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# 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

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## GLOSSARY OF FREQUENTLY USED TERMS

| TERM | DESCRIPTION |
| :--- | :--- |
| Beta Coefficient | A component of the CAPM that measures the risk of <br> a given stock relative to the risk of the overall market. |
| Bond Yield Plus Risk Premium | A risk premium model used to estimate the Cost of <br> Equity. The Bond Yield Plus Risk Premium <br> approach assumes that investors required a risk <br> premium over the cost of debt as compensation for <br> assuming the greater risk of common equity <br> investment. The model is expressed as a bond yield <br> plus equity risk premium. |
| Capital Asset Pricing Model  <br> ("CAPM") A risk premium-based model used to estimate the <br> Cost of Equity, assuming the stock is added to a well- <br> diversified portfolio. The CAPM assumes that <br> investors are compensated for the time value of <br> money (represented by the Risk-Free Rate), and risk <br> (represented by the combination of the Beta  <br> Coefficient and the Market Risk Premium).  |  |
| Constant Growth DCF Model | A form of the DCF model that assumes cash flows <br> will grow at a constant rate, in perpetuity. The model <br> simplifies to a form that expresses the Cost of Equity <br> as the sum of the expected dividend yield and the <br> expected growth rate. |
| Cost of Equity | The return required by investors to invest in equity <br> securities. The terms "Return on Equity" and "Cost <br> of Equity" are used interchangeably. |
| Discounted Cash Flow ("DCF") Model | A model used to estimate the Cost of Equity based on <br> expected cash flows. The Cost of Equity equals the <br> discount rate that sets the current market price equal <br> to the present value of expected cash flows. |
| Market Risk Premium | For a given stock, the current annualized dividend <br> divided by its current market price. |
| Dividend Yield | The value of all finished goods and services produced <br> within a country during a given period of time <br> (usually measured annually). GDP includes public <br> and private consumption, government expenditures, <br> investments, and net exports (that is, exports minus <br> imports). |
| Market Return | The expected return on the equity market, taken as a <br> portfolio. |
| The additional compensation required by investing in <br> the equity market as a portfolio over the Risk-Free <br> rate. The Market Risk Premium is a component of <br> the CAPM. |  |
| Groduct ("GDP") |  |


| TERM | DESCRIPTION |
| :--- | :--- |
| Proxy Group | A group of publicly traded companies used as the <br> "proxy" for the subject company (in this case, <br> Liberty-Empire). Proxy companies are sometimes <br> referred to as "Comparable Companies." |
| Return on Equity ("ROE") | The return required by investors to invest in equity <br> securities. The terms "Return on Equity" and "Cost <br> of Equity" are used interchangeably. Please note that <br> the ROE in this context is distinct from the <br> accounting measure sometimes referred to as the <br> "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 <br> for taking on additional increments of risk. Risk <br> Premium-based approaches are used in addition to the <br> DCF and CAPM to estimate the Cost of Equity. |
| Treasury Yield | The return on Treasury securities; the yield on long- <br> term Treasury bonds is considered to be a measure of <br> the Risk-Free Rate. |

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

## I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

## Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Robert B. Hevert and my business address is ScottMadden, Inc., 1900 West Park Drive, Suite 250, Westborough, MA 01581.
Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?
A. I am submitting this rebuttal testimony ("Rebuttal Testimony") before the Missouri Public Service Commission ("Commission") on behalf of The Empire District Electric Company, a Liberty Utilities company ("Liberty-Empire" or the "Company").
Q. ARE YOU THE SAME ROBERT B. HEVERT WHO FILED DIRECT TESTIMONY IN THIS MATTER ON BEHALF OF LIBERTY-EMPIRE?
A. Yes, I am.

## Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

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

ROBERT B. HEVERT REBUTTAL TESTIMONY Equity") and capital structure. Mr. Peter Chari presents Staff's ROE recommendation. My Rebuttal Testimony updates certain analyses contained in my Direct Testimony, and includes several additional analyses developed in response to issues raised by the Opposing ROE Witnesses. My analyses and conclusions are supported by the data presented in Schedules RBH-R1 through RBH-R13, which have been prepared by me or under my direction.

## Q. PLEASE SUMMARIZE THE KEY ISSUES AND RECOMMENDATIONS ADDRESSED IN YOUR REBUTTAL TESTIMONY.

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

[^0]ROBERT B. HEVERT
Q. PLEASE PROVIDE AN OVERVIEW OF YOUR RESPONSE TO THE OPPOSING ROE WITNESSES.
A. Although I disagree with certain of Staff witness Mr. Chari's analyses and conclusions, the high end of his recommended range, 9.80 percent, overlaps with my recommended range. ${ }^{3}$ Mr. Chari's 9.25 percent recommendation, ${ }^{4}$ however, falls considerably below a reasonable estimate of the Company’s Cost of Equity.

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

Further, although Mr. Chari's recommended range is 9.05 percent to 9.80 percent, his average results range from 4.63 percent to 8.14 percent. ${ }^{6}$ I understand Mr. Chari's recommendation does not rely on those results per se, but on how Staff's results have changed over time. Nonetheless, it is difficult to see how changes in unreliable results

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

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

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

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

[^2]
## II. RESPONSE TO TESTIMONY OF STAFF WITNESS CHARI

Q. PLEASE BRIEFLY SUMMARIZE STAFF'S RECOMMENDATION REGARDING THE COMPANY'S COST OF EQUITY.
A. Through its witness Mr. Chari, Staff recommends an ROE of 9.25 percent, within a range of 9.05 percent to 9.80 percent. ${ }^{10} \mathrm{Mr}$. Chari estimates the ROE using the Constant Growth DCF model and the CAPM. ${ }^{11}$ Mr. Chari reviews recently authorized returns for electric and natural gas utilities as a check on the reasonableness of his recommended ROE, ${ }^{12}$ and considers current market conditions. ${ }^{13}$ As noted earlier, Mr. Chari's recommendation rests on a relative analysis, comparing model results coincident with Spire Missouri's most recent rate cases to those produced using current data. ${ }^{14}$
Q. WHAT ARE THE SPECIFIC AREAS IN WHICH YOU DISAGREE WITH MR. CHARI'S ANALYSES AND CONCLUSIONS?
A. The areas in which I disagree with Mr. Chari include:

1. The basis of his ROE recommendation;
2. Mr. Chari's interpretation of capital market conditions;
3. Mr. Chari's Constant Growth DCF analyses;
4. Mr. Chari's application of the CAPM, the reasonableness of those results, and their relevance in determining the Company's ROE; and
5. The relevance of authorized returns.

I discuss each in turn, below.

## A. ROE Recommendation

Q. DO YOU HAVE ANY PRELIMINARY OBSERVATIONS REGARDING MR. CHARI'S RECOMMENDED RANGE?
A. Yes. Although I do not believe the low end of Mr. Chari's recommended range is a reasonable estimate of the Company's ROE, I recognize the upper end of his range, 9.80 percent, overlaps with my recommended range.
Q. PLEASE SUMMARIZE MR. CHARI'S ROE RECOMMENDATION AND ITS DERIVATION.
A. Mr. Chari recommends an ROE of 9.25 percent, within a range of 9.05 percent to 9.80 percent. ${ }^{15}$ To determine his recommendation, Mr. Chari first:

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

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

15 Staff Cost of Service Report, at 18.
basis points; and (2) subtracting 75 basis points. That process produces an estimate of 9.23 percent, which Mr. Chari rounds to 9.25 percent. ${ }^{16}$

## Q. DO YOU HAVE ANY CONCERNS WITH THAT APPROACH?

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

$$
\begin{equation*}
y=a-b+b-c \tag{1}
\end{equation*}
$$

Where:
$y=$ the adjustment to the authorized ROE in the Spire Missouri Rate Case.
$a=$ the average current results based on the electric proxy group.
$b=$ the average current results based on the natural gas proxy group.
$c=$ the average results based on the natural gas proxy group from the Spire Missouri rate case.

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

$$
\begin{equation*}
y=a-c \tag{2}
\end{equation*}
$$

The current results of the natural gas proxy group therefore have no effect on Mr. Chari's adjustment to the 9.80 percent return authorized in the Spire Missouri rate case. Whether the current natural gas proxy group results average 6.21 percent as Mr. Chari

Staff Cost of Service Report, at 5. estimates, zero percent, 100.00 percent, or any other value, the adjustment remains negative 57 basis points (see, Schedule RBH-R8). That is, Mr. Chari's approach assumes it is appropriate to compare the current results of an electric proxy group to the prior results of a natural gas proxy group to determine how the ROE has changed over time. I do not agree, and it appears neither does Mr. Chari, as he states "Staff's current COE estimated for Staff's electric proxy group of $6.39 \%$ implies that the COE for the electric proxy group is 18 bps higher than for the [current results of the] gas proxy group." ${ }^{18}$

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

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

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

## Q. WHAT HAS STAFF RECOMMENDED RECENTLY FOR OTHER UTILITIES?

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

In the most recent natural gas rate case in Missouri (for Ameren Missouri's natural gas operations), Staff recommended an ROE of 9.50 percent. ${ }^{23}$ The Staff Cost of Service report in that case was filed on April 17, 2019. Staff did not change its recommended ROE

[^4] in its Rebuttal Testimony (filed June 7, 2019) ${ }^{24}$ or its Surrebuttal Testimony (filed July 10, 2019). ${ }^{25}$

