	77,071.52	0.29%	2.05%	13.50%	15.69%	0.0449%
Alliance Data Systems Corp	ADS	5,153.98	0.02%	2.25%	9.00%	11.35%	0.0022%
Autodesk Inc	ADSK	43,698.55	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	19,753.80	0.07%	2.50%	6.50%	9.08%	0.0067%
American Electric Power Co Inc	AEP	49,872.72	0.19%	2.81%	4.00%	6.87%	0.0127%
AES Corp/VA	AES	13,649.64	N/A	2.77%	N/A	N/A	N/A
Aflac Inc	AFL	38,638.43	0.14%	2.13%	8.00%	10.22%	0.0146%
Allergan PLC	AGN	62,535.86	0.23%	1.55%	3.00%	4.57%	0.0106%
American International Group Inc	AIG	44,898.07	N/A	2.48%	N/A	N/A	N/A
Apartment Investment & Management Co	AIV	8,211.35	0.03%	2.90%	-3.00%	-0.14%	0.0000%
Assurant Inc	AIZ	7,918.72	0.03%	1.93%	8.50%	10.51%	0.0031%
Arthur J Gallagher & Co	AJG	18,088.64	0.07%	1.77%	14.50%	16.40%	0.0110%
Akamai Technologies Inc	AKAM	15,590.49	0.06%	0.00%	18.00%	18.00%	0.0104%
Albermarle Corp	ALB	8,683.94	0.03%	1.80%	5.50%	7.35%	0.0024%
Align Technology Inc	ALGN	21,339.90	0.08%	0.00%	25.00%	25.00%	0.0198%
Alaska Air Group Inc	ALK	8,281.82	0.03%	2.08%	6.00%	8.14%	0.0025%
Allstate Corp/The	ALL	38,398.75	0.14%	1.69%	10.50%	12.28%	0.0175%
Allegion PLC	ALLE	12,073.74	0.04%	0.83%	9.50%	10.37%	0.0046%
Alexion Pharmaceuticals Inc	ALXN	24,022.12	0.09%	0.00%	42.00%	42.00%	0.0374%
Applied Materials Inc	AMAT	58,523.24	0.22%	1.36%	7.50%	8.91%	0.0194%
Amcrc PLC	AMCR	17,371.87	N/A	4.47%	N/A	N/A	N/A
Advanced Micro Devices Inc	AMD	57,604.94	0.21%	0.00%	34.00%	34.00%	0.0727%
AMETEK Inc	AME	23,037.60	0.09%	0.56%	15.50%	16.10%	0.0138%
Amgen Inc	AMGN	140,130.90	0.52%	2.72%	7.50%	10.32%	0.0537%
Ameriprise Financial Inc	AMP	21,834.67	0.08%	2.26%	12.50%	14.90%	0.0121%
American Tower Corp	AMT	105,319.40	0.39%	1.86%	7.50%	9.43%	0.0369%
Amazon.com Inc	AMZN	932,867.10	3.46%	0.00%	39.00%	39.00%	1.3503%
Arista Networks Inc	ANET	17,569.22	0.07%	0.00%	12.00%	12.00%	0.0078%
ANSYS Inc	ANSS	23,373.19	0.09%	0.00%	12.00%	12.00%	0.0104%
Anthem Inc	ANTM	77,250.64	0.29%	1.05%	18.50%	19.65%	0.0563%
Aon PLC	AON	49,886.71	0.19%	0.83%	11.00%	11.88%	0.0220%
AO Smith Corp	AOS	7,618.96	0.03%	2.06%	6.50%	8.63%	0.0024%
Apache Corp	APA	11,382.19	0.04%	3.30%	46.00%	50.06%	0.0211%
Air Products & Chemicals Inc	APD	52,288.04	0.19%	2.26%	10.50%	12.88%	0.0250%
Amphenol Corp	APH	31,604.25	0.12%	0.94%	9.50%	10.48%	0.0123%
Aptiv PLC	APTIV	23,604.63	0.09%	0.95%	11.00%	12.00%	0.0105%
Alexandria Real Estate Equities Inc	ARE	18,362.49	N/A	2.50%	N/A	N/A	N/A
Arconic Inc	ARNC	12,784.75	N/A	0.27%	N/A	N/A	N/A
Atmos Energy Corp	ATO	13,814.75	0.05%	1.99%	7.50%	9.56%	0.0049%
Activision Blizzard Inc	ATVI	46,187.41	0.17%	0.67%	9.00%	9.70%	0.0166%
AvalonBay Communities Inc	AVB	30,262.61	0.11%	2.93%	2.50%	5.47%	0.0061%
Broadcom Inc	AVGO	127,220.70	0.47%	4.07%	33.50%	38.25%	0.1806%
Avery Dennison Corp	AVY	10,934.59	0.04%	1.91%	11.00%	13.02%	0.0053%
American Water Works Co Inc	AWK	24,456.38	0.09%	1.51%	9.50%	11.08%	0.0101%
American Express Co	AXP	107,854.80	0.40%	1.31%	10.00%	11.38%	0.0455%
AutoZone Inc	AZO	27,581.73	0.10%	0.00%	13.50%	13.50%	0.0138%
Boeing Co/The	BA	178,848.70	0.66%	2.59%	12.00%	14.75%	0.0979%
Bank of America Corp	BAC	309,784.60	1.15%	2.23%	10.50%	12.85%	0.1477%
Baxter International Inc	BAX	46,480.95	0.17%	0.97%	10.50%	11.52%	0.0199%
Best Buy Co Inc	BBY	23,353.20	0.09%	2.45%	10.50%	13.08%	0.0113%
Becton Dickinson and Co	BDX	75,376.11	0.28%	1.13%	9.50%	10.68%	0.0299%
Franklin Resources Inc	BEN	12,822.10	0.05%	4.52%	7.50%	12.19%	0.0058%
Brown-Forman Corp	BF/B	34,355.11	0.13%	0.97%	14.50%	15.54%	0.0198%
Biogen Inc	BIIB	51,697.80	0.19%	0.00%	8.00%	8.00%	0.0154%
Bank of New York Mellon Corp/The	BK	43,361.79	0.16%	2.64%	7.00%	9.73%	0.0157%
Booking Holdings Inc	BKNG	83,883.82	0.31%	0.00%	12.00%	12.00%	0.0374%
Baker Hughes Co	BKR	14,901.04	N/A	3.14%	N/A	N/A	N/A
BlackRock Inc	BLK	83,648.43	0.31%	2.44%	9.00%	11.55%	0.0359%
Ball Corp	BLL	23,659.31	0.09%	0.84%	25.00%	25.95%	0.0228%
Bristol-Myers Squibb Co	BYM	108,950.30	0.40%	2.69%	9.00%	11.81%	0.0478%
Broadridge Financial Solutions Inc	BR	15,042.40	0.06%	1.65%	11.00%	12.74%	0.0071%
Berkshire Hathaway Inc	BRK/B	-	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	60,726.82	0.23%	0.00%	15.50%	15.50%	0.0349%
BorgWarner Inc	BWA	8,375.36	0.03%	1.68%	4.50%	6.22%	0.0019%

		[4]	[5]	[6]	[7]	[8]	[9]
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Boston Properties Inc	BXP	21,954.66	0.08%	2.78%	5.00%	7.85%	0.0064%
Citigroup Inc	C	174,218.90	0.65%	2.63%	10.00%	12.76%	0.0825%
Conagra Brands Inc	CAG	15,913.95	0.06%	2.66%	5.50%	8.23%	0.0049%
Cardinal Health Inc	CAH	16,076.91	0.06%	3.50%	10.50%	14.18%	0.0085%
Caterpillar Inc	CAT	78,891.93	0.29%	2.89%	12.00%	15.06%	0.0441%
Chubb Ltd	CB	68,977.98	0.26%	1.97%	10.00%	12.07%	0.0309%
Cboe Global Markets Inc	CBOE	13,308.32	0.05%	1.20%	14.50%	15.79%	0.0078%
CBRE Group Inc	CBRE	20,427.33	0.08%	0.00%	11.00%	11.00%	0.0083%
Crown Castle International Corp	CCI	62,308.48	0.23%	3.21%	12.50%	15.91%	0.0368%
Carnival Corp	CCL	26,062.87	0.10%	4.04%	10.00%	14.24%	0.0138%
Cadence Design Systems Inc	CDNS	21,162.32	0.08%	0.00%	12.50%	12.50%	0.0098%
CDW Corp/DE	CDW	19,963.25	0.07%	1.10%	10.50%	11.66%	0.0086%
Celanese Corp	CE	14,023.67	0.05%	2.35%	8.50%	10.95%	0.0057%
Cerner Corp	CERN	23,757.31	0.09%	0.95%	9.00%	9.99%	0.0088%
CF Industries Holdings Inc	CF	9,258.24	N/A	3.06%	N/A	N/A	N/A
Citizens Financial Group Inc	CFG	17,694.37	0.07%	3.91%	9.50%	13.60%	0.0089%
Church & Dwight Co Inc	CHD	17,411.11	0.06%	1.28%	9.00%	10.34%	0.0067%
CH Robinson Worldwide Inc	CHRW	10,785.13	0.04%	2.56%	9.00%	11.68%	0.0047%
Charter Communications Inc	CHTR	110,212.20	0.41%	0.00%	17.50%	17.50%	0.0716%
Cigna Corp	CI	79,427.50	0.29%	0.02%	14.50%	14.52%	0.0428%
Cincinnati Financial Corp	CINF	17,317.13	0.06%	2.11%	9.50%	11.71%	0.0075%
Colgate-Palmolive Co	CL	60,515.88	0.22%	2.44%	5.50%	8.01%	0.0180%
Clorox Co/The	CLX	19,962.49	0.07%	2.67%	3.50%	6.22%	0.0046%
Comerica Inc	CMA	9,511.54	0.04%	4.06%	9.50%	13.75%	0.0049%
Comcast Corp	CMCSA	207,673.30	0.77%	1.84%	13.50%	15.46%	0.1192%
CME Group Inc	CME	74,435.38	0.28%	1.44%	3.00%	4.46%	0.0123%
Chipotle Mexican Grill Inc	CMG	24,460.43	0.09%	0.00%	26.50%	26.50%	0.0241%
Cummins Inc	CMI	26,298.31	0.10%	3.05%	8.00%	11.17%	0.0109%
CMS Energy Corp	CMS	19,012.26	0.07%	2.43%	7.00%	9.52%	0.0067%
Centene Corp	CNC	28,545.75	0.11%	0.00%	15.50%	15.50%	0.0164%
CenterPoint Energy Inc	CNP	13,525.19	0.05%	4.42%	10.50%	15.15%	0.0076%
Capital One Financial Corp	COF	49,380.40	0.18%	1.51%	6.00%	7.56%	0.0138%
Cabot Oil & Gas Corp	COG	6,212.68	0.02%	2.63%	46.50%	49.74%	0.0115%
Cooper Cos Inc/The	COO	17,635.80	0.07%	0.02%	14.50%	14.52%	0.0095%
ConocoPhillips	COP	69,281.56	0.26%	2.66%	37.00%	40.15%	0.1032%
Costco Wholesale Corp	COST	138,223.50	0.51%	0.92%	11.00%	11.97%	0.0614%
Coty Inc	COTY	8,107.47	0.03%	4.67%	5.00%	9.79%	0.0029%
Campbell Soup Co	CPB	15,814.08	0.06%	2.86%	2.00%	4.89%	0.0029%
Capri Holdings Ltd	CPRI	5,534.61	0.02%	0.00%	10.50%	10.50%	0.0022%
Copart Inc	CPRT	23,220.15	0.09%	0.00%	16.00%	16.00%	0.0138%
salesforce.com Inc	CRM	163,006.30	0.61%	0.00%	30.00%	30.00%	0.1815%
Cisco Systems Inc	CSCO	207,809.00	0.77%	2.86%	7.50%	10.47%	0.0807%
CSX Corp	CSX	59,958.31	0.22%	1.25%	14.50%	15.84%	0.0353%
Cintas Corp	CTAS	29,661.13	0.11%	0.89%	15.50%	16.46%	0.0181%
CenturyLink Inc	CTL	16,191.34	0.06%	6.73%	1.00%	7.76%	0.0047%
Cognizant Technology Solutions Corp	CTSH	34,402.50	0.13%	1.28%	6.00%	7.32%	0.0093%
Corteva Inc	CTVA	21,291.70	N/A	2.11%	N/A	N/A	N/A
Citrix Systems Inc	CTXS	16,688.01	0.06%	1.09%	7.00%	8.13%	0.0050%
CVS Health Corp	CVS	95,662.53	0.36%	2.72%	6.50%	9.31%	0.0331%
Chevron Corp	CVX	213,857.60	0.79%	4.29%	16.50%	21.14%	0.1678%
Concho Resources Inc	CXO	16,921.87	0.06%	0.59%	21.00%	21.65%	0.0136%
Dominion Energy Inc	D	69,189.62	0.26%	4.47%	6.50%	11.12%	0.0285%
Delta Air Lines Inc	DAL	38,979.20	0.14%	2.87%	10.00%	13.01%	0.0188%
DuPont de Nemours Inc	DD	43,566.10	N/A	2.15%	N/A	N/A	N/A
Deere & Co	DE	54,177.05	0.20%	1.77%	13.50%	15.39%	0.0309%
Discover Financial Services	DFS	27,041.12	0.10%	2.05%	7.50%	9.63%	0.0097%
Dollar General Corp	DG	39,498.65	0.15%	0.83%	12.00%	12.88%	0.0189%
Quest Diagnostics Inc	DGX	14,578.65	0.05%	1.96%	9.00%	11.05%	0.0060%
DR Horton Inc	DHI	21,733.74	0.08%	1.19%	7.00%	8.23%	0.0066%
Danaher Corp	DHR	116,693.10	0.43%	0.42%	13.50%	13.95%	0.0604%
Walt Disney Co/The	DIS	256,244.40	0.95%	1.24%	7.50%	8.79%	0.0836%
Discovery Inc	DISCA	16,047.15	0.06%	0.00%	18.00%	18.00%	0.0107%
DISH Network Corp	DISH	18,188.91	0.07%	0.00%	-2.00%	-2.00%	-0.0014%
Digital Realty Trust Inc	DLR	26,238.81	0.10%	3.62%	7.00%	10.75%	0.0105%
Dollar Tree Inc	DLTR	20,815.40	0.08%	0.00%	10.00%	10.00%	0.0077%
Dover Corp	DOV	17,235.81	0.06%	1.65%	12.50%	14.25%	0.0091%
Dow Inc	DOW	37,260.18	N/A	5.97%	N/A	N/A	N/A
Duke Realty Corp	DRE	12,904.28	0.05%	2.67%	4.50%	7.23%	0.0035%
Darden Restaurants Inc	DRI	14,292.01	0.05%	3.03%	11.00%	14.20%	0.0075%
DTE Energy Co	DTE	24,556.86	0.09%	3.03%	4.50%	7.60%	0.0069%
Duke Energy Corp	DUK	70,042.32	0.26%	3.98%	6.00%	10.10%	0.0263%
DaVita Inc	DVA	10,778.07	0.04%	0.00%	11.50%	11.50%	0.0046%
Devon Energy Corp	DVN	9,435.48	0.04%	1.48%	18.00%	19.61%	0.0069%
DXC Technology Co	DXC	9,089.42	0.03%	2.36%	10.00%	12.48%	0.0042%
Electronic Arts Inc	EA	33,249.64	0.12%	0.00%	11.00%	11.00%	0.0136%
eBay Inc	EBAY	29,164.59	0.11%	1.66%	10.00%	11.74%	0.0127%
Ecolab Inc	ECL	57,150.05	0.21%	0.95%	10.00%	11.00%	0.0233%
Consolidated Edison Inc	ED	30,799.64	0.11%	3.30%	3.00%	6.35%	0.0073%
Equifax Inc	EFX	18,764.45	0.07%	1.01%	8.50%	9.55%	0.0067%
Edison International	EIX	27,853.65	0.10%	3.32%	14.00%	17.55%	0.0181%
Estee Lauder Cos Inc/The	EL	75,339.83	0.28%	0.92%	14.00%	14.98%	0.0419%
Eastman Chemical Co	EMN	10,066.83	0.04%	3.57%	5.00%	8.66%	0.0032%
Emerson Electric Co	EMR	47,407.49	0.18%	2.58%	11.00%	13.72%	0.0241%
EOG Resources Inc	EOG	47,606.81	0.18%	1.41%	31.50%	33.13%	0.0585%
Equinix Inc	EQIX	50,827.14	0.19%	1.77%	23.50%	25.48%	0.0481%
Equity Residential	EQR	30,690.17	0.11%	2.83%	-13.50%	-10.86%	-0.0124%
Eversource Energy	ES	29,537.40	0.11%	2.44%	5.50%	8.01%	0.0088%
Essex Property Trust Inc	ESS	20,591.28	0.08%	2.61%	-0.50%	2.10%	0.0016%

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
E*TRADE Financial Corp	ETFC	10,448.45	0.04%	1.22%	17.50%	18.83%	0.0073%
Eaton Corp PLC	ETN	40,471.86	0.15%	2.90%	7.00%	10.00%	0.0150%
Energy Corp	ETR	25,871.36	0.10%	2.88%	2.00%	4.91%	0.0047%
Everygy Inc	EVRG	15,998.72	N/A	2.92%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	48,219.79	0.18%	0.00%	16.50%	16.50%	0.0295%
Exelon Corp	EXC	46,607.40	0.17%	3.17%	9.00%	12.31%	0.0213%
Expeditors International of Washington I	EXPD	12,592.88	0.05%	1.35%	9.00%	10.41%	0.0049%
Expedia Group Inc	EXPE	16,546.58	0.06%	1.20%	24.00%	25.34%	0.0156%
Extra Space Storage Inc	EXR	14,052.62	0.05%	3.37%	4.00%	7.44%	0.0039%
Ford Motor Co	F	35,591.57	0.13%	6.57%	3.50%	10.18%	0.0135%
Diamondback Energy Inc	FANG	13,648.73	0.05%	0.89%	17.00%	17.97%	0.0091%
Fastenal Co	FAST	20,681.35	0.08%	2.77%	8.50%	11.39%	0.0087%
Facebook Inc	FB	627,195.10	2.33%	0.00%	17.50%	17.50%	0.4074%
Fortune Brands Home & Security Inc	FBHS	9,818.49	0.04%	1.36%	8.50%	9.92%	0.0036%
Freeport-McMoRan Inc	FCX	17,368.47	0.06%	1.67%	22.50%	24.36%	0.0157%
FedEx Corp	FDX	40,442.11	0.15%	1.68%	6.00%	7.73%	0.0116%
FirstEnergy Corp	FE	27,204.71	0.10%	3.18%	6.50%	9.78%	0.0099%
F5 Networks Inc	FFIV	8,086.76	0.03%	0.00%	12.50%	12.50%	0.0038%
Fidelity National Information Services I	FIS	91,492.15	0.34%	0.94%	23.50%	24.55%	0.0834%
Fiserv Inc	FISV	83,214.18	0.31%	0.00%	15.00%	15.00%	0.0463%
Fifth Third Bancorp	FITB	21,097.60	0.08%	3.41%	7.00%	10.53%	0.0082%
FLIR Systems Inc	FLIR	7,362.04	0.03%	1.31%	12.00%	13.39%	0.0037%
Flowerserve Corp	FLS	6,418.03	0.02%	1.55%	13.50%	15.15%	0.0036%
FleetCor Technologies Inc	FLT	27,480.38	0.10%	0.00%	16.50%	16.50%	0.0168%
FMC Corp	FMC	12,550.62	0.05%	1.82%	15.00%	16.96%	0.0079%
Fox Corp	FOXA	23,268.13	N/A	1.23%	N/A	N/A	N/A
First Republic Bank/CA	FRC	19,525.04	0.07%	0.66%	10.50%	11.19%	0.0081%
Federal Realty Investment Trust	FRT	9,731.95	0.04%	3.22%	3.00%	6.27%	0.0023%
TechnipFMC PLC	FTI	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	20,396.69	0.08%	0.00%	28.00%	28.00%	0.0212%
Fortive Corp	FTV	26,046.96	0.10%	0.36%	10.00%	10.38%	0.0100%
General Dynamics Corp	GD	53,411.67	0.20%	2.21%	6.00%	8.28%	0.0164%
General Electric Co	GE	102,793.90	0.38%	0.34%	2.00%	2.34%	0.0089%
Gilead Sciences Inc	GILD	80,948.05	0.30%	3.94%	-1.50%	2.41%	0.0072%
General Mills Inc	GIS	32,793.50	0.12%	3.61%	4.50%	8.19%	0.0100%
Globe Life Inc	GL	11,361.68	0.04%	0.66%	9.50%	10.19%	0.0043%
Corning Inc	GLW	22,694.40	0.08%	2.71%	14.50%	17.41%	0.0147%
General Motors Co	GM	48,832.00	0.18%	4.47%	2.00%	6.51%	0.0118%
Alphabet Inc	GOOGL	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	14,554.00	0.05%	3.05%	8.00%	11.17%	0.0060%
Global Payments Inc	GPN	60,042.88	0.22%	0.39%	20.50%	20.93%	0.0466%
Gap Inc/The	GPS	6,643.13	0.02%	5.45%	3.00%	8.53%	0.0021%
Garmin Ltd	GRMN	19,116.76	0.07%	2.27%	10.50%	12.89%	0.0091%
Goldman Sachs Group Inc/The	GS	87,797.05	0.33%	2.04%	10.00%	12.14%	0.0396%
WW Grainger Inc	GWW	17,912.60	0.07%	1.73%	8.50%	10.30%	0.0069%
Halliburton Co	HAL	20,656.08	0.08%	3.05%	19.50%	22.85%	0.0175%
Hasbro Inc	HAS	13,317.17	0.05%	2.58%	9.50%	12.20%	0.0060%
Huntington Bancshares Inc/OH	HBAN	14,737.41	0.05%	4.35%	10.50%	15.08%	0.0082%
Hanesbrands Inc	HBI	5,221.68	0.02%	4.16%	3.00%	7.22%	0.0014%
HCA Healthcare Inc	HCA	49,882.38	0.19%	1.09%	12.50%	13.66%	0.0253%
Home Depot Inc/The	HD	254,678.50	0.95%	2.74%	9.00%	11.86%	0.1121%
Hess Corp	HES	20,134.04	N/A	1.50%	N/A	N/A	N/A
HollyFrontier Corp	HFC	7,478.07	0.03%	3.03%	17.00%	20.29%	0.0056%
Hartford Financial Services Group Inc/Th	HIG	21,229.41	0.08%	2.07%	12.50%	14.70%	0.0116%
Huntington Ingalls Industries Inc	HII	11,361.10	0.04%	1.49%	7.00%	8.54%	0.0036%
Hilton Worldwide Holdings Inc	HLT	31,436.08	0.12%	0.54%	17.00%	17.59%	0.0205%
Harley-Davidson Inc	HOG	5,438.79	0.02%	4.26%	8.50%	12.94%	0.0026%
Hologic Inc	HOLX	14,372.74	0.05%	0.00%	12.00%	12.00%	0.0064%
Honeywell International Inc	HON	128,315.80	0.48%	2.01%	8.50%	10.60%	0.0505%
Helmerich & Payne Inc	HP	4,670.60	N/A	6.65%	N/A	N/A	N/A
Hewlett Packard Enterprise Co	HPE	19,622.63	0.07%	3.17%	8.00%	11.30%	0.0082%
HP Inc	HPQ	32,221.80	0.12%	3.17%	7.00%	10.28%	0.0123%
H&R Block Inc	HRB	4,756.19	0.02%	4.35%	7.00%	11.50%	0.0020%
Hormel Foods Corp	HRL	25,115.59	0.09%	1.98%	10.50%	12.58%	0.0117%
Henry Schein Inc	HSIC	10,384.11	0.04%	0.00%	7.00%	7.00%	0.0027%
Host Hotels & Resorts Inc	HST	12,919.98	0.05%	4.76%	-1.50%	3.22%	0.0015%
Hershey Co/The	HSY	32,184.31	0.12%	2.08%	7.00%	9.15%	0.0109%
Humana Inc	HUM	49,301.45	0.18%	0.63%	12.00%	12.67%	0.0232%
International Business Machines Corp	IBM	126,531.00	0.47%	4.60%	1.00%	5.62%	0.0264%
Intercontinental Exchange Inc	ICE	54,293.40	0.20%	1.13%	10.50%	11.69%	0.0236%
IDEXX Laboratories Inc	IDXX	24,555.38	0.09%	0.00%	13.00%	13.00%	0.0118%
IDEX Corp	IEX	13,210.67	0.05%	1.15%	9.50%	10.70%	0.0052%
International Flavors & Fragrances Inc	IFF	14,526.87	0.05%	2.27%	8.00%	10.36%	0.0056%
Illumina Inc	ILMN	48,069.00	0.18%	0.00%	14.00%	14.00%	0.0250%
Incyte Corp	INCY	16,850.86	N/A	0.00%	N/A	N/A	N/A
IHS Markit Ltd	INFO	31,667.68	0.12%	0.84%	18.00%	18.92%	0.0222%
Intel Corp	INTC	275,442.00	1.02%	1.99%	10.50%	12.59%	0.1288%
Intuit Inc	INTU	75,133.25	0.28%	0.74%	14.50%	15.29%	0.0426%
International Paper Co	IP	17,511.19	0.06%	4.59%	9.00%	13.80%	0.0090%
Interpublic Group of Cos Inc/The	IPG	9,107.63	0.03%	3.99%	11.00%	15.21%	0.0051%
IPG Photonics Corp	IPGP	7,787.81	0.03%	0.00%	8.00%	8.00%	0.0023%
IQVIA Holdings Inc	IQV	31,216.54	0.12%	0.00%	12.50%	12.50%	0.0145%
Ingersoll-Rand PLC	IR	31,696.29	0.12%	1.60%	12.50%	14.20%	0.0167%
Iron Mountain Inc	IRM	9,162.48	0.03%	7.77%	8.50%	16.60%	0.0056%
Intuitive Surgical Inc	ISRG	71,094.00	0.26%	0.00%	14.00%	14.00%	0.0369%
Gartner Inc	IT	14,430.12	0.05%	0.00%	13.50%	13.50%	0.0072%
Illinois Tool Works Inc	ITW	57,723.44	0.21%	2.38%	9.50%	11.99%	0.0257%
Invesco Ltd	IVZ	8,383.42	0.03%	6.71%	3.50%	10.33%	0.0032%

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		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Jacobs Engineering Group Inc	J	13,049.66	0.05%	0.79%	14.50%	15.35%	0.0074%
JB Hunt Transport Services Inc	JBHT	12,416.34	0.05%	0.94%	9.50%	10.48%	0.0048%
Johnson Controls International plc	JCI	32,466.09	0.12%	2.49%	8.00%	10.59%	0.0128%
Jack Henry & Associates Inc	JKHY	11,724.60	0.04%	1.05%	12.00%	13.11%	0.0057%
Johnson & Johnson	JNJ	390,776.60	1.45%	2.56%	12.00%	14.71%	0.2134%
Juniper Networks Inc	JNPR	8,351.09	0.03%	3.19%	5.50%	8.78%	0.0027%
JPMorgan Chase & Co	JPM	428,255.70	1.59%	2.71%	8.50%	11.33%	0.1800%
Nordstrom Inc	JWN	6,105.57	0.02%	3.76%	5.00%	8.85%	0.0020%
Kellogg Co	K	24,026.66	0.09%	3.29%	3.50%	6.85%	0.0061%
KeyCorp	KEY	19,602.71	0.07%	3.78%	10.50%	14.48%	0.0105%
Keysight Technologies Inc	KEYS	19,561.25	0.07%	0.00%	21.50%	21.50%	0.0156%
Kraft Heinz Co/The	KHC	37,460.28	N/A	5.22%	N/A	N/A	N/A
Kimco Realty Corp	KIM	8,617.41	0.03%	5.53%	5.00%	10.67%	0.0034%
KLA Corp	KLAC	28,805.29	0.11%	1.86%	11.00%	12.96%	0.0139%
Kimberly-Clark Corp	KMB	49,629.41	0.18%	2.85%	7.50%	10.46%	0.0193%
Kinder Morgan Inc/DE	KMI	49,284.39	0.18%	4.60%	35.50%	40.92%	0.0748%
CarMax Inc	KMX	16,069.93	0.06%	0.00%	10.50%	10.50%	0.0063%
Coca-Cola Co/The	KO	247,743.70	0.92%	2.87%	6.50%	9.46%	0.0870%
Kroger Co/The	KR	22,808.88	0.08%	2.39%	4.00%	6.44%	0.0055%
Kohl's Corp	KSS	7,256.54	0.03%	6.40%	6.50%	13.11%	0.0035%
Kansas City Southern	KSU	16,524.78	0.06%	0.96%	12.00%	13.02%	0.0080%
Loews Corp	L	15,398.17	0.06%	0.49%	14.00%	14.52%	0.0083%
L Brands Inc	LB	5,796.00	0.02%	5.71%	-2.50%	3.14%	0.0007%
Leidos Holdings Inc	LDOS	14,470.83	0.05%	1.33%	9.00%	10.39%	0.0056%
Leggett & Platt Inc	LEG	6,752.55	0.03%	3.12%	9.00%	12.26%	0.0031%
Lennar Corp	LEN	21,366.23	0.08%	0.74%	8.50%	9.27%	0.0074%
Laboratory Corp of America Holdings	LH	17,509.60	0.06%	0.00%	8.00%	8.00%	0.0052%
L3Harris Technologies Inc	LHX	N/A	N/A	0.00%	N/A	N/A	N/A
Linde PLC	LIN	112,745.60	N/A	1.81%	N/A	N/A	N/A
LKQ Corp	LKQ	10,524.91	0.04%	0.00%	10.00%	10.00%	0.0039%
Eli Lilly & Co	LLY	135,568.10	0.50%	2.10%	12.00%	14.23%	0.0716%
Lockheed Martin Corp	LMT	120,946.40	0.45%	2.24%	12.50%	14.88%	0.0668%
Lincoln National Corp	LNC	11,568.41	0.04%	2.79%	9.00%	11.92%	0.0051%
Alliant Energy Corp	LNT	14,050.45	0.05%	2.60%	6.50%	9.18%	0.0048%
Lowe's Cos Inc	LOW	94,241.28	0.35%	1.92%	11.50%	13.53%	0.0473%
Lam Research Corp	LRCX	45,260.59	0.17%	1.47%	9.00%	10.54%	0.0177%
Southwest Airlines Co	LUV	29,155.69	0.11%	1.30%	10.50%	11.87%	0.0128%
Las Vegas Sands Corp	LVS	53,337.60	0.20%	4.55%	7.50%	12.22%	0.0242%
Lamb Weston Holdings Inc	LW	13,270.21	0.05%	1.01%	11.00%	12.07%	0.0059%
LyondellBasell Industries NV	LYB	28,753.11	0.11%	4.87%	5.50%	10.50%	0.0112%
Live Nation Entertainment Inc	LYV	15,889.79	N/A	0.00%	N/A	N/A	N/A
Macy's Inc	M	5,274.03	0.02%	8.85%	2.00%	10.94%	0.0021%
Mastercard Inc	MA	328,229.80	1.22%	0.49%	16.00%	16.53%	0.2014%
Mid-America Apartment Communities Inc	MAA	15,529.46	0.06%	2.93%	1.00%	3.94%	0.0023%
Marriott International Inc/MD	MAR	47,387.42	0.18%	1.33%	11.50%	12.91%	0.0227%
Masco Corp	MAS	14,134.87	0.05%	1.09%	9.50%	10.64%	0.0056%
McDonald's Corp	MCD	160,726.60	0.60%	2.34%	8.50%	10.94%	0.0653%
Microchip Technology Inc	MCHP	26,326.01	0.10%	1.33%	9.50%	10.89%	0.0106%
McKesson Corp	MCK	27,948.96	0.10%	1.06%	10.50%	11.62%	0.0120%
Moody's Corp	MCO	48,526.00	0.18%	0.78%	11.50%	12.32%	0.0222%
Mondelez International Inc	MDLZ	79,871.08	0.30%	2.13%	8.50%	10.72%	0.0318%
Medtronic PLC	MDT	162,145.30	0.60%	1.79%	8.50%	10.37%	0.0624%
MetLife Inc	MET	47,635.39	0.18%	3.40%	7.50%	11.03%	0.0195%
MGM Resorts International	MGM	16,609.70	0.06%	1.61%	14.00%	15.72%	0.0097%
Mohawk Industries Inc	MHK	10,332.03	0.04%	0.00%	1.50%	1.50%	0.0006%
McCormick & Co Inc/MD	MKC	22,963.21	0.09%	1.44%	8.00%	9.50%	0.0081%
MarketAxess Holdings Inc	MKTX	13,876.21	0.05%	0.56%	14.50%	15.10%	0.0078%
Martin Marietta Materials Inc	MLM	16,741.88	0.06%	0.83%	9.50%	10.37%	0.0064%
Marsh & McLennan Cos Inc	MMC	57,685.92	0.21%	1.61%	9.00%	10.68%	0.0229%
3M Co	MMM	102,209.60	0.38%	3.24%	6.00%	9.34%	0.0354%
Monster Beverage Corp	MONST	36,635.86	0.14%	0.00%	14.50%	14.50%	0.0197%
Altria Group Inc	MO	94,452.40	0.35%	6.65%	8.50%	15.43%	0.0541%
Mosaic Co/The	MOS	7,581.92	0.03%	1.25%	18.00%	19.36%	0.0054%
Marathon Petroleum Corp	MPC	35,964.50	0.13%	3.83%	11.00%	15.04%	0.0201%
Merck & Co Inc	MRK	225,906.70	0.84%	2.76%	9.00%	11.88%	0.0996%
Marathon Oil Corp	MRO	9,788.22	N/A	1.64%	N/A	N/A	N/A
Morgan Stanley	MS	90,157.78	0.33%	2.52%	10.00%	12.65%	0.0423%
MSCI Inc	MSCI	23,645.96	0.09%	1.01%	18.50%	19.60%	0.0172%
Microsoft Corp	MSFT	1,272,741.00	4.72%	1.22%	14.00%	15.31%	0.7230%
Motorola Solutions Inc	MSI	30,273.84	0.11%	1.45%	10.50%	12.03%	0.0135%
M&T Bank Corp	MTB	22,532.45	0.08%	2.58%	9.50%	12.20%	0.0102%
Mettler-Toledo International Inc	MTD	20,241.10	0.08%	0.00%	10.00%	10.00%	0.0075%
Micron Technology Inc	MU	65,593.59	0.24%	0.00%	14.00%	14.00%	0.0341%
Maxim Integrated Products Inc	MXIM	17,208.03	0.06%	3.02%	5.50%	8.60%	0.0055%
Mylan NV	MYL	11,427.36	0.04%	0.00%	3.50%	3.50%	0.0015%
Noble Energy Inc	NBL	10,689.96	N/A	2.15%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	12,386.77	0.05%	0.00%	16.00%	16.00%	0.0074%
Nasdaq Inc	NDAQ	17,967.70	0.07%	1.72%	8.00%	9.79%	0.0065%
NextEra Energy Inc	NEE	127,120.90	0.47%	2.11%	10.50%	12.72%	0.0600%
Newmont Corp	NEM	35,826.96	0.13%	1.28%	11.50%	12.85%	0.0171%
Netflix Inc	NFLX	153,212.50	0.57%	0.00%	32.00%	32.00%	0.1820%
NiSource Inc	NI	10,900.92	0.04%	2.74%	12.50%	15.41%	0.0062%
NIKE Inc	NKE	160,608.20	0.60%	0.95%	17.50%	18.53%	0.1105%
NortonLifeLock Inc	NLOK	17,693.20	0.07%	1.76%	7.00%	8.82%	0.0058%
Nielsen Holdings PLC	NLSN	7,603.66	0.03%	1.12%	45.50%	46.87%	0.0132%
Northrop Grumman Corp	NOC	64,359.81	0.24%	1.38%	9.50%	10.95%	0.0261%
National Oilwell Varco Inc	NOV	8,766.51	N/A	0.88%	N/A	N/A	N/A
ServiceNow Inc	NOW	58,728.59	N/A	0.00%	N/A	N/A	N/A

