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**MISSOURI PUBLIC SERVICE COMMISSION**

**FILE NO: GR-2019-0077**

**REBUTTAL TESTIMONY**

**OF**

**ROBERT B. HEVERT**

**ON BEHALF OF**

**UNION ELECTRIC COMPANY  
d/b/a AMEREN MISSOURI**

**Westborough, Massachusetts  
June 7, 2019**

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## GLOSSARY OF FREQUENTLY USED TERMS

TERM	DESCRIPTION
Beta Coefficient	A component of the CAPM that measures the risk of a given stock relative to the risk of the overall market.
Capital Asset Pricing Model (“CAPM”)	A risk premium-based model used to estimate the Cost of Equity, assuming the stock is added to a well-diversified portfolio. The CAPM assumes that investors are compensated for the time value of money (represented by the Risk-Free Rate), and risk (represented by the combination of the Beta Coefficient and the Market Risk Premium).
Constant Growth DCF Model	A form of the DCF model that assumes cash flows will grow at a constant rate, in perpetuity. The model simplifies to a form that expresses the Cost of Equity as the sum of the expected dividend yield and the expected growth rate.
Cost of Equity	The return required by investors to invest in equity securities. The terms “Return on Equity” and “Cost of Equity” are used interchangeably.
Discounted Cash Flow (“DCF”) Model	A model used to estimate the Cost of Equity based on expected cash flows. The Cost of Equity equals the discount rate that sets the current market price equal to the present value of expected cash flows.
Dividend Yield	For a given stock, the current dividend divided by the current market price.
Gross Domestic Product (“GDP”)	The value of all finished goods and services produced within a country during a given period of time (usually measured annually). GDP includes public and private consumption, government expenditures, investments, and exports less imports.
Market Return	The expected return on the equity market, taken as a portfolio.
Market Risk Premium (“MRP”)	The additional compensation required by investing in the equity market as a portfolio over the Risk-Free rate. The Market Risk Premium is a component of the CAPM.
Multi-Stage DCF Model	A form of the DCF model in which the rate of growth may change over different stages.
Proxy Group	A group of publicly traded companies used as the “proxy” for the subject company (in this case, KCP&L). Proxy companies are sometimes referred to as “Comparable Companies.”

<b>TERM</b>	<b>DESCRIPTION</b>
Return on Equity (“ROE”)	The return required by investors to invest in equity securities. The terms “Return on Equity” and “Cost of Equity” are used interchangeably.
Risk-Free Rate	The rate of return on an asset with no risk of default.
Risk Premium	The additional compensation required by investors for taking on additional increments of risk. Risk Premium-based approaches are used in addition to the DCF and CAPM to estimate the Cost of Equity.
Terminal Growth	The expected rate of growth in the final, or terminal, stage of the Multi-Stage DCF model.
Treasury Inflation Protected Securities (“TIPS”)	Treasury securities that are indexed to inflation. The principal value of TIPS increase with inflation and decrease with deflation, as measured by the Consumer Price Index.
Treasury Yield	The return on Treasury securities; the yield on long-term Treasury bonds is considered to be a measure of the Risk-Free Rate.

**REBUTTAL TESTIMONY**

**OF**

**ROBERT B. HEVERT**

**File No. GR-2019-0077**

1           **I.       INTRODUCTION AND SUMMARY OF RECOMMENDATIONS**

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

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

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

6           A.       I am submitting this Rebuttal Testimony before the Missouri Public Service  
7 Commission (“Commission”) on behalf of Union Electric Company d/b/a Ameren Missouri  
8 (“Ameren Missouri” or the “Company”).

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

11          A.       Yes, I am.

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

13          A.       My Rebuttal Testimony responds to the Revenue Requirement Cost of Service  
14 Report (the “Staff Cost of Service Report”) submitted in this proceeding by the Missouri Public  
15 Service Commission Utility Services Division (“Staff”) as it relates to the recommended Return  
16 on Equity (“ROE” or “Cost of Equity”) for the Company. Mr. Jeffrey Smith presents Staff’s ROE  
17 recommendation. My Rebuttal Testimony updates certain analyses contained in my Direct  
18 Testimony, and includes several additional analyses developed in response to issues raised by

1 Staff. My analyses and conclusions are supported by the data presented in Schedules RBH-R1  
2 through RBH-R7, which have been prepared by me or under my direction.