As noted above, Mr. Chari's analyses focus on the relative change over time. Mr. Chari, however, has not explained why investors view electric utilities, such as LibertyEmpire, as so much less risky now than in mid-2018 to lower their required return by 60 basis points. Similarly, Mr. Chari has not explained how market conditions have changed since mid-2019 that would cause Liberty-Empire's (a vertically integrated electric utility) ROE to be 25 basis points below the ROE for Ameren Missouri's natural gas operations.
Q. ARE YOU AWARE OF AN INSTANCE IN WHICH THE FINANCIAL COMMUNITY REACTED NEGATIVELY TO A REGULATORY COMMISSION'S ORDER REGARDING THE ROE, CAPITAL STRUCTURE, OR OTHER CONSIDERATIONS?
A. Yes, I am. CenterPoint Energy Houston Electric LLC ("CEHE") recently was authorized an ROE of 9.40 percent, together with an equity ratio of 42.50 percent. ${ }^{26}$ Throughout the Public Utility Commission of Texas's ("PUCT") deliberations in that proceeding, the financial community monitored the PUCT's deliberations, which initially called for an ROE of 9.25 percent and an equity ratio of 40.00 percent. The real-time effect of those deliberations has been clear: the stock of the Company's parent, CenterPoint Energy, Inc., significantly underperformed the utility sector, and its credit rating from Fitch has been

See, Rebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. GR-20190077, June 7, 2019, at 15. downgraded by one credit "notch." ${ }^{27}$ The equally clear result is that CEHE's cost of capital has increased, to the detriment of its customers.
Q. DO YOU HAVE ANY OTHER CONCERNS WITH MR. CHARI'S RECOMMENDED ROE?
A. Yes, I do. As discussed in more detail later in my response to Mr. Chari, I have several concerns with Mr. Chari's application of the DCF and CAPM methods, and the results they produce.

## B. Capital Market Conditions

Q. PLEASE SUMMARIZE MR. CHARI'S TESTIMONY AS IT RELATES TO CURRENT CAPITAL MARKET CONDITIONS?
A. Mr. Chari reviews current economic conditions, and concludes low interest rates and high utility stock prices suggest a lower Cost of Equity for utilities. ${ }^{28}$ Mr. Chari also reviews the equity markets, noting that utility stock prices and price-to-earnings ("P/E") ratios have risen since 2017, in conjunction with lower dividend yields. Mr. Chari concludes that those two factors suggest a lower ROE in the current market relative to 2017. ${ }^{29}$
Q. DO YOU AGREE WITH MR. CHARI'S CONCLUSION THAT THE CAPITAL MARKET ENVIRONMENT SUGGESTS A LOWER COST OF EQUITY FOR THE COMPANY?
A. No, I do not. In 2019, the 30-year Treasury yield fell by 119 basis points, a decline of about 38.00 percent, in 126 trading days. Looking back to 2001, only 124 of 4,803 observations saw greater declines (only 13 saw greater percentage declines). On an absolute basis, 161 observations experienced greater basis point changes, and only 63 saw greater percentage changes.

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

Chart 1: 30-Year Treasury Yields Coefficient of Variation ${ }^{\mathbf{3 0}}$


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

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

As also shown in my Direct Testimony, the Cboe Options Exchange ("Cboe") VIX increased since the Spire Missouri rate case in 2017. ${ }^{32}$ Looking to more recent data (see, Chart 2), the VIX continues to remain elevated relative to 2017. In addition, although the VIX traded in a relatively narrow range in 2017, it experienced greater variability since the beginning of 2018.

Chart 2: VIX Since January $2017{ }^{33}$


As discussed in my Direct Testimony, since the 2008/2009 financial crisis, Treasury yields have generally remained below utility dividend yields. ${ }^{34}$ 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 ${ }^{35}$



[^5]Further, although Mr. Chari suggests low interest rates, and relatively higher P/E ratios imply reduced required returns as discussed in my Direct Testimony, the greater variability in $\mathrm{P} / \mathrm{E}$ ratios increases the risk of capital loss and a limit on valuation levels. ${ }^{36}$ As such, I do not agree that current market conditions imply a lower ROE.

## C. Constant Growth Discounted Cash Flow Model

## Q. PLEASE SUMMARIZE STAFF'S CONSTANT GROWTH DCF ANALYSIS.

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

[^6]ROBERT B. HEVERT
REBUTTAL TESTIMONY
Q. TURNING TO THE DCF METHOD, DO YOU HAVE ANY CONCERNS WITH THE RANGE OF GROWTH RATES SELECTED BY MR. CHARI?
A. Yes, I do. As noted above, Mr. Chari selects a range of growth rates of 4.20 percent to 5.00 percent for both his electric and natural gas proxy groups. However, Mr. Chari notes that "Staff did not rely on 10- and 5-year historical and projected growth rates for the natural gas utilities to arrive at the growth rate range of $4.20 \%-5.00 \%$." ${ }^{41}$ That is, Mr. Chari has provided no support for his natural gas proxy group assumed growth rates other than "to maintain consistency with the growth rate range assumed in the Spire rate cases." ${ }^{42}$

## Q. IS IT REASONABLE TO ATTEMPT "TO MAINTAIN CONSISTENCY WITH THE GROWTH RATE RANGE" USED IN PRIOR RATE CASES? ${ }^{43}$

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

[^7]yields. Mr. Chari does not consider that fundamental relationship in his attempt "to maintain consistency with the growth rate range assumed in the Spire rate cases." ${ }^{44}$

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

## Q. WHAT WERE THE EPS GROWTH RATES FOR MR. CHARI'S NATURAL GAS PROXY GROUP AS OF NOVEMBER 30, 2019?

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

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

| Growth Rate | June 30, 2017 | November 30, 201945 | Difference |
| :--- | :---: | :---: | :---: |
| Five-Year Historical EPS | $2.84 \%$ | $7.14 \%$ | $4.30 \%$ |
| Ten-Year Historical EPS | 46 | $4.12 \%$ | $4.66 \%$ |
| $0.54 \%$ |  |  |  |
| Projected EPS | $5.19 \%$ | $5.77 \%$ | $0.58 \%$ |

As shown in Table 1, each of the growth rates for Mr. Chari's natural gas proxy groups have increased by at least 56 basis points. In fact, the lowest EPS growth rate is 46 basis points above the low end of his assumed growth rate range. Assuming, conservatively, an increase of 50 basis points to the growth rate range ${ }^{47}$ (i.e., to a range of

[^8]4.70 percent to 5.50 percent), Mr. Chari’s Constant Growth DCF results would be 7.15 percent to 7.95 percent (using Mr. Chari's 2.45 percent expected dividend yield) relative to the 6.90 percent to 7.70 percent range in the Spire Missouri rate case. ${ }^{48}$ That is, based on a conservative estimate of the increase in growth rates, the Constant Growth DCF results increase by 25 basis points. I do not agree the current Constant Growth DCF results suggest a decrease in the ROE. ${ }^{49}$

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

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

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

A. Yes, I do. To develop his range of growth rates, Mr. Chari considers the five- and ten-year historical growth rates in EPS, along with the projected five-year EPS growth rates from S\&P Global Market Intelligence. As noted on page 14 of the Staff Cost of Service Report, the five- and ten-year historical EPS growth rates average 3.11 percent and 3.66 percent for Mr. Chari’s proxy group. However, as shown in Schedule PC-9-3, certain proxy companies experienced negative growth over those two periods. Because Mr. Chari is attempting to determine the growth rate in the DCF model, which is applied in perpetuity, it is inappropriate to include negative EPS growth rates. By assuming a negative growth
rate, Mr. Chari assumes utility investors would willingly commit capital to a company expected to shrink, forever. Although Mr. Chari appears concerned with what he views as relatively high growth rates, ${ }^{50}$ he has not considered the effect of negative growth rates on his DCF analysis.

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

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

A. Yes, I do. Although it appears Mr. Chari has attempted to maintain consistency between the growth rate ranges in the Spire Missouri rate case and this one, the range of growth rates Staff assumed in the Spire Missouri analysis was based on a review of five- and tenyear historical growth rates in DPS, BVPS, and EPS, and projected EPS growth rates for a natural gas proxy group. ${ }^{53}$ That is, Staff in the Spire Missouri rate case and Mr. Chari rely on different datasets to arrive at their growth rate ranges. Mr. Chari has provided no evidence to suggest that comparing different datasets for different proxy groups is a

[^9] reasonable approach to estimate the change in growth rates (or as Mr. Chari does, assume there has been no change).

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

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

## Q. WHAT IS THE RELEVANCE OF EXPECTED GROWTH RATES IN THE DCF MODEL?

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

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

[^10] academic support for the use of earnings growth projections because they have a statistically meaningful relationship to utility stock prices. In summary, growth rates are important inputs to DCF analyses, and analysts' earnings growth rate projections are the appropriate measure of expected growth. Other measures, such as those proposed by Mr. Chari, often have the effect of unreasonably suppressing ROE estimates.

## Q. WHY DOES MR. CHARI EXPRESS CONCERN WITH THE USE OF ANALYSTS’ FORECASTS OF EPS GROWTH IN HIS CONSTANT GROWTH DCF MODEL?