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
NRG Energy Inc	NRG	9,794.70	N/A	3.09%	N/A	N/A	N/A
Norfolk Southern Corp	NSC	54,394.43	0.20%	1.80%	14.00%	15.93%	0.0322%
NetApp Inc	NTAP	13,870.53	0.05%	3.17%	10.00%	13.33%	0.0069%
Northern Trust Corp	NTRS	22,050.56	0.08%	2.69%	8.50%	11.30%	0.0093%
Nucor Corp	NUE	15,639.63	0.06%	3.11%	13.00%	16.31%	0.0095%
NVIDIA Corp	NVDA	154,750.30	0.57%	0.25%	11.50%	11.76%	0.0676%
NVR Inc	NVR	14,896.43	0.06%	0.00%	13.50%	13.50%	0.0075%
Newell Brands Inc	NWL	8,533.73	0.03%	4.56%	4.00%	8.65%	0.0027%
News Corp	NWSA	8,439.55	N/A	1.39%	N/A	N/A	N/A
Realty Income Corp	O	23,461.03	0.09%	3.63%	4.50%	8.21%	0.0072%
Old Dominion Freight Line Inc	ODFL	16,405.78	0.06%	0.35%	9.50%	9.87%	0.0060%
ONEOK Inc	OKE	31,513.56	0.12%	4.98%	17.00%	22.40%	0.0262%
Omnicom Group Inc	OMC	17,146.39	0.06%	3.56%	6.50%	10.18%	0.0065%
Oracle Corp	ORCL	176,705.70	0.66%	1.75%	10.00%	11.84%	0.0776%
O'Reilly Automotive Inc	ORLY	33,021.19	0.12%	0.00%	12.00%	12.00%	0.0147%
Occidental Petroleum Corp	OXY	37,983.84	0.14%	7.46%	24.50%	32.87%	0.0463%
Paycom Software Inc	PAYC	18,153.30	0.07%	0.00%	25.50%	25.50%	0.0172%
Paychex Inc	PAYX	32,130.56	0.12%	2.97%	10.50%	13.63%	0.0162%
People's United Financial Inc	PBCT	6,401.52	0.02%	4.48%	8.00%	12.66%	0.0030%
PACCAR Inc	PCAR	26,826.32	0.10%	4.61%	7.50%	12.28%	0.0122%
Healthpeak Properties Inc	PEAK	17,681.68	0.07%	4.00%	-3.50%	0.43%	0.0003%
Public Service Enterprise Group Inc	PEG	31,116.96	0.12%	3.14%	6.00%	9.23%	0.0107%
PepsiCo Inc	PEP	200,535.40	0.74%	2.75%	6.50%	9.34%	0.0695%
Pfizer Inc	PFE	225,294.10	0.84%	3.73%	10.00%	13.92%	0.1164%
Principal Financial Group Inc	PFGE	15,381.74	0.06%	3.98%	5.50%	9.59%	0.0055%
Procter & Gamble Co/The	PG	308,656.90	1.15%	2.38%	9.00%	11.49%	0.1316%
Progressive Corp/The	PGR	44,622.52	0.17%	0.52%	15.50%	16.06%	0.0266%
Parker-Hannifin Corp	PH	25,925.52	0.10%	1.74%	9.50%	11.32%	0.0109%
PulteGroup Inc	PHM	11,882.08	0.04%	1.10%	9.50%	10.65%	0.0047%
Packaging Corp of America	PKG	10,138.58	0.04%	2.95%	6.00%	9.04%	0.0034%
PerkinElmer Inc	PKI	11,041.53	0.04%	0.28%	11.00%	11.30%	0.0046%
Prologis Inc	PLD	60,254.25	0.22%	2.38%	6.50%	8.96%	0.0200%
Philip Morris International Inc	PM	135,484.30	0.50%	5.37%	6.00%	11.53%	0.0580%
PNC Financial Services Group Inc/The	PNC	67,039.69	0.25%	3.01%	8.00%	11.13%	0.0277%
Pentair PLC	PNR	7,863.39	0.03%	1.63%	6.00%	7.68%	0.0022%
Pinnacle West Capital Corp	PNW	10,767.24	0.04%	3.36%	4.00%	7.43%	0.0030%
PPG Industries Inc	PPG	29,855.82	0.11%	1.62%	6.00%	7.67%	0.0085%
PPL Corp	PPL	26,515.89	0.10%	4.52%	1.50%	6.05%	0.0060%
Perrigo Co PLC	PRGO	8,095.82	0.03%	1.51%	2.00%	3.53%	0.0011%
Prudential Financial Inc	PRU	38,048.36	0.14%	4.19%	6.50%	10.83%	0.0153%
Public Storage	PSA	38,866.04	0.14%	3.76%	4.50%	8.34%	0.0120%
Phillips 66	PSX	45,360.07	0.17%	3.82%	10.00%	14.01%	0.0236%
PVH Corp	PVH	7,102.33	0.03%	0.16%	9.00%	9.17%	0.0024%
Quanta Services Inc	PWR	5,848.88	0.02%	0.49%	17.00%	17.53%	0.0038%
Pioneer Natural Resources Co	PXD	23,261.24	0.09%	1.25%	35.00%	36.47%	0.0315%
PayPal Holdings Inc	PYPL	138,402.90	0.51%	0.00%	20.00%	20.00%	0.1027%
QUALCOMM Inc	QCOM	112,056.00	0.42%	2.70%	10.50%	13.34%	0.0555%
Qorvo Inc	QRVO	13,801.77	0.05%	0.00%	62.50%	62.50%	0.0320%
Royal Caribbean Cruises Ltd	RCL	27,162.97	0.10%	2.41%	12.50%	15.06%	0.0152%
Everest Re Group Ltd	RE	11,444.96	0.04%	2.23%	18.50%	20.94%	0.0089%
Regency Centers Corp	REG	10,759.35	0.04%	3.65%	16.00%	19.94%	0.0080%
Regeneron Pharmaceuticals Inc	REGN	39,953.46	0.15%	0.00%	10.00%	10.00%	0.0148%
Regions Financial Corp	RF	15,595.49	0.06%	4.08%	10.50%	14.79%	0.0086%
Robert Half International Inc	RHI	7,260.71	0.03%	2.11%	9.00%	11.20%	0.0030%
Raymond James Financial Inc	RJF	12,576.71	0.05%	1.64%	8.00%	9.71%	0.0045%
Ralph Lauren Corp	RL	8,804.29	0.03%	2.33%	8.00%	10.42%	0.0034%
ResMed Inc	RMD	23,202.88	0.09%	0.97%	18.00%	19.06%	0.0164%
Rockwell Automation Inc	ROK	23,406.11	0.09%	2.03%	8.00%	10.11%	0.0088%
Rollins Inc	ROL	11,987.65	0.04%	1.15%	13.00%	14.22%	0.0063%
Roper Technologies Inc	ROP	39,381.79	0.15%	0.54%	11.50%	12.07%	0.0176%
Ross Stores Inc	ROST	42,482.07	0.16%	0.95%	9.50%	10.50%	0.0165%
Republic Services Inc	RSG	33,355.05	0.12%	1.75%	11.50%	13.35%	0.0165%
Raytheon Co	RTN	64,003.94	0.24%	1.64%	10.00%	11.72%	0.0278%
SBA Communications Corp	SBAC	28,715.15	0.11%	0.58%	29.50%	30.17%	0.0321%
Starbucks Corp	SBUX	113,109.40	0.42%	1.80%	13.50%	15.42%	0.0647%
Charles Schwab Corp/The	SCHW	62,410.09	0.23%	1.55%	12.00%	13.64%	0.0316%
Sealed Air Corp	SEE	5,887.14	0.02%	1.68%	22.50%	24.37%	0.0053%
Sherwin-Williams Co/The	SHW	55,066.02	0.20%	0.87%	10.50%	11.42%	0.0233%
SVB Financial Group	SIVB	13,357.13	0.05%	0.00%	15.00%	15.00%	0.0074%
JM Smucker Co/The	SJM	12,361.82	0.05%	3.29%	3.50%	6.85%	0.0031%
Schlumberger Ltd	SLB	50,433.29	0.19%	5.49%	15.00%	20.90%	0.0391%
SL Green Realty Corp	SLG	7,971.40	0.03%	3.81%	5.50%	9.41%	0.0028%
Snap-on Inc	SNA	9,238.26	0.03%	2.57%	6.00%	8.65%	0.0030%
Synopsys Inc	SNPS	23,301.80	0.09%	0.00%	12.00%	12.00%	0.0104%
Southern Co/The	SO	72,320.70	0.27%	3.68%	3.50%	7.24%	0.0194%
Simon Property Group Inc	SPG	45,501.57	0.17%	5.98%	4.50%	10.61%	0.0179%
S&P Global Inc	SPGI	72,633.23	0.27%	0.85%	11.00%	11.90%	0.0321%
Sempra Energy	SRE	45,136.92	0.17%	2.62%	11.00%	13.76%	0.0231%
STERIS PLC	STE	12,873.03	0.05%	0.98%	10.00%	11.03%	0.0053%
State Street Corp	STT	29,257.11	0.11%	2.62%	5.00%	7.69%	0.0083%
Seagate Technology PLC	STX	16,482.35	0.06%	4.14%	4.00%	8.22%	0.0050%
Constellation Brands Inc	STZ	37,013.16	0.14%	1.62%	8.50%	10.19%	0.0140%
Stanley Black & Decker Inc	SWK	29,804.62	0.11%	1.66%	9.00%	10.73%	0.0119%
Skyworks Solutions Inc	SWKS	21,840.37	0.08%	1.37%	8.00%	9.42%	0.0076%
Synchrony Financial	SYF	23,662.38	0.09%	2.49%	9.50%	12.11%	0.0106%
Stryker Corp	SYK	80,952.77	0.30%	1.06%	13.00%	14.13%	0.0425%
Sysco Corp	SYI	42,703.12	0.16%	2.15%	10.50%	12.76%	0.0202%
AT&T Inc	T	282,129.30	1.05%	5.38%	5.50%	11.03%	0.1155%

		[4]	[5]	[6]	[7]	[8]	[9]
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Molson Coors Beverage Co	TAP	12,272.86	0.05%	4.02%	2.50%	6.57%	0.0030%
TransDigm Group Inc	TDG	37,018.43	0.14%	0.00%	11.50%	11.50%	0.0158%
TE Connectivity Ltd	TEL	33,765.47	0.13%	1.83%	6.50%	8.39%	0.0105%
Truist Financial Corp	TFC	43,188.84	0.16%	3.27%	8.00%	11.40%	0.0183%
Teleflex Inc	TFX	17,815.63	0.07%	0.35%	15.00%	15.38%	0.0102%
Target Corp	TGT	58,536.51	0.22%	2.29%	9.50%	11.90%	0.0259%
Tiffany & Co	TIF	16,091.78	0.06%	1.77%	10.50%	12.36%	0.0074%
TJX Cos Inc/The	TJX	75,138.84	0.28%	1.47%	13.50%	15.07%	0.0420%
Thermo Fisher Scientific Inc	TMO	145,564.30	0.54%	0.23%	10.00%	10.24%	0.0553%
T-Mobile US Inc	TMUS	70,309.75	0.26%	0.00%	18.50%	18.50%	0.0483%
Tapestry Inc	TPR	7,708.65	0.03%	4.83%	10.50%	15.58%	0.0045%
T Rowe Price Group Inc	TROW	31,264.65	0.12%	2.37%	10.00%	12.49%	0.0145%
Travelers Cos Inc/The	TRV	34,634.44	0.13%	2.44%	9.00%	11.55%	0.0148%
Tractor Supply Co	TSCO	11,096.84	0.04%	1.62%	11.50%	13.21%	0.0054%
Tyson Foods Inc	TSN	32,193.36	0.12%	1.91%	8.00%	9.99%	0.0119%
Take-Two Interactive Software Inc	TTWO	14,610.08	0.05%	0.00%	23.50%	23.50%	0.0127%
Twitter Inc	TWTR	26,289.08	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	125,547.60	0.47%	2.68%	6.00%	8.76%	0.0408%
Textron Inc	TXT	10,293.40	0.04%	0.18%	13.00%	13.19%	0.0050%
Under Armour Inc	UAA	9,586.02	0.04%	0.00%	17.50%	17.50%	0.0062%
United Airlines Holdings Inc	UAL	21,527.61	0.08%	0.00%	12.00%	12.00%	0.0096%
UDR Inc	UDR	13,275.81	0.05%	2.84%	5.50%	8.42%	0.0041%
Universal Health Services Inc	UHS	12,942.87	0.05%	0.54%	11.00%	11.57%	0.0056%
Ulta Beauty Inc	ULTA	15,592.43	0.06%	0.00%	13.00%	13.00%	0.0075%
UnitedHealth Group Inc	UNH	283,588.70	1.05%	1.44%	13.50%	15.04%	0.1583%
Unum Group	UNM	5,912.59	0.02%	3.98%	7.50%	11.63%	0.0026%
Union Pacific Corp	UNP	130,189.90	0.48%	2.07%	13.00%	15.20%	0.0735%
United Parcel Service Inc	UPS	100,279.20	0.37%	3.39%	8.00%	11.53%	0.0429%
United Rentals Inc	URI	11,752.77	0.04%	0.00%	14.50%	14.50%	0.0063%
US Bancorp	USB	86,224.32	0.32%	3.13%	6.00%	9.22%	0.0295%
United Technologies Corp	UTX	132,770.80	0.49%	1.91%	9.00%	11.00%	0.0542%
Visa Inc	V	410,148.70	1.52%	0.58%	18.00%	18.63%	0.2836%
Varian Medical Systems Inc	VAR	13,566.43	0.05%	0.00%	10.50%	10.50%	0.0053%
VF Corp	VFC	34,067.15	0.13%	2.25%	7.00%	9.33%	0.0118%
ViacomCBS Inc	VIAC	13,871.25	0.05%	2.60%	12.00%	14.76%	0.0076%
Valero Energy Corp	VLO	36,771.60	0.14%	4.19%	11.50%	15.93%	0.0217%
Vulcan Materials Co	VMC	18,867.82	0.07%	0.87%	14.50%	15.43%	0.0108%
Vornado Realty Trust	VNO	13,094.22	0.05%	3.85%	-1.50%	2.32%	0.0011%
Verisk Analytics Inc	VRSK	27,018.95	0.10%	0.61%	10.00%	10.64%	0.0107%
VeriSign Inc	VRSN	25,308.93	0.09%	0.00%	11.00%	11.00%	0.0103%
Vertex Pharmaceuticals Inc	VRTX	60,176.86	0.22%	0.00%	50.00%	50.00%	0.1117%
Ventas Inc	VTR	20,852.33	0.08%	5.54%	4.00%	9.65%	0.0075%
Verizon Communications Inc	VZ	250,256.30	0.93%	4.07%	4.00%	8.15%	0.0757%
Westinghouse Air Brake Technologies Corp	WAB	15,330.25	0.06%	0.60%	13.50%	14.14%	0.0080%
Waters Corp	WAT	15,753.75	0.06%	0.00%	13.00%	13.00%	0.0076%
Walgreens Boots Alliance Inc	WBA	47,335.20	0.18%	3.43%	9.00%	12.58%	0.0221%
Western Digital Corp	WDC	21,137.14	0.08%	2.82%	1.00%	3.83%	0.0030%
WEC Energy Group Inc	WEC	31,133.53	0.12%	2.56%	6.00%	8.64%	0.0100%
Welltower Inc	WELL	33,472.25	0.12%	4.13%	10.50%	14.85%	0.0184%
Wells Fargo & Co	WFC	205,858.00	0.76%	4.27%	5.50%	9.89%	0.0755%
Whirlpool Corp	WHR	9,495.36	0.04%	3.19%	6.50%	9.79%	0.0035%
Willis Towers Watson PLC	WLTW	26,565.52	0.10%	1.26%	17.50%	18.87%	0.0186%
Waste Management Inc	WM	51,382.74	0.19%	1.69%	8.50%	10.26%	0.0196%
Williams Cos Inc/The	WMB	27,197.28	0.10%	6.77%	20.00%	27.45%	0.0277%
Walmart Inc	WMT	328,784.60	1.22%	1.87%	7.50%	9.44%	0.1152%
WR Berkley Corp	WRB	13,110.65	0.05%	0.62%	12.00%	12.66%	0.0062%
Westrock Co	WRK	10,840.49	0.04%	4.42%	8.00%	12.60%	0.0051%
Western Union Co/The	WU	11,652.22	0.04%	2.88%	6.50%	9.47%	0.0041%
Weyerhaeuser Co	WY	22,963.09	0.09%	4.41%	15.00%	19.74%	0.0168%
Wynn Resorts Ltd	WYNN	14,935.26	0.06%	2.88%	14.50%	17.59%	0.0098%
Cimarex Energy Co	XEC	4,900.60	0.02%	1.66%	8.50%	10.23%	0.0019%
Xcel Energy Inc	XEL	35,081.29	0.13%	2.57%	5.50%	8.14%	0.0106%
Xilinx Inc	XLNX	25,752.63	0.10%	1.45%	8.00%	9.51%	0.0091%
Exxon Mobil Corp	XOM	282,503.90	1.05%	5.27%	11.00%	16.56%	0.1736%
DENTSPLY SIRONA Inc	XRAY	13,262.42	0.05%	0.59%	4.50%	5.10%	0.0025%
Xerox Holdings Corp	XRX	7,933.03	0.03%	2.76%	12.50%	15.43%	0.0045%
Xylem Inc/NY	XYL	14,824.80	0.06%	1.17%	14.00%	15.25%	0.0084%
Yum! Brands Inc	YUM	32,111.94	0.12%	1.64%	12.00%	13.74%	0.0164%
Zimmer Biomet Holdings Inc	ZBH	30,739.26	0.11%	0.66%	4.50%	5.17%	0.0059%
Zebra Technologies Corp	ZBRA	13,747.39	0.05%	0.00%	15.50%	15.50%	0.0079%
Zions Bancorp NA	ZION	8,142.13	0.03%	2.85%	9.50%	12.49%	0.0038%
Zoetis Inc	ZTS	65,953.04	0.24%	0.58%	13.50%	14.12%	0.0346%
Total Market Capitalization:		26,942,730.24					14.51%

## Notes:

[1] Equals sum of Col. [9]

[2] Source: Bloomberg Professional

[3] Equals [1] - [2]

[4] Source: Value Line

[5] Equals weight in S&amp;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
ALLETE, Inc.	ALE	0.484	0.65
Alliant Energy Corporation	LNT	0.537	0.60
Ameren Corporation	AEE	0.486	0.55
American Electric Power Company, Inc.	AEP	0.538	0.55
Avangrid, Inc.	AGR	0.508	0.40
Avista	AVA	0.492	0.60
CMS Energy Corporation	CMS	0.486	0.50
DTE Energy Company	DTE	0.528	0.55
Duke Energy Corporation	DUK	0.447	0.50
Evergy, Inc	EVRG	0.437	0.51
Hawaiian Electric Industries, Inc.	HE	0.511	0.55
NextEra Energy, Inc.	NEE	0.523	0.55
NorthWestern Corporation	NWE	0.528	0.60
OGE Energy Corp.	OGE	0.583	0.75
Otter Tail Corporation	OTTR	0.631	0.70
Pinnacle West Capital Corporation	PNW	0.426	0.50
PNM Resources, Inc.	PNM	0.528	0.60
Portland General Electric Company	POR	0.524	0.55
Southern Company	SO	0.512	0.50
WEC Energy Group, Inc.	WEC	0.471	0.50
Xcel Energy Inc.	XEL	0.517	0.50
Mean		0.509	0.558

## Notes:

[1] Source: Bloomberg Professional

[2] Source: Value Line. Value Line does not report a beta coefficient for Evergy, Inc. Therefore, the beta coefficient for Evergy has been manually calculated according to Value Line's methodology.



Capital Asset Pricing Model and Empirical 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 MRP	Value Line MRP	Bloomberg Market DCF Derived	Value Line Market DCF Derived
<b>PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT</b>								
Current 30-Year Treasury [9]	2.25%	0.509	11.18%	12.25%	7.95%	8.50%	9.32%	10.00%
Near-Term Projected 30-Year Treasury [10]	2.42%	0.509	11.18%	12.25%	8.11%	8.66%	9.49%	10.16%
Mean					8.03%	8.58%	9.40%	10.08%
	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 MRP	Value Line MRP	Bloomberg Market DCF Derived	Value Line Market DCF Derived
<b>PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT</b>								
Current 30-Year Treasury [9]	2.25%	0.558	11.18%	12.25%	8.49%	9.09%	9.73%	10.44%
Near-Term Projected 30-Year Treasury [10]	2.42%	0.558	11.18%	12.25%	8.65%	9.25%	9.89%	10.61%
Mean					8.57%	9.17%	9.81%	10.52%

## Notes:

[1] See Notes [9], [10]

[2] Source: Schedule RBH-R3

[3] Source: Schedule RBH-R2

[4] Source: Schedule RBH-R2

[5] Equals Col. [1] + (Col. [2] x Col. [3])

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

[7] Equals Col. [1] + 0.25 x Col. [3] + 0.75 x Col. [2] x Col. [3]

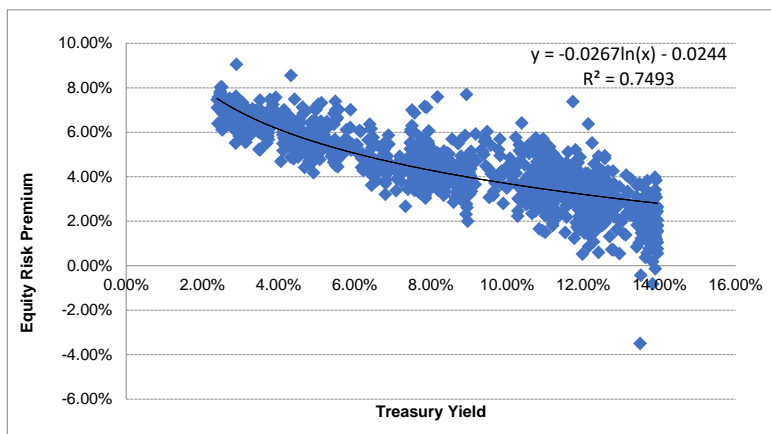
[8] Equals Col. [1] + 0.25 x Col. [4] + 0.75 x Col. [2] x Col. [4]

[9] Source: Bloomberg Professional

[10] Source: Blue Chip Financial Forecasts, Vol. 39, No. 2, February 1, 2020, at 2.

Bond Yield Plus Risk Premium

[1]	[2]	[3]	[4]	[5]	
Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity	
-2.44%	-2.67%				
		Current 30-Year Treasury	2.25%	7.67%	9.92%
		Near-Term Projected 30-Year Treasury	2.42%	7.48%	9.90%
		Long-Term Projected 30-Year Treasury	3.45%	6.53%	9.98%



Notes:

[1] Constant of regression equation

[2] Slope of regression equation

[3] Source: Current = Bloomberg Professional;

Near Term Projected = Blue Chip Financial Forecasts, Vol. 39, No. 2, February 1, 2020, at 2;

Long Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 12, December 1, 2019, at 14.

[4] Equals [1] + ln([3]) x [2]

[5] Equals [3] + [4]

[6] Source: S&P Global Market Intelligence

[7] Source: S&P Global Market Intelligence

[8] Source: Bloomberg Professional, equals 200-trading day average (i.e. lag period)

[9] Equals [7] - [8]

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/1/1980	14.50%	9.36%	5.14%
1/7/1980	14.39%	9.39%	5.00%
1/9/1980	15.00%	9.40%	5.60%
1/14/1980	15.17%	9.42%	5.75%
1/17/1980	13.93%	9.44%	4.49%
1/23/1980	15.50%	9.47%	6.03%
1/30/1980	13.86%	9.52%	4.34%
1/31/1980	12.61%	9.53%	3.08%
2/6/1980	13.71%	9.58%	4.13%
2/13/1980	12.80%	9.64%	3.16%
2/14/1980	13.00%	9.65%	3.35%
2/19/1980	13.50%	9.68%	3.82%
2/27/1980	13.75%	9.78%	3.97%
2/29/1980	13.75%	9.81%	3.94%
2/29/1980	14.00%	9.81%	4.19%
2/29/1980	14.77%	9.81%	4.96%
3/7/1980	12.70%	9.90%	2.80%
3/14/1980	13.50%	9.97%	3.53%
3/26/1980	14.16%	10.11%	4.05%
3/27/1980	14.24%	10.12%	4.12%
3/28/1980	14.50%	10.14%	4.36%
4/11/1980	12.75%	10.28%	2.47%
4/14/1980	13.85%	10.29%	3.56%
4/16/1980	15.50%	10.32%	5.18%
4/22/1980	13.25%	10.36%	2.89%
4/22/1980	13.90%	10.36%	3.54%
4/24/1980	16.80%	10.38%	6.42%
4/29/1980	15.50%	10.41%	5.09%
5/6/1980	13.70%	10.45%	3.25%
5/7/1980	15.00%	10.46%	4.54%
5/8/1980	13.75%	10.47%	3.28%
5/9/1980	14.35%	10.47%	3.88%
5/13/1980	13.60%	10.49%	3.11%
5/15/1980	13.25%	10.50%	2.75%
5/19/1980	13.75%	10.52%	3.23%
5/27/1980	13.62%	10.55%	3.07%
5/27/1980	14.60%	10.55%	4.05%
5/29/1980	16.00%	10.56%	5.44%
5/30/1980	13.80%	10.57%	3.23%
6/2/1980	15.63%	10.58%	5.05%
6/9/1980	15.90%	10.61%	5.29%
6/10/1980	13.78%	10.61%	3.17%
6/12/1980	14.25%	10.62%	3.63%
6/19/1980	13.40%	10.63%	2.77%
6/30/1980	13.00%	10.65%	2.35%
6/30/1980	13.40%	10.65%	2.75%
7/9/1980	14.75%	10.68%	4.07%
7/10/1980	15.00%	10.69%	4.31%
7/15/1980	15.80%	10.70%	5.10%
7/18/1980	13.80%	10.72%	3.08%
7/22/1980	14.10%	10.73%	3.37%
7/24/1980	15.00%	10.73%	4.27%
7/25/1980	13.48%	10.74%	2.74%
7/31/1980	14.58%	10.76%	3.82%
8/8/1980	13.50%	10.78%	2.72%
8/8/1980	14.00%	10.78%	3.22%
8/8/1980	15.45%	10.78%	4.67%
8/11/1980	14.85%	10.78%	4.07%
8/14/1980	14.00%	10.79%	3.21%
8/14/1980	16.25%	10.79%	5.46%
8/25/1980	13.75%	10.82%	2.93%
8/27/1980	13.80%	10.83%	2.97%
8/29/1980	12.50%	10.84%	1.66%
9/15/1980	13.50%	10.88%	2.62%
9/15/1980	13.93%	10.88%	3.05%
9/15/1980	15.80%	10.88%	4.92%
9/24/1980	12.50%	10.93%	1.57%
9/24/1980	15.00%	10.93%	4.07%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/26/1980	13.75%	10.95%	2.80%
9/30/1980	14.10%	10.96%	3.14%
9/30/1980	14.20%	10.96%	3.24%
10/1/1980	13.90%	10.97%	2.93%
10/3/1980	15.50%	10.99%	4.51%
10/7/1980	12.50%	11.00%	1.50%
10/9/1980	13.25%	11.01%	2.24%
10/9/1980	14.50%	11.01%	3.49%
10/9/1980	14.50%	11.01%	3.49%
10/16/1980	16.10%	11.03%	5.07%
10/17/1980	14.50%	11.03%	3.47%
10/31/1980	13.75%	11.11%	2.64%
10/31/1980	14.25%	11.11%	3.14%
11/4/1980	15.00%	11.12%	3.88%
11/5/1980	13.75%	11.13%	2.62%
11/5/1980	14.00%	11.13%	2.87%
11/8/1980	13.75%	11.15%	2.60%
11/10/1980	14.85%	11.15%	3.70%
11/17/1980	14.00%	11.18%	2.82%
11/18/1980	14.00%	11.19%	2.81%
11/19/1980	13.00%	11.19%	1.81%
11/24/1980	14.00%	11.20%	2.80%
11/26/1980	14.00%	11.21%	2.79%
12/8/1980	14.15%	11.22%	2.93%
12/8/1980	15.10%	11.22%	3.88%
12/9/1980	15.35%	11.22%	4.13%
12/12/1980	15.45%	11.22%	4.23%
12/17/1980	13.25%	11.23%	2.02%
12/18/1980	15.80%	11.23%	4.57%
12/19/1980	14.50%	11.23%	3.27%
12/19/1980	14.64%	11.23%	3.41%
12/22/1980	13.45%	11.22%	2.23%
12/22/1980	15.00%	11.22%	3.78%
12/30/1980	14.50%	11.21%	3.29%
12/30/1980	14.95%	11.21%	3.74%
12/31/1980	13.39%	11.21%	2.18%
1/2/1981	15.25%	11.21%	4.04%
1/7/1981	14.30%	11.21%	3.09%
1/19/1981	15.25%	11.19%	4.06%
1/23/1981	13.10%	11.20%	1.90%
1/23/1981	14.40%	11.20%	3.20%
1/26/1981	15.25%	11.20%	4.05%
1/27/1981	15.00%	11.20%	3.80%
1/31/1981	13.47%	11.21%	2.26%
2/3/1981	15.25%	11.23%	4.02%
2/5/1981	15.75%	11.25%	4.50%
2/11/1981	15.60%	11.28%	4.32%
2/20/1981	15.25%	11.34%	3.91%
3/11/1981	15.40%	11.50%	3.90%
3/12/1981	14.51%	11.51%	3.00%
3/12/1981	16.00%	11.51%	4.49%
3/13/1981	13.02%	11.52%	1.50%
3/18/1981	16.19%	11.55%	4.64%
3/19/1981	13.75%	11.56%	2.19%
3/23/1981	14.30%	11.58%	2.72%
3/25/1981	15.30%	11.61%	3.69%
4/1/1981	14.53%	11.69%	2.84%
4/3/1981	19.10%	11.72%	7.38%
4/9/1981	15.00%	11.79%	3.21%
4/9/1981	15.30%	11.79%	3.51%
4/9/1981	16.50%	11.79%	4.71%
4/9/1981	17.00%	11.79%	5.21%
4/10/1981	13.75%	11.81%	1.94%
4/13/1981	13.57%	11.83%	1.74%
4/15/1981	15.30%	11.86%	3.44%
4/16/1981	13.50%	11.88%	1.62%
4/17/1981	14.10%	11.88%	2.22%
4/21/1981	14.00%	11.91%	2.09%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/21/1981	16.80%	11.91%	4.89%
4/24/1981	16.00%	11.96%	4.04%
4/27/1981	12.50%	11.98%	0.52%
4/27/1981	13.61%	11.98%	1.63%
4/29/1981	13.65%	12.01%	1.64%
4/30/1981	13.50%	12.02%	1.48%
5/4/1981	16.22%	12.06%	4.16%
5/5/1981	14.40%	12.08%	2.32%
5/7/1981	16.25%	12.12%	4.13%
5/7/1981	16.27%	12.12%	4.15%
5/8/1981	13.00%	12.14%	0.86%
5/8/1981	16.00%	12.14%	3.86%
5/12/1981	13.50%	12.17%	1.33%
5/15/1981	15.75%	12.23%	3.52%
5/18/1981	14.88%	12.24%	2.64%
5/20/1981	16.00%	12.27%	3.73%
5/21/1981	14.00%	12.28%	1.72%
5/26/1981	14.90%	12.31%	2.59%
5/27/1981	15.00%	12.32%	2.68%
5/29/1981	15.50%	12.34%	3.16%
6/1/1981	16.50%	12.35%	4.15%
6/3/1981	14.67%	12.38%	2.29%
6/5/1981	13.00%	12.40%	0.60%
6/10/1981	16.75%	12.42%	4.33%
6/17/1981	14.40%	12.46%	1.94%
6/18/1981	16.33%	12.47%	3.86%
6/25/1981	14.75%	12.52%	2.23%
6/26/1981	16.00%	12.53%	3.47%
6/30/1981	15.25%	12.55%	2.70%
7/1/1981	15.50%	12.56%	2.94%
7/1/1981	17.50%	12.56%	4.94%
7/10/1981	16.00%	12.62%	3.38%
7/14/1981	16.90%	12.64%	4.26%
7/15/1981	16.00%	12.65%	3.35%
7/17/1981	15.00%	12.67%	2.33%
7/20/1981	15.00%	12.68%	2.32%
7/21/1981	14.00%	12.69%	1.31%
7/28/1981	13.48%	12.75%	0.73%
7/31/1981	13.50%	12.79%	0.71%
7/31/1981	15.00%	12.79%	2.21%
7/31/1981	16.00%	12.79%	3.21%
8/5/1981	15.71%	12.83%	2.88%
8/10/1981	14.50%	12.87%	1.63%
8/11/1981	15.00%	12.88%	2.12%
8/20/1981	13.50%	12.95%	0.55%
8/20/1981	16.50%	12.95%	3.55%
8/24/1981	15.00%	12.97%	2.03%
8/28/1981	15.00%	13.01%	1.99%
9/3/1981	14.50%	13.06%	1.44%
9/10/1981	14.50%	13.11%	1.39%
9/11/1981	16.00%	13.12%	2.88%
9/16/1981	16.00%	13.15%	2.85%
9/17/1981	16.50%	13.16%	3.34%
9/23/1981	15.85%	13.20%	2.65%
9/28/1981	15.50%	13.23%	2.27%
10/9/1981	15.75%	13.34%	2.41%
10/15/1981	16.25%	13.37%	2.88%
10/16/1981	15.50%	13.39%	2.11%
10/16/1981	16.50%	13.39%	3.11%
10/19/1981	14.25%	13.40%	0.85%
10/20/1981	15.25%	13.41%	1.84%
10/20/1981	17.00%	13.41%	3.59%
10/23/1981	16.00%	13.46%	2.54%
10/27/1981	10.00%	13.49%	-3.49%
10/29/1981	14.75%	13.52%	1.23%
10/29/1981	16.50%	13.52%	2.98%
11/3/1981	15.17%	13.54%	1.63%
11/5/1981	16.60%	13.56%	3.04%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/6/1981	15.17%	13.57%	1.60%
11/24/1981	15.50%	13.61%	1.89%
11/25/1981	15.25%	13.61%	1.64%
11/25/1981	15.35%	13.61%	1.74%
11/25/1981	16.10%	13.61%	2.49%
11/25/1981	16.10%	13.61%	2.49%
12/1/1981	15.70%	13.61%	2.09%
12/1/1981	16.00%	13.61%	2.39%
12/1/1981	16.49%	13.61%	2.88%
12/1/1981	16.50%	13.61%	2.89%
12/4/1981	16.00%	13.61%	2.39%
12/11/1981	16.25%	13.63%	2.62%
12/14/1981	14.00%	13.63%	0.37%
12/15/1981	15.81%	13.63%	2.18%
12/15/1981	16.00%	13.63%	2.37%
12/16/1981	15.25%	13.63%	1.62%
12/17/1981	16.50%	13.64%	2.86%
12/18/1981	15.45%	13.64%	1.81%
12/30/1981	14.25%	13.67%	0.58%
12/30/1981	16.00%	13.67%	2.33%
12/30/1981	16.25%	13.67%	2.58%
12/31/1981	16.15%	13.68%	2.47%
1/4/1982	15.50%	13.68%	1.82%
1/11/1982	14.50%	13.73%	0.77%
1/11/1982	17.00%	13.73%	3.27%
1/13/1982	14.75%	13.74%	1.01%
1/14/1982	15.75%	13.75%	2.00%
1/15/1982	15.00%	13.76%	1.24%
1/15/1982	16.50%	13.76%	2.74%
1/22/1982	16.25%	13.80%	2.45%
1/27/1982	16.84%	13.81%	3.03%
1/28/1982	13.00%	13.82%	-0.82%
1/29/1982	15.50%	13.82%	1.68%
2/1/1982	15.85%	13.83%	2.02%
2/3/1982	16.44%	13.84%	2.60%
2/8/1982	15.50%	13.86%	1.64%
2/11/1982	16.00%	13.88%	2.12%
2/11/1982	16.20%	13.88%	2.32%
2/17/1982	15.00%	13.89%	1.11%
2/19/1982	15.17%	13.89%	1.28%
2/26/1982	15.25%	13.89%	1.36%
3/1/1982	15.03%	13.89%	1.14%
3/1/1982	16.00%	13.89%	2.11%
3/3/1982	15.00%	13.88%	1.12%
3/8/1982	17.10%	13.88%	3.22%
3/12/1982	16.25%	13.88%	2.37%
3/17/1982	17.30%	13.88%	3.42%
3/22/1982	15.10%	13.89%	1.21%
3/27/1982	15.40%	13.90%	1.50%
3/30/1982	15.50%	13.91%	1.59%
3/31/1982	17.00%	13.91%	3.09%
4/1/1982	14.70%	13.92%	0.78%
4/1/1982	16.50%	13.92%	2.58%
4/2/1982	15.50%	13.92%	1.58%
4/5/1982	15.50%	13.93%	1.57%
4/8/1982	16.40%	13.94%	2.46%
4/13/1982	14.50%	13.94%	0.56%
4/23/1982	15.75%	13.94%	1.81%
4/27/1982	15.00%	13.94%	1.06%
4/28/1982	15.75%	13.94%	1.81%
4/30/1982	14.70%	13.94%	0.76%
4/30/1982	15.50%	13.94%	1.56%
5/3/1982	16.60%	13.94%	2.66%
5/4/1982	16.00%	13.94%	2.06%
5/14/1982	15.50%	13.92%	1.58%
5/18/1982	15.42%	13.92%	1.50%
5/19/1982	14.69%	13.92%	0.77%
5/20/1982	15.00%	13.91%	1.09%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/20/1982	15.10%	13.91%	1.19%
5/20/1982	15.50%	13.91%	1.59%
5/20/1982	16.30%	13.91%	2.39%
5/21/1982	17.75%	13.91%	3.84%
5/27/1982	15.00%	13.89%	1.11%
5/28/1982	15.50%	13.89%	1.61%
5/28/1982	17.00%	13.89%	3.11%
6/1/1982	13.75%	13.89%	-0.14%
6/1/1982	16.60%	13.89%	2.71%
6/9/1982	17.86%	13.88%	3.98%
6/14/1982	15.75%	13.88%	1.87%
6/15/1982	14.85%	13.87%	0.98%
6/18/1982	15.50%	13.86%	1.64%
6/21/1982	14.90%	13.86%	1.04%
6/23/1982	16.00%	13.86%	2.14%
6/23/1982	16.17%	13.86%	2.31%
6/24/1982	14.85%	13.86%	0.99%
6/25/1982	14.70%	13.85%	0.85%
7/1/1982	16.00%	13.84%	2.16%
7/2/1982	15.62%	13.83%	1.79%
7/2/1982	17.00%	13.83%	3.17%
7/13/1982	14.00%	13.82%	0.18%
7/13/1982	16.80%	13.82%	2.98%
7/14/1982	15.76%	13.81%	1.95%
7/14/1982	16.02%	13.81%	2.21%
7/19/1982	16.50%	13.79%	2.71%
7/22/1982	14.50%	13.76%	0.74%
7/22/1982	17.00%	13.76%	3.24%
7/27/1982	16.75%	13.74%	3.01%
7/29/1982	16.50%	13.73%	2.77%
8/11/1982	17.50%	13.68%	3.82%
8/18/1982	17.07%	13.62%	3.45%
8/20/1982	15.73%	13.60%	2.13%
8/25/1982	16.00%	13.57%	2.43%
8/26/1982	15.50%	13.56%	1.94%
8/30/1982	15.00%	13.55%	1.45%
9/3/1982	16.20%	13.53%	2.67%
9/8/1982	15.00%	13.52%	1.48%
9/15/1982	13.08%	13.51%	-0.43%
9/15/1982	16.25%	13.51%	2.74%
9/16/1982	16.00%	13.50%	2.50%
9/17/1982	15.25%	13.50%	1.75%
9/23/1982	17.17%	13.47%	3.70%
9/24/1982	14.50%	13.47%	1.03%
9/27/1982	15.25%	13.46%	1.79%
10/1/1982	15.50%	13.42%	2.08%
10/15/1982	15.90%	13.32%	2.58%
10/22/1982	15.75%	13.24%	2.51%
10/22/1982	17.15%	13.24%	3.91%
10/29/1982	15.54%	13.16%	2.38%
11/1/1982	15.50%	13.14%	2.36%
11/3/1982	17.20%	13.12%	4.08%
11/4/1982	16.25%	13.10%	3.15%
11/5/1982	16.20%	13.09%	3.11%
11/9/1982	16.00%	13.05%	2.95%
11/23/1982	15.50%	12.88%	2.62%
11/23/1982	15.85%	12.88%	2.97%
11/30/1982	16.50%	12.80%	3.70%
12/1/1982	17.04%	12.78%	4.26%
12/6/1982	15.00%	12.72%	2.28%
12/6/1982	16.35%	12.72%	3.63%
12/10/1982	15.50%	12.66%	2.84%
12/13/1982	16.00%	12.64%	3.36%
12/14/1982	15.30%	12.62%	2.68%
12/14/1982	16.40%	12.62%	3.78%
12/20/1982	16.00%	12.57%	3.43%
12/21/1982	14.75%	12.55%	2.20%
12/21/1982	15.85%	12.55%	3.30%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/22/1982	16.25%	12.54%	3.71%
12/22/1982	16.58%	12.54%	4.04%
12/22/1982	16.75%	12.54%	4.21%
12/29/1982	14.90%	12.48%	2.42%
12/29/1982	16.25%	12.48%	3.77%
12/30/1982	16.00%	12.46%	3.54%
12/30/1982	16.35%	12.46%	3.89%
12/30/1982	16.77%	12.46%	4.31%
1/5/1983	17.33%	12.40%	4.93%
1/11/1983	15.90%	12.34%	3.56%
1/12/1983	14.63%	12.32%	2.31%
1/12/1983	15.50%	12.32%	3.18%
1/20/1983	17.75%	12.23%	5.52%
1/21/1983	15.00%	12.21%	2.79%
1/24/1983	14.50%	12.20%	2.30%
1/24/1983	15.50%	12.20%	3.30%
1/25/1983	15.85%	12.19%	3.66%
1/27/1983	16.14%	12.16%	3.98%
2/1/1983	18.50%	12.13%	6.37%
2/4/1983	14.00%	12.09%	1.91%
2/10/1983	15.00%	12.05%	2.95%
2/21/1983	15.50%	11.98%	3.52%
2/22/1983	15.50%	11.96%	3.54%
2/23/1983	15.10%	11.95%	3.15%
2/23/1983	16.00%	11.95%	4.05%
3/2/1983	15.25%	11.89%	3.36%
3/9/1983	15.20%	11.82%	3.38%
3/15/1983	13.00%	11.76%	1.24%
3/18/1983	15.25%	11.72%	3.53%
3/23/1983	15.40%	11.68%	3.72%
3/24/1983	15.00%	11.66%	3.34%
3/29/1983	15.50%	11.62%	3.88%
3/30/1983	16.71%	11.60%	5.11%
3/31/1983	15.00%	11.58%	3.42%
4/4/1983	15.20%	11.57%	3.63%
4/8/1983	15.50%	11.49%	4.01%
4/11/1983	14.81%	11.48%	3.33%
4/19/1983	14.50%	11.36%	3.14%
4/20/1983	16.00%	11.35%	4.65%
4/29/1983	16.00%	11.23%	4.77%
5/1/1983	14.50%	11.23%	3.27%
5/9/1983	15.50%	11.14%	4.36%
5/11/1983	16.46%	11.11%	5.35%
5/12/1983	14.14%	11.10%	3.04%
5/18/1983	15.00%	11.04%	3.96%
5/23/1983	14.90%	11.00%	3.90%
5/23/1983	15.50%	11.00%	4.50%
5/25/1983	15.50%	10.97%	4.53%
5/27/1983	15.00%	10.95%	4.05%
5/31/1983	14.00%	10.94%	3.06%
5/31/1983	15.50%	10.94%	4.56%
6/2/1983	14.50%	10.92%	3.58%
6/17/1983	15.03%	10.83%	4.20%
7/1/1983	14.80%	10.77%	4.03%
7/1/1983	14.90%	10.77%	4.13%
7/8/1983	16.25%	10.75%	5.50%
7/13/1983	13.20%	10.75%	2.45%
7/19/1983	15.00%	10.74%	4.26%
7/19/1983	15.10%	10.74%	4.36%
7/25/1983	16.25%	10.73%	5.52%
7/28/1983	15.90%	10.74%	5.16%
8/3/1983	16.34%	10.75%	5.59%
8/3/1983	16.50%	10.75%	5.75%
8/19/1983	15.00%	10.80%	4.20%
8/22/1983	15.50%	10.80%	4.70%
8/22/1983	16.40%	10.80%	5.60%
8/31/1983	14.75%	10.85%	3.90%
9/7/1983	15.00%	10.87%	4.13%



Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/14/1983	15.78%	10.89%	4.89%
9/16/1983	15.00%	10.90%	4.10%
9/19/1983	14.50%	10.91%	3.59%
9/20/1983	16.50%	10.91%	5.59%
9/28/1983	14.50%	10.94%	3.56%
9/29/1983	15.50%	10.95%	4.55%
9/30/1983	15.25%	10.95%	4.30%
9/30/1983	16.15%	10.95%	5.20%
10/4/1983	14.80%	10.96%	3.84%
10/7/1983	16.00%	10.97%	5.03%
10/13/1983	15.52%	10.99%	4.53%
10/17/1983	15.50%	11.00%	4.50%
10/18/1983	14.50%	11.00%	3.50%
10/19/1983	16.25%	11.01%	5.24%
10/19/1983	16.50%	11.01%	5.49%
10/26/1983	15.00%	11.04%	3.96%
10/27/1983	15.20%	11.04%	4.16%
11/1/1983	16.00%	11.06%	4.94%
11/9/1983	14.90%	11.09%	3.81%
11/10/1983	14.35%	11.10%	3.25%
11/23/1983	16.00%	11.13%	4.87%
11/23/1983	16.15%	11.13%	5.02%
11/30/1983	15.00%	11.14%	3.86%
12/5/1983	15.25%	11.15%	4.10%
12/6/1983	15.07%	11.16%	3.91%
12/8/1983	15.90%	11.16%	4.74%
12/9/1983	14.75%	11.17%	3.58%
12/12/1983	14.50%	11.18%	3.32%
12/15/1983	15.56%	11.20%	4.36%
12/19/1983	14.80%	11.21%	3.59%
12/20/1983	14.69%	11.22%	3.47%
12/20/1983	16.00%	11.22%	4.78%
12/20/1983	16.25%	11.22%	5.03%
12/22/1983	14.75%	11.23%	3.52%
12/22/1983	15.75%	11.23%	4.52%
1/3/1984	14.75%	11.27%	3.48%
1/10/1984	15.90%	11.30%	4.60%
1/12/1984	15.60%	11.31%	4.29%
1/18/1984	13.75%	11.33%	2.42%
1/19/1984	15.90%	11.33%	4.57%
1/30/1984	16.10%	11.37%	4.73%
1/31/1984	15.25%	11.38%	3.87%
2/1/1984	14.80%	11.39%	3.41%
2/6/1984	13.75%	11.41%	2.34%
2/6/1984	14.75%	11.41%	3.34%
2/9/1984	15.25%	11.43%	3.82%
2/15/1984	15.70%	11.45%	4.25%
2/20/1984	15.00%	11.46%	3.54%
2/20/1984	15.00%	11.46%	3.54%
2/22/1984	14.75%	11.48%	3.27%
2/28/1984	14.50%	11.52%	2.98%
3/2/1984	14.25%	11.54%	2.71%
3/20/1984	16.00%	11.65%	4.35%
3/23/1984	15.50%	11.67%	3.83%
3/26/1984	14.71%	11.68%	3.03%
4/2/1984	15.50%	11.72%	3.78%
4/6/1984	14.74%	11.76%	2.98%
4/11/1984	15.72%	11.78%	3.94%
4/17/1984	15.00%	11.81%	3.19%
4/18/1984	16.20%	11.82%	4.38%
4/25/1984	14.64%	11.85%	2.79%
4/30/1984	14.40%	11.88%	2.52%
5/16/1984	14.69%	11.99%	2.70%
5/16/1984	15.00%	11.99%	3.01%
5/22/1984	14.40%	12.02%	2.38%
5/29/1984	15.10%	12.06%	3.04%
6/13/1984	15.25%	12.16%	3.09%
6/15/1984	15.60%	12.17%	3.43%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/22/1984	16.25%	12.21%	4.04%
6/29/1984	15.25%	12.26%	2.99%
7/2/1984	13.35%	12.27%	1.08%
7/10/1984	16.00%	12.31%	3.69%
7/12/1984	16.50%	12.33%	4.17%
7/13/1984	16.25%	12.34%	3.91%
7/17/1984	14.14%	12.35%	1.79%
7/18/1984	15.30%	12.36%	2.94%
7/18/1984	15.50%	12.36%	3.14%
7/19/1984	14.30%	12.37%	1.93%
7/24/1984	16.79%	12.40%	4.39%
7/31/1984	16.00%	12.43%	3.57%
8/3/1984	14.25%	12.45%	1.80%
8/17/1984	14.30%	12.49%	1.81%
8/20/1984	15.00%	12.49%	2.51%
8/27/1984	16.30%	12.51%	3.79%
8/31/1984	15.55%	12.53%	3.02%
9/6/1984	16.00%	12.54%	3.46%
9/10/1984	14.75%	12.55%	2.20%
9/13/1984	15.00%	12.55%	2.45%
9/17/1984	17.38%	12.56%	4.82%
9/26/1984	14.50%	12.57%	1.93%
9/28/1984	15.00%	12.57%	2.43%
9/28/1984	16.25%	12.57%	3.68%
10/9/1984	14.75%	12.58%	2.17%
10/12/1984	15.60%	12.59%	3.01%
10/22/1984	15.00%	12.59%	2.41%
10/26/1984	16.40%	12.59%	3.81%
10/31/1984	16.25%	12.59%	3.66%
11/7/1984	15.60%	12.58%	3.02%
11/9/1984	16.00%	12.58%	3.42%
11/14/1984	15.75%	12.59%	3.16%
11/20/1984	15.25%	12.58%	2.67%
11/20/1984	15.92%	12.58%	3.34%
11/23/1984	15.00%	12.58%	2.42%
11/28/1984	16.15%	12.57%	3.58%
12/3/1984	15.80%	12.57%	3.23%
12/4/1984	16.50%	12.56%	3.94%
12/18/1984	16.40%	12.54%	3.86%
12/19/1984	14.75%	12.53%	2.22%
12/19/1984	15.00%	12.53%	2.47%
12/20/1984	16.00%	12.53%	3.47%
12/28/1984	16.00%	12.50%	3.50%
1/3/1985	14.75%	12.49%	2.26%
1/10/1985	15.75%	12.47%	3.28%
1/11/1985	16.30%	12.46%	3.84%
1/23/1985	15.80%	12.43%	3.37%
1/24/1985	15.82%	12.43%	3.39%
1/25/1985	16.75%	12.42%	4.33%
1/30/1985	14.90%	12.40%	2.50%
1/31/1985	14.75%	12.39%	2.36%
2/8/1985	14.47%	12.35%	2.12%
3/1/1985	13.84%	12.30%	1.54%
3/8/1985	16.85%	12.28%	4.57%
3/14/1985	15.50%	12.25%	3.25%
3/15/1985	15.62%	12.25%	3.37%
3/29/1985	15.62%	12.16%	3.46%
4/3/1985	14.60%	12.13%	2.47%
4/9/1985	15.50%	12.10%	3.40%
4/16/1985	15.70%	12.05%	3.65%
4/22/1985	14.00%	12.01%	1.99%
4/26/1985	15.50%	11.97%	3.53%
4/29/1985	15.00%	11.96%	3.04%
5/2/1985	14.68%	11.93%	2.75%
5/8/1985	15.62%	11.88%	3.74%
5/10/1985	16.50%	11.86%	4.64%
5/29/1985	14.61%	11.73%	2.88%
5/31/1985	16.00%	11.71%	4.29%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/14/1985	15.50%	11.60%	3.90%
7/9/1985	15.00%	11.44%	3.56%
7/16/1985	14.50%	11.39%	3.11%
7/26/1985	14.50%	11.32%	3.18%
8/2/1985	14.80%	11.29%	3.51%
8/7/1985	15.00%	11.26%	3.74%
8/28/1985	14.25%	11.15%	3.10%
8/28/1985	15.50%	11.15%	4.35%
8/29/1985	14.50%	11.14%	3.36%
9/9/1985	14.60%	11.11%	3.49%
9/9/1985	14.90%	11.11%	3.79%
9/17/1985	14.90%	11.08%	3.82%
9/23/1985	15.00%	11.06%	3.94%
9/27/1985	15.50%	11.04%	4.46%
9/27/1985	15.80%	11.04%	4.76%
10/2/1985	14.00%	11.03%	2.97%
10/2/1985	14.75%	11.03%	3.72%
10/3/1985	15.25%	11.03%	4.22%
10/24/1985	15.40%	10.96%	4.44%
10/24/1985	15.82%	10.96%	4.86%
10/24/1985	15.85%	10.96%	4.89%
10/28/1985	16.00%	10.95%	5.05%
10/29/1985	16.65%	10.94%	5.71%
10/31/1985	15.06%	10.93%	4.13%
11/4/1985	14.50%	10.91%	3.59%
11/7/1985	15.50%	10.89%	4.61%
11/8/1985	14.30%	10.89%	3.41%
12/12/1985	14.75%	10.73%	4.02%
12/18/1985	15.00%	10.69%	4.31%
12/20/1985	14.50%	10.66%	3.84%
12/20/1985	14.50%	10.66%	3.84%
12/20/1985	15.00%	10.66%	4.34%
1/24/1986	15.40%	10.40%	5.00%
1/31/1986	15.00%	10.35%	4.65%
2/5/1986	15.00%	10.32%	4.68%
2/5/1986	15.75%	10.32%	5.43%
2/10/1986	13.30%	10.29%	3.01%
2/11/1986	12.50%	10.27%	2.23%
2/14/1986	14.40%	10.24%	4.16%
2/18/1986	16.00%	10.22%	5.78%
2/24/1986	14.50%	10.17%	4.33%
2/26/1986	14.00%	10.15%	3.85%
3/5/1986	14.90%	10.07%	4.83%
3/11/1986	14.50%	10.01%	4.49%
3/12/1986	13.50%	10.00%	3.50%
3/27/1986	14.10%	9.85%	4.25%
3/31/1986	13.50%	9.84%	3.66%
4/1/1986	14.00%	9.82%	4.18%
4/2/1986	15.50%	9.81%	5.69%
4/4/1986	15.00%	9.78%	5.22%
4/14/1986	13.40%	9.68%	3.72%
4/23/1986	15.00%	9.57%	5.43%
5/16/1986	14.50%	9.31%	5.19%
5/16/1986	14.50%	9.31%	5.19%
5/29/1986	13.90%	9.19%	4.71%
5/30/1986	15.10%	9.17%	5.93%
6/2/1986	12.81%	9.16%	3.65%
6/11/1986	14.00%	9.06%	4.94%
6/24/1986	16.63%	8.93%	7.70%
6/26/1986	12.00%	8.90%	3.10%
6/26/1986	14.75%	8.90%	5.85%
6/30/1986	13.00%	8.86%	4.14%
7/10/1986	14.34%	8.74%	5.60%
7/11/1986	12.75%	8.72%	4.03%
7/14/1986	12.60%	8.71%	3.89%
7/17/1986	12.40%	8.65%	3.75%
7/25/1986	14.25%	8.56%	5.69%
8/6/1986	13.50%	8.43%	5.07%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
8/14/1986	13.50%	8.34%	5.16%
9/16/1986	12.75%	8.06%	4.69%
9/19/1986	13.25%	8.02%	5.23%
10/1/1986	14.00%	7.94%	6.06%
10/3/1986	13.40%	7.92%	5.48%
10/31/1986	13.50%	7.77%	5.73%
11/5/1986	13.00%	7.74%	5.26%
12/3/1986	12.90%	7.58%	5.32%
12/4/1986	14.44%	7.57%	6.87%
12/16/1986	13.60%	7.52%	6.08%
12/22/1986	13.80%	7.50%	6.30%
12/30/1986	13.00%	7.49%	5.51%
1/2/1987	13.00%	7.48%	5.52%
1/12/1987	12.40%	7.46%	4.94%
1/27/1987	12.71%	7.46%	5.25%
3/2/1987	12.47%	7.47%	5.00%
3/3/1987	13.60%	7.47%	6.13%
3/4/1987	12.38%	7.47%	4.91%
3/10/1987	13.50%	7.47%	6.03%
3/13/1987	13.00%	7.47%	5.53%
3/31/1987	13.00%	7.46%	5.54%
4/6/1987	13.00%	7.47%	5.53%
4/14/1987	12.50%	7.49%	5.01%
4/16/1987	14.50%	7.50%	7.00%
4/27/1987	12.00%	7.54%	4.46%
5/5/1987	12.85%	7.58%	5.27%
5/12/1987	12.65%	7.62%	5.03%
5/28/1987	13.50%	7.70%	5.80%
6/15/1987	13.20%	7.78%	5.42%
6/29/1987	15.00%	7.84%	7.16%
6/30/1987	12.50%	7.84%	4.66%
7/8/1987	12.00%	7.86%	4.14%
7/10/1987	12.90%	7.87%	5.03%
7/15/1987	13.50%	7.88%	5.62%
7/16/1987	13.50%	7.88%	5.62%
7/16/1987	15.00%	7.88%	7.12%
7/27/1987	13.00%	7.92%	5.08%
7/27/1987	13.40%	7.92%	5.48%
7/27/1987	13.50%	7.92%	5.58%
7/31/1987	12.98%	7.95%	5.03%
8/26/1987	12.63%	8.06%	4.57%
8/26/1987	12.75%	8.06%	4.69%
8/27/1987	13.25%	8.07%	5.18%
9/9/1987	13.00%	8.14%	4.86%
9/30/1987	12.75%	8.31%	4.44%
9/30/1987	13.00%	8.31%	4.69%
10/2/1987	11.50%	8.33%	3.17%
10/15/1987	13.00%	8.44%	4.56%
11/2/1987	13.00%	8.55%	4.45%
11/19/1987	13.00%	8.64%	4.36%
11/30/1987	12.00%	8.69%	3.31%
12/3/1987	14.20%	8.71%	5.49%
12/15/1987	13.25%	8.78%	4.47%
12/16/1987	13.50%	8.79%	4.71%
12/16/1987	13.72%	8.79%	4.93%
12/17/1987	11.75%	8.80%	2.95%
12/18/1987	13.50%	8.80%	4.70%
12/21/1987	12.01%	8.81%	3.20%
12/22/1987	12.00%	8.82%	3.18%
12/22/1987	12.00%	8.82%	3.18%
12/22/1987	12.75%	8.82%	3.93%
12/22/1987	13.00%	8.82%	4.18%
1/20/1988	13.80%	8.94%	4.86%
1/26/1988	13.90%	8.96%	4.94%
1/29/1988	13.20%	8.96%	4.24%
2/4/1988	12.60%	8.96%	3.64%
3/1/1988	11.56%	8.94%	2.62%
3/23/1988	12.87%	8.92%	3.95%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/24/1988	11.24%	8.92%	2.32%
3/30/1988	12.72%	8.92%	3.80%
4/1/1988	12.50%	8.92%	3.58%
4/7/1988	13.25%	8.93%	4.32%
4/25/1988	10.96%	8.96%	2.00%
5/3/1988	12.91%	8.98%	3.93%
5/11/1988	13.50%	8.99%	4.51%
5/16/1988	13.00%	8.99%	4.01%
6/30/1988	12.75%	8.99%	3.76%
7/1/1988	12.75%	8.99%	3.76%
7/20/1988	13.40%	8.96%	4.44%
8/5/1988	12.75%	8.91%	3.84%
8/23/1988	11.70%	8.93%	2.77%
8/29/1988	12.75%	8.94%	3.81%
8/30/1988	13.50%	8.94%	4.56%
9/8/1988	12.60%	8.95%	3.65%
10/13/1988	13.10%	8.93%	4.17%
12/19/1988	13.00%	9.02%	3.98%
12/20/1988	12.25%	9.02%	3.23%
12/20/1988	13.00%	9.02%	3.98%
12/21/1988	12.90%	9.02%	3.88%
12/27/1988	13.00%	9.03%	3.97%
12/28/1988	13.10%	9.03%	4.07%
12/30/1988	13.40%	9.04%	4.36%
1/27/1989	13.00%	9.06%	3.94%
1/31/1989	13.00%	9.06%	3.94%
2/17/1989	13.00%	9.05%	3.95%
2/20/1989	12.40%	9.05%	3.35%
3/1/1989	12.76%	9.05%	3.71%
3/8/1989	13.00%	9.05%	3.95%
3/30/1989	14.00%	9.05%	4.95%
4/5/1989	14.20%	9.05%	5.15%
4/18/1989	13.00%	9.05%	3.95%
5/5/1989	12.40%	9.05%	3.35%
6/2/1989	13.20%	9.00%	4.20%
6/8/1989	13.50%	8.98%	4.52%
6/27/1989	13.25%	8.91%	4.34%
6/30/1989	13.00%	8.90%	4.10%
8/14/1989	12.50%	8.77%	3.73%
9/28/1989	12.25%	8.63%	3.62%
10/24/1989	12.50%	8.54%	3.96%
11/9/1989	13.00%	8.48%	4.52%
12/15/1989	13.00%	8.33%	4.67%
12/20/1989	12.90%	8.31%	4.59%
12/21/1989	12.90%	8.31%	4.59%
12/27/1989	12.50%	8.29%	4.21%
12/27/1989	13.00%	8.29%	4.71%
1/10/1990	12.80%	8.24%	4.56%
1/11/1990	12.90%	8.23%	4.67%
1/17/1990	12.80%	8.22%	4.58%
1/26/1990	12.00%	8.19%	3.81%
2/9/1990	12.10%	8.17%	3.93%
2/24/1990	12.86%	8.15%	4.71%
3/30/1990	12.90%	8.16%	4.74%
4/4/1990	15.76%	8.17%	7.59%
4/12/1990	12.52%	8.18%	4.34%
4/19/1990	12.75%	8.20%	4.55%
5/21/1990	12.10%	8.28%	3.82%
5/29/1990	12.40%	8.30%	4.10%
5/31/1990	12.00%	8.30%	3.70%
6/4/1990	12.90%	8.30%	4.60%
6/6/1990	12.25%	8.31%	3.94%
6/15/1990	13.20%	8.32%	4.88%
6/20/1990	12.92%	8.32%	4.60%
6/27/1990	12.90%	8.33%	4.57%
6/29/1990	12.50%	8.34%	4.16%
7/6/1990	12.10%	8.34%	3.76%
7/6/1990	12.35%	8.34%	4.01%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
8/10/1990	12.55%	8.41%	4.14%
8/16/1990	13.21%	8.43%	4.78%
8/22/1990	13.10%	8.45%	4.65%
8/24/1990	13.00%	8.46%	4.54%
9/26/1990	11.45%	8.59%	2.86%
10/2/1990	13.00%	8.61%	4.39%
10/5/1990	12.84%	8.63%	4.21%
10/19/1990	13.00%	8.67%	4.33%
10/25/1990	12.30%	8.68%	3.62%
11/21/1990	12.70%	8.69%	4.01%
12/13/1990	12.30%	8.67%	3.63%
12/17/1990	12.87%	8.67%	4.20%
12/18/1990	13.10%	8.67%	4.43%
12/19/1990	12.00%	8.66%	3.34%
12/20/1990	12.75%	8.66%	4.09%
12/21/1990	12.50%	8.66%	3.84%
12/27/1990	12.79%	8.66%	4.13%
1/2/1991	13.10%	8.66%	4.44%
1/4/1991	12.50%	8.65%	3.85%
1/15/1991	12.75%	8.65%	4.10%
1/25/1991	11.70%	8.63%	3.07%
2/4/1991	12.50%	8.60%	3.90%
2/7/1991	12.50%	8.59%	3.91%
2/12/1991	13.00%	8.57%	4.43%
2/14/1991	12.72%	8.56%	4.16%
2/22/1991	12.80%	8.55%	4.25%
3/6/1991	13.10%	8.53%	4.57%
3/8/1991	12.30%	8.52%	3.78%
3/8/1991	13.00%	8.52%	4.48%
4/22/1991	13.00%	8.49%	4.51%
5/7/1991	13.50%	8.47%	5.03%
5/13/1991	13.25%	8.47%	4.78%
5/30/1991	12.75%	8.43%	4.32%
6/12/1991	12.00%	8.41%	3.59%
6/25/1991	11.70%	8.38%	3.32%
6/28/1991	12.50%	8.38%	4.12%
7/1/1991	12.00%	8.37%	3.63%
7/3/1991	12.50%	8.36%	4.14%
7/19/1991	12.10%	8.34%	3.76%
8/1/1991	12.90%	8.32%	4.58%
8/16/1991	13.20%	8.29%	4.91%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.25%	8.23%	4.02%
10/17/1991	13.00%	8.20%	4.80%
10/23/1991	12.50%	8.20%	4.30%
10/23/1991	12.55%	8.20%	4.35%
10/31/1991	11.80%	8.19%	3.61%
11/1/1991	12.00%	8.19%	3.81%
11/5/1991	12.25%	8.19%	4.06%
11/12/1991	12.50%	8.18%	4.32%
11/12/1991	13.25%	8.18%	5.07%
11/25/1991	12.40%	8.18%	4.22%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.50%	8.18%	4.32%
11/27/1991	12.10%	8.18%	3.92%
12/18/1991	12.25%	8.15%	4.10%
12/19/1991	12.60%	8.15%	4.45%
12/19/1991	12.80%	8.15%	4.65%
12/20/1991	12.65%	8.14%	4.51%
1/9/1992	12.80%	8.09%	4.71%
1/16/1992	12.75%	8.07%	4.68%
1/21/1992	12.00%	8.06%	3.94%
1/22/1992	13.00%	8.06%	4.94%
1/27/1992	12.65%	8.05%	4.60%
1/31/1992	12.00%	8.04%	3.96%
2/11/1992	12.40%	8.03%	4.37%
2/25/1992	12.50%	8.01%	4.49%
3/16/1992	11.43%	7.98%	3.45%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
3/18/1992	12.28%	7.98%	4.30%
4/2/1992	12.10%	7.95%	4.15%
4/9/1992	11.45%	7.93%	3.52%
4/10/1992	11.50%	7.93%	3.57%
4/14/1992	11.50%	7.92%	3.58%
5/5/1992	11.50%	7.89%	3.61%
5/12/1992	11.87%	7.88%	3.99%
5/12/1992	12.46%	7.88%	4.58%
6/1/1992	12.30%	7.86%	4.44%
6/12/1992	10.90%	7.85%	3.05%
6/26/1992	12.35%	7.85%	4.50%
6/29/1992	11.00%	7.85%	3.15%
6/30/1992	13.00%	7.85%	5.15%
7/13/1992	11.90%	7.84%	4.06%
7/13/1992	13.50%	7.84%	5.66%
7/22/1992	11.20%	7.83%	3.37%
8/3/1992	12.00%	7.81%	4.19%
8/6/1992	12.50%	7.80%	4.70%
9/22/1992	12.00%	7.71%	4.29%
9/28/1992	11.40%	7.71%	3.69%
9/30/1992	11.75%	7.71%	4.04%
10/2/1992	13.00%	7.70%	5.30%
10/12/1992	12.20%	7.70%	4.50%
10/16/1992	13.16%	7.71%	5.45%
10/30/1992	11.75%	7.71%	4.04%
11/3/1992	12.00%	7.71%	4.29%
12/3/1992	11.85%	7.68%	4.17%
12/15/1992	11.00%	7.66%	3.34%
12/16/1992	11.90%	7.66%	4.24%
12/16/1992	12.40%	7.66%	4.74%
12/17/1992	12.00%	7.66%	4.34%
12/22/1992	12.30%	7.65%	4.65%
12/22/1992	12.40%	7.65%	4.75%
12/29/1992	12.25%	7.63%	4.62%
12/30/1992	12.00%	7.63%	4.37%
12/31/1992	11.90%	7.62%	4.28%
1/12/1993	12.00%	7.61%	4.39%
1/21/1993	11.25%	7.59%	3.66%
2/2/1993	11.40%	7.56%	3.84%
2/15/1993	12.30%	7.52%	4.78%
2/24/1993	11.90%	7.49%	4.41%
2/26/1993	11.80%	7.48%	4.32%
2/26/1993	12.20%	7.48%	4.72%
4/23/1993	11.75%	7.29%	4.46%
5/11/1993	11.75%	7.24%	4.51%
5/14/1993	11.50%	7.24%	4.26%
5/25/1993	11.50%	7.22%	4.28%
5/28/1993	11.00%	7.22%	3.78%
6/3/1993	12.00%	7.21%	4.79%
6/16/1993	11.50%	7.19%	4.31%
6/18/1993	12.10%	7.18%	4.92%
6/25/1993	11.67%	7.17%	4.50%
7/21/1993	11.38%	7.10%	4.28%
7/23/1993	10.46%	7.09%	3.37%
8/24/1993	11.50%	6.95%	4.55%
9/21/1993	10.50%	6.80%	3.70%
9/29/1993	11.47%	6.76%	4.71%
9/30/1993	11.60%	6.76%	4.84%
11/2/1993	10.80%	6.60%	4.20%
11/12/1993	12.00%	6.56%	5.44%
11/26/1993	11.00%	6.52%	4.48%
12/14/1993	10.55%	6.48%	4.07%
12/16/1993	10.60%	6.48%	4.12%
12/21/1993	11.30%	6.47%	4.83%
1/4/1994	10.07%	6.44%	3.63%
1/13/1994	11.00%	6.42%	4.58%
1/21/1994	11.00%	6.40%	4.60%
1/28/1994	11.35%	6.39%	4.96%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
2/3/1994	11.40%	6.38%	5.02%
2/17/1994	10.60%	6.36%	4.24%
2/25/1994	11.25%	6.35%	4.90%
2/25/1994	12.00%	6.35%	5.65%
3/1/1994	11.00%	6.35%	4.65%
3/4/1994	11.00%	6.34%	4.66%
4/25/1994	11.00%	6.40%	4.60%
5/10/1994	11.75%	6.44%	5.31%
5/13/1994	10.50%	6.46%	4.04%
6/3/1994	11.00%	6.54%	4.46%
6/27/1994	11.40%	6.65%	4.75%
8/5/1994	12.75%	6.88%	5.87%
10/31/1994	10.00%	7.33%	2.67%
11/9/1994	10.85%	7.40%	3.45%
11/9/1994	10.85%	7.40%	3.45%
11/18/1994	11.20%	7.46%	3.74%
11/22/1994	11.60%	7.47%	4.13%
11/28/1994	11.06%	7.50%	3.56%
12/8/1994	11.50%	7.55%	3.95%
12/8/1994	11.70%	7.55%	4.15%
12/14/1994	10.95%	7.57%	3.38%
12/15/1994	11.50%	7.57%	3.93%
12/19/1994	11.50%	7.58%	3.92%
12/28/1994	12.15%	7.61%	4.54%
1/9/1995	12.28%	7.64%	4.64%
1/31/1995	11.00%	7.69%	3.31%
2/10/1995	12.60%	7.70%	4.90%
2/17/1995	11.90%	7.70%	4.20%
3/9/1995	11.50%	7.72%	3.78%
3/20/1995	12.00%	7.72%	4.28%
3/23/1995	12.81%	7.72%	5.09%
3/29/1995	11.60%	7.72%	3.88%
4/6/1995	11.10%	7.72%	3.38%
4/7/1995	11.00%	7.71%	3.29%
4/19/1995	11.00%	7.70%	3.30%
5/12/1995	11.63%	7.68%	3.95%
5/25/1995	11.20%	7.65%	3.55%
6/9/1995	11.25%	7.60%	3.65%
6/21/1995	12.25%	7.56%	4.69%
6/30/1995	11.10%	7.51%	3.59%
9/11/1995	11.30%	7.20%	4.10%
9/27/1995	11.30%	7.12%	4.18%
9/27/1995	11.50%	7.12%	4.38%
9/27/1995	11.75%	7.12%	4.63%
9/29/1995	11.00%	7.11%	3.89%
11/9/1995	11.38%	6.89%	4.49%
11/9/1995	12.36%	6.89%	5.47%
11/17/1995	11.00%	6.85%	4.15%
12/4/1995	11.35%	6.78%	4.57%
12/11/1995	11.40%	6.74%	4.66%
12/20/1995	11.60%	6.69%	4.91%
12/27/1995	12.00%	6.66%	5.34%
2/5/1996	12.25%	6.48%	5.77%
3/29/1996	10.67%	6.42%	4.25%
4/8/1996	11.00%	6.42%	4.58%
4/11/1996	12.59%	6.43%	6.16%
4/11/1996	12.59%	6.43%	6.16%
4/24/1996	11.25%	6.43%	4.82%
4/30/1996	11.00%	6.43%	4.57%
5/13/1996	11.00%	6.44%	4.56%
5/23/1996	11.25%	6.43%	4.82%
6/25/1996	11.25%	6.48%	4.77%
6/27/1996	11.20%	6.48%	4.72%
8/12/1996	10.40%	6.57%	3.83%
9/27/1996	11.00%	6.71%	4.29%
10/16/1996	12.25%	6.76%	5.49%
11/5/1996	11.00%	6.81%	4.19%
11/26/1996	11.30%	6.83%	4.47%



Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/18/1996	11.75%	6.84%	4.91%
12/31/1996	11.50%	6.83%	4.67%
1/3/1997	10.70%	6.83%	3.87%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.82%	4.98%
3/31/1997	10.02%	6.80%	3.22%
4/2/1997	11.65%	6.80%	4.85%
4/28/1997	11.50%	6.81%	4.69%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
12/12/1997	11.00%	6.60%	4.40%
12/23/1997	11.12%	6.57%	4.55%
2/2/1998	12.75%	6.39%	6.36%
3/2/1998	11.25%	6.28%	4.97%
3/6/1998	10.75%	6.27%	4.48%
3/20/1998	10.50%	6.22%	4.28%
4/30/1998	12.20%	6.12%	6.08%
7/10/1998	11.40%	5.94%	5.46%
9/15/1998	11.90%	5.78%	6.12%
11/30/1998	12.60%	5.58%	7.02%
12/10/1998	12.20%	5.54%	6.66%
12/17/1998	12.10%	5.52%	6.58%
2/5/1999	10.30%	5.38%	4.92%
3/4/1999	10.50%	5.34%	5.16%
4/6/1999	10.94%	5.32%	5.62%
7/29/1999	10.75%	5.52%	5.23%
9/23/1999	10.75%	5.70%	5.05%
11/17/1999	11.10%	5.90%	5.20%
1/7/2000	11.50%	6.05%	5.45%
1/7/2000	11.50%	6.05%	5.45%
2/17/2000	10.60%	6.17%	4.43%
3/28/2000	11.25%	6.20%	5.05%
5/24/2000	11.00%	6.18%	4.82%
7/18/2000	12.20%	6.16%	6.04%
9/29/2000	11.16%	6.03%	5.13%
11/28/2000	12.90%	5.89%	7.01%
11/30/2000	12.10%	5.88%	6.22%
1/23/2001	11.25%	5.79%	5.46%
2/8/2001	11.50%	5.77%	5.73%
5/8/2001	10.75%	5.62%	5.13%
6/26/2001	11.00%	5.62%	5.38%
7/25/2001	11.02%	5.60%	5.42%
7/25/2001	11.02%	5.60%	5.42%
7/31/2001	11.00%	5.59%	5.41%
8/31/2001	10.50%	5.56%	4.94%
9/7/2001	10.75%	5.55%	5.20%
9/10/2001	11.00%	5.55%	5.45%
9/20/2001	10.00%	5.55%	4.45%
10/24/2001	10.30%	5.54%	4.76%
11/28/2001	10.60%	5.49%	5.11%
12/3/2001	12.88%	5.49%	7.39%
12/20/2001	12.50%	5.50%	7.00%
1/22/2002	10.00%	5.50%	4.50%
3/27/2002	10.10%	5.45%	4.65%
4/22/2002	11.80%	5.45%	6.35%
5/28/2002	10.17%	5.46%	4.71%
6/10/2002	12.00%	5.47%	6.53%
6/18/2002	11.16%	5.48%	5.68%
6/20/2002	11.00%	5.48%	5.52%
6/20/2002	12.30%	5.48%	6.82%
7/15/2002	11.00%	5.48%	5.52%
9/12/2002	12.30%	5.45%	6.85%
9/26/2002	10.45%	5.41%	5.04%
12/4/2002	11.55%	5.29%	6.26%
12/13/2002	11.75%	5.27%	6.48%
12/20/2002	11.40%	5.25%	6.15%
1/8/2003	11.10%	5.19%	5.91%
1/31/2003	12.45%	5.13%	7.32%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
2/28/2003	12.30%	5.04%	7.26%
3/6/2003	10.75%	5.02%	5.73%
3/7/2003	9.96%	5.02%	4.94%
3/20/2003	12.00%	4.98%	7.02%
4/3/2003	12.00%	4.95%	7.05%
4/15/2003	11.15%	4.93%	6.22%
6/25/2003	10.75%	4.79%	5.96%
6/26/2003	10.75%	4.79%	5.96%
7/9/2003	9.75%	4.79%	4.96%
7/16/2003	9.75%	4.79%	4.96%
7/25/2003	9.50%	4.79%	4.71%
8/26/2003	10.50%	4.83%	5.67%
12/17/2003	9.85%	4.94%	4.91%
12/17/2003	10.70%	4.94%	5.76%
12/18/2003	11.50%	4.94%	6.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
12/23/2003	10.50%	4.94%	5.56%
1/13/2004	12.00%	4.95%	7.05%
3/2/2004	10.75%	4.99%	5.76%
3/26/2004	10.25%	5.02%	5.23%
4/5/2004	11.25%	5.03%	6.22%
5/18/2004	10.50%	5.07%	5.43%
5/25/2004	10.25%	5.07%	5.18%
5/27/2004	10.25%	5.08%	5.17%
6/2/2004	11.22%	5.08%	6.14%
6/30/2004	10.50%	5.10%	5.40%
6/30/2004	10.50%	5.10%	5.40%
7/16/2004	11.60%	5.11%	6.49%
8/25/2004	10.25%	5.10%	5.15%
9/9/2004	10.40%	5.10%	5.30%
11/9/2004	10.50%	5.07%	5.43%
11/23/2004	11.00%	5.06%	5.94%
12/14/2004	10.97%	5.07%	5.90%
12/21/2004	11.25%	5.07%	6.18%
12/21/2004	11.50%	5.07%	6.43%
12/22/2004	10.70%	5.07%	5.63%
12/22/2004	11.50%	5.07%	6.43%
12/29/2004	9.85%	5.08%	4.77%
1/6/2005	10.70%	5.08%	5.62%
2/18/2005	10.30%	4.98%	5.32%
2/25/2005	10.50%	4.96%	5.54%
3/10/2005	11.00%	4.93%	6.07%
3/24/2005	10.30%	4.89%	5.41%
4/4/2005	10.00%	4.87%	5.13%
4/7/2005	10.25%	4.87%	5.38%
5/18/2005	10.25%	4.78%	5.47%
5/25/2005	10.75%	4.76%	5.99%
5/26/2005	9.75%	4.76%	4.99%
6/1/2005	9.75%	4.75%	5.00%
7/19/2005	11.50%	4.64%	6.86%
8/5/2005	11.75%	4.62%	7.13%
8/15/2005	10.13%	4.61%	5.52%
9/28/2005	10.00%	4.54%	5.46%
10/4/2005	10.75%	4.53%	6.22%
12/12/2005	11.00%	4.55%	6.45%
12/13/2005	10.75%	4.55%	6.20%
12/21/2005	10.29%	4.54%	5.75%
12/21/2005	10.40%	4.54%	5.86%
12/22/2005	11.00%	4.54%	6.46%
12/22/2005	11.15%	4.54%	6.61%
12/28/2005	10.00%	4.54%	5.46%
12/28/2005	10.00%	4.54%	5.46%
1/5/2006	11.00%	4.53%	6.47%
1/27/2006	9.75%	4.52%	5.23%
3/3/2006	10.39%	4.53%	5.86%
4/17/2006	10.20%	4.62%	5.58%
4/26/2006	10.60%	4.64%	5.96%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/17/2006	11.60%	4.69%	6.91%
6/6/2006	10.00%	4.75%	5.25%
6/27/2006	10.75%	4.80%	5.95%
7/6/2006	10.20%	4.83%	5.37%
7/24/2006	9.60%	4.86%	4.74%
7/26/2006	10.50%	4.86%	5.64%
7/28/2006	10.05%	4.87%	5.18%
8/23/2006	9.55%	4.89%	4.66%
9/1/2006	10.54%	4.90%	5.64%
9/14/2006	10.00%	4.91%	5.09%
10/6/2006	9.67%	4.92%	4.75%
11/21/2006	10.08%	4.95%	5.13%
11/21/2006	10.08%	4.95%	5.13%
11/21/2006	10.12%	4.95%	5.17%
12/1/2006	10.25%	4.96%	5.29%
12/1/2006	10.50%	4.96%	5.54%
12/7/2006	10.75%	4.96%	5.79%
12/21/2006	10.90%	4.95%	5.95%
12/21/2006	11.25%	4.95%	6.30%
12/22/2006	10.25%	4.95%	5.30%
1/5/2007	10.00%	4.95%	5.05%
1/11/2007	10.10%	4.95%	5.15%
1/11/2007	10.10%	4.95%	5.15%
1/11/2007	10.90%	4.95%	5.95%
1/12/2007	10.10%	4.95%	5.15%
1/13/2007	10.40%	4.95%	5.45%
1/19/2007	10.80%	4.94%	5.86%
3/21/2007	11.35%	4.86%	6.49%
3/22/2007	9.75%	4.86%	4.89%
5/15/2007	10.00%	4.81%	5.19%
5/17/2007	10.25%	4.80%	5.45%
5/17/2007	10.25%	4.80%	5.45%
5/22/2007	10.20%	4.80%	5.40%
5/22/2007	10.50%	4.80%	5.70%
5/23/2007	10.70%	4.80%	5.90%
5/25/2007	9.67%	4.80%	4.87%
6/15/2007	9.90%	4.82%	5.08%
6/21/2007	10.20%	4.83%	5.37%
6/22/2007	10.50%	4.83%	5.67%
6/28/2007	10.75%	4.84%	5.91%
7/12/2007	9.67%	4.86%	4.81%
7/19/2007	10.00%	4.87%	5.13%
7/19/2007	10.00%	4.87%	5.13%
8/15/2007	10.40%	4.88%	5.52%
10/9/2007	10.00%	4.91%	5.09%
10/17/2007	9.10%	4.91%	4.19%
10/31/2007	9.96%	4.90%	5.06%
11/29/2007	10.90%	4.87%	6.03%
12/6/2007	10.75%	4.86%	5.89%
12/13/2007	9.96%	4.86%	5.10%
12/14/2007	10.70%	4.86%	5.84%
12/14/2007	10.80%	4.86%	5.94%
12/19/2007	10.20%	4.86%	5.34%
12/20/2007	10.20%	4.86%	5.34%
12/20/2007	11.00%	4.86%	6.14%
12/28/2007	10.25%	4.85%	5.40%
12/31/2007	11.25%	4.85%	6.40%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/28/2008	9.40%	4.80%	4.60%
1/30/2008	10.00%	4.79%	5.21%
1/31/2008	10.71%	4.79%	5.92%
2/29/2008	10.25%	4.75%	5.50%
3/12/2008	10.25%	4.73%	5.52%
3/25/2008	9.10%	4.68%	4.42%
4/22/2008	10.25%	4.60%	5.65%
4/24/2008	10.10%	4.60%	5.50%
5/1/2008	10.70%	4.58%	6.12%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/19/2008	11.00%	4.56%	6.44%
5/27/2008	10.00%	4.55%	5.45%
6/10/2008	10.70%	4.54%	6.16%
6/27/2008	10.50%	4.54%	5.96%
6/27/2008	11.04%	4.54%	6.50%
7/10/2008	10.43%	4.52%	5.91%
7/16/2008	9.40%	4.51%	4.89%
7/30/2008	10.80%	4.51%	6.29%
7/31/2008	10.70%	4.51%	6.19%
8/11/2008	10.25%	4.50%	5.75%
8/26/2008	10.18%	4.50%	5.68%
9/10/2008	10.30%	4.50%	5.80%
9/24/2008	10.65%	4.48%	6.17%
9/24/2008	10.65%	4.48%	6.17%
9/24/2008	10.65%	4.48%	6.17%
9/30/2008	10.20%	4.47%	5.73%
10/8/2008	10.15%	4.46%	5.69%
11/13/2008	10.55%	4.45%	6.10%
11/17/2008	10.20%	4.44%	5.76%
12/1/2008	10.25%	4.39%	5.86%
12/23/2008	11.00%	4.27%	6.73%
12/29/2008	10.00%	4.24%	5.76%
12/29/2008	10.20%	4.24%	5.96%
12/31/2008	10.75%	4.22%	6.53%
1/14/2009	10.50%	4.15%	6.35%
1/21/2009	10.50%	4.11%	6.39%
1/21/2009	10.50%	4.11%	6.39%
1/21/2009	10.50%	4.11%	6.39%
1/27/2009	10.76%	4.09%	6.67%
1/30/2009	10.50%	4.07%	6.43%
2/4/2009	8.75%	4.06%	4.69%
3/4/2009	10.50%	3.96%	6.54%
3/12/2009	11.50%	3.93%	7.57%
4/2/2009	11.10%	3.85%	7.25%
4/21/2009	10.61%	3.80%	6.81%
4/24/2009	10.00%	3.78%	6.22%
4/30/2009	11.25%	3.77%	7.48%
5/4/2009	10.74%	3.77%	6.97%
5/20/2009	10.25%	3.74%	6.51%
5/28/2009	10.50%	3.74%	6.76%
6/22/2009	10.00%	3.76%	6.24%
6/24/2009	10.80%	3.76%	7.04%
7/8/2009	10.63%	3.76%	6.87%
7/17/2009	10.50%	3.77%	6.73%
8/31/2009	10.25%	3.82%	6.43%
10/14/2009	10.70%	4.02%	6.68%
10/23/2009	10.88%	4.06%	6.82%
11/2/2009	10.70%	4.10%	6.60%
11/3/2009	10.70%	4.10%	6.60%
11/24/2009	10.25%	4.16%	6.09%
11/25/2009	10.75%	4.16%	6.59%
11/30/2009	10.35%	4.17%	6.18%
12/3/2009	10.50%	4.18%	6.32%
12/7/2009	10.70%	4.19%	6.51%
12/16/2009	10.90%	4.22%	6.68%
12/16/2009	11.00%	4.22%	6.78%
12/18/2009	10.40%	4.22%	6.18%
12/18/2009	10.40%	4.22%	6.18%
12/22/2009	10.20%	4.23%	5.97%
12/22/2009	10.40%	4.23%	6.17%
12/22/2009	10.40%	4.23%	6.17%
12/30/2009	10.00%	4.26%	5.74%
1/4/2010	10.80%	4.28%	6.52%
1/11/2010	11.00%	4.31%	6.69%
1/26/2010	10.13%	4.35%	5.78%
1/27/2010	10.40%	4.36%	6.04%
1/27/2010	10.40%	4.36%	6.04%
1/27/2010	10.70%	4.36%	6.34%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
2/9/2010	9.80%	4.38%	5.42%
2/18/2010	10.60%	4.40%	6.20%
2/24/2010	10.18%	4.41%	5.77%
3/2/2010	9.63%	4.41%	5.22%
3/4/2010	10.50%	4.41%	6.09%
3/5/2010	10.50%	4.41%	6.09%
3/11/2010	11.90%	4.42%	7.48%
3/17/2010	10.00%	4.41%	5.59%
3/25/2010	10.15%	4.42%	5.73%
4/2/2010	10.10%	4.43%	5.67%
4/27/2010	10.00%	4.46%	5.54%
4/29/2010	9.90%	4.46%	5.44%
4/29/2010	10.06%	4.46%	5.60%
4/29/2010	10.26%	4.46%	5.80%
5/12/2010	10.30%	4.45%	5.85%
5/12/2010	10.30%	4.45%	5.85%
5/28/2010	10.10%	4.44%	5.66%
5/28/2010	10.20%	4.44%	5.76%
6/7/2010	10.30%	4.44%	5.86%
6/16/2010	10.00%	4.44%	5.56%
6/28/2010	9.67%	4.43%	5.24%
6/28/2010	10.50%	4.43%	6.07%
6/30/2010	9.40%	4.43%	4.97%
7/1/2010	10.25%	4.43%	5.82%
7/15/2010	10.53%	4.43%	6.10%
7/15/2010	10.70%	4.43%	6.27%
7/30/2010	10.70%	4.41%	6.29%
8/4/2010	10.50%	4.41%	6.09%
8/6/2010	9.83%	4.41%	5.42%
8/25/2010	9.90%	4.37%	5.53%
9/3/2010	10.60%	4.35%	6.25%
9/14/2010	10.70%	4.33%	6.37%
9/16/2010	10.00%	4.32%	5.68%
9/16/2010	10.00%	4.32%	5.68%
9/30/2010	9.75%	4.28%	5.47%
10/14/2010	10.35%	4.24%	6.11%
10/28/2010	10.70%	4.21%	6.49%
11/2/2010	10.38%	4.20%	6.18%
11/4/2010	10.70%	4.19%	6.51%
11/19/2010	10.20%	4.17%	6.03%
11/22/2010	10.00%	4.17%	5.83%
12/1/2010	10.13%	4.16%	5.97%
12/6/2010	9.86%	4.15%	5.71%
12/9/2010	10.25%	4.15%	6.10%
12/13/2010	10.70%	4.15%	6.55%
12/14/2010	10.13%	4.15%	5.98%
12/15/2010	10.44%	4.15%	6.29%
12/17/2010	10.00%	4.14%	5.86%
12/20/2010	10.60%	4.14%	6.46%
12/21/2010	10.30%	4.14%	6.16%
12/27/2010	9.90%	4.14%	5.76%
12/29/2010	11.15%	4.14%	7.01%
1/5/2011	10.15%	4.13%	6.02%
1/12/2011	10.30%	4.12%	6.18%
1/13/2011	10.30%	4.12%	6.18%
1/18/2011	10.00%	4.12%	5.88%
1/20/2011	9.30%	4.12%	5.18%
1/20/2011	10.13%	4.12%	6.01%
1/31/2011	9.60%	4.11%	5.49%
2/3/2011	10.00%	4.11%	5.89%
2/25/2011	10.00%	4.14%	5.86%
3/25/2011	9.80%	4.18%	5.62%
3/30/2011	10.00%	4.18%	5.82%
4/12/2011	10.00%	4.21%	5.79%
4/25/2011	10.74%	4.23%	6.51%
4/26/2011	9.67%	4.24%	5.43%
4/27/2011	10.40%	4.24%	6.16%
5/4/2011	10.00%	4.25%	5.75%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/4/2011	10.00%	4.25%	5.75%
5/24/2011	10.50%	4.27%	6.23%
6/8/2011	10.75%	4.30%	6.45%
6/16/2011	9.20%	4.32%	4.88%
6/17/2011	9.95%	4.32%	5.63%
7/13/2011	10.20%	4.37%	5.83%
8/1/2011	9.20%	4.39%	4.81%
8/8/2011	10.00%	4.38%	5.62%
8/11/2011	10.00%	4.38%	5.62%
8/12/2011	10.35%	4.38%	5.97%
8/19/2011	10.25%	4.36%	5.89%
9/2/2011	12.88%	4.32%	8.56%
9/22/2011	10.00%	4.24%	5.76%
10/12/2011	10.30%	4.14%	6.16%
10/20/2011	10.50%	4.10%	6.40%
11/30/2011	10.90%	3.87%	7.03%
11/30/2011	10.90%	3.87%	7.03%
12/14/2011	10.00%	3.79%	6.21%
12/14/2011	10.30%	3.79%	6.51%
12/20/2011	10.20%	3.76%	6.44%
12/21/2011	10.20%	3.75%	6.45%
12/22/2011	9.90%	3.75%	6.15%
12/22/2011	10.40%	3.75%	6.65%
12/23/2011	10.19%	3.74%	6.45%
1/25/2012	10.50%	3.57%	6.93%
1/27/2012	10.50%	3.55%	6.95%
2/15/2012	10.20%	3.47%	6.73%
2/23/2012	9.90%	3.43%	6.47%
2/27/2012	10.25%	3.42%	6.83%
2/29/2012	10.40%	3.41%	6.99%
3/29/2012	10.37%	3.31%	7.06%
4/4/2012	10.00%	3.29%	6.71%
4/26/2012	10.00%	3.20%	6.80%
5/2/2012	10.00%	3.18%	6.82%
5/7/2012	9.80%	3.16%	6.64%
5/15/2012	10.00%	3.14%	6.86%
5/29/2012	10.05%	3.11%	6.94%
6/7/2012	10.30%	3.07%	7.23%
6/14/2012	9.40%	3.06%	6.34%
6/15/2012	10.40%	3.06%	7.34%
6/18/2012	9.60%	3.05%	6.55%
6/19/2012	9.25%	3.05%	6.20%
6/26/2012	10.10%	3.04%	7.06%
6/29/2012	10.00%	3.04%	6.96%
7/9/2012	10.20%	3.03%	7.17%
7/16/2012	9.80%	3.02%	6.78%
7/20/2012	9.31%	3.01%	6.30%
7/20/2012	9.81%	3.01%	6.80%
9/13/2012	9.80%	2.94%	6.86%
9/19/2012	9.80%	2.94%	6.86%
9/19/2012	10.05%	2.94%	7.11%
9/26/2012	9.50%	2.94%	6.56%
10/12/2012	9.60%	2.93%	6.67%
10/23/2012	9.75%	2.93%	6.82%
10/24/2012	10.30%	2.93%	7.37%
11/9/2012	10.30%	2.92%	7.38%
11/28/2012	10.40%	2.90%	7.50%
11/29/2012	9.75%	2.89%	6.86%
11/29/2012	9.88%	2.89%	6.99%
12/5/2012	9.71%	2.89%	6.82%
12/5/2012	10.40%	2.89%	7.51%
12/12/2012	9.80%	2.88%	6.92%
12/13/2012	9.50%	2.88%	6.62%
12/13/2012	10.50%	2.88%	7.62%
12/14/2012	10.40%	2.88%	7.52%
12/19/2012	9.71%	2.87%	6.84%
12/19/2012	10.25%	2.87%	7.38%
12/20/2012	9.50%	2.87%	6.63%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/20/2012	9.80%	2.87%	6.93%
12/20/2012	10.25%	2.87%	7.38%
12/20/2012	10.25%	2.87%	7.38%
12/20/2012	10.30%	2.87%	7.43%
12/20/2012	10.40%	2.87%	7.53%
12/20/2012	10.45%	2.87%	7.58%
12/21/2012	10.20%	2.87%	7.33%
12/26/2012	9.80%	2.86%	6.94%
1/9/2013	9.70%	2.84%	6.86%
1/9/2013	9.70%	2.84%	6.86%
1/9/2013	9.70%	2.84%	6.86%
1/16/2013	9.60%	2.84%	6.76%
1/16/2013	9.60%	2.84%	6.76%
2/13/2013	10.20%	2.84%	7.36%
2/22/2013	9.75%	2.85%	6.90%
2/27/2013	10.00%	2.86%	7.14%
3/14/2013	9.30%	2.88%	6.42%
3/27/2013	9.80%	2.90%	6.90%
5/1/2013	9.84%	2.94%	6.90%
5/15/2013	10.30%	2.96%	7.34%
5/30/2013	10.20%	2.98%	7.22%
5/31/2013	9.00%	2.98%	6.02%
6/11/2013	10.00%	3.00%	7.00%
6/21/2013	9.75%	3.02%	6.73%
6/25/2013	9.80%	3.03%	6.77%
7/12/2013	9.36%	3.08%	6.28%
8/8/2013	9.83%	3.14%	6.69%
8/14/2013	9.15%	3.16%	5.99%
9/11/2013	10.20%	3.27%	6.93%
9/11/2013	10.25%	3.27%	6.98%
9/24/2013	10.20%	3.31%	6.89%
10/3/2013	9.65%	3.33%	6.32%
11/6/2013	10.20%	3.41%	6.79%
11/21/2013	10.00%	3.44%	6.56%
11/26/2013	10.00%	3.45%	6.55%
12/3/2013	10.25%	3.47%	6.78%
12/4/2013	9.50%	3.47%	6.03%
12/5/2013	10.20%	3.48%	6.72%
12/9/2013	8.72%	3.49%	5.23%
12/9/2013	9.75%	3.49%	6.26%
12/13/2013	9.75%	3.50%	6.25%
12/16/2013	9.95%	3.50%	6.45%
12/16/2013	9.95%	3.50%	6.45%
12/16/2013	10.12%	3.50%	6.62%
12/17/2013	9.50%	3.51%	5.99%
12/17/2013	10.95%	3.51%	7.44%
12/18/2013	8.72%	3.51%	5.21%
12/18/2013	9.80%	3.51%	6.29%
12/19/2013	10.15%	3.51%	6.64%
12/30/2013	9.50%	3.54%	5.96%
2/20/2014	9.20%	3.69%	5.51%
2/26/2014	9.75%	3.70%	6.05%
3/17/2014	9.55%	3.72%	5.83%
3/26/2014	9.40%	3.73%	5.67%
3/26/2014	9.96%	3.73%	6.23%
4/2/2014	9.70%	3.73%	5.97%
5/16/2014	9.80%	3.70%	6.10%
5/30/2014	9.70%	3.68%	6.02%
6/6/2014	10.40%	3.67%	6.73%
6/30/2014	9.55%	3.64%	5.91%
7/2/2014	9.62%	3.64%	5.98%
7/10/2014	9.95%	3.63%	6.32%
7/23/2014	9.75%	3.61%	6.14%
7/29/2014	9.45%	3.60%	5.85%
7/31/2014	9.90%	3.60%	6.30%
8/20/2014	9.75%	3.56%	6.19%
8/25/2014	9.60%	3.56%	6.04%
8/29/2014	9.80%	3.54%	6.26%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/11/2014	9.60%	3.51%	6.09%
9/15/2014	10.25%	3.51%	6.74%
10/9/2014	9.80%	3.44%	6.36%
11/6/2014	9.56%	3.37%	6.19%
11/6/2014	10.20%	3.37%	6.83%
11/14/2014	10.20%	3.35%	6.85%
11/26/2014	9.70%	3.32%	6.38%
11/26/2014	10.20%	3.32%	6.88%
12/4/2014	9.68%	3.30%	6.38%
12/10/2014	9.25%	3.29%	5.96%
12/10/2014	9.25%	3.29%	5.96%
12/11/2014	10.07%	3.28%	6.79%
12/12/2014	10.20%	3.28%	6.92%
12/17/2014	9.17%	3.27%	5.90%
12/18/2014	9.83%	3.26%	6.57%
1/23/2015	9.50%	3.14%	6.36%
2/24/2015	9.83%	3.04%	6.79%
3/18/2015	9.75%	2.98%	6.77%
3/25/2015	9.50%	2.95%	6.55%
3/26/2015	9.72%	2.95%	6.77%
4/23/2015	10.20%	2.87%	7.33%
4/29/2015	9.53%	2.86%	6.67%
5/1/2015	9.60%	2.85%	6.75%
5/26/2015	9.75%	2.83%	6.92%
6/17/2015	9.00%	2.82%	6.18%
6/17/2015	9.00%	2.82%	6.18%
9/2/2015	9.50%	2.79%	6.71%
9/10/2015	9.30%	2.79%	6.51%
10/15/2015	9.00%	2.81%	6.19%
11/19/2015	10.00%	2.88%	7.12%
11/19/2015	10.30%	2.88%	7.42%
12/3/2015	10.00%	2.90%	7.10%
12/9/2015	9.14%	2.90%	6.24%
12/9/2015	9.14%	2.90%	6.24%
12/11/2015	10.30%	2.90%	7.40%
12/15/2015	9.60%	2.91%	6.69%
12/17/2015	9.70%	2.91%	6.79%
12/18/2015	9.50%	2.91%	6.59%
12/30/2015	9.50%	2.93%	6.57%
1/6/2016	9.50%	2.94%	6.56%
2/23/2016	9.75%	2.94%	6.81%
3/16/2016	9.85%	2.91%	6.94%
4/29/2016	9.80%	2.83%	6.97%
6/3/2016	9.75%	2.80%	6.95%
6/8/2016	9.48%	2.80%	6.68%
6/15/2016	9.00%	2.78%	6.22%
6/15/2016	9.00%	2.78%	6.22%
7/18/2016	9.98%	2.71%	7.27%
8/9/2016	9.85%	2.66%	7.19%
8/18/2016	9.50%	2.63%	6.87%
8/24/2016	9.75%	2.61%	7.14%
9/1/2016	9.50%	2.59%	6.91%
9/8/2016	10.00%	2.57%	7.43%
9/28/2016	9.58%	2.53%	7.05%
9/30/2016	9.90%	2.53%	7.37%
11/9/2016	9.80%	2.48%	7.32%
11/10/2016	9.50%	2.48%	7.02%
11/15/2016	9.55%	2.49%	7.06%
11/18/2016	10.00%	2.50%	7.50%
11/29/2016	10.55%	2.51%	8.04%
12/1/2016	10.00%	2.51%	7.49%
12/6/2016	8.64%	2.52%	6.12%
12/6/2016	8.64%	2.52%	6.12%
12/7/2016	10.10%	2.52%	7.58%
12/12/2016	9.60%	2.53%	7.07%
12/14/2016	9.10%	2.53%	6.57%
12/19/2016	9.00%	2.54%	6.46%
12/19/2016	9.37%	2.54%	6.83%



Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/22/2016	9.60%	2.55%	7.05%
12/22/2016	9.90%	2.55%	7.35%
12/28/2016	9.50%	2.55%	6.95%
1/12/2017	9.60%	2.58%	7.02%
1/18/2017	9.45%	2.58%	6.87%
1/24/2017	9.00%	2.59%	6.41%
1/31/2017	10.10%	2.60%	7.50%
2/15/2017	9.60%	2.62%	6.98%
2/22/2017	9.60%	2.64%	6.96%
2/24/2017	9.75%	2.64%	7.11%
2/28/2017	10.10%	2.64%	7.46%
3/2/2017	9.41%	2.65%	6.76%
3/20/2017	9.50%	2.68%	6.82%
4/4/2017	10.25%	2.72%	7.53%
4/12/2017	9.40%	2.74%	6.66%
4/20/2017	9.50%	2.76%	6.74%
5/3/2017	9.50%	2.79%	6.71%
5/11/2017	9.20%	2.81%	6.39%
5/18/2017	9.50%	2.83%	6.67%
5/23/2017	9.70%	2.84%	6.86%
6/16/2017	9.65%	2.89%	6.76%
6/22/2017	9.70%	2.90%	6.80%
6/22/2017	9.70%	2.90%	6.80%
7/24/2017	9.50%	2.95%	6.55%
8/15/2017	10.00%	2.97%	7.03%
9/22/2017	9.60%	2.93%	6.67%
9/28/2017	9.80%	2.92%	6.88%
10/20/2017	9.50%	2.91%	6.59%
10/26/2017	10.20%	2.91%	7.29%
10/26/2017	10.25%	2.91%	7.34%
10/26/2017	10.30%	2.91%	7.39%
11/6/2017	10.25%	2.90%	7.35%
11/15/2017	11.95%	2.89%	9.06%
11/30/2017	10.00%	2.88%	7.12%
11/30/2017	10.00%	2.88%	7.12%
12/5/2017	9.50%	2.88%	6.62%
12/6/2017	8.40%	2.87%	5.53%
12/6/2017	8.40%	2.87%	5.53%
12/7/2017	9.80%	2.87%	6.93%
12/14/2017	9.60%	2.86%	6.74%
12/14/2017	9.65%	2.86%	6.79%
12/18/2017	9.50%	2.86%	6.64%
12/20/2017	9.58%	2.85%	6.73%
12/21/2017	9.10%	2.85%	6.25%
12/28/2017	9.50%	2.85%	6.65%
12/29/2017	9.51%	2.85%	6.66%
1/18/2018	9.70%	2.84%	6.86%
1/31/2018	9.30%	2.84%	6.46%
2/2/2018	9.98%	2.84%	7.14%
2/23/2018	9.90%	2.85%	7.05%
3/12/2018	9.25%	2.86%	6.39%
3/15/2018	9.00%	2.87%	6.13%
3/29/2018	10.00%	2.88%	7.12%
4/12/2018	9.90%	2.89%	7.01%
4/13/2018	9.73%	2.89%	6.84%
4/18/2018	9.25%	2.89%	6.36%
4/18/2018	10.00%	2.89%	7.11%
4/26/2018	9.50%	2.90%	6.60%
5/30/2018	9.95%	2.94%	7.01%
5/31/2018	9.50%	2.94%	6.56%
6/14/2018	8.80%	2.96%	5.84%
6/22/2018	9.50%	2.97%	6.53%
6/22/2018	9.90%	2.97%	6.93%
6/28/2018	9.35%	2.97%	6.38%
6/29/2018	9.50%	2.97%	6.53%
8/8/2018	9.53%	2.99%	6.54%
8/21/2018	9.70%	3.00%	6.70%
8/24/2018	9.28%	3.01%	6.27%

Bond Yield Plus Risk Premium			
[6]	[7]	[8]	[9]
Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/5/2018	9.56%	3.02%	6.54%
9/14/2018	10.00%	3.03%	6.97%
9/20/2018	9.80%	3.04%	6.76%
9/26/2018	9.77%	3.05%	6.72%
9/26/2018	10.00%	3.05%	6.95%
9/27/2018	9.30%	3.05%	6.25%
10/4/2018	9.85%	3.06%	6.79%
10/29/2018	9.60%	3.10%	6.50%
10/31/2018	9.99%	3.11%	6.88%
11/1/2018	8.69%	3.11%	5.58%
12/4/2018	8.69%	3.14%	5.55%
12/13/2018	9.30%	3.14%	6.16%
12/14/2018	9.50%	3.14%	6.36%
12/19/2018	9.84%	3.14%	6.70%
12/20/2018	9.65%	3.14%	6.51%
12/21/2018	9.30%	3.14%	6.16%
1/9/2019	10.00%	3.14%	6.86%
2/27/2019	9.75%	3.12%	6.63%
3/13/2019	9.60%	3.12%	6.48%
3/14/2019	9.00%	3.12%	5.88%
3/14/2019	9.40%	3.12%	6.28%
3/22/2019	9.65%	3.12%	6.53%
4/30/2019	9.73%	3.11%	6.62%
4/30/2019	9.73%	3.11%	6.62%
5/1/2019	9.50%	3.11%	6.39%
5/2/2019	10.00%	3.11%	6.89%
5/8/2019	9.50%	3.10%	6.40%
5/14/2019	8.75%	3.10%	5.65%
5/16/2019	9.50%	3.09%	6.41%
5/23/2019	9.90%	3.09%	6.81%
8/12/2019	9.60%	2.89%	6.71%
8/29/2019	9.06%	2.81%	6.25%
9/4/2019	10.00%	2.78%	7.22%
9/30/2019	9.60%	2.70%	6.90%
10/31/2019	10.00%	2.60%	7.40%
10/31/2019	10.00%	2.60%	7.40%
11/7/2019	9.35%	2.58%	6.77%
11/29/2019	9.50%	2.52%	6.98%
12/4/2019	8.91%	2.51%	6.40%
12/4/2019	9.75%	2.51%	7.24%
12/16/2019	8.91%	2.48%	6.43%
12/17/2019	9.70%	2.47%	7.23%
12/17/2019	10.50%	2.47%	8.03%
12/19/2019	10.20%	2.47%	7.73%
12/19/2019	10.25%	2.47%	7.78%
12/19/2019	10.30%	2.47%	7.83%
12/20/2019	9.45%	2.46%	6.99%
12/20/2019	9.65%	2.46%	7.19%
12/24/2019	9.50%	2.46%	7.04%
1/8/2020	10.02%	2.43%	7.59%
1/16/2020	8.80%	2.41%	6.39%
1/22/2020	9.50%	2.39%	7.11%
1/23/2020	9.86%	2.39%	7.47%

# of Cases: 1,617  
Average: 4.71%

## Expected Earnings Analysis

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]
		Expected ROE 2022-24	2019	2022-24	% Increase	Adjustment Factor	Adjusted ROE
ALLETE, Inc.	ALE	9.00%	51.75	52.75	0.48%	1.002	9.02%
Alliant Energy Corporation	LNT	10.00%	240.00	250.00	1.03%	1.005	10.05%
Ameren Corporation	AEE	10.50%	246.00	259.00	1.30%	1.006	10.57%
American Electric Power Company, Inc.	AEP	10.50%	494.65	525.50	1.52%	1.008	10.58%
Avangrid, Inc.	AGR	5.50%	309.00	309.00	0.00%	1.000	5.50%
Avista	AVA	8.00%	67.00	71.00	1.46%	1.007	8.06%
CMS Energy Corporation	CMS	13.50%	284.00	296.00	1.04%	1.005	13.57%
DTE Energy Company	DTE	9.50%	194.00	212.00	2.24%	1.011	9.61%
Duke Energy Corporation	DUK	8.50%	733.00	770.00	1.24%	1.006	8.55%
Evergy, Inc	EVRG	8.50%	220.00	212.00	-0.92%	0.995	8.46%
Hawaiian Electric Industries, Inc.	HE	9.00%	109.00	113.00	0.91%	1.005	9.04%
NextEra Energy, Inc.	NEE	12.50%	489.00	495.00	0.31%	1.002	12.52%
NorthWestern Corporation	NWE	9.00%	50.50	51.60	0.54%	1.003	9.02%
OGE Energy Corp.	OGE	11.50%	200.00	200.00	0.00%	1.000	11.50%
Otter Tail Corporation	OTTR	11.00%	40.00	41.80	1.11%	1.006	11.06%
Pinnacle West Capital Corporation	PNW	10.00%	113.00	118.00	1.09%	1.005	10.05%
PNM Resources, Inc.	PNM	9.00%	79.65	90.00	3.10%	1.015	9.14%
Portland General Electric Company	POR	9.00%	89.40	90.00	0.17%	1.001	9.01%
Southern Company	SO	12.50%	1050.00	1080.00	0.71%	1.004	12.54%
WEC Energy Group, Inc.	WEC	12.00%	315.50	315.50	0.00%	1.000	12.00%
Xcel Energy Inc.	XEL	10.50%	525.00	546.00	0.99%	1.005	10.55%
						Median	10.05%
						Average	10.02%

## Notes:

[1] Source: Value Line

[2] Source: Value Line

[3] Source: Value Line

[4] Equals  $=(\frac{[3]}{[2]})^{(1/4)}-1; (\frac{[3]}{[2]})^{(1/5)}-1$ [5] Equals  $(2 \times (1 + [4])) / (2 + [4])$ [6] Equals  $[1] \times [5]$

## Proxy Group Capital Structure

Company	Ticker	% Common Equity								
		2019Q3	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	Average
ALLETE, Inc.	ALE	58.68%	59.66%	59.53%	59.12%	58.50%	58.84%	63.09%	62.51%	59.99%
Alliant Energy Corporation	LNT	51.73%	50.38%	53.18%	53.11%	51.13%	51.00%	49.74%	49.77%	51.26%
Ameren Corporation	AEE	53.67%	53.03%	52.81%	52.69%	53.22%	52.01%	53.04%	52.65%	52.89%
American Electric Power Company, Inc.	AEP	50.28%	49.12%	49.89%	49.90%	49.29%	49.18%	48.83%	49.38%	49.48%
Avangrid, Inc.	AGR	54.38%	56.33%	56.51%	55.72%	56.13%	54.93%	56.55%	55.69%	55.78%
Avista Corporation	AVA	55.80%	56.32%	56.10%	55.09%	55.75%	55.76%	56.34%	55.76%	55.86%
CMS Energy Corporation	CMS	51.70%	53.64%	52.52%	50.27%	53.01%	52.86%	53.13%	52.25%	52.42%
DTE Energy Company	DTE	49.40%	48.76%	48.69%	50.96%	49.97%	49.23%	51.12%	51.02%	49.89%
Duke Energy Corporation	DUK	52.89%	54.48%	53.14%	54.35%	55.03%	54.94%	54.46%	54.30%	54.20%
Evergy, Inc.	EVRG	60.28%	60.51%	58.16%	59.56%	59.86%	58.51%	58.73%	58.62%	59.28%
Hawaiian Electric Industries, Inc.	HE	58.43%	58.17%	58.06%	57.98%	56.09%	55.78%	57.44%	57.42%	57.42%
NextEra Energy, Inc.	NEE	56.15%	61.22%	61.05%	62.05%	60.06%	57.87%	57.75%	57.06%	59.15%
NorthWestern Corporation	NWE	47.80%	48.07%	48.74%	47.88%	48.36%	48.41%	47.48%	49.89%	48.33%
OGE Energy Corp.	OGE	54.96%	53.47%	55.38%	53.20%	53.05%	54.25%	53.59%	53.36%	53.91%
Otter Tail Corporation	OTTR	55.43%	53.75%	53.90%	53.58%	53.49%	53.11%	52.67%	57.34%	54.16%
Pinnacle West Capital Corporation	PNW	54.25%	54.41%	54.48%	54.36%	53.68%	53.71%	53.18%	53.14%	53.90%
PNM Resources, Inc.	PNM	45.33%	43.86%	43.45%	45.63%	48.01%	46.68%	46.20%	46.06%	45.65%
Portland General Electric Company	POR	51.78%	51.56%	50.60%	50.19%	50.51%	50.29%	50.14%	49.80%	50.61%
Southern Company	SO	52.36%	52.93%	52.80%	52.38%	50.22%	48.78%	48.55%	45.49%	50.44%
Wisconsin Energy Corporation	WEC	55.79%	56.71%	55.73%	53.46%	58.30%	57.72%	61.62%	54.62%	56.74%
Xcel Energy Inc.	XEL	53.98%	54.70%	54.51%	54.22%	53.37%	53.63%	54.15%	53.95%	54.06%
Mean		53.57%	53.86%	53.77%	53.60%	53.67%	53.21%	53.70%	53.34%	53.59%