3 **Q. Please summarize the key issues and recommendations addressed in your**  
4 **Rebuttal Testimony.**

5 A. In my Direct Testimony, I found the Company’s Cost of Equity to be within a range  
6 of 10.00 percent to 10.60 percent.<sup>1</sup> As my Direct Testimony discussed, my ROE recommendation  
7 considers a variety of factors, including capital market conditions in general and certain risks faced  
8 by the Company. Because the application of financial models and the interpretation of their results  
9 are often sources of disagreement among analysts in regulatory proceedings, it is important to  
10 review and consider a variety of data points; doing so enables us to put in context both quantitative  
11 analyses and the associated recommendations. As such, I have updated many of the analyses  
12 contained in my Direct Testimony, and have provided additional analyses in response to issues  
13 raised by Staff.

14 **Q. Which of the analyses contained in your Direct Testimony have you updated?**

15 A. I have updated the Constant Growth DCF model, CAPM, and Bond Yield Risk  
16 Premium analyses based on data through April 12, 2019.<sup>2</sup>

17 **Q. Have you updated your recommendation contained in your Direct Testimony?**

18 A. Mr. Smith argues his recommended range of 9.00 percent to 10.00 percent is fair  
19 and reasonable “in light of recent Commission decisions...”<sup>3</sup> I am aware that the Commission’s  
20 2015 Report and Order in File No. ER-2014-0370 (“2015 KCP&L Order”) discussed the

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<sup>1</sup> Direct Testimony of Robert B. Hevert, at 4.

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

<sup>3</sup> Staff Cost of Service Report at 26.

1 importance that recommendations rely on verifiable and independent market data, and accepted  
2 market-based rate of return models.<sup>4</sup> The updated analyses that underlie my recommended range  
3 consider the Commission’s findings, and reflect the types of analyses and data discussed in the  
4 2015 KCP&L Order. Based on those analyses and data, I have revised my recommended range to  
5 9.80 percent to 10.60 percent, which represents a reasonable, but conservative range of the  
6 Company’s Cost of Equity. Within that range, I recommend an ROE of 9.95 percent.

7 **Q. Please provide an overview of your response to Mr. Smith.**

8 A. Although I disagree with certain of Mr. Smith’s analyses and conclusions, the high  
9 end of his recommended range, 10.00 percent, overlaps my revised recommended range of 9.80  
10 percent to 10.60 percent.<sup>5</sup> Mr. Smith’s recommended ROE of 9.50 percent, however, remains  
11 below my proposed ROE of 9.95 percent.<sup>6</sup>

12 Mr. Smith presents his analyses as of March 31, 2019 and June 30, 2017, the earlier date  
13 representing the analytical period underlying Staff’s analysis in Spire Missouri, Inc.’s (“Spire  
14 Missouri”) rate proceeding, the most recent natural gas rate case in Missouri.<sup>7</sup> Mr. Smith bases  
15 his recommendation on the change in Staff’s analytical results from that case to this. As discussed  
16 throughout my Rebuttal Testimony, I do not agree with Staff’s premise, that there has been a  
17 decrease in the ROE over that period. Nor do I agree that Mr. Smith’s analyses support a 30 basis  
18 point decrease from the 9.80 percent ROE authorized by the Commission in the Spire Missouri  
19 case.

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<sup>4</sup> See *In the Matter of Kansas City Power & Light Company’s Request for Authority to Implement a General Rate Increase for Electric Service*, File No. ER-2014-0370, Report and Order at 20 (Sept. 2, 2015).

<sup>5</sup> Staff Cost of Service Report at 26.