A. Mr. Chari asserts that because they are higher than his 4.40 percent high-end GDP growth estimate, analysts' growth rate projections are unsustainable. ${ }^{56}$
Q. IS THE USE OF ANALYSTS' EARNINGS GROWTH PROJECTIONS IN THE DCF MODEL SUPPORTED BY FINANCIAL LITERATURE?
A. Yes, it is. As explained in my Direct Testimony, the relationship between various growth rates and stock valuation metrics has been the subject of much academic research, including published articles that support the use of analysts' earnings growth projections in the DCF model. ${ }^{57}$
Q. DO YOU AGREE WITH MR. CHARI THAT LOAD GROWTH IS A REASONABLE MEASURE OF THE COMPANY'S EXPECTED GROWTH IN THE DCF MODEL? ${ }^{58}$
A. No, I do not. Mr. Chari’s position assumes there is a direct path from electric retail sales to earnings. As a practical matter, many variables enter that relationship. Rate design, for

[^11] example, may affect the relationship between retail sales and revenues. The relationship between revenue and earnings likewise is a function of operating margins, which in turn, are influenced by a variety of operating factors, such as productivity improvements.

To that point, the U.S. Energy Information Administration’s ("EIA") 2019 Annual Energy Outlook reports expected annual electricity sales to grow approximately 1.02 percent per year over the next five years, ${ }^{59}$ whereas the average electric proxy company expected earnings growth estimate reported in Schedule RBH R-1 is 5.49 percent. Analysts' expectations for earnings growth are not limited by retail electric sales growth, and Mr. Chari's focus on that factor is inconsistent with actual practice.

## Q. WHAT ARE STAFF'S DCF RESULTS BASED ON THE CHANGES NOTED ABOVE?

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

Table 2: Adjusted DCF Results

| Proxy Group | Low | High |
| :--- | :---: | :---: |
| Natural Gas - Spire Missouri | $6.90 \%$ | $7.70 \%$ |
| Natural Gas - Current | $7.15 \%$ | $7.95 \%$ |
| Electric | $7.58 \%$ | $8.30 \%$ |

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.

## D. Capital Asset Pricing Model

## Q. PLEASE BRIEFLY DESCRIBE MR. CHARI'S CAPM ANALYSES.

A. Mr. Chari's CAPM analyses assume a risk-free rate of 2.21 percent, an average calculated Beta coefficient of 0.54 for his electric proxy group and 0.60 for his natural gas proxy group, and historical Market Risk Premium ("MRP") estimates of 6.00 percent (using the long-term arithmetic mean) and 4.50 percent (using the long-term geometric mean). ${ }^{60}$ Based on those inputs, Mr. Chari’s CAPM calculations produce Cost of Equity estimates of 4.63 to 5.43 percent for his electric proxy group and 4.91 percent to 5.81 percent for his natural gas proxy group. ${ }^{61}$ Again, Mr. Chari considers his results on a relative, not absolute, basis and compares the current results to those as of June 30, 2017. Mr. Chari reports the CAPM results as of June 30, 2017 to be in the range of 6.08 percent to 7.14 percent. ${ }^{62}$

## Q. DO YOU AGREE WITH MR. CHARI'S CAPM ANALYSIS?

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

[^12]Q. BEFORE TURNING TO THE MRP, DO YOU AGREE WITH MR. CHARI'S USE OF THE AVERAGE 30-YEAR TREASURY YIELD AS THE RISK-FREE RATE?
A. Although I agree with Mr. Chari that it is appropriate to use the current average 30-year Treasury yield, I relied on both the current 30-day average 30-year Treasury yield and the (near-term) projected 30-year Treasury yield as reported in the Blue Chip Financial Forecast. ${ }^{63}$

## Q. HOW DID MR. CHARI CALCULATE HIS MRP ESTIMATES?

A. Mr. Chari cites Duff \& Phelps’ 2019 SBBI Yearbook, and states he calculated his MRP estimates by taking the difference between the long-term average earned return on stocks and bonds from 1926 - 2018. ${ }^{64}$
Q. IS IT APPROPRIATE TO RELY EXCLUSIVELY ON HISTORICAL DATA IN ESTIMATING THE MRP, AS MR. CHARI HAS DONE?
A. No, it is not. The Market Risk Premium represents the additional return required by equity investors to assume the risks of owning the "market portfolio" of equity relative to longterm Treasury securities. As with other elements of Cost of Equity analyses, the MRP is meant to be a forward-looking parameter. Simply relying on the historical MRP may produce results that are inconsistent with investor sentiment and current conditions in capital markets. For example, Morningstar observes:

It is important to note that the expected equity risk premium, as it is used in discount rates and cost of capital analysis, is a forward-looking concept. That is, the equity risk premium that is used in the discount rate should be reflective of what investors think the risk premium will be going forward. ${ }^{65}$

[^13]ROBERT B. HEVERT REBUTTAL TESTIMONY

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

## Q. WHAT IS THE DIFFERENCE BETWEEN THE GEOMETRIC AND THE ARITHMETIC MEAN RISK PREMIUM?

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

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

Lastly, investment risk or volatility is typically measured on the basis of the standard deviation. The standard deviation, in turn, is a function of the arithmetic, as opposed to the geometric mean. In that regard, the Beta coefficients applied in CAPM analyses are derived from the standard deviation of returns. ${ }^{66}$ In any case, Morningstar notes that:

The arithmetic average equity risk premium can be demonstrated to be the most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of the stock market returns and the riskless rates is the relevant number. ${ }^{67}$

Similarly, an article reviewing literature on the topic noted the following rationale
for using the arithmetic mean:
Note that the arithmetic mean, not the geometric mean is the relevant value for this purpose. The quantity desired is the rate of return that investors expect over the next year for the random annual rate of return on the market. The arithmetic mean, or simple average, is the unbiased measure of the expected value of repeated observations of a random variable, not the geometric mean. ... [The] geometric mean underestimates the expected annual rate of return. ${ }^{68}$

## Q. PUTTING ASIDE THE ISSUE OF WHETHER IT IS MORE APPROPRIATE TO

USE THE GEOMETRIC OR ARITHMETIC MEAN, DO YOU HAVE ANY CONCERNS WITH THE MANNER IN WHICH MR. CHARI CALCULATED HIS ASSUMED MARKET RISK PREMIUM?
A. Yes, I do. Mr. Chari's estimates are based on the historical difference in the total returns on stocks and bonds. According to Morningstar, however, the historical MRP is
appropriately calculated by subtracting the income only portion of the government bond return from the total return on large company stocks:

Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation return, and the reinvestment return.... The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return. ${ }^{69}$

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

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

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

[^14]investors and as such, equity investors bear the residual risk of ownership in perpetuity. As such, no rational equity investor would have a required ROE equal to the Cost of Debt, as Mr. Chari's CAPM analysis suggests. ${ }^{72}$

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

## Q. WHAT ARE YOUR CONCLUSIONS REGARDING MR. CHARI'S CAPM ANALYSIS? <br> A. As a practical matter, estimates as low as 4.63 percent have little, if any, practical meaning for the purpose of determining the Company's ROE, even if only used to assess the change in the ROE over time. Financial models must be applied giving due consideration to the reasonableness of the inputs, assumptions, and results. <br> E. Authorized Returns <br> Q. DO YOU HAVE ANY OBSERVATIONS REGARDING THE AUTHORIZED RETURN DATA PRESENTED BY MR. CHARI?

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

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

Table 3: Natural Gas Rate Cases ${ }^{73}$

| 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 |

Table 4: Vertically Integrated Electric Rate Cases ${ }^{74}$

| 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 |

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

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

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

Further, although the 2019 average for electric utilities appears to be lower, that average is substantially biased by the 8.75 percent authorized return for Otter Tail Power in South Dakota. That return represents the lowest authorized return for a vertically integrated electric utility in at least the last 40 years. ${ }^{75}$

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

Chart 4: Natural Gas Authorized Returns (2015-2020) ${ }^{76}$


Chart 5: Vertically Integrated Electric Authorized Returns (2015-2020) ${ }^{77}$


[^15]Q. DO YOU HAVE ANY OBSERVATIONS REGARDING THE 8.75 PERCENT ROE

## AUTHORIZED TO OTTER TAIL POWER?

A. Yes, as note earlier the lowest authorized ROE for a vertically integrated electric utility (8.75 percent) was authorized to Otter Tail Power by the South Dakota Public Utilities Commission ("SDPUC") on May 30, 2019. ${ }^{78}$ In considering the effect of that order, there are several points to keep in mind. First, South Dakota represents 10.00 percent of Otter Tail Corporation’s ("OTTR") retail electric revenues. ${ }^{79}$ Yet, from May 6 to May 31, 2019, OTTR lost about 5.20 percent of its market value, even though the Dow Jones Utility Average gained about 1.00 percent. ${ }^{80}$ I recognize that is a limited observation, but still, it appears OTTR meaningfully underperformed the utility sector around the time the SDPUC issued its order. My view that the SDPUC's order was anomalously low relative to returns authorized in other jurisdictions seems to be consistent with OTTR's price behavior.
Q. EARLIER, YOU DISCUSSED THE EFFECT THE PUCT'S DELIBERATIONS IN CENTERPOINT ENERGY HOUSTON ELECTRIC'S RATE CASE HAD ON CENTERPOINT ENERGY'S STOCK PRICE. CONSIDERING BOTH THE OTTER TAIL POWER AND CENTERPOINT CASES, ARE THERE CONCLUSIONS TO BE DRAWN FROM THEM?
A. Yes, there are. In the case of Otter Tail Power, it appears the market reacted adversely to an unfavorable regulatory decision, even though the operations affected by that decision represented only a small portion of the company's consolidated operations. The case of

CenterPoint Energy is very clear. There, CenterPoint Energy Houston Electric represents about 45.00 percent of the company's combined net income. ${ }^{81}$ In this proceeding, LibertyEmpire's Missouri electric operations are significant, representing about 37.00 percent of Liberty Utilities' planned capital investment through 2024. ${ }^{82}$

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

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

To summarize, we have seen the financial community react negatively to adverse regulatory decisions. A consequence of those reactions is a diminished ability to compete
for capital, and an increase in the cost of capital, to the detriment of customers. If Mr. Chari's ROE recommendation, which is far removed from the returns available to other utilities were to be adopted, the eventual result would be an increase in the Company's cost of capital.