## Operating Company Capital Structure

Operating Company	Parent	% Common Equity								
		2019Q3	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	Average
ALLETE (Minnesota Power)	ALE	59.33%	60.94%	60.87%	61.39%	60.43%	60.33%	60.38%	60.04%	60.46%
Superior Water, Light and Power Company	ALE	58.03%	58.38%	58.19%	56.86%	56.58%	57.34%	65.80%	64.99%	59.52%
Interstate Power and Light Company	LNT	50.06%	51.76%	53.33%	53.52%	49.64%	50.47%	49.92%	50.31%	51.13%
Wisconsin Power and Light Company	LNT	53.40%	49.01%	53.03%	52.69%	52.62%	51.52%	49.57%	49.23%	51.38%
Ameren Illinois Company	AEE	54.46%	54.05%	53.65%	52.86%	53.18%	52.74%	54.24%	53.38%	53.57%
Union Electric Company	AEE	52.88%	52.00%	51.96%	52.52%	53.26%	51.28%	51.84%	51.92%	52.21%
AEP Texas Central Company	AEP	NA	NA	NA	NA	NA	NA	NA	NA	NA
AEP Texas North Company	AEP	NA	NA	NA	NA	NA	NA	NA	NA	NA
Appalachian Power Company	AEP	48.74%	48.19%	47.77%	49.51%	49.30%	48.93%	49.35%	48.72%	48.81%
Indiana Michigan Power Company	AEP	46.51%	45.83%	45.43%	44.62%	44.53%	44.15%	46.64%	46.33%	45.50%
Kentucky Power Company	AEP	46.94%	46.50%	46.42%	45.72%	45.28%	44.89%	44.40%	43.52%	45.46%
Kingsport Power Company	AEP	54.24%	50.18%	51.54%	50.79%	50.71%	47.69%	47.28%	46.53%	49.87%
Ohio Power Company	AEP	53.63%	52.92%	58.86%	57.80%	56.85%	57.11%	52.91%	58.63%	56.09%
Public Service Company of Oklahoma	AEP	49.89%	48.02%	47.19%	49.16%	49.55%	48.59%	48.10%	48.50%	48.62%
Southwestern Electric Power Company	AEP	48.63%	47.45%	47.59%	46.97%	43.43%	47.91%	47.72%	48.52%	47.28%
Wheeling Power Company	AEP	53.66%	53.83%	54.27%	54.62%	54.70%	54.19%	54.27%	54.26%	54.23%
Central Maine Power Company	AGR	62.19%	61.96%	63.51%	63.21%	64.17%	63.53%	64.18%	63.82%	63.32%
New York State Electric & Gas Corporation	AGR	48.79%	55.84%	55.93%	54.30%	53.95%	50.99%	54.51%	53.30%	53.45%
Rochester Gas and Electric Corporation	AGR	50.50%	50.25%	49.96%	48.89%	48.16%	47.77%	50.80%	49.63%	49.50%
United Illuminating Company	AGR	56.05%	57.26%	56.65%	56.46%	58.23%	57.43%	56.70%	56.00%	56.85%
Alaska Electric Light and Power Company	AVA	61.28%	61.24%	61.02%	60.29%	61.94%	61.78%	61.53%	60.77%	61.23%
Avista Corporation	AVA	50.33%	51.40%	51.18%	49.89%	49.55%	49.74%	51.16%	50.75%	50.50%
Consumers Energy Company	CMS	51.70%	53.64%	52.52%	50.27%	53.01%	52.86%	53.13%	52.25%	52.42%
DTE Electric Company	DTE	49.40%	48.76%	48.69%	50.96%	49.97%	49.23%	51.12%	51.02%	49.89%
Duke Energy Carolinas, LLC	DUK	51.80%	52.94%	52.32%	51.78%	52.64%	52.10%	51.70%	52.98%	52.28%
Duke Energy Florida, LLC	DUK	52.82%	51.55%	50.56%	50.04%	49.65%	48.79%	49.92%	49.25%	50.32%
Duke Energy Indiana, LLC	DUK	51.52%	54.83%	54.29%	53.26%	52.79%	52.64%	52.54%	51.94%	52.98%
Duke Energy Kentucky, Inc.	DUK	45.44%	53.04%	52.81%	51.95%	56.58%	55.79%	53.72%	53.11%	52.80%
Duke Energy Ohio, Inc.	DUK	64.90%	64.45%	59.29%	68.09%	67.73%	67.10%	66.06%	66.24%	65.48%
Duke Energy Progress, LLC	DUK	50.86%	50.09%	49.60%	51.00%	50.76%	53.22%	52.82%	52.27%	51.33%
Evergy Kansas South, Inc.	EVRG	81.84%	81.49%	75.13%	74.97%	74.91%	74.45%	74.29%	74.18%	76.41%
Evergy Metro, Inc.	EVRG	50.43%	49.62%	46.04%	49.49%	49.50%	48.88%	49.25%	49.15%	49.05%
Evergy Missouri West, Inc.	EVRG	51.18%	51.74%	52.68%	54.71%	55.70%	52.03%	52.63%	52.40%	52.88%
Westar Energy (KPL)	EVRG	57.66%	59.18%	58.80%	59.08%	59.34%	58.68%	58.75%	58.74%	58.78%
Hawaii Electric Light Company, Inc.	HE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hawaiian Electric Company, Inc.	HE	58.43%	58.17%	58.06%	57.98%	56.09%	55.78%	57.44%	57.42%	57.42%
Maui Electric Company, Limited	HE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Florida Power & Light Company	NEE	59.78%	61.30%	64.03%	64.37%	64.78%	60.84%	61.23%	59.93%	62.03%
Gulf Power Company	NEE	52.52%	61.15%	58.06%	59.73%	55.34%	54.90%	54.27%	54.19%	56.27%
NorthWestern Corporation	NWE	47.80%	48.07%	48.74%	47.88%	48.36%	48.41%	47.48%	49.89%	48.33%
Oklahoma Gas and Electric Company	OGE	54.96%	53.47%	55.38%	53.20%	53.05%	54.25%	53.59%	53.36%	53.91%
Otter Tail Power Company	OTTR	55.43%	53.75%	53.90%	53.58%	53.49%	53.11%	52.67%	57.34%	54.16%
Arizona Public Service Company	PNW	54.25%	54.41%	54.48%	54.36%	53.68%	53.71%	53.18%	53.14%	53.90%
Public Service Company of New Mexico	PNM	45.33%	43.86%	43.45%	45.63%	48.01%	46.68%	46.20%	46.06%	45.65%
Portland General Electric Company	POR	51.78%	51.56%	50.60%	50.19%	50.51%	50.29%	50.14%	49.80%	50.61%
Alabama Power Company	SO	51.45%	52.54%	52.23%	47.77%	48.13%	47.51%	48.86%	47.07%	49.44%
Georgia Power Company	SO	55.38%	56.39%	56.43%	59.02%	57.27%	54.97%	53.81%	50.06%	55.42%
Mississippi Power Company	SO	50.23%	49.87%	49.73%	50.35%	45.28%	43.87%	43.00%	39.34%	46.46%
Upper Michigan Energy Resources Corporation	WEC	56.09%	54.45%	52.54%	47.01%	55.08%	54.53%	70.04%	49.85%	54.95%
Wisconsin Electric Power Company	WEC	56.92%	56.64%	55.78%	56.03%	59.25%	59.09%	56.47%	55.94%	57.01%
Wisconsin Public Service Corporation	WEC	54.37%	59.04%	58.88%	57.33%	60.59%	59.53%	58.35%	58.06%	58.27%
Northern States Power Company - MN	XEL	51.79%	53.66%	53.64%	52.81%	52.64%	52.61%	52.59%	52.38%	52.77%
Northern States Power Company - WI	XEL	53.56%	53.49%	53.59%	53.60%	48.45%	53.85%	53.79%	53.36%	52.96%
Public Service Company of Colorado	XEL	56.35%	57.53%	56.68%	56.31%	56.08%	54.17%	56.67%	56.50%	56.29%
Southwestern Public Service Company	XEL	54.21%	54.14%	54.13%	54.17%	56.29%	53.88%	53.54%	53.55%	54.24%
Mean		53.72%	54.15%	53.95%	53.90%	53.94%	53.45%	53.93%	53.33%	53.80%

Source: S&amp;P Global Market Intelligence

## Proxy Group Capital Structure

Company	Ticker	% Long-Term Debt								
		2019Q3	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	Average
ALLETE, Inc.	ALE	41.32%	40.34%	40.47%	40.88%	41.50%	41.16%	36.91%	37.49%	40.01%
Alliant Energy Corporation	LNT	48.27%	49.62%	46.82%	46.89%	48.87%	49.00%	50.26%	50.23%	48.74%
Ameren Corporation	AEE	46.33%	46.97%	47.19%	47.31%	46.78%	47.99%	46.96%	47.35%	47.11%
American Electric Power Company, Inc.	AEP	49.72%	50.88%	50.11%	50.10%	50.71%	50.82%	51.17%	50.62%	50.52%
Avangrid, Inc.	AGR	45.62%	43.67%	43.49%	44.28%	43.87%	45.07%	43.45%	44.31%	44.22%
Avista Corporation	AVA	44.20%	43.68%	43.90%	44.91%	44.25%	44.24%	43.66%	44.24%	44.14%
CMS Energy Corporation	CMS	48.30%	46.36%	47.48%	49.73%	46.99%	47.14%	46.87%	47.75%	47.58%
DTE Energy Company	DTE	50.60%	51.24%	51.31%	49.04%	50.03%	50.77%	48.88%	48.98%	50.11%
Duke Energy Corporation	DUK	47.11%	45.52%	46.86%	45.65%	44.97%	45.06%	45.54%	45.70%	45.80%
Evergy, Inc.	EVRG	39.72%	39.49%	41.84%	40.44%	40.14%	41.49%	41.27%	41.38%	40.72%
Hawaiian Electric Industries, Inc.	HE	41.57%	41.83%	41.94%	42.02%	43.91%	44.22%	42.56%	42.58%	42.58%
NextEra Energy, Inc.	NEE	43.85%	38.78%	38.95%	37.95%	39.94%	42.13%	42.25%	42.94%	40.85%
NorthWestern Corporation	NWE	52.20%	51.93%	51.26%	52.12%	51.64%	51.59%	52.52%	50.11%	51.67%
OGE Energy Corp.	OGE	45.04%	46.53%	44.62%	46.80%	46.95%	45.75%	46.41%	46.64%	46.09%
Otter Tail Corporation	OTTR	44.57%	46.25%	46.10%	46.42%	46.51%	46.89%	47.33%	42.66%	45.84%
Pinnacle West Capital Corporation	PNW	45.75%	45.59%	45.52%	45.64%	46.32%	46.29%	46.82%	46.86%	46.10%
PNM Resources, Inc.	PNM	54.67%	56.14%	56.55%	54.37%	51.99%	53.32%	53.80%	53.94%	54.35%
Portland General Electric Company	POR	48.22%	48.44%	49.40%	49.81%	49.49%	49.71%	49.86%	50.20%	49.39%
Southern Company	SO	47.64%	47.07%	47.20%	47.62%	49.78%	51.22%	51.45%	54.51%	49.56%
Wisconsin Energy Corporation	WEC	44.21%	43.29%	44.27%	46.54%	41.70%	42.28%	38.38%	45.38%	43.26%
Xcel Energy Inc.	XEL	46.02%	45.30%	45.49%	45.78%	46.63%	46.37%	45.85%	46.05%	45.94%
Mean		46.43%	46.14%	46.23%	46.40%	46.33%	46.79%	46.30%	46.66%	46.41%

## Operating Company Capital Structure

Operating Company	Parent	% Long-Term Debt								
		2019Q3	2019Q2	2019Q1	2018Q4	2018Q3	2018Q2	2018Q1	2017Q4	Average
ALLETE (Minnesota Power)	ALE	40.67%	39.06%	39.13%	38.61%	39.57%	39.67%	39.62%	39.96%	39.54%
Superior Water, Light and Power Company	ALE	41.97%	41.62%	41.81%	43.14%	43.42%	42.66%	34.20%	35.01%	40.48%
Interstate Power and Light Company	LNT	49.94%	48.24%	46.67%	46.48%	50.36%	49.53%	50.08%	49.69%	48.87%
Wisconsin Power and Light Company	LNT	46.60%	50.99%	46.97%	47.31%	47.38%	48.48%	50.43%	50.77%	48.62%
Ameren Illinois Company	AEE	45.54%	45.95%	46.35%	47.14%	46.82%	47.26%	45.76%	46.62%	46.43%
Union Electric Company	AEE	47.12%	48.00%	48.04%	47.48%	46.74%	48.72%	48.16%	48.08%	47.79%
AEP Texas Central Company	AEP	NA	NA	NA	NA	NA	NA	NA	NA	NA
AEP Texas North Company	AEP	NA	NA	NA	NA	NA	NA	NA	NA	NA
Appalachian Power Company	AEP	51.26%	51.81%	52.23%	50.49%	50.70%	51.07%	50.65%	51.28%	51.19%
Indiana Michigan Power Company	AEP	53.49%	54.17%	54.57%	55.38%	55.47%	55.85%	53.36%	53.67%	54.50%
Kentucky Power Company	AEP	53.06%	53.50%	53.58%	54.28%	54.72%	55.11%	55.60%	56.48%	54.54%
Kingsport Power Company	AEP	45.76%	49.82%	48.46%	49.21%	49.29%	52.31%	52.72%	53.47%	50.13%
Ohio Power Company	AEP	46.37%	47.08%	41.14%	42.20%	43.15%	42.89%	47.09%	41.37%	43.91%
Public Service Company of Oklahoma	AEP	50.11%	51.98%	52.81%	50.84%	50.45%	51.41%	51.90%	51.50%	51.38%
Southwestern Electric Power Company	AEP	51.37%	52.55%	52.41%	53.03%	56.57%	52.09%	52.28%	51.48%	52.72%
Wheeling Power Company	AEP	46.34%	46.17%	45.73%	45.38%	45.30%	45.81%	45.73%	45.74%	45.77%
Central Maine Power Company	AGR	37.81%	38.04%	36.49%	36.79%	35.83%	36.47%	35.82%	36.18%	36.68%
New York State Electric & Gas Corporation	AGR	51.21%	44.16%	44.07%	45.70%	46.05%	49.01%	45.49%	46.70%	46.55%
Rochester Gas and Electric Corporation	AGR	49.50%	49.75%	50.04%	51.11%	51.84%	52.23%	49.20%	50.37%	50.50%
United Illuminating Company	AGR	43.95%	42.74%	43.35%	43.54%	41.77%	42.57%	43.30%	44.00%	43.15%
Alaska Electric Light and Power Company	AVA	38.72%	38.76%	38.98%	39.71%	38.06%	38.22%	38.47%	39.23%	38.77%
Avista Corporation	AVA	49.67%	48.60%	48.82%	50.11%	50.45%	50.26%	48.84%	49.25%	49.50%
Consumers Energy Company	CMS	48.30%	46.36%	47.48%	49.73%	46.99%	47.14%	46.87%	47.75%	47.58%
DTE Electric Company	DTE	50.60%	51.24%	51.31%	49.04%	50.03%	50.77%	48.88%	48.98%	50.11%
Duke Energy Carolinas, LLC	DUK	48.20%	47.06%	47.68%	48.22%	47.36%	47.90%	48.30%	47.02%	47.72%
Duke Energy Florida, LLC	DUK	47.18%	48.45%	49.44%	49.96%	50.35%	51.21%	50.08%	50.75%	49.68%
Duke Energy Indiana, LLC	DUK	48.48%	45.17%	45.71%	46.74%	47.21%	47.36%	47.46%	48.06%	47.02%
Duke Energy Kentucky, Inc.	DUK	54.56%	46.96%	47.19%	48.05%	43.42%	44.21%	46.28%	46.89%	47.20%
Duke Energy Ohio, Inc.	DUK	35.10%	35.55%	40.71%	31.91%	32.27%	32.90%	33.94%	33.76%	34.52%
Duke Energy Progress, LLC	DUK	49.14%	49.91%	50.40%	49.00%	49.24%	46.78%	47.18%	47.73%	48.67%
Evergy Kansas South, Inc.	EVRG	18.16%	18.51%	24.87%	25.03%	25.09%	25.55%	25.71%	25.82%	23.59%
Evergy Metro, Inc.	EVRG	49.57%	50.38%	53.96%	50.51%	50.50%	51.12%	50.75%	50.85%	50.95%
Evergy Missouri West, Inc.	EVRG	48.82%	48.26%	47.32%	45.29%	44.30%	47.97%	47.37%	47.60%	47.12%
Westar Energy (KPL)	EVRG	42.34%	40.82%	41.20%	40.92%	40.66%	41.32%	41.25%	41.26%	41.22%
Hawaii Electric Light Company, Inc.	HE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Hawaiian Electric Company, Inc.	HE	41.57%	41.83%	41.94%	42.02%	43.91%	44.22%	42.56%	42.58%	42.58%
Maui Electric Company, Limited	HE	NA	NA	NA	NA	NA	NA	NA	NA	NA
Florida Power & Light Company	NEE	40.22%	38.70%	35.97%	35.63%	35.22%	39.16%	38.77%	40.07%	37.97%
Gulf Power Company	NEE	47.48%	38.85%	41.94%	40.27%	44.66%	45.10%	45.73%	45.81%	43.73%
NorthWestern Corporation	NWE	52.20%	51.93%	51.26%	52.12%	51.64%	51.59%	52.52%	50.11%	51.67%
Oklahoma Gas and Electric Company	OGE	45.04%	46.53%	44.62%	46.80%	46.95%	45.75%	46.41%	46.64%	46.09%
Otter Tail Power Company	OTTR	44.57%	46.25%	46.10%	46.42%	46.51%	46.89%	47.33%	42.66%	45.84%
Arizona Public Service Company	PNW	45.75%	45.59%	45.52%	45.64%	46.32%	46.29%	46.82%	46.86%	46.10%
Public Service Company of New Mexico	PNM	54.67%	56.14%	56.55%	54.37%	51.99%	53.32%	53.80%	53.94%	54.35%
Portland General Electric Company	POR	48.22%	48.44%	49.40%	49.81%	49.49%	49.71%	49.86%	50.20%	49.39%
Alabama Power Company	SO	48.55%	47.46%	47.77%	52.23%	51.87%	52.49%	51.14%	52.93%	50.56%
Georgia Power Company	SO	44.62%	43.61%	43.57%	40.98%	42.73%	45.03%	46.19%	49.94%	44.58%
Mississippi Power Company	SO	49.77%	50.13%	50.27%	49.65%	54.72%	56.13%	57.00%	60.66%	53.54%
Upper Michigan Energy Resources Corporation	WEC	43.91%	45.55%	47.46%	52.99%	44.92%	45.47%	29.96%	50.15%	45.05%
Wisconsin Electric Power Company	WEC	43.08%	43.36%	44.22%	43.97%	40.75%	40.91%	43.53%	44.06%	42.99%
Wisconsin Public Service Corporation	WEC	45.63%	40.96%	41.12%	42.67%	39.41%	40.47%	41.65%	41.94%	41.73%
Northern States Power Company - MN	XEL	48.21%	46.34%	46.36%	47.19%	47.36%	47.39%	47.41%	47.62%	47.23%
Northern States Power Company - WI	XEL	46.44%	46.51%	46.41%	46.40%	51.55%	46.15%	46.21%	46.64%	47.04%
Public Service Company of Colorado	XEL	43.65%	42.47%	43.32%	43.69%	43.92%	45.83%	43.33%	43.50%	43.71%
Southwestern Public Service Company	XEL	45.79%	45.86%	45.87%	45.83%	43.71%	46.12%	46.46%	46.45%	45.76%
Mean		46.28%	45.85%	46.05%	46.10%	46.06%	46.55%	46.07%	46.67%	46.20%

Source: S&amp;P Global Market Intelligence

## Staff Bench Analysis ROE Recommendation

	Average Result	Average Result	Average Result
Staff's Current Cost of Equity Estimates for the Electric Proxy Group	6.39%	6.39%	6.39%
Staff's Current Cost of Equity Estimates for the Gas Proxy Group	6.21%	<b>0.00%</b>	<b>100.00%</b>
Staff's Cost of Equity Estimates for the Gas Proxy Group in the Spire Missouri Cases	6.96%	6.96%	6.96%
	Difference	Difference	Difference
Average COE Difference Between Current Electric and Gas Proxy Groups	0.18%	6.39%	-93.61%
Difference in Average COE for Gas Proxy Group Between Rate Cases	-0.75%	-6.96%	93.04%
Implied COE Differential for Electric Proxy Group	<b>-0.57%</b>	<b>-0.57%</b>	<b>-0.57%</b>
	ROE	ROE	ROE
Commission allowed ROE in Spire Missouri rate cases	9.80%	9.80%	9.80%
Implied COE Differential for Electric Proxy Group	-0.57%	-0.57%	-0.57%
Staff recommended allowed ROE for Ameren Missouri Electric	9.23%	9.23%	9.23%
Difference Between Gas Proxy Group in the Spire Missouri Cases and Current Electric Proxy Group	<b>-0.57%</b>	<b>-0.57%</b>	<b>-0.57%</b>

Source: Schedule PC-12



## Mr. Chari Schedule PC-9-3 - Recreated As Filed

Company Name	Ticker	10-Year Historical Growth Rate EPS	5-Year Historical Growth Rate EPS	Projected 5-Year EPS Growth SNL (Mean) (%)
Alliant Energy Corporation	LNT	2.38%	4.99%	5.66%
Ameren Corporation	AEE	-0.39%	6.31%	6.28%
American Electric Power Company, Inc.	AEP	0.28%	0.34%	5.82%
Avista Corporation	AVA	5.37%	4.75%	3.98%
CMS Energy Corporation	CMS	NM	4.47%	6.89%
Duke Energy Corporation	DUK	2.29%	2.42%	4.57%
Evergy, Inc.	EVRG	NM	NM	6.17%
IDACORP, Inc.	IDA	7.11%	3.85%	3.50%
NorthWestern Corporation	NEW	9.56%	6.84%	3.41%
OGE Energy Corp.	OGE	6.12%	4.66%	5.18%
Pinnacle West Capital Corporation	PNW	4.78%	4.73%	5.29%
PNM Resources, Inc.	PNM	NM	-4.94%	6.05%
Portland General Electric Company	POR	3.19%	5.12%	4.63%
Southern Company	SO	-1.75%	-4.80%	4.52%
Xcel Energy Inc.	XEL	5.05%	4.80%	5.43%
Average		3.66%	3.11%	5.16%

Source: Schedule PC-9-3

## Mr. Chari Schedule PC-9-3 - Remove Negative Growth Rates

Company Name	Ticker	10-Year Historical Growth Rate EPS	5-Year Historical Growth Rate EPS	Projected 5-Year EPS Growth SNL (Mean) (%)
Alliant Energy Corporation	LNT	2.38%	4.99%	5.66%
Ameren Corporation	AEE		6.31%	6.28%
American Electric Power Company, Inc.	AEP	0.28%	0.34%	5.82%
Avista Corporation	AVA	5.37%	4.75%	3.98%
CMS Energy Corporation	CMS	NM	4.47%	6.89%
Duke Energy Corporation	DUK	2.29%	2.42%	4.57%
Evergy, Inc.	EVRG	NM	NM	6.17%
IDACORP, Inc.	IDA	7.11%	3.85%	3.50%
NorthWestern Corporation	NEW	9.56%	6.84%	3.41%
OGE Energy Corp.	OGE	6.12%	4.66%	5.18%
Pinnacle West Capital Corporation	PNW	4.78%	4.73%	5.29%
PNM Resources, Inc.	PNM	NM		6.05%
Portland General Electric Company	POR	3.19%	5.12%	4.63%
Southern Company	SO			4.52%
Xcel Energy Inc.	XEL	5.05%	4.80%	5.43%
Average		4.61%	4.44%	5.16%

Source: Schedule PC-9-3

ALE US Equity				LNT US Equity				AEE US Equity				AEP US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	3.555	2.79	0.78481	12/31/1990	1.115	0.87	0.78027	12/31/1995	2.72	#N/A	N/A	12/31/1990	2.65	2.4	0.90566
12/31/1991	3.69	2.85	0.77236	12/31/1991	1.215	0.9	0.74074	12/31/1996	2.71	#N/A	N/A	12/31/1991	2.7	2.4	0.88889
12/31/1992	3.705	2.91	0.78543	12/31/1992	1.05	0.93	0.88571	12/31/1997	2.439	0	0	12/31/1992	2.54	2.4	0.94488
12/31/1993	3.3	2.97	0.9	12/31/1993	1.055	0.95	0.90047	12/31/1998	2.817	2.54	0.90167	12/31/1993	1.92	2.4	1.25
12/30/1994	3.09	3.03	0.98058	12/30/1994	1.065	0.96	0.90141	12/31/1999	2.81	2.54	0.90391	12/30/1994	2.71	2.4	0.88561
12/29/1995	3.24	3.06	0.94444	12/29/1995	0.95	0.97	1.02105	12/29/2000	3.33	2.54	0.76276	12/29/1995	2.85	2.4	0.84211
12/31/1996	3.42	3.06	0.89474	12/31/1996	1.17	0.985	0.84188	12/31/2001	3.4	2.54	0.74706	12/31/1996	3.14	2.4	0.76433
12/31/1997	3.705	3.06	0.82591	12/31/1997	0.9486	1	1.05419	12/31/2002	2.6	2.54	0.97692	12/31/1997	2.703	2.4	0.8879
12/31/1998	4.035	3.06	0.75836	12/31/1998	0.6285	1	1.59109	12/31/2003	3.25	2.54	0.78154	12/31/1998	2.811	2.4	0.85379
12/31/1999	2.91	3.21	1.10309	12/31/1999	1.255	1	0.79681	12/31/2004	2.84	2.54	0.89437	12/31/1999	3.03	2.4	0.79208
12/29/2000	6.33	3.21	0.50711	12/29/2000	2.515	1	0.39761	12/30/2005	3.02	2.54	0.84106	12/29/2000	0.83	2.4	2.89157
12/31/2001	5.43	3.21	0.59116	12/31/2001	1.0271	1	0.97362	12/29/2006	2.66	2.54	0.95489	12/31/2001	3.01	2.4	0.79734
12/31/2002	5.04	3.3	0.65476	12/31/2002	0.59	1	1.69492	12/31/2007	2.98	2.54	0.85235	12/31/2002	-1.57	2.4	-1.52866
12/31/2003	8.52	3.39	0.39789	12/31/2003	#N/A	N/A	0.5	12/31/2008	2.88	2.54	0.88194	12/31/2003	0.29	1.65	5.68966
12/31/2004	3.67	2.8425	0.77452	12/31/2004	0.64	0.5063	0.79109	12/31/2009	2.78	1.54	0.55396	12/31/2004	2.75	1.4	0.50909
12/30/2005	0.48	1.245	2.59375	12/30/2005	-0.035	0.525	-15	12/31/2010	0.58	1.54	2.65517	12/30/2005	2.08	1.42	0.68269
12/29/2006	2.74	1.45	0.5292	12/31/2007	1.89	0.635	0.33598	12/30/2011	2.15	1.555	0.72326	12/29/2006	2.53	1.5	0.59289
12/31/2007	3.08	1.64	0.53247	12/31/2008	1.305	0.7	0.5364	12/31/2012	-4.01	1.6	-0.399	12/31/2007	2.72	1.58	0.58088
12/31/2008	2.82	1.72	0.60993	12/31/2009	0.505	0.75	1.48515	12/31/2013	1.18	1.6	1.35593	12/31/2008	3.42	1.64	0.47953
12/31/2009	1.89	1.76	0.93122	12/31/2010	1.3	0.79	0.60769	12/31/2014	2.4	1.61	0.67083	12/31/2009	2.96	1.64	0.55405
12/31/2010	2.19	1.76	0.80365	12/30/2011	1.37	0.85	0.62044	12/31/2015	2.59	1.655	0.639	12/31/2010	2.53	1.71	0.67589
12/30/2011	2.65	1.78	0.6717	12/31/2012	1.445	0.9	0.62284	12/30/2016	2.68	1.715	0.63993	12/30/2011	4.02	1.85	0.4602
12/31/2012	2.58	1.84	0.71318	12/31/2013	1.615	0.94	0.58204	12/29/2017	2.14	1.7775	0.83061	12/31/2012	2.6	1.88	0.72308
12/31/2013	2.63	1.9	0.72243	12/31/2014	1.73	1.02	0.5896	12/31/2018	3.32	1.8475	0.55648	12/31/2013	3.04	1.95	0.64145
12/31/2014	2.9	1.96	0.67586	12/31/2015	1.68	1.1	0.65476					12/31/2014	3.34	2.03	0.60778
12/31/2015	2.92	2.02	0.69178	12/30/2016	1.64	1.175	0.71646					12/31/2015	4.17	2.15	0.51559
12/30/2016	3.14	2.08	0.66242	12/29/2017	1.99	1.26	0.63317					12/30/2016	1.24	2.27	1.83065
12/29/2017	3.38	2.14	0.63314	12/31/2018	2.19	1.34	0.61187					12/29/2017	3.88	2.39	0.61598
12/31/2018	3.38	2.24	0.66272									12/31/2018	3.9	2.53	0.64872
	Median		0.72243		Median		0.74074		Median		0.80607		Median		0.72308

Electric Universe Average Payout Ratio	65.65%
Gas Universe Average Payout Ratio	63.58%
Utility Universe Average Payout Ratio	65.22%

Source: Bloomberg Professional

AGR US Equity				AVA US Equity				BKH US Equity				CNP US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/2015	1.07	0		12/31/1990	1.73	1.24	0.71676	12/31/1990	1.1156	0.7289	0.65337	12/31/1990	1.335	1.48	1.10861
12/30/2016	2.04	1.728	0.84706	12/31/1991	1.34	1.24	0.92537	12/31/1991	1.1067	0.7822	0.70679	12/31/1991	1.62	1.48	0.91358
12/29/2017	1.23	1.728	1.40488	12/31/1992	1.37	1.24	0.90511	12/31/1992	1.1533	0.8267	0.71681	12/31/1992	1.68	1.49	0.88669
12/31/2018	1.92	1.744	0.90833	12/31/1993	1.44	1.24	0.86111	12/31/1993	1.1067	0.8533	0.77103	12/31/1993	1.6	1.5	0.9375
				12/30/1994	1.28	1.24	0.96875	12/30/1994	1.1067	0.88	0.79516	12/30/1994	1.625	1.5	0.92308
				12/29/1995	1.41	1.24	0.87943	12/29/1995	1.1867	0.8933	0.75276	12/29/1995	4.46	1.5	0.33632
				12/31/1996	1.35	1.24	0.91852	12/31/1996	1.4	0.92	0.65714	12/31/1996	1.66	1.5	0.90361
				12/31/1997	1.96	1.24	0.63265	12/31/1997	1.49	0.9467	0.63537	12/31/1997	1.66	1.5	0.90361
				12/31/1998	1.28	1.05	0.82031	12/31/1998	1.19	1	0.84034	12/31/1998	-0.5	1.5	-3
				12/31/1999	0.12	0.48	4	12/31/1999	1.73	1.04	0.60116	12/31/1999	5.18	1.5	0.28958
				12/29/2000	1.47	0.48	0.32653	12/29/2000	2.37	1.08	0.4557	12/29/2000	1.56	1.5	0.96154
				12/31/2001	0.2	0.48	2.4	12/31/2001	3.42	1.12	0.32749	12/31/2001	3.35	1.5	0.44776
				12/31/2002	0.6	0.48	0.8	12/31/2002	2.26	1.16	0.51327	12/31/2002	-13.16	1.07	-0.08131
				12/31/2003	0.89	0.49	0.55056	12/31/2003	1.97	1.2	0.60914	12/31/2003	1.46	0.4	0.27397
				12/31/2004	0.72	0.515	0.71528	12/31/2004	1.76	1.24	0.70455	12/31/2004	-2.48	0.4	-0.16129
				12/30/2005	0.92	0.545	0.59239	12/30/2005	1	1.28	1.28	12/30/2005	0.75	0.4	0.53333
				12/29/2006	1.46	0.57	0.39041	12/29/2006	2.42	1.32	0.54545	12/29/2006	1.33	0.6	0.45113
				12/31/2007	0.72	0.595	0.82639	12/31/2007	2.64	1.37	0.51894	12/31/2007	1.17	0.68	0.5812
				12/31/2008	1.36	0.69	0.50735	12/31/2008	2.75	1.4	0.50909	12/31/2008	1.3	0.73	0.56154
				12/31/2009	1.58	0.81	0.51266	12/31/2009	2.11	1.42	0.67299	12/31/2009	1.01	0.76	0.75248
				12/31/2010	1.65	1	0.60606	12/31/2010	1.76	1.44	0.81818	12/31/2010	1.07	0.78	0.72897
				12/30/2011	1.72	1.1	0.63953	12/30/2011	1.24	1.46	1.17742	12/30/2011	3.17	0.79	0.24921
				12/31/2012	1.32	1.16	0.87879	12/31/2012	1.85	1.48	0.8	12/31/2012	0.97	0.81	0.83505
				12/31/2013	1.85	1.22	0.65946	12/31/2013	2.59	1.52	0.58687	12/31/2013	0.72	0.83	1.15278
				12/31/2014	3.1	1.27	0.40968	12/31/2014	2.93	1.56	0.53242	12/31/2014	1.42	0.95	0.66901
				12/31/2015	1.97	1.32	0.67005	12/31/2015	-0.71	1.62	-2.28169	12/31/2015	-1.61	0.99	-0.61491
				12/30/2016	2.15	1.37	0.63721	12/30/2016	1.37	1.68	1.22628	12/30/2016	1	1.03	1.03
				12/29/2017	1.79	1.43	0.79888	12/29/2017	3.21	1.81	0.56386	12/29/2017	4.13	1.3475	0.32627
				12/31/2018	2.07	1.49	0.71981	12/31/2018	4.66	1.93	0.41416	12/31/2018	0.74	1.12	1.51351
				Median	0.90833			Median	0.71676			Median	0.65337		
												Median	0.66901		

CMS US Equity				ED US Equity				D US Equity				DTE US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	-6.07	0.42	-0.06919	12/31/1990	2.32	1.82	0.78448	12/31/1990	1.46	1.1167	0.76486	12/31/1990	3.26	1.78	0.54601
12/31/1991	-3.44	0.48	-0.13953	12/31/1991	2.32	1.86	0.80172	12/31/1991	1.47	1.1567	0.78687	12/31/1991	3.64	1.88	0.51648
12/31/1992	-3.72	0.48	-0.12903	12/31/1992	2.46	1.9	0.77236	12/31/1992	1.38	1.2	0.86957	12/31/1992	3.79	1.98	0.52243
12/31/1993	1.9	0.6	0.31579	12/31/1993	2.66	1.94	0.72932	12/31/1993	1.56	1.24	0.79487	12/31/1993	3.34	2.06	0.61677
12/30/1994	2.09	0.78	0.37321	12/30/1994	2.98	2	0.67114	12/30/1994	1.405	1.275	0.90747	12/30/1994	2.67	2.06	0.77154
12/29/1995	2.26	0.9	0.39823	12/29/1995	2.93	2.04	0.69625	12/29/1995	1.225	1.29	1.05306	12/29/1995	2.8	2.06	0.73571
12/31/1996	2.44	1.02	0.41803	12/31/1996	2.93	2.08	0.7099	12/31/1996	1.325	1.29	0.97358	12/31/1996	2.13	2.06	0.96714
12/31/1997	2.37	1.14	0.48101	12/31/1997	2.954	2.1	0.7109	12/31/1997	1.075	1.29	1.2	12/31/1997	2.88	2.06	0.71528
12/31/1998	2.62	1.26	0.48092	12/31/1998	3.042	2.12	0.69691	12/31/1998	1.375	1.29	0.93818	12/31/1998	3.05	2.06	0.67541
12/31/1999	2.17	1.39	0.64055	12/31/1999	3.13	2.14	0.68371	12/31/1999	0.74	1.29	1.74324	12/31/1999	3.33	2.06	0.61862
12/29/2000	0.38	1.46	3.84211	12/29/2000	2.74	2.18	0.79562	12/29/2000	0.925	1.29	1.39459	12/29/2000	3.27	2.06	0.62997
12/31/2001	-3.42	1.46	-0.4269	12/31/2001	3.21	2.2	0.68536	12/31/2001	1.075	1.29	1.2	12/31/2001	2.16	2.06	0.9537
12/31/2002	-4.68	1.09	-0.23291	12/31/2002	3.02	2.22	0.7351	12/31/2002	2.41	1.29	0.53527	12/31/2002	3.83	2.06	0.53786
12/31/2003	-0.3	#N/A	N/A	12/31/2003	2.38	2.24	0.94118	12/31/2003	0.5	1.29	2.58	12/31/2003	3.09	2.06	0.66667
12/31/2004	0.64	#N/A	N/A	12/31/2004	2.27	2.26	0.99559	12/31/2004	1.89	1.3	0.68783	12/31/2004	2.49	2.06	0.82731
12/30/2005	-0.44	0	0	12/30/2005	2.94	2.28	0.77551	12/30/2005	1.5	1.34	0.89333	12/30/2005	3.05	2.06	0.67541
12/29/2006	-0.41	0	0	12/29/2006	2.95	2.3	0.77966	12/29/2006	1.96	1.38	0.70408	12/29/2006	2.43	2.075	0.85391
12/31/2007	-1.02	0.2	-0.19608	12/31/2007	3.47	2.32	0.68859	12/31/2007	3.88	1.46	0.37629	12/31/2007	5.7	2.12	0.37193
12/31/2008	1.2	0.36	0.3	12/31/2008	4.37	2.34	0.53547	12/31/2008	3.16	1.58	0.5	12/31/2008	3.36	2.12	0.63095
12/31/2009	0.91	1	1.0989	12/31/2009	3.14	2.36	0.75159	12/31/2009	2.17	1.75	0.80645	12/31/2009	3.24	2.12	0.65432
12/31/2010	1.28	0.66	0.51563	12/31/2010	3.47	2.38	0.68588	12/31/2010	4.76	1.83	0.38445	12/31/2010	3.74	2.18	0.58289
12/30/2011	1.58	0.84	0.53165	12/30/2011	3.57	2.4	0.67227	12/30/2011	2.45	1.97	0.80408	12/30/2011	4.18	2.32	0.55502
12/31/2012	1.42	0.96	0.67606	12/31/2012	3.86	2.42	0.62694	12/31/2012	0.53	2.11	3.98113	12/31/2012	3.55	2.42	0.68169
12/31/2013	1.66	1.02	0.61446	12/31/2013	3.61	2.46	0.68144	12/31/2013	2.93	2.25	0.76792	12/31/2013	3.76	2.59	0.68883
12/31/2014	1.74	1.08	0.62069	12/31/2014	3.71	2.52	0.67925	12/31/2014	2.24	2.4	1.07143	12/31/2014	5.1	2.69	0.52745
12/31/2015	1.89	1.16	0.61376	12/31/2015	4.05	2.6	0.64198	12/31/2015	3.2	2.59	0.80938	12/31/2015	4.05	2.84	0.70123
12/30/2016	1.98	1.24	0.62626	12/30/2016	4.12	2.68	0.65049	12/30/2016	3.44	2.8	0.81395	12/30/2016	4.83	3.06	0.63354
12/29/2017	1.64	1.33	0.81098	12/29/2017	4.94	2.76	0.5587	12/29/2017	4.72	3.035	0.64301	12/29/2017	6.32	3.36	0.53165
12/31/2018	2.32	1.43	0.61638	12/31/2018	4.42	2.86	0.64706	12/31/2018	3.74	3.34	0.89305	12/31/2018	6.17	3.6	0.58347
	Median		0.48092		Median		0.69625		Median		0.81395		Median		0.63354