<sup>6</sup> *Ibid.*

<sup>7</sup> See File Nos. GR-2017-0215 and GR-2017-0216

1 Further, although Mr. Smith's recommended range is 9.00 percent to 10.00 percent, his  
2 analytical models range from an average of 6.22 percent to 7.17 percent.<sup>8</sup> I recognize that Mr.  
3 Smith's recommendation does not rely on those results *per se*, rather on how those models' results  
4 have changed since the 2017 Spire Missouri case. Nonetheless, it is difficult to reconcile the use  
5 of those results as a measure of change in the ROE when Staff does not have confidence in their  
6 use as direct measures of the Company's ROE. That is, if the results cannot be relied on to form  
7 the basis of a defensible estimate of the Cost of Equity in the first instance, it is unclear why they  
8 should be relied on to measure the change in the Cost of Equity over time.

## II. RESPONSE TO TESTIMONY OF STAFF WITNESS SMITH

9 **Q. Please briefly summarize Staff's recommendation regarding the Company's**  
10 **Cost of Equity.**

11 A. Through its witness Mr. Smith, Staff recommends an ROE of 9.50 percent, within  
12 a range of 9.00 percent to 10.00 percent.<sup>9</sup> Mr. Smith estimates the ROE using the Constant Growth  
13 and Multi-Stage forms of the DCF model, the CAPM, and recently authorized returns for electric  
14 utilities.<sup>10</sup> Mr. Smith also considers current market conditions.<sup>11</sup> Mr. Smith also performs a  
15 relative analysis, comparing certain analytical results over two time periods: (1) as of a period  
16 coincident with Spire Missouri's recent rate cases; and (2) current data.<sup>12</sup>

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<sup>8</sup> Those results are below Staff's recommended rate of return (i.e., 7.21 percent). Staff Cost of Service Report, at 9.

<sup>9</sup> Staff Cost of Service Report, at 26.

<sup>10</sup> *Ibid.*, at 8-9, 25-26.

<sup>11</sup> *Ibid.*, at 11-18.

<sup>12</sup> *Ibid.*, Schedule JS-9, JS-10, and JS-11.



1           **Q.     Do you have any observations regarding Mr. Smith’s recommendation?**

2           A.     Although I do not believe the low end of Mr. Smith’s recommended range is a  
3 reasonable estimate of the Company’s ROE, I recognize that the upper end of his range overlaps  
4 with the lower end of my revised range.

5           **Q.     What are the specific areas in which you disagree with Mr. Smith’s analyses?**

6           A.     The areas in which I disagree with Mr. Smith’s analyses include:

- 7                   1. Mr. Smith’s interpretation of capital market conditions;
- 8                   2. Mr. Smith’s application of the Constant Growth DCF analyses;
- 9                   3. The application and structure of Mr. Smith’s Multi-Stage DCF model;
- 10                  4. Mr. Smith’s application of the CAPM and the relevance of those results in  
11                   estimating the Cost of Equity; and
- 12                  5. Relevance of average authorized returns.

13           I discuss each of those in turn, below.

14           **A.     *Capital Market Conditions***

15           **Q.     Please summarize Mr. Smith’s testimony as it relates to current capital market**  
16 **conditions?**

17           A.     Mr. Smith reviews current economic conditions and concludes that slowing  
18 economic growth and low interest rates due to “accommodative support from the FED” suggest a  
19 lower Cost of Equity for utilities.<sup>13</sup> Mr. Smith also reviews the debt and equity markets concluding  
20 that “debt costs have come down in 2019 compared to 2018” and “equity costs are lower than they  
21 were at the start of Spire Missouri’s rate cases.”<sup>14</sup>