## III. RESPONSE TO TESTIMONY OF OPC WITNESS MURRAY

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

A. Mr. Murray recommends an ROE of 9.25 percent, within a range of 8.50 percent to 9.25 percent, assuming a common equity ratio of 46.00 percent. ${ }^{84} \mathrm{Mr}$. Murray estimates the ROE using the Multi-Stage DCF model and the CAPM. ${ }^{85}$ He also reviews his "rule of thumb" method, and his Constant Growth DCF analysis, as checks on the reasonableness of his ROE recommendation. ${ }^{86}$

## A. Multi-Stage Discounted Cash Flow Model

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

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

[^16]ROBERT B. HEVERT REBUTTAL TESTIMONY constant in perpetuity, it essentially is equivalent to the "Gordon Growth" form of the Constant Growth DCF model. The "Gordon Growth" model represents the "terminal value," or the expected price at which the stock may be sold at the end of the forecast horizon. Mr. Murray's Multi-Stage DCF analysis produces average ROE estimates between 6.47 percent to 7.22 percent based on the nine proxy groups he presents. ${ }^{88}$

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

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

A. Mr. Murray's Schedule DM-D-6 estimates his 2.85 percent terminal growth rate based on the sustainable growth rate, calculated as the product of an assumed ROE of 9.50 percent and a 30.00 retention ratio. ${ }^{91}$

Mr. Murray does not explain how he determined 3.00 percent is an appropriate terminal growth rate in his Multi-Stage DCF analysis based on the approach he relied on in prior rate cases, ${ }^{92}$ other than to note that he believes sustainable growth rates are in the 2.00 percent to 3.00 percent range. ${ }^{93}$

[^17]Q. DOES MR. MURRAY PROVIDE SUPPORT FOR A SUSTAINABLE GROWTH RATE OF APPROXIMATELY 2.00 PERCENT TO 3.00 PERCENT?
A. Mr. Murray refers to analyses of historical industry growth based on the Moody's electric utility index, and historical growth for a sample group of electric utility companies based on Value Line data, and equity analyst reports. ${ }^{94}$

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

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

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

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

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

Chart 6: Moody's Electric Utility Index Book Value 1947-2000 ${ }^{97}$


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

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

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

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

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

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

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

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

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

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

## Q. DO YOU HAVE ANY OTHER CONCERNS WITH MR. MURRAY'S ASSUMED

 TERMINAL GROWTH RATE?A. Yes, I disagree with Mr. Murray's assumption that the historical payout ratios have been 70.00 percent. As shown in Schedule RBH-R10, since 1990 utilities have averaged a payout ratio closer to 65.00 percent. ${ }^{101} \mathrm{Had}$ Mr. Murray assumed a 35.00 percent retention ratio, ${ }^{102}$ the terminal growth rate would increase from 2.85 percent to 3.33 percent. Although I continue to believe 3.33 percent is unreasonably low, that change illustrates how Mr. Murray’s subjective assumptions may affect his analysis.

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

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

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

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

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

where:

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

The "SV" term models an additional element of growth resulting from the issuance of shares at a price above book value.

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

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

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

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

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

Because they are perpetual, terminal growth rates that substantially deviate from the long-term historical average should be viewed with considerable caution. That is the case with Mr. Murray's estimates. As a point of reference, the long-term compound average GDP growth rate has been 6.09 percent, approximately 310 to 325 basis points above Mr. Murray’s estimate. ${ }^{107}$

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

[^19] percent and 3.00 percent have been observed very infrequently. In fact, average annual growth exceeded 3.00 percent in 79 of 86 five-year periods.

Chart 7: Average Annual GDP Growth Measured Over Five-Year Periods ${ }^{108}$


## Q. WHAT ARE YOUR CONCLUSIONS RELATED TO MR. MURRAY'S MULTI-

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

## B. Capital Asset Pricing Model

Q. PLEASE BRIEFLY DESCRIBE MR. MURRAY'S CAPM ANALYSES.
A. Mr. Murray presents three CAPM analyses based on various estimates of the risk-free rate and MRP. His first CAPM analysis assumes a risk-free rate of 2.10 percent, based on a

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

Mr. Murray's third approach assumes the same Beta coefficients, but relies on the normalized risk-free rate ( 3.00 percent) and MRP ( 5.50 percent) from Duff \& Phelps. ${ }^{113}$ Those results range from 5.98 percent to 6.17 percent. ${ }^{114}$

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

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

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

109 Direct Testimony of David Murray, Schedule DM-D-7.
110 Ibid.
111 Ibid., Schedule DM-D-8.
112 Ibid.
113 Ibid., Schedule DM-D-9.
114 Ibid.
115 Direct Testimony of Robert B. Hevert, at 55.
116 The Constant Growth DCF model, for example, reflects the perpetual nature of equity investments.

When valuing a business that is being treated as a going concern, the appropriate Treasury yield should be that of a long-term Treasury bond. Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years. ${ }^{117}$

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

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

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

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

[^20]
## Q. HOW DID MR. MURRAY CALCULATE HIS MRP ESTIMATES?

A. Mr. Murray reviews MRPs from Duff \& Phelps’ 2019 Valuation Handbook, Bank of America Merrill lynch, and a survey from the Philadelphia Federal Reserve, concluding that a 6.00 percent MRP is reasonable. ${ }^{120}$ As noted above, Mr. Murray relied on estimates of the MRP from Duff \& Phelps.

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

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

Regarding Mr. Murray’s position that expected market returns "are as low as in the $5 \%$ to $6 \%$ range," ${ }^{121}$ as reported by the Federal Bank of Philadelphia, looking to the Federal Bank of Philadelphia’s First Quarter 2019 survey, only 16 of 38 participants responded to the question regarding the expected return for the S\&P 500 over the next ten years. ${ }^{122}$

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

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Q. WHAT ARE YOUR CONCLUSIONS REGARDING MR. MURRAY'S CAPM ANALYSIS?
A. As a practical matter, estimates as low as 5.35 percent have little, if any, practical meaning for the purpose of determining the Company's ROE. Mr. Murray's view that his 5.35 percent to 6.17 percent CAPM results have any analytical meaning is misplaced on its face. Equally important, Mr. Murray’s position demonstrates the difficulty in applying financial models without giving due consideration to the reasonableness of the inputs, assumptions, and results.

## C. "Rule of Thumb" Calculation

Q. PLEASE BRIEFLY SUMMARIZE MR. MURRAY'S "RULE OF THUMB" CALCULATION.
A. Mr. Murray's calculation adds "a $3 \%$ risk premium to recent average BBB rated and 'A'rated utility bond yields of $3.4 \%$ to $3.75 \%$." ${ }^{123}$ Based on that approach, Mr. Murray presents an ROE estimate of 6.40 percent to 6.75 percent. ${ }^{124}$

## Q. ARE MR. MURRAY'S CONCLUSIONS VALID?

A. No, his "rule of thumb" approach ignores the finding that the Equity Risk Premium is inversely related to interest rates. That relationship, which was demonstrated with respect to long-term Treasury yields in my Direct Testimony, ${ }^{125}$ and is consistent with published

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research, ${ }^{126}$ also applies to utility bond yields. As Chart 8 (below), demonstrates, there is a significant, negative relationship between the Moody’s Baa Utility Bond Index yield and the Equity Risk Premium (defined by reference to authorized ROEs).

Chart 8: Equity Risk Premium vs. Moody's Utility Baa Index Yield ${ }^{127}$


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

[^23]
## D. Constant Growth Discounted Cash Flow Model

Q. PLEASE BRIEFLY SUMMARIZE MR. MURRAY'S CONSTANT GROWTH DCF MODEL.
A. Mr. Murray performs his generic Constant Growth DCF analysis based on a dividend yield of 3.00 percent, and adds to that a 3.00 percent to 4.00 percent growth rate, which he bases on "long-term industry averages and economic logic." ${ }^{128}$
Q. DO YOU HAVE ANY CONCERNS WITH MR. MURRAY'S CONSTANT GROWTH DISCOUNTED CASH FLOW MODEL?
A. Yes, I do. Mr. Murray does not perform his Constant Growth DCF analysis on a proxy group, as he does his Multi-Stage DCF and CAPM analyses. Rather, he applies the model based on what he believes to be utility industry dividend yields and growth rates. As noted in my Direct Testimony, the use of a proxy group is consistent with the economic principle of "opportunity costs", which is fundamental to the Cost of Equity. ${ }^{129}$ Further, because Mr. Murray's Constant Growth DCF analysis is entirely subjective, it is impossible to recreate his analysis or to determine how new data may change the results. Although he recognized the importance of relying on a proxy group in his Multi-Stage DCF and CAPM analyses, Mr. Murray did not do so in his Constant Growth DCF analysis.