DUK US Equity				EIX US Equity				EE US Equity				ETR US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	3.6	2.4	0.66667	12/31/1990	1.8	1.31	0.72778	12/31/1996	0.523	0		12/31/1990	2.44	1.05	0.43033
12/31/1991	3.9	2.52	0.64615	12/31/1991	1.605	1.35	0.84112	12/31/1997	0.639	0		12/31/1991	2.64	1.25	0.47348
12/31/1992	3.315	2.64	0.79638	12/31/1992	1.66	1.39	0.83735	12/31/1998	0.754	0		12/31/1992	2.48	1.45	0.58468
12/31/1993	4.2	2.76	0.65714	12/31/1993	1.43	1.415	0.98951	12/31/1999	0.473	0		12/31/1993	3.16	1.65	0.52215
12/30/1994	4.32	2.88	0.66667	12/30/1994	1.52	1.105	0.72697	12/29/2000	1.06	0		12/30/1994	1.49	1.8	1.20805
12/29/1995	4.875	3	0.61538	12/29/1995	1.66	0.75	0.45181	12/31/2001	1.23	0		12/29/1995	2.28	1.8	0.78947
12/31/1996	4.245	3.12	0.73498	12/31/1996	1.63	1.25	0.76687	12/31/2002	0.57	0		12/31/1996	1.83	1.8	0.98361
12/31/1997	3.75	3.24	0.864	12/31/1997	1.73	1	0.57803	12/31/2003	1.23	0		12/31/1997	1.03	1.8	1.74757
12/31/1998	5.1	3.3	0.64706	12/31/1998	1.84	1.04	0.56522	12/31/2004	0.73	0		12/31/1998	2.997	1.5	0.5005
12/31/1999	6.09	3.3	0.54187	12/31/1999	1.79	1.08	0.60335	12/30/2005	0.74	#N/A	N/A	12/31/1999	2.25	1.2	0.53333
12/29/2000	7.14	3.3	0.46218	12/29/2000	-5.84	0.84	-0.14384	12/29/2006	1.4	0		12/29/2000	2.97	1.215	0.40909
12/31/2001	7.32	3.3	0.45082	12/31/2001	3.17	#N/A	N/A	12/31/2007	1.63	0		12/31/2001	3.23	1.275	0.39474
12/31/2002	3.66	3.3	0.90164	12/31/2002	3.28	0	0	12/31/2008	1.73	0		12/31/2002	2.64	1.34	0.50758
12/31/2003	-4.44	3.3	-0.74324	12/31/2003	2.5	0.2	0.08	12/31/2009	1.5	0		12/31/2003	4.01	1.6	0.399
12/31/2004	4.62	3.3	0.71429	12/31/2004	2.77	0.85	0.30686	12/31/2010	2.31	0		12/31/2004	3.93	1.89	0.48092
12/30/2005	5.64	3.51	0.62234	12/30/2005	3.43	1.02	0.29738	12/30/2011	2.48	0.66	0.26613	12/30/2005	4.19	2.16	0.51551
12/29/2006	4.71	3.78	0.80255	12/29/2006	3.61	1.1	0.30471	12/31/2012	2.26	0.97	0.4292	12/29/2006	5.36	2.16	0.40299
12/31/2007	3.54	2.58	0.72881	12/31/2007	3.31	1.175	0.35498	12/31/2013	2.2	1.045	0.475	12/31/2007	5.6	2.58	0.46071
12/31/2008	3.21	2.7	0.84112	12/31/2008	3.73	1.225	0.32842	12/31/2014	2.27	1.105	0.48678	12/31/2008	6.0721	3	0.49406
12/31/2009	2.49	2.82	1.13253	12/31/2009	2.58	1.245	0.48256	12/31/2015	2.03	1.165	0.57389	12/31/2009	6.3	3	0.47619
12/31/2010	3	2.91	0.97	12/31/2010	3.8176	1.265	0.33136	12/30/2016	2.39	1.225	0.51255	12/31/2010	6.66	3.24	0.48649
12/30/2011	3.84	2.97	0.77344	12/30/2011	-0.11	1.285	-11.6818	12/29/2017	2.42	1.315	0.54339	12/30/2011	7.55	3.32	0.43974
12/31/2012	3.07	3.03	0.98697	12/31/2012	-0.56	1.3125	-2.34375	12/31/2018	2.07	1.415	0.68357	12/31/2012	4.76	3.32	0.69748
12/31/2013	3.76	3.09	0.82181	12/31/2013	2.78	1.3675	0.49191					12/31/2013	3.99	3.32	0.83208
12/31/2014	2.66	3.15	1.18421	12/31/2014	4.89	1.4825	0.30317					12/31/2014	5.22	3.32	0.63602
12/31/2015	4.05	3.24	0.8	12/31/2015	3.1	1.7325	0.55887					12/31/2015	-0.99	3.34	-3.37374
12/30/2016	3.11	3.36	1.08039	12/30/2016	3.97	1.9825	0.49937					12/30/2016	-3.26	3.42	-1.04908
12/29/2017	4.36	3.49	0.80046	12/29/2017	1.72	2.2325	1.29797					12/29/2017	2.28	3.44	1.50877
12/31/2018	3.76	3.64	0.96809	12/31/2018	-1.3	2.4275	-1.86731					12/31/2018	4.63	3.58	0.77322
	Median		0.77344		Median		0.46718		Median		0.49967		Median		0.5005

EVRG US Equity				ES US Equity				EXC US Equity				FE US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/2018	2.5	1.735	0.694	12/31/1990	1.94	1.76	0.90722	12/31/1999	-3.4	0.9	-0.26471	12/31/1995	2.05	#N/A	N/A
				12/31/1991	2.12	1.76	0.83019	12/29/2000	1.435	0.455	0.31707	12/31/1996	2.1	#N/A	N/A
				12/31/1992	2.02	1.76	0.87129	12/31/2001	2.215	0.634	0.28623	12/31/1997	1.94	1.5	0.7732
				12/31/1993	2.02	1.76	0.87129	12/31/2002	2.22	0.88	0.3964	12/31/1998	1.82	1.5	0.82418
				12/30/1994	2.3	1.76	0.76522	12/31/2003	1.375	0.96	0.69818	12/31/1999	2.5	1.5	0.6
				12/29/1995	2.24	1.76	0.78571	12/31/2004	2.78	1.26	0.45324	12/29/2000	2.69	1.5	0.55762
				12/31/1996	0.01	1.38	138	12/30/2005	1.36	1.6	1.17647	12/31/2001	2.81	1.5	0.53381
				12/31/1997	-1.01	0.25	-0.24752	12/29/2006	2.35	1.6	0.68085	12/31/2002	2.14	1.5	0.70093
				12/31/1998	-1.124	0	0	12/31/2007	4.05	1.76	0.43457	12/31/2003	1.39	1.5	1.07914
				12/31/1999	0.26	0.1	0.38462	12/31/2008	4.13	2.03	0.49153	12/31/2004	2.67	1.9125	0.71629
				12/29/2000	-0.2	#N/A	N/A	12/31/2009	4.09	2.1	0.51345	12/30/2005	2.61	1.705	0.65326
				12/31/2001	1.79	0.45	0.2514	12/31/2010	3.87	2.1	0.54264	12/29/2006	3.81	1.85	0.48556
				12/31/2002	1.18	0.525	0.44492	12/30/2011	3.75	2.1	0.56	12/31/2007	4.22	2.05	0.48578
				12/31/2003	0.91	0.575	0.63187	12/31/2012	1.42	2.1	1.47887	12/31/2008	4.38	2.2	0.50228
				12/31/2004	0.91	0.625	0.68681	12/31/2013	2	1.46	0.73	12/31/2009	3.29	2.2	0.66869
				12/30/2005	-1.93	0.675	-0.34974	12/31/2014	1.88	1.24	0.65957	12/31/2010	2.42	2.2	0.90909
				12/29/2006	3.05	0.725	0.2377	12/31/2015	2.54	1.24	0.48819	12/30/2011	2.21	2.2	0.99548
				12/31/2007	1.59	0.775	0.48742	12/30/2016	1.21	1.264	1.04463	12/31/2012	1.84	2.2	1.19565
				12/31/2008	1.67	0.825	0.49401	12/29/2017	3.99	1.31	0.32832	12/31/2013	0.94	1.65	1.75532
				12/31/2009	1.91	0.95	0.49738	12/31/2018	2.07	1.38	0.66667	12/31/2014	0.71	1.44	2.02817
				12/31/2010	2.19	1.025	0.46804					12/31/2015	1.37	1.44	1.05109
				12/30/2011	2.22	1.1	0.4955					12/30/2016	-14.49	1.44	-0.09938
				12/31/2012	1.89	1.32	0.69841					12/29/2017	-3.88	1.44	-0.37113
				12/31/2013	2.49	1.47	0.59036					12/31/2018	1.99	1.46	0.73367
				12/31/2014	2.58	1.57	0.60853								
				12/31/2015	2.76	1.67	0.60507								
				12/30/2016	2.96	1.78	0.60135								
				12/29/2017	3.11	1.9	0.61093								
				12/31/2018	3.25	2.02	0.62154								
	Median		0.694		Median		0.60321		Median		0.52804		Median		0.70861

HE US Equity				IDA US Equity				MGE E US Equity				NEE US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	1.085	1.085	1	12/31/1990	1.91	1.86	0.97382	12/31/1990	0.9067	0.7644	0.84306	12/31/1990	-1.43	1.17	-0.81818
12/31/1991	1.2	1.105	0.92083	12/31/1991	1.56	1.86	1.19231	12/31/1991	1.0133	0.7763	0.76611	12/31/1991	0.74	1.195	1.61486
12/31/1992	-0.24	1.125	-4.6875	12/31/1992	1.55	1.86	1.2	12/31/1992	0.9689	0.7956	0.82114	12/31/1992	1.325	1.215	0.91698
12/31/1993	0.94	1.145	1.21809	12/31/1993	2.14	1.86	0.86916	12/31/1993	1.0044	0.8178	0.81422	12/31/1993	1.15	1.235	1.07391
12/30/1994	1.3	1.165	0.89615	12/30/1994	1.8	1.86	1.03333	12/30/1994	1.0178	0.8311	0.81657	12/30/1994	1.455	0.94	0.64605
12/29/1995	1.33	1.185	0.89098	12/29/1995	2.1	1.86	0.88571	12/29/1995	0.9911	0.84	0.84754	12/29/1995	1.58	0.88	0.55696
12/31/1996	1.295	1.205	0.9305	12/31/1996	2.21	1.86	0.84163	12/31/1996	0.2667	0.8488	3.1826	12/31/1996	1.665	0.92	0.55255
12/31/1997	1.3734	1.22	0.88831	12/31/1997	2.32	1.86	0.80172	12/31/1997	0.9333	0.858	0.91932	12/31/1997	1.785	0.96	0.53782
12/31/1998	1.32	1.24	0.93939	12/31/1998	2.2205	1.86	0.83765	12/31/1998	0.92	0.8667	0.94207	12/31/1998	1.925	1	0.51948
12/31/1999	1.5	1.24	0.82667	12/31/1999	2.43	1.86	0.76543	12/31/1999	0.9867	0.872	0.88375	12/31/1999	2.035	1.04	0.51106
12/29/2000	0.7	1.24	1.77143	12/29/2000	3.72	1.86	0.5	12/29/2000	1.1133	0.8787	0.78928	12/29/2000	2.07	1.08	0.52174
12/31/2001	1.235	1.24	1.00405	12/31/2001	3.35	1.86	0.55522	12/31/2001	1.08	0.8853	0.81972	12/31/2001	2.31	1.12	0.48485
12/31/2002	1.62	1.24	0.76543	12/31/2002	1.63	1.86	1.1411	12/31/2002	1.1267	0.8933	0.79285	12/31/2002	1.365	1.16	0.84982
12/31/2003	1.525	1.24	0.81311	12/31/2003	1.22	1.695	1.38934	12/31/2003	1.14	0.9	0.78947	12/31/2003	2.5	1.2	0.48
12/31/2004	1.38	1.24	0.89855	12/31/2004	1.9	1.2	0.63158	12/31/2004	1.18	0.9067	0.76839	12/31/2004	2.455	1.3	0.52953
12/30/2005	1.56	1.24	0.79487	12/30/2005	1.5	1.2	0.8	12/30/2005	1.0467	0.9133	0.87255	12/30/2005	2.34	1.42	0.60684
12/31/2007	1.03	1.24	1.20388	12/29/2006	2.51	1.2	0.47809	12/31/2007	1.5133	0.94	0.62116	12/29/2006	3.23	1.5	0.4644
12/31/2008	1.07	1.24	1.15888	12/31/2007	1.86	1.2	0.64516	12/31/2008	1.5867	0.9533	0.60081	12/31/2007	3.27	1.64	0.50153
12/31/2009	0.91	1.24	1.36264	12/31/2008	2.17	1.2	0.553	12/31/2009	1.4733	0.9733	0.66063	12/31/2008	4.07	1.78	0.43735
12/31/2010	1.21	1.24	1.02479	12/31/2009	2.64	1.2	0.45455	12/31/2010	1.6667	0.9933	0.59597	12/31/2009	3.97	1.89	0.47607
12/30/2011	1.44	1.24	0.86111	12/31/2010	2.95	1.2	0.40678	12/30/2011	1.76	1.0133	0.57574	12/31/2010	4.74	2	0.42194
12/31/2012	1.42	1.24	0.87324	12/30/2011	3.36	1.2	0.35714	12/31/2012	1.86	1.04	0.55914	12/30/2011	4.59	2.2	0.4793
12/31/2013	1.62	1.24	0.76543	12/31/2012	3.46	1.37	0.39595	12/31/2013	2.16	1.07	0.49537	12/31/2012	4.56	2.4	0.52632
12/31/2014	1.63	1.24	0.76074	12/31/2013	3.64	1.57	0.43132	12/31/2014	2.32	1.11	0.47845	12/31/2013	4.4684	2.64	0.59082
12/31/2015	1.5	1.24	0.82667	12/31/2014	3.85	1.76	0.45714	12/31/2015	2.06	1.16	0.56311	12/31/2014	5.6	2.9	0.51786
12/30/2016	2.29	1.24	0.54148	12/31/2015	3.87	1.92	0.49612	12/30/2016	2.18	1.21	0.55505	12/31/2015	6.06	3.08	0.50825
12/29/2017	1.52	1.24	0.81579	12/30/2016	3.94	2.08	0.52792	12/29/2017	2.82	1.26	0.44681	12/30/2016	6.24	3.48	0.55769
12/31/2018	1.85	1.24	0.67027	12/29/2017	4.21	2.24	0.53207	12/31/2018	2.43	1.32	0.54321	12/29/2017	11.39	3.93	0.34504
				12/31/2018	4.49	2.4	0.53452					12/31/2018	13.88	4.44	0.31988
Median	0.88964			Median	0.63158			Median	0.77883			Median	0.51948		

NWE US Equity				OGU US Equity				OTTR US Equity				PCG US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/2002	-30.04	1.27	-0.04228	12/31/1990	0.845	0.62	0.73373	12/31/1990	0.995	0.78	0.78392	12/31/1990	2.1	1.52	0.72381
12/31/2003	-3.44	0	0	12/31/1991	0.8175	0.645	0.78899	12/31/1991	1.075	0.8	0.74419	12/31/1991	2.24	1.64	0.73214
12/31/2004	15.29	0	0	12/31/1992	0.605	0.665	1.09917	12/31/1992	1.085	0.82	0.75576	12/31/1992	2.58	1.76	0.68217
12/30/2005	1.65	1	0.60606	12/31/1993	0.695	0.665	0.95683	12/31/1993	1.115	0.84	0.75336	12/31/1993	2.33	1.88	0.80687
12/29/2006	1.01	1.24	1.22772	12/30/1994	0.7525	0.665	0.88372	12/30/1994	1.17	0.86	0.73504	12/30/1994	2.21	1.96	0.88688
12/31/2007	1.44	1.28	0.88889	12/29/1995	0.7625	0.665	0.87213	12/29/1995	1.19	0.88	0.7395	12/29/1995	2.99	1.96	0.65552
12/31/2008	1.77	1.32	0.74576	12/31/1996	0.8125	0.665	0.81846	12/31/1996	1.23	0.9	0.73171	12/31/1996	1.75	1.77	1.01143
12/31/2009	2.02	1.34	0.66337	12/31/1997	0.8067	0.665	0.82435	12/31/1997	1.29	0.93	0.72093	12/31/1997	1.75	#N/A	N/A
12/31/2010	2.14	1.36	0.63551	12/31/1998	1.022	0.665	0.65068	12/31/1998	1.36	0.96	0.70588	12/31/1998	1.88	1.2	0.6383
12/30/2011	2.53	1.44	0.56917	12/31/1999	0.97	0.665	0.68557	12/31/1999	1.79	0.99	0.55307	12/31/1999	-0.2	1.2	-6
12/31/2012	2.66	1.48	0.55639	12/29/2000	0.945	0.665	0.7037	12/29/2000	1.59	1.02	0.64151	12/29/2000	-9.29	1.2	-0.12917
12/31/2013	2.46	1.52	0.61789	12/31/2001	0.645	0.665	1.03101	12/31/2001	1.68	1.04	0.61905	12/31/2001	3.02	0	0
12/31/2014	2.99	1.6	0.53512	12/31/2002	0.58	0.665	1.14655	12/31/2002	1.79	1.06	0.59218	12/31/2002	-2.36	0	0
12/31/2015	3.17	1.92	0.60568	12/31/2003	0.79	0.665	0.84177	12/31/2003	1.51	1.08	0.71523	12/31/2003	1.06	0	0
12/30/2016	3.39	2	0.58997	12/31/2004	0.865	0.665	0.76879	12/31/2004	1.58	1.1	0.6962	12/31/2004	10.57	0.33	0.03122
12/29/2017	3.34	2.1	0.62874	12/30/2005	1.16	0.665	0.57328	12/30/2005	2.11	1.12	0.53081	12/30/2005	2.37	1.23	0.51899
12/31/2018	3.92	2.2	0.56122	12/29/2006	1.42	0.6688	0.47099	12/29/2006	1.7	1.15	0.67647	12/29/2006	2.76	1.32	0.47826
				12/31/2007	1.32	0.6838	0.51803	12/31/2007	1.78	1.17	0.6573	12/31/2007	2.78	1.44	0.51799
				12/31/2008	1.245	0.6988	0.56129	12/31/2008	1.09	1.19	1.09174	12/31/2008	3.75	1.56	0.416
				12/31/2009	1.33	0.7138	0.53669	12/31/2009	0.71	1.19	1.67606	12/31/2009	3.2	1.68	0.525
				12/31/2010	1.495	0.7313	0.48916	12/31/2010	-0.06	1.19	-19.8333	12/31/2010	2.82	1.82	0.64539
				12/30/2011	1.725	0.7588	0.43988	12/30/2011	-0.4	1.19	-2.975	12/30/2011	2.1	1.82	0.86667
				12/31/2012	1.79	0.7975	0.44553	12/31/2012	-0.17	1.19	-7	12/31/2012	1.92	1.82	0.94792
				12/31/2013	1.94	0.8513	0.43881	12/31/2013	1.39	1.19	0.85612	12/31/2013	1.83	1.82	0.99454
				12/31/2014	1.98	0.95	0.4798	12/31/2014	1.57	1.21	0.7707	12/31/2014	3.06	1.82	0.59477
				12/31/2015	1.36	1.05	0.77206	12/31/2015	1.58	1.23	0.77848	12/31/2015	1.79	1.82	1.01676
				12/30/2016	1.69	1.155	0.68343	12/30/2016	1.61	1.25	0.7764	12/30/2016	2.78	1.93	0.69424
				12/29/2017	3.1	1.27	0.40968	12/29/2017	1.82	1.28	0.7033	12/29/2017	3.21	1.55	0.48287
				12/31/2018	2.12	1.395	0.65802	12/31/2018	2.06	1.34	0.65049	12/31/2018	-13.25	0	0
	Median		0.60568		Median		0.68557		Median		0.71523		Median		0.61653



PNW US Equity				PNM US Equity				POR US Equity				PPL US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	1.12	#N/A	N/A	12/31/1990	-0.1533	#N/A	N/A	12/31/1992	2.3	0	0	12/31/1990	0.9875	0.745	0.75443
12/31/1991	-2.15	#N/A	N/A	12/31/1991	0.2133	#N/A	N/A	12/31/1993	2.17	0	0	12/31/1991	1.0025	0.775	0.77307
12/31/1992	1.8	#N/A	N/A	12/31/1992	-1.78	#N/A	N/A	12/30/1994	2.29	0	0	12/31/1992	1.01	0.8	0.79208
12/31/1993	2.17	0.2	0.09217	12/31/1993	-1.0933	#N/A	N/A	12/29/1995	1.94	0	0	12/31/1993	1.035	0.825	0.7971
12/30/1994	2.3	0.825	0.3587	12/30/1994	1.18	#N/A	N/A	12/31/1996	3.58	0	0	12/30/1994	0.705	0.835	1.1844
12/29/1995	2.15	0.925	0.43023	12/29/1995	1.1467	#N/A	N/A	12/31/1997	2.899	1.47	0.50707	12/29/1995	1.025	0.835	0.81463
12/31/1996	2.06	1.025	0.49757	12/31/1996	1.14	0.24	0.21053	12/31/1998	3.16	1.15	0.36392	12/31/1996	1.025	0.835	0.81463
12/31/1997	2.74	1.125	0.41058	12/31/1997	1.2733	0.42	0.32985	12/31/1999	2.95	1.89	0.64068	12/31/1997	0.9	0.835	0.92778
12/31/1998	2.85	1.225	0.42982	12/31/1998	1.3	0.5133	0.39485	12/29/2000	3.25	1.89	0.58154	12/31/1998	-1.73	0.6675	-0.38584
12/31/1999	1.97	1.325	0.67259	12/31/1999	1.34	0.5333	0.39799	12/31/2001	0.748	0.935	1.25	12/31/1999	1.42	0.5	0.35211
12/29/2000	3.56	1.425	0.40028	12/29/2000	1.6867	0.5333	0.31618	12/31/2002	1.5	0.63	0.42	12/29/2000	1.72	0.53	0.30814
12/31/2001	3.68	1.525	0.4144	12/31/2001	2.5133	0.5333	0.21219	12/31/2003	1.33	0	0	12/31/2001	0.61	0.53	0.86885
12/31/2002	1.76	1.625	0.9233	12/31/2002	1.0733	0.5733	0.53415	12/31/2004	2.15	0	0	12/31/2002	0.68	0.72	1.05882
12/31/2003	2.63	1.725	0.65589	12/31/2004	1.43	0.665	0.46503	12/30/2005	1.5	3.51	2.34	12/31/2003	2.12	0.77	0.36321
12/31/2004	2.66	1.825	0.68609	12/30/2005	1	0.785	0.785	12/29/2006	1.14	0.675	0.59211	12/31/2004	1.89	0.82	0.43386
12/30/2005	1.82	1.925	1.05769	12/29/2006	1.71	0.88	0.51462	12/31/2007	2.33	0.93	0.39914	12/30/2005	1.77	0.96	0.54237
12/29/2006	3.27	2.025	0.61927	12/31/2007	0.96	0.92	0.95833	12/31/2008	1.39	0.97	0.69784	12/29/2006	2.24	1.1	0.49107
12/31/2007	3.05	2.1	0.68852	12/31/2008	-3.24	0.605	-0.18673	12/31/2009	1.31	1.01	0.77099	12/31/2007	3.35	1.22	0.36418
12/31/2008	2.4	2.1	0.875	12/31/2009	1.36	0.5	0.36765	12/31/2010	1.66	1.035	0.62349	12/31/2008	2.47	1.34	0.54251
12/31/2009	0.67	2.1	3.13433	12/31/2010	-0.49	0.5	-1.02041	12/30/2011	1.95	1.055	0.54103	12/31/2009	1.08	1.38	1.27778
12/31/2010	3.27	2.1	0.6422	12/30/2011	1.96	0.5	0.2551	12/31/2012	1.87	1.075	0.57487	12/31/2010	2.17	1.4	0.64516
12/30/2011	3.09	2.1	0.67961	12/31/2012	1.31	0.58	0.44275	12/31/2013	1.35	1.095	0.81111	12/30/2011	2.7	1.4	0.51852
12/31/2012	3.45	2.12	0.61449	12/31/2013	1.25	0.68	0.544	12/31/2014	2.18	1.115	0.51147	12/31/2012	2.6	1.44	0.55385
12/31/2013	3.66	2.23	0.60929	12/31/2014	1.45	0.74	0.51034	12/31/2015	2.04	1.18	0.57843	12/31/2013	1.76	1.47	0.83523
12/31/2014	3.58	2.2975	0.64176	12/31/2015	0.2	0.8	4	12/30/2016	2.16	1.26	0.58333	12/31/2014	2.61	1.49	0.57088
12/31/2015	3.92	2.41	0.6148	12/30/2016	1.46	0.88	0.60274	12/29/2017	2.1	1.34	0.6381	12/31/2015	1.01	1.5	1.48515
12/30/2016	3.95	2.53	0.64051	12/29/2017	1	0.97	0.97	12/31/2018	2.37	1.4275	0.60232	12/30/2016	2.79	1.52	0.5448
12/29/2017	4.35	2.7	0.62069	12/31/2018	1.07	1.06	0.99065					12/29/2017	1.64	1.58	0.96341
12/31/2018	4.54	2.87	0.63216									12/31/2018	2.58	1.64	0.63566
	Median	0.62642		Median	0.45389			Median	0.57487			Median	0.64516		

PEG US Equity				SRE US Equity				SO US Equity				VVC US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	1.28	1.045	0.81641	12/31/1996	1.77	#N/A	N/A	12/31/1990	0.955	1.07	1.12042	12/31/1999	1.48	0.94	0.63514
12/31/1991	1.215	1.065	0.87654	12/31/1997	1.82	1.27	0.6978	12/31/1991	1.39	1.07	0.76978	12/29/2000	1.17	0.74	0.63248
12/31/1992	1.085	1.08	0.99539	12/31/1998	1.24	1.56	1.25806	12/31/1992	1.51	1.1	0.72848	12/31/2001	0.79	1.03	1.3038
12/31/1993	1.3	1.08	0.83077	12/31/1999	1.66	1.56	0.93976	12/31/1993	1.57	1.14	0.72611	12/31/2002	1.68	1.07	0.6369
12/30/1994	1.39	1.08	0.77698	12/29/2000	2.06	1	0.48544	12/30/1994	1.52	1.18	0.77632	12/31/2003	1.57	1.11	0.70701
12/29/1995	1.355	1.08	0.79705	12/31/2001	2.52	1	0.39683	12/29/1995	1.66	1.22	0.73494	12/31/2004	1.42	1.15	0.80986
12/31/1996	1.26	1.08	0.85714	12/31/2002	2.87	1	0.34843	12/31/1996	1.68	1.26	0.75	12/30/2005	1.8	1.19	0.66111
12/31/1997	1.205	1.08	0.89627	12/31/2003	3.03	1	0.33003	12/31/1997	1.419	1.3	0.91614	12/29/2006	1.43	1.23	0.86014
12/31/1998	1.395	1.08	0.77419	12/31/2004	3.83	1	0.2611	12/31/1998	1.402	1.34	0.95578	12/31/2007	1.87	1.27	0.67914
12/31/1999	-0.185	1.08	-5.83784	12/30/2005	3.65	1.16	0.31781	12/31/1999	1.86	1.34	0.72043	12/31/2008	1.63	1.31	0.80368
12/29/2000	1.775	1.08	0.60845	12/29/2006	5.38	1.2	0.22305	12/29/2000	2.01	1.34	0.66667	12/31/2009	1.64	1.345	0.82012
12/31/2001	1.85	1.08	0.58378	12/31/2007	4.16	1.24	0.29808	12/31/2001	1.82	1.34	0.73626	12/31/2010	1.64	1.365	0.83232
12/31/2002	0.565	1.08	1.9115	12/31/2008	4.43	1.37	0.30926	12/31/2002	1.85	1.355	0.73243	12/30/2011	1.73	1.385	0.80058
12/31/2003	2.535	1.08	0.42604	12/31/2009	4.52	1.56	0.34513	12/31/2003	2.02	1.385	0.68564	12/31/2012	1.94	1.405	0.72423
12/31/2004	1.525	1.1	0.72131	12/31/2010	2.98	1.56	0.52349	12/31/2004	2.06	1.415	0.68689	12/31/2013	1.66	1.425	0.85843
12/30/2005	1.355	1.12	0.82657	12/30/2011	5.51	1.92	0.34846	12/30/2005	2.13	1.475	0.69249	12/31/2014	2.02	1.46	0.72277
12/29/2006	1.465	1.14	0.77816	12/31/2012	3.48	2.4	0.68966	12/29/2006	2.1	1.535	0.73095	12/31/2015	2.39	1.54	0.64435
12/31/2007	2.62	0.585	0.22328	12/31/2013	4.01	2.52	0.62843	12/31/2007	2.28	1.595	0.69956	12/30/2016	2.55	1.62	0.63529
12/31/2008	2.34	1.29	0.55128	12/31/2014	4.63	2.64	0.57019	12/31/2008	2.25	1.6625	0.73889	12/29/2017	2.6	1.71	0.65769
12/31/2009	3.14	1.33	0.42357	12/31/2015	5.37	2.8	0.52142	12/31/2009	2.06	1.7325	0.84102				
12/31/2010	3.08	1.37	0.44481	12/30/2016	5.46	3.02	0.55311	12/31/2010	2.36	1.8025	0.76377				
12/30/2011	2.96	1.37	0.46284	12/29/2017	1.01	3.29	3.25743	12/30/2011	2.55	1.8725	0.73431				
12/31/2012	2.51	1.42	0.56574	12/31/2018	3.42	3.58	1.04678	12/31/2012	2.67	1.9425	0.72753				
12/31/2013	2.45	1.44	0.58776					12/31/2013	1.87	2.0125	1.0762				
12/31/2014	2.99	1.48	0.49498					12/31/2014	2.18	2.0825	0.95528				
12/31/2015	3.3	1.56	0.47273					12/31/2015	2.6	2.1525	0.82788				
12/30/2016	1.75	1.64	0.93714					12/30/2016	2.55	2.2225	0.87157				
12/29/2017	3.1	1.72	0.55484					12/29/2017	0.84	2.3	2.7381				
12/31/2018	2.83	1.8	0.63604					12/31/2018	2.17	2.4	1.10599				
	Median	0.63604			Median	0.50343			Median	0.73889			Median	0.72277	

WEC US Equity				XEL US Equity				ATO US Equity				CPK US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	0.9233	0.5783	0.62634	12/31/1990	1.415	1.1475	0.81095	12/31/1990	0.98	0.7733	0.78908	12/31/1990	0.6067	0.5678	0.93588
12/31/1991	0.9367	0.6117	0.65304	12/31/1991	1.645	1.1975	0.72796	12/31/1991	0.8	0.8	1	12/31/1991	0.4933	0.5733	1.16217
12/31/1992	0.835	0.6425	0.76946	12/31/1992	1.52	1.2475	0.82072	12/31/1992	0.9733	0.8267	0.84938	12/31/1992	0.6733	0.5733	0.85148
12/31/1993	0.9	0.6706	0.74511	12/31/1993	1.51	1.2825	0.84934	12/31/1993	1.22	0.8533	0.69943	12/31/1993	0.7333	0.5733	0.78181
12/30/1994	0.835	0.6981	0.83605	12/30/1994	1.73	1.3125	0.75867	12/30/1994	0.97	0.88	0.90722	12/30/1994	0.8	0.5867	0.73338
12/29/1995	1.065	0.7275	0.6831	12/29/1995	1.955	1.3425	0.6867	12/29/1995	1.22	0.92	0.7541	12/29/1995	1.26	0.6	0.47619
12/31/1996	0.985	0.7538	0.76528	12/31/1996	1.91	1.3725	0.71859	12/31/1996	1.42	0.96	0.67606	12/31/1996	1.1133	0.62	0.5569
12/31/1997	0.27	0.3838	1.42148	12/31/1997	1.605	1.4025	0.87383	12/31/1997	0.81	1.005	1.24074	12/31/1997	0.78	0.6467	0.8291
12/31/1998	0.825	0.7775	0.94242	12/31/1998	1.84	1.425	0.77446	12/31/1998	1.84	1.06	0.57609	12/31/1998	0.6933	0.6667	0.96163
12/31/1999	0.895	0.78	0.87151	12/31/1999	1.7	1.445	0.85	12/31/1999	0.58	1.1	1.89655	12/31/1999	1.0467	0.6867	0.65606
12/29/2000	0.635	0.685	1.07874	12/29/2000	1.54	1.482	0.96234	12/29/2000	1.14	1.14	1	12/29/2000	0.9333	0.7133	0.76428
12/31/2001	0.93	0.4	0.43011	12/31/2001	2.3	1.5	0.65217	12/31/2001	1.47	1.16	0.78912	12/31/2001	0.8267	0.73	0.88303
12/31/2002	0.72	0.4	0.55556	12/31/2002	-5.82	1.125	-0.1933	12/31/2002	1.45	1.18	0.81379	12/31/2002	0.4533	0.7333	1.61769
12/31/2003	1.03	0.4	0.38835	12/31/2003	1.5	0.75	0.5	12/31/2003	1.54	1.2	0.77922	12/31/2003	1.0867	0.7333	0.6748
12/31/2004	1.285	0.415	0.32296	12/31/2004	0.87	0.81	0.93103	12/31/2004	1.58	1.22	0.77215	12/31/2004	1.08	0.7467	0.69139
12/30/2005	1.305	0.44	0.33716	12/30/2005	1.23	0.8525	0.69309	12/30/2005	1.72	1.24	0.72093	12/30/2005	1.18	0.76	0.64407
12/29/2006	1.335	0.46	0.34457	12/29/2006	1.36	0.8825	0.6489	12/29/2006	1.82	1.26	0.69231	12/29/2006	1.1467	0.7733	0.67437
12/31/2007	1.415	0.5	0.35336	12/31/2007	1.35	0.91	0.67407	12/31/2007	1.92	1.28	0.66667	12/31/2007	1.2933	0.7867	0.60829
12/31/2008	1.52	0.54	0.35526	12/31/2008	1.46	0.94	0.64384	12/31/2008	2	1.3	0.65	12/31/2008	1.32	0.8067	0.61114
12/31/2009	1.62	0.675	0.41667	12/31/2009	1.48	0.97	0.65541	12/31/2009	2.08	1.32	0.63462	12/31/2009	1.4333	0.8333	0.58139
12/31/2010	1.93	0.8	0.41451	12/31/2010	1.62	1	0.61728	12/31/2010	2.2	1.34	0.60909	12/31/2010	1.82	0.87	0.47802
12/30/2011	2.24	1.04	0.46429	12/30/2011	1.72	1.03	0.59884	12/30/2011	2.27	1.36	0.59912	12/30/2011	1.9133	0.91	0.47562
12/31/2012	2.35	1.2	0.51064	12/31/2012	1.85	1.07	0.57838	12/31/2012	2.37	1.38	0.58228	12/31/2012	1.9933	0.96	0.48161
12/31/2013	2.51	1.445	0.5757	12/31/2013	1.91	1.11	0.58115	12/31/2013	2.64	1.4	0.5303	12/31/2013	2.26	1.0133	0.44836
12/31/2014	2.59	1.56	0.60232	12/31/2014	2.03	1.2	0.59113	12/31/2014	2.96	1.48	0.5	12/31/2014	2.47	1.067	0.43198
12/31/2015	2.34	1.74	0.74359	12/31/2015	1.94	1.28	0.65979	12/31/2015	3.09	1.56	0.50485	12/31/2015	2.72	1.1325	0.41636
12/30/2016	2.96	1.98	0.66892	12/30/2016	2.21	1.36	0.61538	12/30/2016	3.38	1.68	0.49704	12/30/2016	2.86	1.2025	0.42045
12/29/2017	3.79	2.08	0.54881	12/29/2017	2.25	1.44	0.64	12/29/2017	3.73	1.8	0.48257	12/29/2017	3.55	1.28	0.36056
12/31/2018	3.34	2.21	0.66168	12/31/2018	2.47	1.52	0.61538	12/31/2018	5.43	1.94	0.35727	12/31/2018	3.45	1.435	0.41594
	Median	0.60232		Median	0.65979			Median	0.69231			Median	0.64407		

NJR US Equity				NI US Equity				NWN US Equity				OGS US Equity			
Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %	Date	TRAIL_12	EQY_DPS	Payout %
12/31/1990	0.2156	0.32	1.48423	12/31/1990	0.5905	0.52	0.88061	12/31/1990	1.5867	1.1	0.69326	12/31/2013	#N/A	N/A	0
12/31/1991	0.1844	0.3333	1.80748	12/31/1991	0.97	0.58	0.59794	12/31/1991	0.6733	1.1267	1.6734	12/31/2014	2.07	0.84	0.4058
12/31/1992	0.3644	0.3378	0.927	12/31/1992	1	0.62	0.62	12/31/1992	0.74	1.1467	1.54959	12/31/2015	2.24	1.2	0.53571
12/31/1993	0.3822	0.3378	0.88383	12/31/1993	1.18	0.66	0.55932	12/31/1993	1.74	1.1667	0.67052	12/30/2016	2.65	1.4	0.5283
12/30/1994	0.4289	0.3378	0.7876	12/30/1994	1.24	0.72	0.58065	12/30/1994	1.6267	1.1733	0.72128	12/29/2017	3.08	1.68	0.54545
12/29/1995	0.3133	0.3378	1.0782	12/29/1995	1.36	0.78	0.57353	12/29/1995	1.6133	1.18	0.73142	12/31/2018	3.25	1.84	0.56615
12/31/1996	0.4578	0.3444	0.75229	12/31/1996	1.44	0.84	0.58333	12/31/1996	1.94	1.2	0.61856				
12/31/1997	0.4911	0.3556	0.72409	12/31/1997	1.53	0.9	0.58824	12/31/1997	1.76	1.205	0.68466				
12/31/1998	0.5178	0.3644	0.70375	12/31/1998	1.59	0.96	0.60377	12/31/1998	1.02	1.22	1.19608				
12/31/1999	0.5533	0.3733	0.67468	12/31/1999	1.27	1.035	0.81496	12/31/1999	1.7	1.225	0.72059				
12/29/2000	0.6089	0.3822	0.62769	12/29/2000	1.11	#N/A	N/A	12/29/2000	1.88	1.24	0.65957				
12/31/2001	0.6511	0.3911	0.60068	12/31/2001	1.03	1.16	1.12621	12/31/2001	1.88	1.245	0.66223				
12/31/2002	0.6967	0.4	0.57414	12/31/2002	1.75	1.16	0.66286	12/31/2002	1.62	1.26	0.77778				
12/31/2003	0.7933	0.4133	0.52099	12/31/2003	0.33	1.1	3.33333	12/31/2003	1.76	1.27	0.72159				
12/31/2004	0.85	0.4333	0.50976	12/31/2004	1.64	0.92	0.56098	12/31/2004	1.86	1.299	0.69839				
12/30/2005	0.9033	0.4533	0.50183	12/30/2005	1.12	0.92	0.82143	12/30/2005	2.11	1.32	0.62559				
12/29/2006	2.6333	0.48	0.18228	12/29/2006	1.03	0.92	0.8932	12/29/2006	2.29	1.39	0.60699				
12/31/2007	0.7767	0.5067	0.65238	12/31/2007	1.17	0.92	0.78632	12/31/2007	2.76	1.44	0.52174				
12/31/2008	1.295	0.555	0.42857	12/31/2008	0.29	0.92	3.17241	12/31/2008	2.61	1.52	0.58238				
12/31/2009	0.32	0.62	1.9375	12/31/2009	0.79	0.92	1.16456	12/31/2009	2.83	1.6	0.56537				
12/31/2010	1.41	0.68	0.48227	12/31/2010	1.01	0.92	0.91089	12/31/2010	2.73	1.68	0.61538				
12/30/2011	1.22	0.72	0.59016	12/30/2011	1.03	0.92	0.8932	12/30/2011	2.39	1.75	0.73222				
12/31/2012	1.115	0.76	0.68161	12/31/2012	1.39	0.94	0.67626	12/31/2012	2.18	1.79	0.8211				
12/31/2013	1.375	0.81	0.58909	12/31/2013	1.7	0.98	0.57647	12/31/2013	2.24	1.83	0.81696				
12/31/2014	1.67	0.855	0.51198	12/31/2014	1.67	1.02	0.61078	12/31/2014	2.16	1.85	0.85648				
12/31/2015	2.1	0.915	0.43571	12/31/2015	0.8959	0.83	0.92644	12/31/2015	1.96	1.86	0.94898				
12/30/2016	1.52	0.975	0.64145	12/30/2016	1.02	0.64	0.62745	12/30/2016	2.12	1.87	0.88208				
12/29/2017	1.52	1.0375	0.68257	12/29/2017	0.39	0.7	1.79487	12/29/2017	-1.94	1.88	-0.96907				
12/31/2018	2.64	1.11	0.42045	12/31/2018	-0.18	0.78	-4.33333	12/31/2018	2.24	1.8925	0.84487				
	Median	0.64145		Median	0.66956			Median	0.72059			Median	0.53571		