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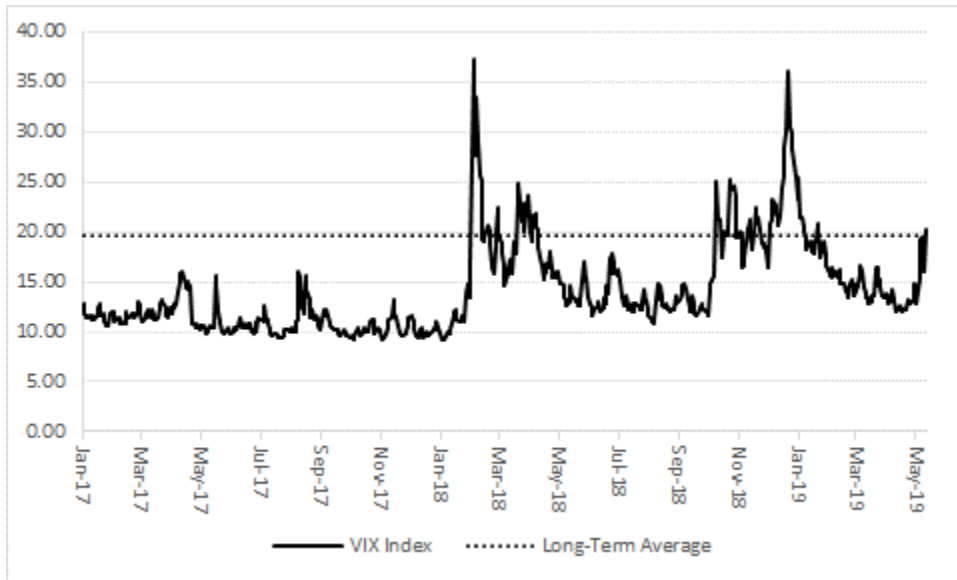
<sup>13</sup> Staff Cost of Service Report, at 14.

<sup>14</sup> *Ibid.*, at 18.

1           **Q.     Do you agree with Mr. Smith’s conclusion that the capital market environment**  
2 **suggests a lower Cost of Equity for the Company?**

3           A.     No, I do not. As shown in my Direct Testimony, the Cboe Options Exchange  
4 (“Cboe”) Volatility Index (“VIX”) has increased since the Spire Missouri rate case in 2017. An  
5 updated version of Chart 7 from my Direct Testimony is presented below.

**Chart 1: VIX Since January 2017<sup>15</sup>**



6           Since the analytical period in my Direct Testimony (October 12, 2018), the VIX has  
7 averaged 17.98, which is above the 2018 average noted in my Direct Testimony (15.23) and the  
8 2017 average (11.09). In other words, market volatility has increased since the Spire rate case and  
9 since the filing of my Direct Testimony, suggesting that risk has increased.

10           **B.     Application of the Constant Growth DCF Model**

11           **Q.     Please summarize Staff’s Constant Growth DCF analysis.**

12           A.     As noted earlier, Mr. Smith does not rely on the results of his Constant Growth  
13 DCF model on an absolute basis, but as a measure of change. That is, Mr. Smith compares the

<sup>15</sup> Source: Bloomberg Professional, as of May 13, 2019.

1 range of results of his Constant Growth DCF model in this proceeding (6.67 percent to 7.67  
2 percent) to those as of the Spire Missouri case (6.91 percent to 7.71) and concludes “it appears the  
3 [Cost of Equity] has come down.”<sup>16</sup>

4 **Q. Do you have any concerns with Mr. Smith’s conclusion that his range of**  
5 **Constant Growth DCF results suggests a lower ROE in this proceeding?**

6 A. Yes, I do. Mr. Smith’s Constant Growth DCF results substantially overlap Staff’s  
7 results in the Spire Missouri case; the high end is similar, and the low end is 24 basis points lower  
8 (I discuss my concerns about Mr. Smith’s derivation of his low estimate below). Although the low  
9 end of Mr. Smith’s range has decreased, the range represents the lower and upper bounds of  
10 reasonable estimates of the Company’s ROE; essentially all reasonable estimates in the Spire  
11 Missouri case are within Mr. Smith’s current range. A change in the size of the range (from 80  
12 basis points in the Spire Missouri case to 100 basis points in this proceeding) does not necessarily  
13 imply that the recommended ROE should similarly change. As such, it is difficult to infer how  
14 the ROE has changed over time based solely on the range of Constant Growth DCF results, which  
15 is driven solely by the expansion of the range on the low end.

16 **Q. Turning to his application of the DCF method, do you have any concerns with**  
17 **the range of growth rates selected by Mr. Smith?**

18 A. Yes, I do. Mr. Smith selects a range of growth rates of 4.00 percent to 5.00 percent,  
19 based on his review of historical growth in dividends per share (“DPS”), book value per share  
20 (“BVPS”), and earnings per share (“EPS”), and projected growth in EPS. The range of growth

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<sup>16</sup> Staff Cost of Service Report, at 22.