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

## Q. WHAT ARE YOUR CONCLUSIONS REGARDING MR. MURRAY'S

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

## E. Financial Integrity and ROE Determinations

Q. DID MR. MURRAY QUANTIFY THE POTENTIAL EFFECT OF HIS ROE RECOMMENDATION ON LIBERTY-EMPIRE'S FINANCIAL INTEGRITY?
A. Mr. Murray develops a pro forma analysis in which he considers Liberty-Empire's Funds from Operations ("FFO") to debt ratio assuming a 46.00 percent common equity ratio together with a 9.25 percent ROE. ${ }^{130}$ Mr. Murray states those assumptions support an S\&P credit rating of BBB for Liberty-Empire. ${ }^{131}$
Q. DO YOU HAVE ANY GENERAL OBSERVATIONS REGARDING MR. MURRAY'S APPROACH TO ASSESSING HIS RECOMMENDATION BY REFERENCE TO PRO FORMA CREDIT METRICS?
A. Yes, I do. It is helpful to review rating agencies’ perspectives regarding their use of credit metrics in rating determinations. On November 30, 2007, S\&P released a statement announcing that electric, gas, and water utility ratings would be "categorized under the business/financial risk matrix used by the Corporate Ratings group". ${ }^{132}$ S\&P also provided

[^24]matrices of business and financial risk, based on "Financial Risk Indicative Ratios":
FFO/Debt; FFO/Interest; and Total Debt/Capital. In that announcement, S\&P noted:
...even after we assign a company business risk and financial risk, the committee does not arrive by rote at a rating based on the matrix. The matrix is a guide - - it is not intended to convey precision in the ratings process or reduce the decision to plotting intersections on a graph. Many small positives and negatives that affect credit quality can lead a committee to a different conclusion than what is indicated in the matrix.

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

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

Moreover, our assessment of financial risk is not as simplistic as looking at a few ratios. ${ }^{133}$

Later, on September 18, 2012, S\&P further expanded its matrix, confirming "[s]till, it is essential to realize that the financial benchmarks are guidelines, neither gospel nor guarantees." ${ }^{134}$

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

133 Standard \& Poor’s Ratings Services, Criteria Methodology: Business Risk/Financial Risk Matrix Expanded, May 27, 2009.
Standard \& Poor’s Ratings Services, Methodology: Business Risk/Financial Risk Matrix Expanded, September 18, 2012.

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

## Q. ARE CREDIT RATINGS DETERMINED LARGELY BY THE FFO/DEBT METRIC?

A. No, they are not. S\&P's ratings process considers a range of both quantitative and qualitative data. As Chart 9 (below) demonstrates, Cash Flow/Leverage considerations are but one element of a broad set of criteria. The FFO/debt metric therefore represent only a portion of the factors considered by S\&P. Again, a pro forma assessment of certain ratios does not address the complex assessments considered by either debt or equity investors. Chart 9: Standard \& Poor's Corporate Criteria Framework ${ }^{135}$


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

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. ${ }^{136}$

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

[^25]Q. DOES MOODY'S CONSIDER SIMILAR FACTORS IN ITS RATINGS

## DETERMINATIONS?

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

Chart 10: Moody's Rating Factors and Associated Weights ${ }^{137}$

| 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 Sufficiency of Rates and Returns | $\begin{aligned} & 12.5 \% \\ & 12.5 \% \end{aligned}$ |
| Diversification | 10\% | Market Position | 5\%* |
|  |  | Generation and Fuel Diversity | 5\%** |
| Financial Strength, Key Financial Metrics | 40\% |  |  |
|  |  | CFO pre-WC + Interest/ Interest | 7.5\% |
|  |  | CFO pre-WC / Debt | 15.0\% |
|  |  | CFO pre-WC - Dividends / Debt | 10.0\% |
|  |  | Debt/Capitalization | 7.5\% |
| Total | 100\% |  | 100\% |
| Notching Adjustment |  |  |  |
| Holding Company Structural Subordination |  |  | 0 to -3 |
| *10\% weight for issuers that lack generation; ** $0 \%$ weight for issuers that lack generation |  |  |  |

Moody's ratings process is not mechanical and does not rely on pro forma assessments of financial metrics. As Moody's explains, "...the four rating factors and the notching factor in the grid do not constitute an exhaustive treatment of all of the

[^26]considerations that are important for ratings of companies in the regulated electric and gas utility sector." ${ }^{138}$ More generally, Moody's notes that its rating grid:
...provides summarized guidance for the factors that are generally most important in assigning ratings to companies in the regulated electric and gas utility industry. However, the grid is a summary that does not include every rating consideration. The weights shown for each factor in the grid represent an approximation of their importance for rating decisions but actual importance may vary substantially. In addition, the grid in this document uses historical results while ratings are based on our forward-looking expectations. As a result, the grid-indicated rating is not expected to match the actual rating of each company. ${ }^{139}$

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

## Q. DO YOU AGREE WITH MR. MURRAY THAT HIS ROE RECOMMENDATION IS HIGHER THAN LIBERTY-EMPIRE'S ACTUAL COST OF EQUITY, AND THAT IT IS COMMON PRACTICE FOR UTILITY COMMISSIONS TO SET THE AUTHORIZED ROE ABOVE THE ACTUAL COST OF EQUITY? ${ }^{140}$

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

[^27]proceeding. The Hope and Bluefield standards require the authorized ROE to be comparable to the returns available from companies with similar business and financial risks. To that point, the Commission has determined that authorized ROEs in other jurisdictions are a relevant benchmark in developing a zone of reasonableness against which it may test the authorized ROE. ${ }^{143}$

## F. Capital Structure

## Q. <br> PLEASE BRIEFLY SUMMARIZE MR. MURRAY'S PROPOSED CAPITAL STRUCTURE.

A. Mr. Murray recommends a capital structure including 46.00 percent common equity and 54.00 percent long-term debt. ${ }^{144}$ Mr. Murray's recommended capital structure considers the capital structure of Liberty-Empire's immediate parent company and the "amount of leverage APUC targets as reasonable for the lower business risk associated with LUCo’s regulated utilities." ${ }^{145}$

## Q. WHAT FACTORS DO UTILITIES GENERALLY CONSIDER IN DEVELOPING

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

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

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

The requirement to access the capital markets in all market conditions can be contrasted with the financial needs of other entities without the legal obligation to serve. Because of that obligation, the financial flexibility brought about by the access to both long-term capital and short-term liquidity is critical for utilities' financial integrity, and their ability to continually attract capital. Unregulated firms have options to choose whether, where, and when to make investments; what services or products will be offered; whether to invest in expansions; and whether to cease operations in a given location. That is, unregulated companies may adjust the timing and amount of their major capital expenditures to align with economic cycles, and to defer decisions and investments to better match market conditions. Regulated companies have limited options to do so. Ensuring the financial strength to access capital because of the reduced spending flexibility therefore is critically important to utilities, their investors, and their customers.

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

## Q. IS THERE A GENERAL FINANCING PRACTICE TYPICALLY USED BY UTILITIES?

A. Yes, there is. As discussed in my Direct Testimony, ${ }^{146}$ although capital structure optimization is complex, there are certain principles that commonly apply among utilities. In my experience, the financing practice sometimes referred to as "maturity matching" is chief among those principles. That practice aligns the average life of the securities in the capital structure with the average lives of the assets being financed. ${ }^{147}$

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

147 This is not to say that an individual dollar may be traced from its source to its use.
life of the rate base, common equity is needed to extend the capital structure's duration to more closely match that of the rate base. That is, owing to its perpetual life, common equity extends the weighted average life of the capital structure, and mitigates financing risk. Conversely, relying more heavily on debt increases the risk of refinancing maturing obligations during less accommodating market environments.

## Q. WHAT WOULD BE THE EFFECT OF INCREASING THE DEBT COMPONENT

 AND REDUCING THE COMMON EQUITY COMPONENT OF LIBERTYEMPIRE'S CAPITAL STRUCTURE AS MR. MURRAY SUGGESTS?A. Lowering Liberty-Empire's equity ratio would put upward pressure on its cost of capital, to the long-term detriment of its customers. As noted earlier, rating agencies such as S\&P consider the regulatory environment, including the extent to which the presiding regulatory commission is supportive of issues affecting credit quality, to be an important determinant of the subject company's credit profile. Based on criteria established by S\&P, a company's credit rating is the result of the combination of the company's "Business Risk" rating and its "Financial Risk" rating. A decision by the Commission to increase Liberty-Empire's debt ratio (i.e., increase Liberty-Empire’s financial leverage) could adversely affect both the Company's Business Risk rating and investors' perception of the regulatory environment in Missouri.

In a similar fashion, Moody's considers the regulatory structure to be so important that 50.00 percent of the factors that weigh in a ratings determination are related to the
nature of regulation. ${ }^{148}$ Among the factors considered by Moody's in assessing the regulatory framework are the predictability and consistency of regulatory actions:

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

In situations where the regulatory framework is less supportive, or is more contentious, a utility's credit quality can deteriorate rapidly. ${ }^{149}$
Q. MR. MURRAY ARGUES LIBERTY UTILITIES COMPANY (THE COMPANY'S PARENT COMPANY) "IS USING A MORE ECONOMICAL CAPITAL STRUCTURE THAN EMPIRE'S IMPLIED HIGHER COST CAPITAL STRUCTURE." ${ }^{150}$ AS A RESULT, HE SUGGESTS LIBERTY-EMPIRE'S PARENT COMPANY ADJUSTED CAPITAL STRUCTURE SHOULD BE RELIED ON. WHAT IS YOUR RESPONSE?
A. Mr. Murray's position appears to suggest the Company is engaging in double leverage, to the detriment of customers. ${ }^{151}$ I have several concerns with that position. First, as discussed above, in my experience utilities typically apply the prudent financing principle of maturity, or duration matching. Under that principle, long-lived assets are financed with correspondingly long-lived securities. As discussed earlier, due to its perpetual life common equity has a long duration. Adding equity to the capital structure therefore

[^29]ROBERT B. HEVERT REBUTTAL TESTIMONY extends the capital structure's weighted average duration, more closely aligning it with the assets that form the rate base.