SJI US Equity			SWX US Equity			SR US Equity			UGI US Equity						
Date	TRAIL_12	EQY_DPS Payout %	Date	TRAIL_12	EQY_DPS Payout %	Date	TRAIL_12	EQY_DPS Payout %	Date	TRAIL_12	EQY_DPS Payout %				
12/31/1990	0.3333	0.3505	1.051605161	12/31/1992	0.81	0.7	0.8642	12/31/1990	1.185	1.18	0.99578	12/31/1992	0.2444	0.2822	1.15466
12/31/1991	0.3186	0.3529	1.107658506	12/31/1993	0.71	0.74	1.04225	12/31/1991	1.28	1.2	0.9375	12/31/1993	0.2089	0.2933	1.40402
12/31/1992	0.3946	0.3529	0.894323365	12/30/1994	1.22	0.8	0.65574	12/31/1992	1.165	1.2	1.03004	12/30/1994	0.3111	0.3022	0.97139
12/31/1993	0.3975	0.3582	0.901132075	12/29/1995	-0.66	0.82	-1.24242	12/31/1993	1.61	1.215	0.75466	12/29/1995	-0.0578	0.2322	-4.0173
12/30/1994	0.3025	0.36	1.190082645	12/31/1996	0.25	0.82	3.28	12/30/1994	1.42	1.22	0.85915	12/31/1996	0.2644	0.3133	1.18495
12/29/1995	0.4125	0.36	0.872727273	12/31/1998	1.65	0.82	0.49697	12/29/1995	1.27	1.24	0.97638	12/31/1997	0.3489	0.3178	0.91086
12/31/1996	0.7105	0.36	0.506685433	12/31/1999	1.27	0.82	0.64567	12/31/1996	1.87	1.26	0.6738	12/31/1998	0.2711	0.3222	1.18849
12/31/1997	0.367	0.36	0.980926431	12/29/2000	1.21	0.82	0.67769	12/31/1997	1.84	1.3	0.70652	12/31/1999	0.3867	0.3267	0.84484
12/31/1998	0.255	0.36	1.411764706	12/31/2001	1.15	0.82	0.71304	12/31/1998	1.58	1.32	0.83544	12/29/2000	0.3644	0.3389	0.93002
12/31/1999	0.4975	0.36	0.72361809	12/31/2002	1.32	0.82	0.62121	12/31/1999	1.43	1.34	0.93706	12/31/2001	0.4578	0.35	0.76453
12/29/2000	0.53	0.365	0.688679245	12/31/2003	1.13	0.82	0.72566	12/29/2000	1.37	1.34	0.9781	12/31/2004	0.7667	0.39	0.50867
12/31/2001	0.565	0.37	0.654867257	12/31/2004	1.6	0.82	0.5125	12/31/2001	1.61	1.34	0.8323	12/30/2005	1.18	0.4333	0.3672
12/31/2002	0.5975	0.375	0.627615063	12/30/2005	1.14	0.82	0.7193	12/31/2002	1.18	1.34	1.13559	12/29/2006	1.1	0.46	0.41818
12/31/2003	0.66	0.39	0.590909091	12/29/2006	2.05	0.82	0.4	12/31/2003	1.82	1.34	0.73626	12/31/2007	1.26	0.482	0.38254
12/31/2004	0.765	0.41	0.535947712	12/31/2007	1.95	0.86	0.44103	12/31/2004	1.82	1.355	0.74451	12/31/2008	1.3267	0.5033	0.37936
12/30/2005	0.69	0.43	0.623188406	12/31/2008	1.39	0.9	0.64748	12/30/2005	1.9	1.375	0.72368	12/31/2009	1.5733	0.5233	0.33261
12/29/2006	1.22	0.46	0.37704918	12/31/2009	1.94	0.95	0.48969	12/29/2006	2.3	1.41	0.61304	12/31/2010	1.5733	0.6	0.38136
12/31/2007	1.05	0.505	0.480952381	12/31/2010	2.27	1	0.44053	12/31/2007	2.31	1.46	0.63203	12/30/2011	1.3733	0.68	0.49516
12/31/2008	1.29	0.555	0.430232558	12/30/2011	2.43	1.06	0.43621	12/31/2008	3.58	1.5	0.41899	12/31/2012	1.2333	0.7067	0.57302
12/31/2009	0.97	0.61	0.628865979	12/31/2012	2.86	1.18	0.41259	12/31/2009	2.92	1.54	0.5274	12/31/2013	1.6067	0.7367	0.45852
12/31/2010	1.11	0.68	0.612612613	12/31/2013	3.11	1.32	0.42444	12/31/2010	2.43	1.58	0.65021	12/31/2014	1.92	0.791	0.41198
12/30/2011	1.485	0.75	0.505050505	12/31/2014	3.01	1.46	0.48505	12/30/2011	2.86	1.62	0.56643	12/31/2015	1.6	0.89	0.55625
12/31/2012	1.485	0.825	0.555555556	12/31/2015	2.92	1.62	0.55479	12/31/2012	2.79	1.66	0.59498	12/30/2016	2.08	0.93	0.44712
12/31/2013	1.275	0.9	0.705882353	12/30/2016	3.18	1.8	0.56604	12/31/2013	2.02	1.7	0.84158	12/29/2017	2.46	0.975	0.39634
12/31/2014	1.46	0.96	0.657534247	12/29/2017	4.04	2.475	0.61262	12/31/2014	2.35	1.76	0.74894	12/31/2018	4.06	1.02	0.25123
12/31/2015	1.52	1.02	0.671052632	12/31/2018	3.68	2.08	0.56522	12/31/2015	3.16	1.84	0.58228				
12/30/2016	1.56	1.07	0.685897436					12/30/2016	3.24	1.96	0.60494				
12/29/2017	-0.04	1.1	-27.5					12/29/2017	3.43	2.1	0.61224				
12/31/2018	0.21	1.13	5.380952381					12/31/2018	4.33	2.25	0.51963				
	Median		0.657534247		Median		0.56563		Median		0.73626		Median		0.49516

## Long-Term GDP Growth Rate

		30-Day Average of 10-Year Treasury Yield	30-Day Average of 30-Year Treasury Yield	Implied 20-Year Forward Rate in 10 Years
TIPS	[1]	0.07%	0.46%	0.66%
Nominal Treasury	[1]	1.80%	2.25%	2.48%
Implied Forward				1.82%
Real GDP	[2]			3.21%
Implied Expected Nominal GDP				5.09%

## Sources:

[1] Bureau of Economic Analysis

[2] Board of Governors of the Federal Reserve System

Data as of January 30, 2020

Mr. Murray Multi-Stage DCF Model - 5.09 percent Terminal Growth Rate

Company Name	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ALLETE, Inc.	\$3.78	\$4.14	\$4.26	\$4.34	\$4.65	\$4.96	\$5.27	\$5.58	\$5.89	\$6.19	\$6.50	\$6.83
Alliant Energy Corporation	\$2.41	\$2.55	\$2.71	\$2.86	\$3.02	\$3.18	\$3.35	\$3.52	\$3.71	\$3.89	\$4.09	\$4.30
Ameren Corporation	\$3.46	\$3.81	\$4.00	\$4.24	\$4.49	\$4.75	\$5.01	\$5.29	\$5.56	\$5.85	\$6.14	\$6.46
American Electric Power Company, Inc.	\$4.40	\$4.68	\$5.02	\$5.45	\$5.75	\$6.07	\$6.40	\$6.73	\$7.08	\$7.45	\$7.82	\$8.22
Avangrid, Inc.	\$2.45	\$2.66	\$2.90	\$3.09	\$3.29	\$3.50	\$3.71	\$3.92	\$4.13	\$4.34	\$4.56	\$4.80
Avista Corporation	\$2.00	\$2.15	\$2.43	\$2.52	\$2.62	\$2.73	\$2.85	\$2.98	\$3.13	\$3.29	\$3.45	\$3.63
Black Hills Corporation	\$3.68	\$3.92	\$4.13	\$4.20	\$4.41	\$4.63	\$4.86	\$5.10	\$5.36	\$5.63	\$5.92	\$6.22
CenterPoint Energy, Inc.	\$1.63	\$1.71	\$1.80	\$1.78	\$1.88	\$1.99	\$2.10	\$2.21	\$2.33	\$2.45	\$2.57	\$2.70
CMS Energy Corporation	\$2.67	\$2.88	\$3.08	\$3.31	\$3.54	\$3.77	\$4.01	\$4.24	\$4.47	\$4.70	\$4.94	\$5.19
Consolidated Edison, Inc.	\$4.62	\$4.74	\$4.92	\$5.19	\$5.35	\$5.53	\$5.74	\$5.98	\$6.26	\$6.58	\$6.92	\$7.27
Dominion Energy, Inc.	\$4.38	\$4.63	\$4.87	\$5.15	\$5.37	\$5.61	\$5.87	\$6.15	\$6.45	\$6.78	\$7.12	\$7.48
DTE Energy Company	\$6.61	\$7.11	\$7.61	\$8.20	\$8.71	\$9.23	\$9.76	\$10.30	\$10.85	\$11.40	\$11.98	\$12.59
Duke Energy Corporation	\$5.15	\$5.38	\$5.71	\$5.99	\$6.24	\$6.51	\$6.81	\$7.13	\$7.48	\$7.86	\$8.26	\$8.68
Edison International	\$4.65	\$4.72	\$4.78	\$5.06	\$5.35	\$5.65	\$5.96	\$6.28	\$6.60	\$6.94	\$7.29	\$7.66
El Paso Electric Company	\$2.84	\$3.02	\$3.21	\$3.41	\$3.62	\$3.84	\$4.06	\$4.28	\$4.51	\$4.74	\$4.98	\$5.24
Entergy Corporation	\$5.60	\$5.96	\$6.34	\$6.70	\$6.78	\$6.92	\$7.11	\$7.36	\$7.68	\$8.07	\$8.48	\$8.92
Eversource Energy	\$3.13	\$3.28	\$3.45	\$3.62	\$3.93	\$4.23	\$4.53	\$4.83	\$5.11	\$5.37	\$5.64	\$5.93
Exelon Corporation	\$3.07	\$3.04	\$3.12	\$3.28	\$3.59	\$3.90	\$4.07	\$4.25	\$4.45	\$4.68	\$4.92	\$5.17
FirstEnergy Corp.	\$2.49	\$2.64	\$2.79	\$2.96	\$3.14	\$3.33	\$3.52	\$3.72	\$3.92	\$4.11	\$4.32	\$4.54
Hawaiian Electric Industries, Inc.	\$2.01	\$2.16	\$2.25	\$2.35	\$2.45	\$2.56	\$2.67	\$2.80	\$2.94	\$3.09	\$3.24	\$3.41
IDACORP, Inc.	\$4.62	\$4.86	\$5.02	\$5.19	\$5.36	\$5.56	\$5.78	\$6.04	\$6.32	\$6.65	\$6.98	\$7.34
MDU Resources Group Inc.	\$1.65	\$1.82	\$1.96	\$2.11	\$2.28	\$2.44	\$2.60	\$2.76	\$2.92	\$3.07	\$3.22	\$3.39
NextEra Energy, Inc.	\$9.06	\$9.85	\$10.66	\$11.50	\$12.40	\$13.31	\$14.21	\$15.09	\$15.94	\$16.75	\$17.60	\$18.50
NiSource Inc.	\$1.38	\$1.46	\$1.55	\$1.61	\$1.72	\$1.80	\$1.88	\$1.98	\$2.07	\$2.18	\$2.29	\$2.41
NorthWestern Corporation	\$3.56	\$3.72	\$3.92	\$4.05	\$4.20	\$4.36	\$4.55	\$4.75	\$4.98	\$5.23	\$5.50	\$5.78
OGE Energy Corp.	\$2.28	\$2.40	\$2.49	\$2.52	\$2.65	\$2.79	\$2.93	\$3.08	\$3.24	\$3.40	\$3.58	\$3.76
Otter Tail Corporation	\$2.41	\$2.52	\$2.70	\$2.88	\$3.08	\$3.29	\$3.49	\$3.70	\$3.90	\$4.10	\$4.30	\$4.52
PG&E Corporation	\$4.19	\$3.41	\$4.45	\$4.72	\$5.00	\$5.29	\$5.59	\$5.89	\$6.20	\$6.52	\$6.85	\$7.20
Pinnacle West Capital Corporation	\$4.86	\$5.16	\$5.45	\$5.74	\$6.04	\$6.35	\$6.68	\$7.02	\$7.38	\$7.76	\$8.15	\$8.57
PNM Resources, Inc.	\$2.21	\$2.39	\$2.54	\$2.70	\$2.87	\$3.03	\$3.20	\$3.37	\$3.54	\$3.72	\$3.91	\$4.11
Portland General Electric Company	\$2.56	\$2.73	\$2.83	\$2.90	\$3.03	\$3.17	\$3.32	\$3.49	\$3.66	\$3.85	\$4.04	\$4.25
PPL Corporation	\$2.54	\$2.52	\$2.66	\$2.74	\$2.82	\$2.92	\$3.03	\$3.16	\$3.31	\$3.48	\$3.65	\$3.84
Public Service Enterprise Group Incorporated	\$3.42	\$3.49	\$3.66	\$3.85	\$4.05	\$4.26	\$4.48	\$4.72	\$4.96	\$5.21	\$5.47	\$5.75
Sempra Energy	\$7.12	\$7.89	\$8.46	\$9.60	\$10.39	\$11.17	\$11.95	\$12.71	\$13.43	\$14.12	\$14.84	\$15.59
Southern Company	\$3.17	\$3.28	\$3.51	\$3.85	\$4.02	\$4.21	\$4.41	\$4.62	\$4.85	\$5.10	\$5.36	\$5.63
Unitil Corporation	\$2.42	\$2.58	\$2.67	\$2.82	\$2.94	\$3.07	\$3.21	\$3.37	\$3.53	\$3.71	\$3.90	\$4.10
WEC Energy Group, Inc.	\$3.74	\$4.00	\$4.26	\$4.40	\$4.67	\$4.94	\$5.22	\$5.51	\$5.80	\$6.09	\$6.40	\$6.73
Xcel Energy Inc.	\$2.78	\$2.97	\$3.12	\$3.32	\$3.51	\$3.70	\$3.90	\$4.11	\$4.33	\$4.55	\$4.78	\$5.02

Source: Schedules DM-6 through DM-D-9.xls, "WP-Multi-stage"

Mr. Murray Multi-Stage DCF Model - 5.09 percent Terminal Growth Rate

Dividend Payout Ratios												
Company	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ALLETE, Inc.	65.34%	62.56%	63.49%	64.42%	65.35%	66.28%	67.21%	68.14%	69.07%	70.00%	70.00%	70.00%
Alliant Energy Corporation	63.07%	63.14%	63.47%	64.40%	65.33%	66.27%	67.20%	68.13%	69.07%	70.00%	70.00%	70.00%
Ameren Corporation	58.38%	55.64%	55.75%	57.79%	59.82%	61.86%	63.89%	65.93%	67.96%	70.00%	70.00%	70.00%
American Electric Power Company, Inc.	64.55%	63.89%	62.75%	61.47%	61.74%	63.39%	65.04%	66.70%	68.35%	70.00%	70.00%	70.00%
Avangrid, Inc.	75.51%	71.43%	65.86%	66.45%	67.04%	67.64%	68.23%	68.82%	69.41%	70.00%	70.00%	70.00%
Avista Corporation	80.50%	78.60%	77.53%	76.45%	75.38%	74.30%	73.23%	72.15%	71.08%	70.00%	70.00%	70.00%
Black Hills Corporation	58.97%	59.18%	60.54%	61.89%	63.24%	64.59%	65.94%	67.30%	68.65%	70.00%	70.00%	70.00%
CenterPoint Energy, Inc.	76.07%	71.93%	67.78%	68.54%	68.78%	69.03%	69.27%	69.51%	69.76%	70.00%	70.00%	70.00%
CMS Energy Corporation	61.42%	60.76%	60.71%	61.03%	62.52%	64.02%	65.51%	67.01%	68.50%	70.00%	70.00%	70.00%
Consolidated Edison, Inc.	67.70%	66.88%	66.46%	64.74%	65.62%	66.49%	67.37%	68.25%	69.12%	70.00%	70.00%	70.00%
Dominion Energy, Inc.	86.30%	84.23%	81.11%	78.64%	77.20%	75.76%	74.32%	72.88%	71.44%	70.00%	70.00%	70.00%
DTE Energy Company	61.88%	61.46%	60.05%	57.93%	59.94%	61.95%	63.96%	65.98%	67.99%	70.00%	70.00%	70.00%
Duke Energy Corporation	75.92%	75.46%	71.10%	72.12%	71.77%	71.41%	71.06%	70.71%	70.35%	70.00%	70.00%	70.00%
Edison International	55.82%	55.93%	54.60%	56.80%	59.00%	61.20%	63.40%	65.60%	67.80%	70.00%	70.00%	70.00%
El Paso Electric Company	55.63%	57.00%	58.63%	60.25%	61.88%	63.50%	65.13%	66.75%	68.38%	70.00%	70.00%	70.00%
Energy Corporation	66.96%	65.10%	65.77%	66.38%	66.98%	67.58%	68.19%	68.79%	69.40%	70.00%	70.00%	70.00%
Energy, Inc.	65.50%	67.07%	67.83%	67.13%	67.61%	68.08%	68.56%	69.04%	69.52%	70.00%	70.00%	70.00%
Eversource Energy	61.92%	62.18%	62.14%	62.05%	58.97%	61.18%	63.38%	65.59%	67.79%	70.00%	70.00%	70.00%
Exelon Corporation	49.51%	52.63%	53.85%	56.15%	58.46%	60.77%	63.08%	65.38%	67.69%	70.00%	70.00%	70.00%
FirstEnergy Corp.	63.45%	62.12%	61.65%	62.84%	64.03%	65.23%	66.42%	67.61%	68.81%	70.00%	70.00%	70.00%
Hawaiian Electric Industries, Inc.	65.67%	62.96%	63.84%	64.72%	65.60%	66.48%	67.36%	68.24%	69.12%	70.00%	70.00%	70.00%
IDACORP, Inc.	57.58%	59.47%	60.78%	62.10%	63.42%	64.73%	66.05%	67.37%	68.68%	70.00%	70.00%	70.00%
MDU Resources Group Inc.	50.91%	46.70%	49.62%	52.53%	55.44%	58.35%	61.26%	64.18%	67.09%	70.00%	70.00%	70.00%
NextEra Energy, Inc.	61.92%	63.25%	65.95%	66.53%	67.11%	67.68%	68.26%	68.84%	69.42%	70.00%	70.00%	70.00%
NiSource Inc.	61.59%	60.96%	61.29%	63.98%	63.37%	64.70%	66.02%	67.35%	68.67%	70.00%	70.00%	70.00%
NorthWestern Corporation	67.42%	66.94%	67.32%	67.70%	68.08%	68.47%	68.85%	69.23%	69.62%	70.00%	70.00%	70.00%
OGE Energy Corp.	69.74%	70.00%	71.08%	70.93%	70.77%	70.62%	70.46%	70.31%	70.15%	70.00%	70.00%	70.00%
Otter Tail Corporation	61.00%	61.11%	62.22%	63.33%	64.44%	65.56%	66.67%	67.78%	68.89%	70.00%	70.00%	70.00%
PG&E Corporation	0.00%	0.00%	44.94%	48.52%	52.10%	55.68%	59.26%	62.84%	66.42%	70.00%	70.00%	70.00%
Pinnacle West Capital Corporation	65.23%	65.50%	65.50%	66.15%	66.79%	67.43%	68.07%	68.72%	69.36%	70.00%	70.00%	70.00%
PNM Resources, Inc.	55.66%	54.39%	56.34%	58.29%	60.25%	62.20%	64.15%	66.10%	68.05%	70.00%	70.00%	70.00%
Portland General Electric Company	63.28%	63.00%	64.66%	65.43%	66.19%	66.95%	67.71%	68.48%	69.24%	70.00%	70.00%	70.00%
PPL Corporation	66.54%	68.65%	68.82%	68.99%	69.16%	69.33%	69.49%	69.66%	69.83%	70.00%	70.00%	70.00%
Public Service Enterprise Group Incorporated	57.60%	59.31%	59.02%	59.46%	61.22%	62.97%	64.73%	66.49%	68.24%	70.00%	70.00%	70.00%
Sempra Energy	59.13%	57.29%	57.57%	59.34%	61.12%	62.89%	64.67%	66.45%	68.22%	70.00%	70.00%	70.00%
Southern Company	80.13%	80.18%	76.92%	75.93%	74.95%	73.96%	72.97%	71.98%	70.99%	70.00%	70.00%	70.00%
Unitil Corporation	61.98%	58.91%	57.68%	56.74%	58.95%	61.16%	63.37%	65.58%	67.79%	70.00%	70.00%	70.00%
WEC Energy Group, Inc.	66.84%	66.50%	67.61%	67.95%	68.29%	68.63%	68.97%	69.32%	69.66%	70.00%	70.00%	70.00%
Xcel Energy Inc.	61.51%	61.62%	61.86%	60.84%	62.37%	63.90%	65.42%	66.95%	68.47%	70.00%	70.00%	70.00%

Source: Schedules DM-6 through DM-D-9.xls, "WP-Multi-stage"



Mr. Murray Multi-Stage DCF Model - 5.09 percent Terminal Growth Rate

Estimated Dividends to Shareholders for Infinite Period

Company	Cost of Equity	Year										
		2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
ALLETE, Inc.	8.36%	-82.82	\$2.47	\$2.59	\$2.70	\$2.80	\$3.04	\$3.29	\$3.54	\$3.80	\$4.07	\$4.33
Alliant Energy Corporation	8.31%	-53.14	\$1.52	\$1.61	\$1.72	\$1.84	\$1.97	\$2.11	\$2.25	\$2.40	\$2.56	\$2.73
Ameren Corporation	8.40%	-76.03	\$2.02	\$2.12	\$2.23	\$2.45	\$2.69	\$2.94	\$3.20	\$3.48	\$3.78	\$4.09
American Electric Power Company, Inc.	8.59%	-92.40	\$2.84	\$2.99	\$3.15	\$3.35	\$3.55	\$3.85	\$4.16	\$4.49	\$4.84	\$5.21
Avangrid, Inc.	8.93%	-49.81	\$1.85	\$1.90	\$1.91	\$2.05	\$2.21	\$2.37	\$2.53	\$2.70	\$2.87	\$3.04
Avista Corporation	8.24%	-47.64	\$1.61	\$1.69	\$1.88	\$1.93	\$1.98	\$2.03	\$2.09	\$2.15	\$2.22	\$2.30
Black Hills Corporation	8.29%	-77.06	\$2.17	\$2.32	\$2.50	\$2.60	\$2.79	\$2.99	\$3.20	\$3.43	\$3.68	\$3.94
CenterPoint Energy, Inc.	9.13%	-27.24	\$1.24	\$1.23	\$1.22	\$1.22	\$1.30	\$1.37	\$1.45	\$1.54	\$1.62	\$1.71
CMS Energy Corporation	8.35%	-62.36	\$1.64	\$1.75	\$1.87	\$2.02	\$2.21	\$2.41	\$2.62	\$2.84	\$3.06	\$3.29
Consolidated Edison, Inc.	8.37%	-89.66	\$3.06	\$3.17	\$3.27	\$3.36	\$3.51	\$3.68	\$3.87	\$4.08	\$4.33	\$4.61
Dominion Energy, Inc.	8.94%	-81.70	\$3.78	\$3.90	\$3.95	\$4.05	\$4.15	\$4.25	\$4.36	\$4.48	\$4.61	\$4.74
DTE Energy Company	8.95%	-126.83	\$4.09	\$4.37	\$4.57	\$4.75	\$5.22	\$5.72	\$6.24	\$6.80	\$7.37	\$7.98
Duke Energy Corporation	8.98%	-91.74	\$3.91	\$4.06	\$4.06	\$4.32	\$4.48	\$4.65	\$4.84	\$5.04	\$5.26	\$5.50
Edison International	9.28%	-70.82	\$2.54	\$2.64	\$2.61	\$2.87	\$3.15	\$3.46	\$3.78	\$4.12	\$4.48	\$4.86
El Paso Electric Company	8.13%	-67.37	\$1.58	\$1.72	\$1.88	\$2.05	\$2.24	\$2.44	\$2.64	\$2.86	\$3.09	\$3.32
Energy Corporation	8.17%	-117.81	\$3.75	\$3.88	\$4.17	\$4.45	\$4.54	\$4.68	\$4.85	\$5.07	\$5.33	\$5.65
Evergy, Inc.	8.76%	-63.81	\$2.05	\$2.20	\$2.34	\$2.43	\$2.65	\$2.88	\$3.11	\$3.33	\$3.55	\$3.76
Eversource Energy	8.38%	-83.19	\$2.26	\$2.40	\$2.56	\$2.73	\$2.86	\$3.14	\$3.44	\$3.76	\$4.09	\$4.44
Exelon Corporation	9.44%	-45.44	\$1.52	\$1.60	\$1.68	\$1.84	\$2.10	\$2.37	\$2.56	\$2.78	\$3.01	\$3.28
FirstEnergy Corp.	8.84%	-47.79	\$1.58	\$1.64	\$1.72	\$1.86	\$2.01	\$2.17	\$2.34	\$2.51	\$2.69	\$2.88
Hawaiian Electric Industries, Inc.	8.14%	-44.82	\$1.32	\$1.36	\$1.44	\$1.52	\$1.61	\$1.70	\$1.80	\$1.91	\$2.03	\$2.16
IDACORP, Inc.	7.82%	-106.96	\$2.66	\$2.89	\$3.05	\$3.22	\$3.40	\$3.60	\$3.82	\$4.07	\$4.34	\$4.65
MDU Resources Group Inc.	9.50%	-28.70	\$0.84	\$0.85	\$0.97	\$1.11	\$1.26	\$1.42	\$1.60	\$1.77	\$1.96	\$2.15
NextEra Energy, Inc.	8.21%	-233.53	\$5.61	\$6.23	\$7.03	\$7.65	\$8.32	\$9.01	\$9.70	\$10.39	\$11.07	\$11.73
NiSource Inc.	8.56%	-27.45	\$0.85	\$0.89	\$0.95	\$1.03	\$1.09	\$1.16	\$1.24	\$1.33	\$1.42	\$1.53
NorthWestern Corporation	8.34%	-72.11	\$2.40	\$2.49	\$2.64	\$2.74	\$2.86	\$2.99	\$3.13	\$3.29	\$3.47	\$3.66
OGE Energy Corp.	8.63%	-43.23	\$1.59	\$1.68	\$1.77	\$1.79	\$1.88	\$1.97	\$2.06	\$2.17	\$2.27	\$2.38
Otter Tail Corporation	8.51%	-51.93	\$1.47	\$1.54	\$1.68	\$1.83	\$1.99	\$2.16	\$2.33	\$2.50	\$2.69	\$2.87
PG&E Corporation	24.91%	-8.59	\$0.00	\$0.00	\$2.00	\$2.29	\$2.61	\$2.95	\$3.31	\$3.70	\$4.12	\$4.56
Pinnacle West Capital Corporation	8.88%	-90.33	\$3.17	\$3.38	\$3.57	\$3.79	\$4.03	\$4.28	\$4.55	\$4.83	\$5.12	\$5.43
PNM Resources, Inc.	8.28%	-50.23	\$1.23	\$1.30	\$1.43	\$1.57	\$1.73	\$1.89	\$2.05	\$2.23	\$2.41	\$2.61
Portland General Electric Company	8.14%	-55.88	\$1.62	\$1.72	\$1.83	\$1.90	\$2.01	\$2.12	\$2.25	\$2.39	\$2.53	\$2.69
PPL Corporation	9.79%	-33.49	\$1.69	\$1.73	\$1.83	\$1.89	\$1.95	\$2.02	\$2.11	\$2.20	\$2.31	\$2.43
Public Service Enterprise Group Incorporated	8.81%	-60.63	\$1.97	\$2.07	\$2.16	\$2.29	\$2.48	\$2.68	\$2.90	\$3.13	\$3.38	\$3.65
Sempra Energy	9.15%	-146.74	\$4.21	\$4.52	\$4.87	\$5.70	\$6.35	\$7.03	\$7.73	\$8.44	\$9.17	\$9.88
Southern Company	8.84%	-61.97	\$2.54	\$2.63	\$2.70	\$2.92	\$3.02	\$3.11	\$3.22	\$3.33	\$3.44	\$3.57
Unitil Corporation	7.70%	-61.83	\$1.50	\$1.52	\$1.54	\$1.60	\$1.73	\$1.88	\$2.04	\$2.21	\$2.39	\$2.60
WEC Energy Group, Inc.	8.04%	-91.23	\$2.50	\$2.66	\$2.88	\$2.99	\$3.19	\$3.39	\$3.60	\$3.82	\$4.04	\$4.26
Xcel Energy Inc.	8.25%	-62.60	\$1.71	\$1.83	\$1.93	\$2.02	\$2.19	\$2.37	\$2.55	\$2.75	\$2.96	\$3.18

Source: Schedules DM-6 through DM-D-9.xls, "WP-Multi-stage"

Mr. Murray Multi-Stage DCF Model - 5.09 percent Terminal Growth Rate

Estimated Dividends to Shareholders for Infinite Period

Company	Cost of Equity	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028 + Terminal Value	Terminal Value	2029	Cost of Equity	
ALLETE, Inc.	8.39%	-82.82	\$2.47	\$2.59	\$2.70	\$2.80	\$3.04	\$3.29	\$3.54	\$3.80	\$136.46	\$4.07	\$132.39	\$4.33	8.36%
Alliant Energy Corporation	8.33%	-53.14	\$1.52	\$1.61	\$1.72	\$1.84	\$1.97	\$2.11	\$2.25	\$2.40	\$87.33	\$2.56	\$84.77	\$2.73	8.31%
Ameren Corporation	8.42%	-76.03	\$2.02	\$2.12	\$2.23	\$2.45	\$2.69	\$2.94	\$3.20	\$3.48	\$127.52	\$3.78	\$123.74	\$4.09	8.40%
American Electric Power Company, Inc.	8.61%	-92.40	\$2.84	\$2.99	\$3.15	\$3.35	\$3.55	\$3.85	\$4.16	\$4.49	\$153.58	\$4.84	\$148.74	\$5.21	8.59%
Avangrid, Inc.	8.94%	-49.81	\$1.85	\$1.90	\$1.91	\$2.05	\$2.21	\$2.37	\$2.53	\$2.70	\$82.04	\$2.87	\$79.18	\$3.04	8.93%
Avista Corporation	8.26%	-47.64	\$1.61	\$1.69	\$1.88	\$1.93	\$1.98	\$2.03	\$2.09	\$2.15	\$75.39	\$2.22	\$73.17	\$2.30	8.24%
Black Hills Corporation	8.32%	-77.06	\$2.17	\$2.32	\$2.50	\$2.60	\$2.79	\$2.99	\$3.20	\$3.43	\$126.95	\$3.68	\$123.27	\$3.94	8.29%
CenterPoint Energy, Inc.	9.13%	-27.24	\$1.24	\$1.23	\$1.22	\$1.22	\$1.30	\$1.37	\$1.45	\$1.54	\$44.06	\$1.62	\$42.44	\$1.71	9.13%
CMS Energy Corporation	8.37%	-62.36	\$1.64	\$1.75	\$1.87	\$2.02	\$2.21	\$2.41	\$2.62	\$2.84	\$104.05	\$3.06	\$100.98	\$3.29	8.35%
Consolidated Edison, Inc.	8.39%	-89.66	\$3.06	\$3.17	\$3.27	\$3.36	\$3.51	\$3.68	\$3.87	\$4.08	\$144.92	\$4.33	\$140.59	\$4.61	8.37%
Dominion Energy, Inc.	8.95%	-81.70	\$3.78	\$3.90	\$3.95	\$4.05	\$4.15	\$4.25	\$4.36	\$4.48	\$127.84	\$4.61	\$123.23	\$4.74	8.94%
DTE Energy Company	8.96%	-126.83	\$4.09	\$4.37	\$4.57	\$4.75	\$5.22	\$5.72	\$6.24	\$6.80	\$213.96	\$7.37	\$206.58	\$7.98	8.95%
Duke Energy Corporation	8.99%	-91.74	\$3.91	\$4.06	\$4.06	\$4.32	\$4.48	\$4.65	\$4.84	\$5.04	\$146.79	\$5.26	\$141.52	\$5.50	8.98%
Edison International	9.28%	-70.82	\$2.54	\$2.64	\$2.61	\$2.87	\$3.15	\$3.46	\$3.78	\$4.12	\$120.44	\$4.48	\$115.96	\$4.86	9.28%
El Paso Electric Company	8.17%	-67.37	\$1.58	\$1.72	\$1.88	\$2.05	\$2.24	\$2.44	\$2.64	\$2.86	\$112.24	\$3.09	\$109.16	\$3.32	8.13%
Energy Corporation	8.20%	-117.81	\$3.75	\$3.88	\$4.17	\$4.45	\$4.54	\$4.68	\$4.85	\$5.07	\$189.06	\$5.33	\$183.73	\$5.65	8.17%
Energy, Inc.	8.78%	-63.81	\$2.05	\$2.20	\$2.34	\$2.43	\$2.65	\$2.88	\$3.11	\$3.33	\$105.76	\$3.55	\$102.21	\$3.76	8.78%
Eversource Energy	8.40%	-83.19	\$2.26	\$2.40	\$2.56	\$2.73	\$2.86	\$3.14	\$3.44	\$3.76	\$139.08	\$4.09	\$134.99	\$4.44	8.38%
Exelon Corporation	9.45%	-45.44	\$1.52	\$1.60	\$1.68	\$1.84	\$2.10	\$2.37	\$2.66	\$2.98	\$78.24	\$3.01	\$75.23	\$3.28	9.44%
FirstEnergy Corp.	8.85%	-47.79	\$1.58	\$1.64	\$1.72	\$1.86	\$2.01	\$2.17	\$2.34	\$2.51	\$79.57	\$2.69	\$76.88	\$2.88	8.84%
Hawaiian Electric Industries, Inc.	8.17%	-44.82	\$1.32	\$1.36	\$1.44	\$1.52	\$1.61	\$1.70	\$1.80	\$1.91	\$72.98	\$2.03	\$70.95	\$2.16	8.14%
IDACORP, Inc.	7.89%	-106.96	\$2.66	\$2.89	\$3.05	\$3.22	\$3.40	\$3.60	\$3.82	\$4.07	\$174.54	\$4.34	\$170.20	\$4.65	7.82%
MDU Resources Group Inc.	9.50%	-28.70	\$0.84	\$0.85	\$0.97	\$1.11	\$1.26	\$1.42	\$1.60	\$1.77	\$50.67	\$1.96	\$48.71	\$2.15	9.50%
NextEra Energy, Inc.	8.24%	-233.53	\$5.61	\$6.23	\$7.03	\$7.65	\$8.32	\$9.01	\$9.70	\$10.39	\$386.78	\$11.07	\$375.71	\$11.73	8.21%
NiSource Inc.	8.58%	-27.45	\$0.85	\$0.89	\$0.95	\$1.03	\$1.09	\$1.16	\$1.24	\$1.33	\$45.33	\$1.42	\$43.91	\$1.53	8.56%
NorthWestern Corporation	8.36%	-72.11	\$2.40	\$2.49	\$2.64	\$2.74	\$2.86	\$2.99	\$3.13	\$3.29	\$116.28	\$3.47	\$112.81	\$3.66	8.34%
OGE Energy Corp.	8.64%	-43.23	\$1.59	\$1.68	\$1.77	\$1.79	\$1.88	\$1.97	\$2.06	\$2.17	\$69.54	\$2.27	\$67.27	\$2.38	8.63%
Otter Tail Corporation	8.53%	-51.93	\$1.47	\$1.54	\$1.68	\$1.83	\$1.99	\$2.16	\$2.33	\$2.50	\$86.46	\$2.69	\$83.77	\$2.87	8.51%
PG&E Corporation	24.91%	-8.59	\$0.00	\$0.00	\$2.00	\$2.29	\$2.61	\$2.95	\$3.31	\$3.70	\$27.15	\$4.12	\$23.03	\$4.56	24.91%
Pinnacle West Capital Corporation	8.89%	-90.33	\$3.17	\$3.38	\$3.57	\$3.79	\$4.03	\$4.28	\$4.55	\$4.83	\$148.40	\$5.12	\$143.28	\$5.43	8.88%
PNM Resources, Inc.	8.31%	-50.23	\$1.23	\$1.30	\$1.43	\$1.57	\$1.73	\$1.89	\$2.05	\$2.23	\$84.16	\$2.41	\$81.74	\$2.61	8.28%
Portland General Electric Company	8.17%	-55.88	\$1.62	\$1.72	\$1.83	\$1.90	\$2.01	\$2.12	\$2.25	\$2.39	\$90.91	\$2.53	\$88.38	\$2.69	8.14%
PPL Corporation	9.79%	-33.49	\$1.69	\$1.73	\$1.83	\$1.89	\$1.95	\$2.02	\$2.11	\$2.20	\$54.05	\$2.31	\$51.74	\$2.43	9.79%
Public Service Enterprise Group Incorporated	8.82%	-60.63	\$1.97	\$2.07	\$2.16	\$2.29	\$2.48	\$2.68	\$2.90	\$3.13	\$101.30	\$3.38	\$97.92	\$3.65	8.81%
Sempra Energy	9.16%	-146.74	\$4.21	\$4.52	\$4.87	\$5.70	\$6.35	\$7.03	\$7.73	\$8.44	\$252.42	\$9.17	\$243.25	\$9.88	9.15%
Southern Company	8.85%	-61.97	\$2.54	\$2.63	\$2.70	\$2.92	\$3.02	\$3.11	\$3.22	\$3.33	\$98.55	\$3.44	\$95.10	\$3.57	8.84%
Unitil Corporation	7.78%	-61.83	\$1.50	\$1.52	\$1.54	\$1.60	\$1.73	\$1.88	\$2.04	\$2.21	\$101.89	\$2.39	\$99.50	\$2.60	7.70%
WEC Energy Group, Inc.	8.08%	-91.23	\$2.50	\$2.66	\$2.88	\$2.99	\$3.19	\$3.39	\$3.60	\$3.82	\$148.47	\$4.04	\$144.43	\$4.26	8.04%
Xcel Energy Inc.	8.28%	-62.60	\$1.71	\$1.83	\$1.93	\$2.02	\$2.19	\$2.37	\$2.55	\$2.75	\$103.57	\$2.96	\$100.61	\$3.18	8.25%
<b>Average</b>	<b>9.03%</b>														
<b>Average Regulated EEI</b>	<b>9.08%</b>														
<b>Average w/o EIX, EE, SE, PPL, PCG</b>	<b>8.55%</b>														
<b>Average Regulated EEI w/o EIX, EE, SE, PPL, PCG</b>	<b>8.43%</b>														
<b>Average Mostly Pure Play</b>	<b>8.33%</b>														
<b>Average Pure Play</b>	<b>8.41%</b>														
<b>Average Pure Play VI Elec</b>	<b>8.41%</b>														
<b>Combined 2012-2014</b>	<b>8.45%</b>														
<b>Companies from 2014 Rate Case</b>	<b>8.53%</b>														