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

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

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

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

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

Carrying the double leverage standard to its logical conclusion leads to even more unreasonable prescriptions. If the common shares of a subsidiary were held by both the parent and by individual investors, the equity contributed by the parent would have one cost under the double leverage computation while the equity contributed by the public would have another. ${ }^{152}$

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

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

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Energy Group, Corporate. ${ }^{153}$ Because they are separately reported, we reasonably can assume those segments face different risks. And because they face different risks, we reasonably may assume they require different returns. Dr. Morin further noted:

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

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

1. Pettway and Jordan (1983), and Beranek and Miles (1988) point out the flaws in the double leverage argument, particularly the excess return argument, and also demonstrate that the "stand-alone" method is the superior approach. ${ }^{155}$
2. Rozeff (1983) discusses the ratepayer cross-subsidies of one subsidiary by another when employing double leverage. ${ }^{156}$

[^30]3. Lerner (1973) concludes that the returns granted to equity investors must be based on the risks to which the investors' capital is exposed and not the investors' source of funds. ${ }^{157}$ Basic finance texts reach the same conclusions. In Principles of Corporate Finance, $8^{\text {th }}$ edition, Brealey, Myers, and Allen state:

In principle, each project should be evaluated at its own opportunity cost of capital; the true cost of capital depends on the use to which the capital is put. If we wish to estimate the cost of capital for a particular project, it is project risk that counts. ${ }^{158}$

Likewise, in Modern Corporate Finance, $1^{\text {st }}$ edition, Shapiro states:
Each project has its own required return, reflecting three basic elements: (1) the real or inflation-adjusted risk-free interest rate; (2) an inflation premium approximately equal to the amount of expected inflation; and (3) a premium for risk. The first two cost elements are shared by all projects and reflect the time value of money, whereas the third component varies according to the risks borne by investors in the different projects. For a project to be acceptable to the firm's shareholders, its return must be sufficient to compensate them for all three cost components. This minimum or required return is the project's cost of capital and is sometimes referred to as a hurdle rate.

The preceding paragraph bears a crucial message: The cost of capital for a project depends on the riskiness of the assets being financed, not on the identity of the firm undertaking the project. ${ }^{159}$

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

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

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

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

158 Richard A. Brealey, Steward C. Meyers, Franklin Allen, Principles of Corporate Finance, McGraw-Hill Irwin, 8th Ed., 2006, at 234.
Alan C. Shapiro, Modern Corporate Finance, Wiley, 1st Ed., 1990, at 276.

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rather than the risks faced by the capital. ${ }^{160}$
In 2016, the Federal Energy Regulatory Commission ("FERC") reiterated its previous position on "double leveraging," ${ }^{161}$ stating that "the motivations of a parent company are irrelevant" ${ }^{162}$ so long as the operating company passes the FERC’s three-part test: (i) it issues its own debt without guarantees; (2) it has its own bond rating; and (3) it has a capital structure within the range of capital structures approved by the commission. ${ }^{163}$ Under FERC guidance, the capital structure of Duke Energy Corporation is not applicable to DE Carolinas.

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

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

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

The ring fencing provisions required by our final order in Docket UE051090 insulate PacifiCorp and its customers from risks and financial distress at the MEHC level. Nonetheless, after having insulated PacifiCorp and its customers from the risks of leveraged financing at the

[^31]parent, Staff and Public Counsel seek to secure for customers the cost and tax benefits of that financing. The Company's expert witness argues this may violate the familiar principle in utility law that financial benefits should follow burden of risks. We agree. If the risks and costs of activities at the parent-level are born exclusively by shareholdersbecause customers are insulated from them by the ring fence-then it is fair and appropriate for the shareholders, and not the customers, to receive the benefits that result from those activities. ${ }^{165}$

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

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

## Q. IS MR. MURRAY'S PROPOSED CAPITAL STRUCTURE CONSISTENT WITH

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

On the other hand, Liberty-Empire's proposed equity ratio updated as of September 30, 2019 of 52.93 percent continues to be within the range of its peers'. On that basis, I believe it is reasonable and appropriate, and should be approved by the Commission.
Q. WHAT IS THE IMPLICATION OF A CAPITAL STRUCTURE THAT IS TOO HEAVILY WEIGHTED WITH DEBT FOR THE COMPANY'S COST OF CAPITAL?
A. Simply, adding additional debt, as Mr. Murray suggests, creates additional degrees of financial risk. Financial risk, which is the additional risk that the subject company may not have adequate cash flows to meet its financial obligations, is created by the introduction of senior capital, i.e., debt and preferred stock, into the capital structure. Intuitively, as the degree of financial leverage increases, the risk of financial distress also increases. Even if two firms face the same business risks, the company with meaningfully higher levels of debt in its capital structure is likely to have greater financial risk and, therefore, higher costs of both debt and equity. As Brigham and Gapenski point out, "...the use of debt, or financial leverage, concentrates the firm's business risk on its stockholders."

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

## Q. WHAT IS YOUR CONCLUSION REGARDING AN APPROPRIATE CAPITAL STRUCTURE FOR THE COMPANY

A. Considering the average actual common equity ratios in place at the proxy companies, I believe that Liberty-Empire's proposed common equity ratio as updated at September 30, 2019 of 52.93 percent is reasonable. Mr. Murray's proposed equity ratio, however, is
inconsistent with the equity ratios of comparable companies, would add unnecessary and unproductive levels of financial risk, and should be rejected.

## IV. CONCLUSIONS AND RECOMMENDATION

Q. WHAT ARE YOUR OVERALL CONCLUSIONS AND RECOMMENDATIONS?
A. Based on the analyses discussed throughout my Rebuttal Testimony, I conclude that the reasonable range of ROE estimates remains from 9.80 percent to 10.60 percent. I continue to believe an ROE of 9.95 percent is reasonable for Liberty-Empire.

In addition, the Company's updated at September 30, 2019 proposed capital structure of 52.93 percent common equity and 47.07 percent long-term debt is consistent with industry practice.
Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?
A. Yes, it does.

Constant Growth Discounted Cash Flow Model
30 Day Average Stock Price

|  |  | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Ticker | Annualized Dividend | Average Stock Price | Dividend Yield | Expected Dividend Yield | $\begin{aligned} & \text { Zacks } \\ & \text { Earnings } \\ & \text { Growth } \end{aligned}$ | First Call Earnings Growth | Value Line Earnings Growth | Average Earnings Growth | $\begin{aligned} & \text { Low } \\ & \text { ROE } \end{aligned}$ | Mean ROE | $\begin{aligned} & \text { High } \\ & \text { ROE } \\ & \hline \end{aligned}$ |
| 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:

Notes.
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of January 31, 2020
[3] Equals [1] / [2]
[4] Equals [3] $\times(1+0.5 \times[8])$
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average([5], [6], [7])
[9] Equals [3] $\times(1+0.5 \times$ Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] $\times(1+0.5 \times$ Maximum $([5],[6],[7]))+$ Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Mode
90 Day Average Stock Price

|  |  | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Ticker | Annualized Dividend | Average Stock Price | Dividend Yield | Expected Dividend Yield | Zacks Earnings Growth | First Call Earnings Growth | Value Line Earnings Growth | Average Earnings Growth | $\begin{array}{r} \text { Low } \\ \text { ROE } \\ \hline \end{array}$ | Mean ROE | $\begin{aligned} & \text { High } \\ & \text { ROE } \end{aligned}$ |
| 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:
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of January 31, 2020
[3] Equals [1] / [2]
[4] Equals [3] $\times(1+0.5 \times[8])$
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average([5], [6], [7])
[9] Equals [3] $\times(1+0.5 \times$ Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] $\times(1+0.5 \times$ Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Mode
180 Day Average Stock Price

|  |  | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Ticker | Annualized Dividend | Average Stock Price | Dividend Yield | $\begin{gathered} \hline \text { Expected } \\ \text { Dividend } \\ \text { Yield } \\ \hline \end{gathered}$ | $\begin{aligned} & \text { Zacks } \\ & \text { Earnings } \\ & \text { Growth } \\ & \hline \end{aligned}$ | First Call Earnings Growth | $\begin{gathered} \text { Value Line } \\ \text { Earnings } \\ \text { Growth } \\ \hline \end{gathered}$ | Average Earnings Growth | $\begin{array}{r} \text { Low } \\ \text { ROE } \\ \hline \end{array}$ | Mean ROE | $\begin{aligned} & \text { High } \\ & \text { ROE } \end{aligned}$ |
| 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\% |

$\frac{\text { Notes: }}{\text { [1] Source: Bloomberg Professional }}$
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of January 31, 2020
[3] Equals [1] / [2]
[4] Equals [3] $\times(1+0.5 \times[8])$
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average([5], [6], [7])
[9] Equals [3] $\times(1+0.5 \times$ Minimum([5], [6], [7]) $)+$ Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] $\times(1+0.5 \times$ 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 | APTV | 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 | BMY | 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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term Growth |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Est. | DCF Result | 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 | Cl | 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 $\mathrm{Co} /$ /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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term Growth |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Est. | DCF Result | 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\% |
| Evergy 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\% |
| Flowserve 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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term Growth |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Est. | DCF Result | 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 $\mathrm{Co} /$ 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\% |
| MSCl Inc | MSCl | 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\% |
| Nettlix 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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term Growth |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Est. | DCF Result | 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 | $\bigcirc$ | 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 | PFG | 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 $\mathrm{Co} /$ 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 | SYY | 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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term Growth |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Est. | DCF Result | 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\% |

Notes:
[1] Equals sum of Col. [9]
[2] Source: Bloomberg Professional
[3] Equals [1] - [2]
[4] Source: Bloomberg Professional
[5] Equals weight in S\&P 500 based on market capitalization
[6] Source: Bloomberg Professional
[7] Source: Bloomberg Professional
[8] Equals ([6] $\times(1+(0.5 \times[7])))+[7]$
[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\% |
| Albemarle 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\% |
| Amcor 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 | APTV | 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 $\mathrm{Co} /$ /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 | BMY | 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] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Growth Est. | DCF Result | 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 | CCl | 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 | Cl | 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 $\mathrm{Co} /$ /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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Growth Est. | DCF Result | 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\% |
| Entergy Corp | ETR | 25,871.36 | 0.10\% | 2.88\% | 2.00\% | 4.91\% | 0.0047\% |
| Evergy 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\% |
| Flowserve 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\% |


|  |  | [4] | [5] | [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Market |  | Estimated | Long-Term |  | Weighted |
| Company | Ticker | Capitalization | Weight in Index | Dividend Yield | Growth Est. | DCF Result | 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 $\mathrm{Co} /$ 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 | MNST | 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 |


|  |  | [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 |
| 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 | $\bigcirc$ | 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 | PFG | 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 | SYY | 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 | 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 $\mathrm{Co} /$ 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\% |

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

Bloomberg and Value Line Beta Coefficients

|  |  | $[1]$ | $[2]$ |
| :--- | :---: | :---: | :---: |
| Company | Ticker | 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 |  |  |  |

## Notes:

[1] Source: Bloomberg Professiona
[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] |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  | CAP | Result | ECAP | Result |
|  | Risk-Free Rate | Average Beta Coefficient | Bloomberg Market DCF Derived | Value Line Market DCF Derived | $\begin{gathered} \text { Bloomberg } \\ \text { MRP } \\ \hline \end{gathered}$ | Value Line $\qquad$ | Bloomberg Market DCF Derived | Value Line <br> Market DCF Derived |
| PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT |  |  |  |  |  |  |  |  |
| 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 | $\begin{gathered} \text { Bloomberg } \\ \text { MRP } \\ \hline \end{gathered}$ | Value Line MRP | Bloomberg Market DCF Derived | Value Line Market DCF Derived |
| PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT |  |  |  |  |  |  |  |  |
| 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] $+0.25 \times$ Col. [3] $+0.75 \times$ Col. [2] $\times$ Col. [3]
[8] Equals Col. [1] $+0.25 \times$ Col. [4] $+0.75 \times$ Col. [2] $\times$ 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




## 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] $+\ln ([3]) \times$ [2]
[5] Equals [3] + [4]
[6] Source: S\&P Global Market Intelligence
[7] Source: S\&P Global Market Intelligence
[8] Source: Bloomberg Professional, equals 200-trading day average (i.e. lag period)
[9] Equals [7] - [8]

| ond Yield Plus Risk Premium |  |  |  |
| :---: | :---: | :---: | :---: |
| [6] | [7] | [8] | [9] |
| Date of |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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\% |


| ond Yield Plus Risk Premium |  |  |  |
| :---: | :---: | :---: | :---: |
| [6] | [7] | [8] | [9] |
| Date of |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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\% |


| [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: |
| Date of |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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\% |


| [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: |
| Date of |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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\% |


| [6] | [7] | [8] | [9] |
| :---: | :---: | :---: | :---: |
| Date of |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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 |  | 30-Year |  |
| Electric | Return on | Treasury | Risk |
| Rate Case | Equity | Yield | 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

|  |  | [1] <br> Expected ROE | [2] | [3] es Outstan | [4] | [5] <br> Adjustment | [6] <br> Adjusted |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Ticker | 2022-24 | 2019 | 2022-24 | \% Increase | Factor | 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 | [3] Source: Value Line |  |  |  | [5] Equals $(2 \times(1+[4])) /(2+[4])$ |  |  |
| [2] Source: Value Line | [4] Equals $=([3] /[2])^{\wedge}(1 / 4)-1 ;([3] /[2])^{\wedge}(1 / 5)-1$ |  |  |  | [6] Equals [1] $\times$ [5] |  |  |

Proxy Group Capital Structure

|  | \% Common Equity |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Ticker | 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

|  | \% Common Equity |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Operating Company | Parent | 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\&P Global Market Intelligence

Proxy Group Capital Structure

|  |  | \% Long-Term Debt |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Ticker | 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

|  |  | \% Long-Term Debt |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Operating Company | Parent | 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\&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\% | 0.00\% | 100.00\% |
| 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 | -0.57\% | -0.57\% | -0.57\% |
|  | 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 | -0.57\% | -0.57\% | -0.57\% |

Mr. Chari Schedule PC-9-3 - Recreated As Filed
$\left.\left.\begin{array}{lcccc} & \text { Ticker } & & \begin{array}{c}\text { 10-Year } \\ \text { Historical } \\ \text { Growth Rate } \\ \text { EPS }\end{array} & \begin{array}{c}\text { 5-Year } \\ \text { Historical } \\ \text { Growth Rate } \\ \text { EPS }\end{array}\end{array} \begin{array}{c}\text { Projected } \\ \text { 5-Year } \\ \text { EPS Growth } \\ \text { SNL }\end{array}\right] \begin{array}{l}\text { (Mean) (\%) }\end{array}\right]$

Source: Schedule PC-9-3

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

| Company Name | Ticker | 10-Year <br> Historical Growth Rate EPS | 5-Year <br> 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 Date |  |  |  | AEE US Equity |  |  |  |  | AEP US Equity |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Date | TRAIL_12 EQY_DPS Payout \% |  |  |  | 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 | $65.22 \%$ |


| AGR US Equity Date | TRAIL_12 EQY_DPS Payout \% |  |  | AVA US EquityDate | TRAIL_12 EQY_DPS Payout \% |  |  | BKH US Equity |  |  |  | CNP US Equity |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | Date |  |  |  | TRAIL_12 | EQY_DPS P | 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 | 0.8869 |
| 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_DP | 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 | 0.66859 | 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_DP¢ | Payout \% | Date | TRAIL_12 | QY_DPS | Payout \% | Date | TRAIL_12 | QY_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 |



| HE US Equity | IDA US Equity |  |  |  |  |  |  | MGEE US Equity |  |  |  | NEE US Equity |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Date | TRAIL_12 | QY_DP | Payout \% | Date | TRAIL_12 | EQY_DP | ayout \% | Date | TRAIL_12 | EQY | Payout \% | Date | TRAIL_1 | _ | ayout \% |
| 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 |  |  | dian | 0.51948 |


| NWE US Equity |  |  |  | OGE US Equity |  |  |  | OTTR US Equity |  |  |  | PCG US Equity |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Date | TRAIL_12 EQY_DPS Payout \% |  |  | Date | TRAIL_12 EQY_DP§ Payout \% |  |  | Date | TRAIL_12 EQY_DP§ 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 | QY_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 EquityDate | TRAIL_12 |  |  | SO US EquityDate |  | VVC US Equity |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Date | TRAIL_12 | EQY_DPS | Payout \% |  |  | EQY_DPS P | Payout \% |  |  | 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 |

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| 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 | QY_DP | 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 |

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| 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 |

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| SJI US Equity | TRAIL_12 EQY_DPS Payout \% |  |  | SWX US Equity |  |  |  | SR US EquityDate | UGI US Equity |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Date |  |  |  | Date | TRAIL_12 | EQY_DPS | Payout \% |  | 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 <br> Average of 10-Year Treasury Yield | 30-Day <br> 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. | \$4.52 | \$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 | \$4.55 | \$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 |
| Evergy, Inc. | \$3.13 | \$3.28 | \$3.45 | \$3.62 | \$3.93 | \$4.23 | \$4.53 | \$4.83 | \$5.11 | \$5.37 | \$5.64 | \$5.93 |
| Eversource Energy | \$3.65 | \$3.86 | \$4.12 | \$4.40 | \$4.85 | \$5.14 | \$5.43 | \$5.73 | \$6.03 | \$6.34 | \$6.66 | \$7.00 |
| 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.x|s, "WP-Multi-stage"

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


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

|  | Cost of |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | Equity | 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 |
| Entergy 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 |