Source: Schedule DM-D-6

## Mr. Murray Multi-Stage DCF Model - 5.09 percent Terminal Growth Rate

Company	Analysts' Est 5-								
	Yr CAGR	2022	2023	2024	2025	2026	2027	2028	2029
ALLETE, Inc.	7.10%	Discrete Est.	Discrete Est.	7.10%	6.70%	6.30%	5.89%	5.49%	5.09%
Alliant Energy Corporation	5.49%	Discrete Est.	5.49%	5.49%	5.41%	5.33%	5.25%	5.17%	5.09%
Ameren Corporation	5.94%	Discrete Est.	5.94%	5.94%	5.77%	5.60%	5.43%	5.26%	5.09%
American Electric Power Company, Inc.	5.62%	Discrete Est.	Discrete Est.	Discrete Est.	5.52%	5.41%	5.30%	5.20%	5.09%
Avangrid, Inc.	6.58%	Discrete Est.	6.58%	6.58%	6.28%	5.98%	5.69%	5.39%	5.09%
Avista Corporation	3.90%	Discrete Est.	3.90%	3.90%	4.14%	4.38%	4.62%	4.85%	5.09%
Black Hills Corporation	4.94%	Discrete Est.	Discrete Est.	4.94%	4.97%	5.00%	5.03%	5.06%	5.09%
CenterPoint Energy, Inc.	5.82%	Discrete Est.	Discrete Est.	5.82%	5.67%	5.53%	5.38%	5.24%	5.09%
CMS Energy Corporation	6.94%	Discrete Est.	Discrete Est.	6.94%	6.57%	6.20%	5.83%	5.46%	5.09%
Consolidated Edison, Inc.	3.00%	Discrete Est.	Discrete Est.	3.00%	3.42%	3.84%	4.25%	4.67%	5.09%
Dominion Energy, Inc.	4.27%	Discrete Est.	Discrete Est.	4.27%	4.43%	4.60%	4.76%	4.93%	5.09%
DTE Energy Company	6.20%	Discrete Est.	Discrete Est.	6.20%	5.98%	5.76%	5.53%	5.31%	5.09%
Duke Energy Corporation	4.18%	Discrete Est.	Discrete Est.	4.18%	4.36%	4.54%	4.72%	4.91%	5.09%
Edison International	5.76%	Discrete Est.	5.76%	5.76%	5.62%	5.49%	5.36%	5.22%	5.09%
El Paso Electric Company	6.25%	6.25%	6.25%	6.25%	6.02%	5.79%	5.55%	5.32%	5.09%
Entergy Corporation	1.24%	Discrete Est.	Discrete Est.	1.24%	2.01%	2.78%	3.55%	4.32%	5.09%
Eversource Energy	6.10%	Discrete Est.	Discrete Est.	8.48%	7.80%	7.12%	6.45%	5.77%	5.09%
Exelon Corporation	3.67%	Discrete Est.	Discrete Est.	Discrete Est.	5.90%	5.70%	5.50%	5.29%	5.09%
FirstEnergy Corp.	6.20%	Discrete Est.	Discrete Est.	Discrete Est.	Discrete Est.	4.24%	4.52%	4.81%	5.09%
Hawaiian Electric Industries, Inc.	4.22%	Discrete Est.	Discrete Est.	6.20%	5.98%	5.76%	5.53%	5.31%	5.09%
IDACORP, Inc.	3.33%	3.33%	3.33%	3.33%	3.68%	4.04%	4.39%	4.74%	5.09%
MDU Resources Group Inc.	7.75%	7.75%	7.75%	7.75%	7.22%	6.69%	6.15%	5.62%	5.09%
NextEra Energy, Inc.	7.86%	Discrete Est.	7.86%	7.86%	7.31%	6.75%	6.20%	5.64%	5.09%
NiSource Inc.	4.49%	Discrete Est.	Discrete Est.	Discrete Est.	4.61%	4.73%	4.85%	4.97%	5.09%
NorthWestern Corporation	3.64%	Discrete Est.	Discrete Est.	3.64%	3.93%	4.22%	4.51%	4.80%	5.09%
OGE Energy Corp.	5.17%	Discrete Est.	Discrete Est.	5.17%	5.16%	5.14%	5.12%	5.11%	5.09%
Otter Tail Corporation	6.97%	6.97%	6.97%	6.97%	6.59%	6.22%	5.84%	5.47%	5.09%
PG&E Corporation	6.00%	Discrete Est.	6.00%	6.00%	5.82%	5.64%	5.45%	5.27%	5.09%
Pinnacle West Capital Corporation	5.23%	Discrete Est.	5.23%	5.23%	5.21%	5.18%	5.15%	5.12%	5.09%
PNM Resources, Inc.	5.75%	Discrete Est.	Discrete Est.	Discrete Est.	5.62%	5.48%	5.35%	5.22%	5.09%
Portland General Electric Company	4.55%	Discrete Est.	Discrete Est.	4.55%	4.66%	4.77%	4.88%	4.98%	5.09%
PPL Corporation	3.00%	Discrete Est.	3.00%	3.00%	3.42%	3.84%	4.25%	4.67%	5.09%
Public Service Enterprise Group Incorporated	5.23%	Discrete Est.	5.23%	5.23%	5.20%	5.17%	5.15%	5.12%	5.09%
Sempra Energy	8.20%	Discrete Est.	Discrete Est.	8.20%	7.58%	6.96%	6.33%	5.71%	5.09%
Southern Company	4.50%	Discrete Est.	Discrete Est.	4.50%	4.62%	4.74%	4.85%	4.97%	5.09%
Unitil Corporation	4.28%	Discrete Est.	Discrete Est.	4.28%	4.44%	4.60%	4.77%	4.93%	5.09%
WEC Energy Group, Inc.	6.06%	Discrete Est.	Discrete Est.	6.06%	5.86%	5.67%	5.48%	5.28%	5.09%
Xcel Energy Inc.	5.67%	Discrete Est.	Discrete Est.	5.67%	5.55%	5.44%	5.32%	5.21%	5.09%

Source: Schedule DM-D-6

## Mr. Murray Multi-Stage DCF Model - Recreated As Filed

Long-Term Growth Rate 2.85%

Company Name	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
ALLETE, Inc.	\$3.78	\$4.14	\$4.26	\$4.34	\$4.65	\$4.94	\$5.21	\$5.44	\$5.64	\$5.80	\$5.97	\$6.14
Alliant Energy Corporation	\$2.41	\$2.55	\$2.71	\$2.86	\$3.02	\$3.17	\$3.31	\$3.43	\$3.55	\$3.65	\$3.76	\$3.86
Ameren Corporation	\$3.46	\$3.81	\$4.00	\$4.24	\$4.49	\$4.73	\$4.95	\$5.15	\$5.33	\$5.48	\$5.64	\$5.80
American Electric Power Company, Inc.	\$4.40	\$4.68	\$5.02	\$5.45	\$5.75	\$6.04	\$6.31	\$6.56	\$6.79	\$6.98	\$7.18	\$7.38
Avangrid, Inc.	\$2.45	\$2.66	\$2.90	\$3.09	\$3.29	\$3.49	\$3.66	\$3.82	\$3.96	\$4.07	\$4.19	\$4.31
Avista Corporation	\$2.00	\$2.15	\$2.43	\$2.52	\$2.62	\$2.72	\$2.82	\$2.91	\$3.00	\$3.08	\$3.17	\$3.26
Black Hills Corporation	\$3.68	\$3.92	\$4.13	\$4.20	\$4.41	\$4.61	\$4.80	\$4.97	\$5.14	\$5.28	\$5.43	\$5.59
CenterPoint Energy, Inc.	\$1.63	\$1.71	\$1.80	\$1.78	\$1.88	\$1.98	\$2.07	\$2.16	\$2.23	\$2.30	\$2.36	\$2.43
CMS Energy Corporation	\$2.67	\$2.88	\$3.08	\$3.31	\$3.54	\$3.76	\$3.96	\$4.13	\$4.28	\$4.41	\$4.53	\$4.66
Consolidated Edison, Inc.	\$4.52	\$4.74	\$4.92	\$5.19	\$5.35	\$5.50	\$5.67	\$5.83	\$6.00	\$6.17	\$6.35	\$6.53
Dominion Energy, Inc.	\$4.38	\$4.63	\$4.87	\$5.15	\$5.37	\$5.58	\$5.79	\$5.99	\$6.18	\$6.35	\$6.53	\$6.72
DTE Energy Company	\$6.61	\$7.11	\$7.61	\$8.20	\$8.71	\$9.19	\$9.64	\$10.04	\$10.39	\$10.69	\$10.99	\$11.31
Duke Energy Corporation	\$5.15	\$5.38	\$5.71	\$5.99	\$6.24	\$6.48	\$6.72	\$6.95	\$7.16	\$7.37	\$7.58	\$7.79
Edison International	\$4.55	\$4.72	\$4.78	\$5.06	\$5.35	\$5.62	\$5.88	\$6.12	\$6.33	\$6.51	\$6.69	\$6.88
El Paso Electric Company	\$2.84	\$3.02	\$3.21	\$3.41	\$3.62	\$3.82	\$4.01	\$4.18	\$4.32	\$4.45	\$4.57	\$4.70
Energy Corporation	\$5.60	\$5.96	\$6.34	\$6.70	\$6.78	\$6.89	\$7.02	\$7.17	\$7.35	\$7.56	\$7.78	\$8.00
Eversource Energy	\$3.13	\$3.28	\$3.45	\$3.62	\$3.93	\$4.22	\$4.48	\$4.71	\$4.89	\$5.03	\$5.18	\$5.32
Exelon Corporation	\$3.07	\$3.04	\$3.12	\$3.28	\$3.59	\$3.90	\$4.03	\$4.16	\$4.28	\$4.41	\$4.53	\$4.66
FirstEnergy Corp.	\$2.49	\$2.64	\$2.79	\$2.96	\$3.14	\$3.32	\$3.48	\$3.62	\$3.75	\$3.86	\$3.97	\$4.08
Hawaiian Electric Industries, Inc.	\$2.01	\$2.16	\$2.25	\$2.35	\$2.45	\$2.55	\$2.64	\$2.73	\$2.81	\$2.89	\$2.98	\$3.06
IDACORP, Inc.	\$4.62	\$4.86	\$5.02	\$5.19	\$5.36	\$5.54	\$5.71	\$5.88	\$6.06	\$6.23	\$6.41	\$6.59
MDU Resources Group Inc.	\$1.65	\$1.82	\$1.96	\$2.11	\$2.28	\$2.43	\$2.57	\$2.70	\$2.80	\$2.88	\$2.96	\$3.04
NextEra Energy, Inc.	\$9.06	\$9.85	\$10.66	\$11.50	\$12.40	\$13.25	\$14.03	\$14.71	\$15.28	\$15.71	\$16.16	\$16.62
NiSource Inc.	\$1.38	\$1.46	\$1.55	\$1.61	\$1.72	\$1.79	\$1.86	\$1.93	\$1.99	\$2.04	\$2.10	\$2.16
NorthWestern Corporation	\$3.56	\$3.72	\$3.92	\$4.05	\$4.20	\$4.34	\$4.49	\$4.63	\$4.77	\$4.90	\$5.04	\$5.19
OGE Energy Corp.	\$2.28	\$2.40	\$2.49	\$2.52	\$2.65	\$2.78	\$2.89	\$3.00	\$3.10	\$3.19	\$3.28	\$3.37
Otter Tail Corporation	\$2.41	\$2.52	\$2.70	\$2.88	\$3.08	\$3.27	\$3.45	\$3.60	\$3.74	\$3.84	\$3.95	\$4.06
PG&E Corporation	\$4.19	\$3.41	\$4.45	\$4.72	\$5.00	\$5.27	\$5.52	\$5.75	\$5.94	\$6.11	\$6.29	\$6.47
Pinnacle West Capital Corporation	\$4.86	\$5.16	\$5.45	\$5.74	\$6.04	\$6.32	\$6.59	\$6.84	\$7.07	\$7.27	\$7.48	\$7.69
PNM Resources, Inc.	\$2.21	\$2.39	\$2.54	\$2.70	\$2.87	\$3.02	\$3.16	\$3.28	\$3.40	\$3.49	\$3.59	\$3.69
Portland General Electric Company	\$2.56	\$2.73	\$2.83	\$2.90	\$3.03	\$3.16	\$3.28	\$3.40	\$3.51	\$3.61	\$3.71	\$3.81
PPL Corporation	\$2.54	\$2.52	\$2.66	\$2.74	\$2.82	\$2.91	\$2.99	\$3.08	\$3.17	\$3.26	\$3.35	\$3.45
Public Service Enterprise Group Incorporated	\$3.42	\$3.49	\$3.66	\$3.85	\$4.05	\$4.25	\$4.43	\$4.60	\$4.75	\$4.88	\$5.02	\$5.17
Sempra Energy	\$7.12	\$7.89	\$8.46	\$9.60	\$10.39	\$11.13	\$11.80	\$12.39	\$12.88	\$13.24	\$13.62	\$14.01
Southern Company	\$3.17	\$3.28	\$3.51	\$3.85	\$4.02	\$4.19	\$4.35	\$4.50	\$4.65	\$4.78	\$4.92	\$5.06
Unitil Corporation	\$2.42	\$2.58	\$2.67	\$2.82	\$2.94	\$3.06	\$3.17	\$3.28	\$3.38	\$3.48	\$3.58	\$3.68
WEC Energy Group, Inc.	\$3.74	\$4.00	\$4.26	\$4.40	\$4.67	\$4.92	\$5.15	\$5.37	\$5.55	\$5.71	\$5.88	\$6.04
Xcel Energy Inc.	\$2.78	\$2.97	\$3.12	\$3.32	\$3.51	\$3.69	\$3.85	\$4.01	\$4.15	\$4.26	\$4.38	\$4.51

Source: Schedule DM-D-3.1

## Weight by Stage

Company	Stock Price	First	Second	Third	Check	% 3rd Stage
ALLETE, Inc.	-82.82	11.23	8.93	62.66	0.00	76%
Alliant Energy Corporation	-53.14	7.15	5.69	40.30	0.00	76%
Ameren Corporation	-76.03	9.46	8.12	58.46	0.00	77%
American Electric Power Company, Inc.	-92.40	13.01	10.35	69.05	0.00	75%
Avangrid, Inc.	-49.81	8.06	6.09	35.66	0.00	72%
Avista Corporation	-47.64	7.53	5.23	34.88	0.00	73%
Black Hills Corporation	-77.06	10.23	8.13	58.70	0.00	76%
CenterPoint Energy, Inc.	-27.24	5.03	3.44	18.76	0.00	69%
CMS Energy Corporation	-62.36	7.82	6.65	47.89	0.00	77%
Consolidated Edison, Inc.	-89.66	13.54	9.70	66.42	0.00	74%
Dominion Energy, Inc.	-81.70	16.14	10.32	55.24	0.00	68%
DTE Energy Company	-126.83	18.63	15.16	93.04	0.00	73%
Duke Energy Corporation	-91.74	16.91	11.50	63.34	0.00	69%
Edison International	-70.82	11.09	8.95	50.78	0.00	72%
El Paso Electric Company	-67.37	7.84	6.82	52.72	0.00	78%
Energy Corporation	-117.81	17.26	12.31	88.24	0.00	75%
Energy, Inc.	-63.81	9.50	7.59	46.72	0.00	73%
Eversource Energy	-83.19	10.56	8.75	63.89	0.00	77%
Exelon Corporation	-45.44	6.95	6.01	32.47	0.00	71%
FirstEnergy Corp.	-47.79	7.16	5.70	34.94	0.00	73%
Hawaiian Electric Industries, Inc.	-44.82	6.02	4.61	34.20	0.00	76%
IDACORP, Inc.	-106.96	12.76	10.04	84.16	0.00	79%
MDU Resources Group Inc.	-28.70	3.98	3.75	20.97	0.00	73%
NextEra Energy, Inc.	-233.53	28.72	24.70	180.10	0.00	77%
NISource Inc.	-27.45	3.94	3.09	20.42	0.00	74%
NorthWestern Corporation	-72.11	10.85	7.85	53.41	0.00	74%
OGE Energy Corp.	-43.23	7.13	5.05	31.05	0.00	72%
Otter Tail Corporation	-51.93	6.96	5.81	39.16	0.00	75%
PG&E Corporation	-8.59	2.91	2.75	2.93	0.00	34%
Pinnacle West Capital Corporation	-90.33	14.56	10.97	64.80	0.00	72%
PNM Resources, Inc.	-50.23	5.98	5.24	39.00	0.00	78%
Portland General Electric Company	-55.88	7.54	5.75	42.59	0.00	76%
PPL Corporation	-33.49	7.20	4.72	21.57	0.00	64%
Public Service Enterprise Group Incorporated	-60.63	8.93	7.10	44.61	0.00	74%
Sempra Energy	-146.74	20.50	18.49	107.75	0.00	73%
Southern Company	-61.97	11.24	7.69	43.04	0.00	69%
Unitil Corporation	-61.83	6.66	5.44	49.72	0.00	80%
WEC Energy Group, Inc.	-91.23	11.84	9.26	70.14	0.00	77%
Xcel Energy Inc.	-62.60	8.01	6.52	48.07	0.00	77%
Average						73%

## Mr. Murray Multi-Stage DCF Model - Recreated As Filed

Dividend Payout Ratios Company	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
ALLETE, Inc.	65.34%	62.56%	63.49%	64.42%	65.35%	66.28%	67.21%	68.14%	69.07%	70.00%
Alliant Energy Corporation	63.07%	63.14%	63.47%	64.40%	65.33%	66.27%	67.20%	68.13%	69.07%	70.00%
Ameren Corporation	58.38%	55.64%	55.75%	57.79%	59.82%	61.86%	63.89%	65.93%	67.96%	70.00%
American Electric Power Company, Inc.	64.55%	63.89%	62.75%	61.47%	61.74%	63.39%	65.04%	66.70%	68.35%	70.00%
Avangrid, Inc.	75.51%	71.43%	65.86%	66.45%	67.04%	67.64%	68.23%	68.82%	69.41%	70.00%
Avista Corporation	80.50%	78.60%	77.53%	76.45%	75.38%	74.30%	73.23%	72.15%	71.08%	70.00%
Black Hills Corporation	58.97%	59.18%	60.54%	61.89%	63.24%	64.59%	65.94%	67.30%	68.65%	70.00%
CenterPoint Energy, Inc.	76.07%	71.93%	67.78%	68.54%	68.78%	69.03%	69.27%	69.51%	69.76%	70.00%
CMS Energy Corporation	61.42%	60.76%	60.71%	61.03%	62.52%	64.02%	65.51%	67.01%	68.50%	70.00%
Consolidated Edison, Inc.	67.70%	66.88%	66.46%	64.74%	65.62%	66.49%	67.37%	68.25%	69.12%	70.00%
Dominion Energy, Inc.	86.30%	84.23%	81.11%	78.64%	77.20%	75.76%	74.32%	72.88%	71.44%	70.00%
DTE Energy Company	61.88%	61.46%	60.05%	57.93%	59.94%	61.95%	63.96%	65.98%	67.99%	70.00%
Duke Energy Corporation	75.92%	75.46%	71.10%	72.12%	71.77%	71.41%	71.06%	70.71%	70.35%	70.00%
Edison International	55.82%	55.93%	54.60%	56.80%	59.00%	61.20%	63.40%	65.60%	67.80%	70.00%
El Paso Electric Company	55.63%	57.00%	58.63%	60.25%	61.88%	63.50%	65.13%	66.75%	68.38%	70.00%
Entergy Corporation	68.96%	65.10%	65.77%	66.38%	66.98%	67.58%	68.19%	68.79%	69.40%	70.00%
Eversource Energy	65.50%	67.07%	67.83%	67.13%	67.61%	68.08%	68.56%	69.04%	69.52%	70.00%
Exelon Corporation	49.51%	52.63%	53.85%	56.15%	58.46%	60.77%	63.08%	65.38%	67.69%	70.00%
FirstEnergy Corp.	63.45%	62.12%	61.65%	62.84%	64.03%	65.23%	66.42%	67.61%	68.81%	70.00%
Hawaiian Electric Industries, Inc.	65.67%	62.96%	63.84%	64.72%	65.60%	66.48%	67.36%	68.24%	69.12%	70.00%
IDACORP, Inc.	57.58%	59.47%	60.78%	62.10%	63.42%	64.73%	66.05%	67.37%	68.68%	70.00%
MDU Resources Group Inc.	50.91%	46.70%	49.62%	52.53%	55.44%	58.35%	61.26%	64.18%	67.09%	70.00%
NextEra Energy, Inc.	61.92%	63.25%	65.95%	66.53%	67.11%	67.68%	68.26%	68.84%	69.42%	70.00%
NISource Inc.	61.59%	60.96%	61.29%	63.98%	63.37%	64.70%	66.02%	67.35%	68.67%	70.00%
NorthWestern Corporation	67.42%	66.94%	67.32%	67.70%	68.08%	68.47%	68.85%	69.23%	69.62%	70.00%
OGE Energy Corp.	69.74%	70.00%	71.08%	70.93%	70.77%	70.62%	70.46%	70.31%	70.15%	70.00%
Otter Tail Corporation	61.00%	61.11%	62.22%	63.33%	64.44%	65.56%	66.67%	67.78%	68.89%	70.00%
PG&E Corporation	0.00%	0.00%	44.94%	48.52%	52.10%	55.68%	59.26%	62.84%	66.42%	70.00%
Pinnacle West Capital Corporation	65.23%	65.50%	65.50%	66.15%	66.79%	67.43%	68.07%	68.72%	69.36%	70.00%
PNM Resources, Inc.	55.66%	54.39%	56.34%	58.29%	60.25%	62.20%	64.15%	66.10%	68.05%	70.00%
Portland General Electric Company	63.28%	63.00%	64.66%	65.43%	66.19%	66.95%	67.71%	68.48%	69.24%	70.00%
PPL Corporation	66.54%	68.65%	68.82%	68.99%	69.16%	69.33%	69.49%	69.66%	69.83%	70.00%
Public Service Enterprise Group Incorporated	57.60%	59.31%	59.02%	59.46%	61.22%	62.97%	64.73%	66.49%	68.24%	70.00%
Sempra Energy	59.13%	57.29%	57.57%	59.34%	61.12%	62.89%	64.67%	66.45%	68.22%	70.00%
Southern Company	80.13%	80.18%	76.92%	75.93%	74.95%	73.96%	72.97%	71.98%	70.99%	70.00%
Unitil Corporation	61.98%	58.91%	57.68%	56.74%	58.95%	61.16%	63.37%	65.58%	67.79%	70.00%
WEC Energy Group, Inc.	66.84%	66.50%	67.61%	67.95%	68.29%	68.63%	68.97%	69.32%	69.66%	70.00%
Xcel Energy Inc.	61.51%	61.62%	61.86%	60.84%	62.37%	63.90%	65.42%	66.95%	68.47%	70.00%

Source: Schedule DM-D-3.3

## Mr. Murray Multi-Stage DCF Model - Recreated As Filed

## Estimated Dividends to Shareholders for Infinite Period

Company	Cost of Equity	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
ALLETE, Inc.	6.52%	-82.82	\$2.47	\$2.59	\$2.70	\$2.80	\$3.04	\$3.27	\$3.50	\$3.71	\$3.90	\$4.06
Alliant Energy Corporation	6.46%	-53.14	\$1.52	\$1.61	\$1.72	\$1.84	\$1.97	\$2.10	\$2.22	\$2.34	\$2.45	\$2.56
Ameren Corporation	6.55%	-76.03	\$2.02	\$2.12	\$2.23	\$2.45	\$2.69	\$2.92	\$3.16	\$3.40	\$3.62	\$3.84
American Electric Power Company, Inc.	6.77%	-92.40	\$2.84	\$2.99	\$3.15	\$3.35	\$3.55	\$3.83	\$4.11	\$4.38	\$4.64	\$4.89
Avangrid, Inc.	7.14%	-49.81	\$1.85	\$1.90	\$1.91	\$2.05	\$2.21	\$2.36	\$2.50	\$2.63	\$2.75	\$2.85
Avista Corporation	6.39%	-47.64	\$1.61	\$1.69	\$1.88	\$1.93	\$1.98	\$2.02	\$2.06	\$2.10	\$2.13	\$2.16
Black Hills Corporation	6.44%	-77.06	\$2.17	\$2.32	\$2.50	\$2.60	\$2.79	\$2.98	\$3.16	\$3.35	\$3.53	\$3.70
CenterPoint Energy, Inc.	7.37%	-27.24	\$1.24	\$1.23	\$1.22	\$1.22	\$1.30	\$1.37	\$1.44	\$1.50	\$1.56	\$1.61
CMS Energy Corporation	6.50%	-62.36	\$1.64	\$1.75	\$1.87	\$2.02	\$2.21	\$2.40	\$2.59	\$2.77	\$2.94	\$3.08
Consolidated Edison, Inc.	6.53%	-89.66	\$3.06	\$3.17	\$3.27	\$3.36	\$3.51	\$3.66	\$3.82	\$3.98	\$4.15	\$4.32
Dominion Energy, Inc.	7.17%	-81.70	\$3.78	\$3.90	\$3.95	\$4.05	\$4.15	\$4.23	\$4.30	\$4.36	\$4.41	\$4.45
DTE Energy Company	7.16%	-126.83	\$4.09	\$4.37	\$4.57	\$4.75	\$5.22	\$5.69	\$6.16	\$6.62	\$7.07	\$7.48
Duke Energy Corporation	7.20%	-91.74	\$3.91	\$4.06	\$4.06	\$4.32	\$4.48	\$4.63	\$4.78	\$4.91	\$5.04	\$5.16
Edison International	7.52%	-70.82	\$2.54	\$2.64	\$2.61	\$2.87	\$3.15	\$3.44	\$3.73	\$4.01	\$4.29	\$4.55
El Paso Electric Company	6.26%	-67.37	\$1.58	\$1.72	\$1.88	\$2.05	\$2.24	\$2.43	\$2.61	\$2.79	\$2.96	\$3.11
Entergy Corporation	6.31%	-117.81	\$3.75	\$3.88	\$4.17	\$4.45	\$4.54	\$4.66	\$4.79	\$4.93	\$5.10	\$5.29
Eversource Energy	6.96%	-63.81	\$2.05	\$2.20	\$2.34	\$2.43	\$2.65	\$2.87	\$3.07	\$3.25	\$3.40	\$3.52
Exelon Corporation	6.53%	-83.19	\$2.26	\$2.40	\$2.56	\$2.73	\$2.86	\$3.13	\$3.40	\$3.66	\$3.92	\$4.16
FirstEnergy Corp.	7.72%	-45.44	\$1.52	\$1.60	\$1.68	\$1.84	\$2.10	\$2.37	\$2.54	\$2.72	\$2.90	\$3.08
Hawaiian Electric Industries, Inc.	7.04%	-47.79	\$1.58	\$1.64	\$1.72	\$1.86	\$2.01	\$2.16	\$2.31	\$2.45	\$2.58	\$2.70
Hawaiian Electric Industries, Inc.	6.27%	-44.82	\$1.32	\$1.36	\$1.44	\$1.52	\$1.61	\$1.69	\$1.78	\$1.86	\$1.94	\$2.03
IDACORP, Inc.	5.93%	-106.96	\$2.66	\$2.89	\$3.05	\$3.22	\$3.40	\$3.58	\$3.77	\$3.96	\$4.16	\$4.36
MDU Resources Group Inc.	7.75%	-28.70	\$0.84	\$0.85	\$0.97	\$1.11	\$1.26	\$1.42	\$1.58	\$1.73	\$1.88	\$2.01
NextEra Energy, Inc.	6.35%	-233.53	\$5.61	\$6.23	\$7.03	\$7.65	\$8.32	\$8.97	\$9.58	\$10.13	\$10.61	\$11.00
NiSource Inc.	6.74%	-27.45	\$0.85	\$0.89	\$0.95	\$1.03	\$1.09	\$1.16	\$1.23	\$1.30	\$1.36	\$1.43
NorthWestern Corporation	6.50%	-72.11	\$2.40	\$2.49	\$2.64	\$2.74	\$2.86	\$2.97	\$3.09	\$3.21	\$3.32	\$3.43
OGE Energy Corp.	6.82%	-43.23	\$1.59	\$1.68	\$1.77	\$1.79	\$1.88	\$1.96	\$2.04	\$2.11	\$2.18	\$2.23
Otter Tail Corporation	6.68%	-51.93	\$1.47	\$1.54	\$1.68	\$1.83	\$1.99	\$2.15	\$2.30	\$2.44	\$2.57	\$2.69
PG&E Corporation	23.97%	-8.59	\$0.00	\$0.00	\$2.00	\$2.29	\$2.61	\$2.93	\$3.27	\$3.61	\$3.95	\$4.28
Pinnacle West Capital Corporation	7.09%	-90.33	\$3.17	\$3.38	\$3.57	\$3.79	\$4.03	\$4.26	\$4.49	\$4.70	\$4.90	\$5.09
PNM Resources, Inc.	6.43%	-50.23	\$1.23	\$1.30	\$1.43	\$1.57	\$1.73	\$1.88	\$2.03	\$2.17	\$2.31	\$2.44
Portland General Electric Company	6.27%	-55.88	\$1.62	\$1.72	\$1.83	\$1.90	\$2.01	\$2.12	\$2.22	\$2.33	\$2.43	\$2.52
PPL Corporation	8.10%	-33.49	\$1.69	\$1.73	\$1.83	\$1.89	\$1.95	\$2.01	\$2.08	\$2.14	\$2.21	\$2.28
Public Service Enterprise Group Incorporated	7.01%	-60.63	\$1.97	\$2.07	\$2.16	\$2.29	\$2.48	\$2.67	\$2.87	\$3.06	\$3.24	\$3.42
Sempra Energy	7.38%	-146.74	\$4.21	\$4.52	\$4.87	\$5.70	\$6.35	\$7.00	\$7.63	\$8.23	\$8.78	\$9.27
Southern Company	7.06%	-61.97	\$2.54	\$2.63	\$2.70	\$2.92	\$3.02	\$3.10	\$3.18	\$3.24	\$3.30	\$3.35
Unitil Corporation	5.79%	-61.83	\$1.50	\$1.52	\$1.54	\$1.60	\$1.73	\$1.87	\$2.01	\$2.15	\$2.29	\$2.44
WEC Energy Group, Inc.	6.17%	-91.23	\$2.50	\$2.66	\$2.88	\$2.99	\$3.19	\$3.38	\$3.55	\$3.72	\$3.87	\$4.00
Xcel Energy Inc.	6.40%	-62.60	\$1.71	\$1.83	\$1.93	\$2.02	\$2.19	\$2.36	\$2.52	\$2.68	\$2.84	\$2.98

Source: Schedules DM-6 through DM-D-9.xls, "WP-Multi-stage"

## Mr. Murray Multi-Stage DCF Model - Recreated As Filed

Company	Analysts' Est 5-								
	Yr CAGR	2022	2023	2024	2025	2026	2027	2028	2029
ALLETE, Inc.	7.10%	Discrete Est.	Discrete Est.	7.10%	6.25%	5.40%	4.55%	3.70%	2.85%
Alliant Energy Corporation	5.49%	Discrete Est.	5.49%	5.49%	4.96%	4.43%	3.91%	3.38%	2.85%
Ameren Corporation	5.94%	Discrete Est.	5.94%	5.94%	5.32%	4.70%	4.08%	3.47%	2.85%
American Electric Power Company, Inc.	5.62%	Discrete Est.	Discrete Est.	Discrete Est.	5.07%	4.51%	3.96%	3.40%	2.85%
Avangrid, Inc.	6.58%	Discrete Est.	6.58%	6.58%	5.83%	5.09%	4.34%	3.60%	2.85%
Avista Corporation	3.90%	Discrete Est.	3.90%	3.90%	3.69%	3.48%	3.27%	3.06%	2.85%
Black Hills Corporation	4.94%	Discrete Est.	Discrete Est.	4.94%	4.52%	4.10%	3.69%	3.27%	2.85%
CenterPoint Energy, Inc.	5.82%	Discrete Est.	Discrete Est.	5.82%	5.23%	4.63%	4.04%	3.44%	2.85%
CMS Energy Corporation	6.94%	Discrete Est.	Discrete Est.	6.94%	6.12%	5.30%	4.49%	3.67%	2.85%
Consolidated Edison, Inc.	3.00%	Discrete Est.	Discrete Est.	3.00%	2.97%	2.94%	2.91%	2.88%	2.85%
Dominion Energy, Inc.	4.27%	Discrete Est.	Discrete Est.	4.27%	3.99%	3.70%	3.42%	3.13%	2.85%
DTE Energy Company	6.20%	Discrete Est.	Discrete Est.	6.20%	5.53%	4.86%	4.19%	3.52%	2.85%
Duke Energy Corporation	4.18%	Discrete Est.	Discrete Est.	4.18%	3.91%	3.65%	3.38%	3.12%	2.85%
Edison International	5.76%	Discrete Est.	5.76%	5.76%	5.17%	4.59%	4.01%	3.43%	2.85%
El Paso Electric Company	6.25%	6.25%	6.25%	6.25%	5.57%	4.89%	4.21%	3.53%	2.85%
Entergy Corporation	1.24%	Discrete Est.	Discrete Est.	1.24%	1.56%	1.88%	2.20%	2.53%	2.85%
Eversource Energy	6.10%	Discrete Est.	Discrete Est.	8.48%	7.35%	6.23%	5.10%	3.98%	2.85%
Exelon Corporation	3.67%	Discrete Est.	Discrete Est.	Discrete Est.	5.45%	4.80%	4.15%	3.50%	2.85%
FirstEnergy Corp.	6.20%	Discrete Est.	Discrete Est.	Discrete Est.	Discrete Est.	3.34%	3.18%	3.01%	2.85%
Hawaiian Electric Industries, Inc.	4.22%	Discrete Est.	Discrete Est.	4.22%	3.94%	3.67%	3.40%	3.12%	2.85%
IDACORP, Inc.	3.33%	3.33%	3.33%	3.33%	3.24%	3.14%	3.04%	2.95%	2.85%
MDU Resources Group Inc.	7.75%	7.75%	7.75%	7.75%	6.77%	5.79%	4.81%	3.83%	2.85%
NextEra Energy, Inc.	7.86%	Discrete Est.	7.86%	7.86%	6.86%	5.86%	4.86%	3.85%	2.85%
NiSource Inc.	4.49%	Discrete Est.	Discrete Est.	Discrete Est.	4.16%	3.83%	3.50%	3.18%	2.85%
NorthWestern Corporation	3.64%	Discrete Est.	Discrete Est.	3.64%	3.48%	3.32%	3.17%	3.01%	2.85%
OGE Energy Corp.	5.17%	Discrete Est.	Discrete Est.	5.17%	4.71%	4.24%	3.78%	3.31%	2.85%
Otter Tail Corporation	6.97%	6.97%	6.97%	6.97%	6.14%	5.32%	4.50%	3.67%	2.85%
PG&E Corporation	6.00%	Discrete Est.	6.00%	6.00%	5.37%	4.74%	4.11%	3.48%	2.85%
Pinnacle West Capital Corporation	5.23%	Discrete Est.	5.23%	5.23%	4.76%	4.28%	3.80%	3.33%	2.85%
PNM Resources, Inc.	5.75%	Discrete Est.	Discrete Est.	Discrete Est.	5.17%	4.59%	4.01%	3.43%	2.85%
Portland General Electric Company	4.55%	Discrete Est.	Discrete Est.	4.55%	4.21%	3.87%	3.53%	3.19%	2.85%
PPL Corporation	3.00%	Discrete Est.	3.00%	3.00%	2.97%	2.94%	2.91%	2.88%	2.85%
Public Service Enterprise Group Incorporated	5.23%	Discrete Est.	5.23%	5.23%	4.75%	4.28%	3.80%	3.33%	2.85%
Sempra Energy	8.20%	Discrete Est.	Discrete Est.	8.20%	7.13%	6.06%	4.99%	3.92%	2.85%
Southern Company	4.50%	Discrete Est.	Discrete Est.	4.50%	4.17%	3.84%	3.51%	3.18%	2.85%
Unitil Corporation	4.28%	Discrete Est.	Discrete Est.	4.28%	3.99%	3.71%	3.42%	3.14%	2.85%
WEC Energy Group, Inc.	6.06%	Discrete Est.	Discrete Est.	6.06%	5.42%	4.77%	4.13%	3.49%	2.85%
Xcel Energy Inc.	5.67%	Discrete Est.	Discrete Est.	5.67%	5.11%	4.54%	3.98%	3.41%	2.85%

Source: Schedule DM-D-6.2




**AFFIDAVIT OF ROBERT B. HEVERT**

COMMONWEALTH OF MASSACHUSETTS )  
  ) ss  
COUNTY OF WORCESTER                  )

On the 2<sup>nd</sup> day of March, 2020, before me appeared Bob B. Hevert, to me personally known, who, being by me first duly sworn, states that he a partner at ScottMadden, Inc and acknowledges that he has read the above and foregoing document and believes that the statements therein are true and correct to the best of his information, knowledge and belief.

  
\_\_\_\_\_  
Robert B. Hevert

Subscribed and sworn to before me this 2<sup>nd</sup> day of March, 2020.

  
\_\_\_\_\_  
Notary Public

My commission expires: Nov. 8, 2024