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 | 2028 | 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\% |
| Entergy 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\% |
| Evergy, 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 | 8.76\% |
| 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 | \$2.56 | \$2.78 | \$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\% |
| Average | 9.03\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Average Regulated EEI | 9.08\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Average w/o EIX, EE, SE, PPL, PCG | 8.55\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| le Regulated EEI w/o EIX, EE, SE, PPL, PCG | 8.43\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Average Mostly Pure Play | 8.33\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Average Pure Play | 8.41\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Average Pure Play VI Elec | 8.41\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Combined 2012-2014 | 8.45\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Companies from 2014 Rate Case | 8.53\% |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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

| Analysts' Est 5- |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | 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\% |
| Evergy, Inc. | 8.48\% | Discrete Est. | Discrete Est. | 8.48\% | 7.80\% | 7.12\% | 6.45\% | 5.77\% | 5.09\% |
| Eversource Energy | 6.10\% | Discrete Est. | Discrete Est. | Discrete Est. | 5.90\% | 5.70\% | 5.50\% | 5.29\% | 5.09\% |
| Exelon Corporation | 3.67\% | Discrete Est. | Discrete Est. | Discrete Est. | Discrete Est. | 4.24\% | 4.52\% | 4.81\% | 5.09\% |
| FirstEnergy Corp. | 6.20\% | Discrete Est. | Discrete Est. | 6.20\% | 5.98\% | 5.76\% | 5.53\% | 5.31\% | 5.09\% |
| Hawaiian Electric Industries, Inc. | 4.22\% | Discrete Est. | Discrete Est. | 4.22\% | 4.39\% | 4.57\% | 4.74\% | 4.92\% | 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 |
| Entergy 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 |
| Evergy, Inc. | \$3.13 | \$3.28 | \$3.45 | \$3.62 | \$3.93 | \$4.22 | \$4.48 | \$4.71 | \$4.89 | \$5.03 | \$5.18 | \$5.32 |
| Eversource Energy | \$3.65 | \$3.86 | \$4.12 | \$4.40 | \$4.85 | \$5.11 | \$5.36 | \$5.58 | \$5.78 | \$5.94 | \$6.11 | \$6.29 |
| 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\% |
| Entergy Corporation | -117.81 | 17.26 | 12.31 | 88.24 | 0.00 | 75\% |
| Evergy, 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


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

|  | Cost of |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | 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 |
| Evergy, Inc. | 6.96\% | -63.81 | \$2.05 | \$2.20 | \$2.34 | \$2.43 | \$2.65 | \$2.87 | \$3.07 | \$3.25 | \$3.40 | \$3.52 |
| Eversource Energy | 6.53\% | -83.19 | \$2.26 | \$2.40 | \$2.56 | \$2.73 | \$2.86 | \$3.13 | \$3.40 | \$3.66 | \$3.92 | \$4.16 |
| Exelon Corporation | 7.72\% | -45.44 | \$1.52 | \$1.60 | \$1.68 | \$1.84 | \$2.10 | \$2.37 | \$2.54 | \$2.72 | \$2.90 | \$3.08 |
| FirstEnergy Corp. | 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 |

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

| Analysts' Est 5- |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Company | 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\% |
| Evergy, Inc. | 8.48\% | Discrete Est. | Discrete Est. | 8.48\% | 7.35\% | 6.23\% | 5.10\% | 3.98\% | 2.85\% |
| Eversource Energy | 6.10\% | Discrete Est. | Discrete Est. | Discrete Est. | 5.45\% | 4.80\% | 4.15\% | 3.50\% | 2.85\% |
| Exelon Corporation | 3.67\% | Discrete Est. | Discrete Est. | Discrete Est. | Discrete Est. | 3.34\% | 3.18\% | 3.01\% | 2.85\% |
| FirstEnergy Corp. | 6.20\% | Discrete Est. | Discrete Est. | 6.20\% | 5.53\% | 4.86\% | 4.19\% | 3.52\% | 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 COUNTY OF WORCESTER

On the $2^{n d}$ 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.


Subscribed and sworn to before me this $\qquad$ day of March, 2020.


Notary Public
My commission expires:/80, 8, 2024



[^0]:    1 Direct Testimony of Robert B. Hevert, at 2. See, Schedules RBH-R1 through RBH-R6.

[^1]:    Staff Cost of Service Report, at 18.
    Ibid.
    See, File Nos. GR-2017-0215 and GR-2017-0216.
    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.

[^2]:    $7 \quad$ Assuming his recommended common equity ratio of 46.00 percent. Direct Testimony of David Murray, Schedules DM-D-6 through DM-D-9.
    See, Hydro One and Avista Mutually Agree to Terminate Merger Agreement, Press Release, January 23, 2019.

[^3]:    Ibid. [Clarification added]
    Source: Regulatory Research Associates.

[^4]:    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.
    See, Rebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. ER-20180145 and ER-2018-0146, July 27, 2018.
    See, Surrebuttal Testimony of Jeffrey Smith, Missouri Public Service Commission, Docket No. ER-20180145 and ER-2018-0146, September 4, 2018, at 13.
    See, Staff Report Cost of Service, Missouri Public Service Commission, Docket No. GR-2019-0077, April 17, 2019, at 2.

[^5]:    33
    34
    35
    Source: Bloomberg Professional, through February 25, 2020.
    Direct Testimony of Robert B. Hevert, at 36.
    Source: S\&P Global Market Intelligence, through February 25, 2020.

[^6]:    Direct Testimony of Robert B. Hevert, at 38.
    Staff Cost of Service Report, at 14.
    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.
    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.
    Ibid., at 16.

[^7]:    Mr. Chari’s response to Liberty-Empire Data Request 0242.
    Staff Cost of Service Report, at 16.
    Ibid.

[^8]:    44
    Ibid.
    Source: S\&P Global Market Intelligence.
    The ten-year historical EPS growth rate excluding the negative growth rate for Northwest Natural Holding Company is 6.56 percent.
    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.

[^9]:    $50 \quad$ Staff Cost of Service Report, at 15.
    Schedule RBH-R9.
    $7.58 \%=3.14 \%+4.44 \% ; 8.30 \%=3.14 \%+5.16 \%$. Please note, I am not suggesting 7.58 percent to 8.30 percent is a reasonable range of estimates.
    Ibid., Schedule PC-10, and Missouri Public Service Commission, File Nos. GR-2017-0215 and GR-20170216, Staff Cost of Service Report, Schedule 9-4.

[^10]:    Ibid., Schedules PC-9-3. Ibid., at 15.

[^11]:    56
    Ibid., at 15.
    Ibid., at 49-51.
    Ibid., at 15.

[^12]:    Staff Cost of Service Report, at 17, Schedule PC-11.
    Ibid.
    Ibid.

[^13]:    Direct Testimony of Robert B. Hevert, Schedule RBH-D4.
    Staff Cost of Service Report, Schedule PC-11.
    Morningstar, Inc., Ibbotson Stocks, Bonds, Bills and Inflation 2013 Valuation Yearbook at 53.

[^14]:    69
    70
    71
    Morningstar, Inc., Ibbotson Stocks, Bonds, Bills, and Inflation 2013 Valuation Yearbook, at 55. See Duff \& Phelps, CRSP Deciles Size Study - Supplementary Data Exhibits. Staff Cost of Service Report, at 13.

[^15]:    Source: Regulatory Research Associates.
    Source: Regulatory Research Associates.

[^16]:    84 Direct Testimony of David Murray, at 2.
    85
    86
    87
    Ibid., at 19.
    Ibid.
    Ibid., at 35, Schedule DM-D-6.

[^17]:    88

[^18]:    101 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. $0.35=1.00-0.65$.

[^19]:    105
    Staff Revenue Requirement Cost of Service Report, Docket No. ER-2014-0258, at 33 (original emphasis). Schedule RBH-R13.
    Source: Bureau of Economic Analysis.

[^20]:    117 Morningstar, Inc., 2013 Ibbotson Stocks, Bonds, Bills and Inflation Valuation Yearbook, at 44.
    1182011 CFA Curriculum Level I, Volume 4 at 52.
    119
    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]

[^21]:    120 Direct Testimony of David Murray, at 38-39.
    121 Ibid., at 38.
    122
    See, Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters, First Quarter of 2019 at 19.

[^22]:    123 Direct Testimony of David Murray, at 40.
    Ibid.
    Direct Testimony of Robert B. Hevert at 63.

[^23]:    126
    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).

[^24]:    130 Direct Testimony of David Murray, at 16-17.
    Ibid.
    Standard \& Poor’s Ratings Services, U.S. Utilities Ratings Analysis Now Portrayed In The S\&P Corporate Ratings Matrix, Nov. 30, 2007, at 2.

[^25]:    135 Standard \& Poor’s Ratings Services, Corporate Methodology, November 19, 2013, at 5.
    136 Standard \& Poor’s Ratings Services, How Regulatory Advantage Scores Can Affect Ratings On Regulated Utilities, April 23, 2015 at 2.

[^26]:    137
    Moody’s Investors Service, Rating Methodology, Regulated Electric and Gas Utilities, June 23, 2017, at 4.

[^27]:    138 Ibid. at 24.
    139 Ibid., at 1.
    140 Direct Testimony of David Murray, at 2. Ibid., at 2, 4. Ibid., at 17.

[^28]:    143 See, for example, Report and Order, Case No. ER-2011-0028 at 67. Direct Testimony of David Murray, at 5 . Ibid.

[^29]:    148
    See, Moody’s Investors Service, Rating Methodology; Regulated Gas and Electric Utilities, page 4 (June 23, 2017).
    149 Moody’s Investors Service, Regulatory Frameworks - Ratings and Credit Quality for Investor-Owned Utilities, page 2 (June 18, 2010).
    Direct Testimony of David Murray, at 11. See, also, Direct Testimony of David Murray, at 10.
    Ibid.

[^30]:    153
    See, Algonquin Power \& Utilities Corp., Consolidated Financial Statements, for the years ended December 31, 2019 and 2018, at 56.
    154 Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 524-525.
    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. 31, 1983.

[^31]:    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]
    See, Transcontinental Gas Pipe Line Corp., 80 FERC 『 61,157, 61,657 (1997) ("Opinion No. 414").
    See, 154 FERC $\mathbb{1}$ 61,004, Docket No. ER15-945-001, at 15.
    Ibid. See, also, Transcontinental Gas Pipe Line Corp., 80 FERC $\mathbb{1}$ 61,157, 61,657 (1997) ("Opinion No. 414").
    Washington Utilities and Transportation Commission, Docket No. UE 050684, Order No. 4, at 117.