1 rates selected by Staff in the Spire Missouri analysis was 4.20 percent to 5.00 percent, based on  
2 similar data.<sup>17</sup>

3 Table 1, below, summarizes the average growth rates presented in this proceeding (as of  
4 March 31, 2019) relative to the same growth rates presented by Staff in the Spire Missouri rate  
5 case (as of June 30, 2017).

**Table 1: Staff Growth Rates Comparison<sup>18</sup>**

<b>Growth Rate</b>	<b>6/30/2017</b>	<b>3/31/2019</b>	<b>Difference</b>
Ten-Year Avg DPS, EPS, BVPS	4.38%	4.73%	0.35%
Five-Year Avg DPS, EPS, BVPS	4.34%	6.58%	2.24%
Mean Proj. Long-Term Growth Rate	5.19%	5.06%	-0.13%

6 As shown in Table 1, since mid-2017 the ten-year and five-year historical growth rates  
7 increased 35 basis points and 224 basis points, respectively;<sup>19</sup> the projected growth rates  
8 decreased only 13 basis points. The low end of Mr. Smith’s assumed growth rate range,  
9 however, fell from 4.20 percent to 4.00 percent. Mr. Smith has not explained that difference.

10 Further, Mr. Smith notes his 4.00 percent to 5.00 percent proposed growth rate range is  
11 reasonable, “because historical dividend growth has been approximately 4.4% over the previous  
12 10 years and expected dividend growth over the next five years is expected to be higher...”<sup>20</sup> In  
13 the Spire Missouri case, Staff reported a 3.75 percent ten-year historical average dividend growth  
14 rate.<sup>21</sup> It is unclear why a 65 basis point increase in the historical dividend growth rate (with further  
15 increases expected) would support a 20 basis point decrease in the growth rate.

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<sup>17</sup> *Ibid*, Schedule JS-12.

<sup>18</sup> Staff Cost of Service Report, Schedule JS-8-3, and Missouri Public Service Commission, File Nos. GR-2017-0215 and GR-2017-0216, Staff Cost of Service Report, Schedule 9-4.

<sup>19</sup> As of June 30, 2017, One Gas, Inc. (“One Gas”) had not had five years of historical data, so its historical growth rate was not included in Staff’s analysis in the Spire Missouri case. Currently, One Gas, does have five years of historical data and is included in the 6.58 percent average. Even if One Gas were included from the current average, the five-year historical average growth rate would be 5.81 percent, which would represent an increase of 147 basis points since June 30, 2017.

<sup>20</sup> Staff Cost of Service Report, at 22.

<sup>21</sup> See Missouri Public Service Commission, File Nos. GR-2017-0215 and GR-2017-0216; Staff Cost of Service Report, Schedule 9-1.

1           **Q.     What are the consequences of a decrease in the low end of the range of growth**  
2 **rates in Mr. Smith’s Constant Growth DCF model?**

3           A.     Given that Staff’s average dividend yield has only decreased by four basis points  
4 between the two periods, the decrease in the low end of the range of growth rates accounts for  
5 substantially all of the decrease in the Constant Growth DCF results between the Spire Missouri  
6 rate case and those in this proceeding. As such, Mr. Smith’s conclusion that the ROE has decreased  
7 since mid-2017 is almost entirely based on an arbitrary decrease in the low end of his proposed  
8 range of growth rates. Further, the change in growth rates provided by Staff in the Spire Missouri  
9 rate case relative to this proceeding would, if anything, suggest an *increase* in the growth rates,  
10 which would result in an increase in the ROE.

11           **Q.     Have you considered how other growth rates have changed since the Spire**  
12 **Missouri rate case?**

13           A.     In my Constant Growth DCF analysis, I rely on long-term earnings growth rates  
14 from Zacks, First Call, and Value Line. I reviewed those growth rates for Staff’s proxy group as  
15 of June 30, 2017 and March 31, 2019 to see how they changed over the period Mr. Smith considers.  
16 As shown in Schedule RBH-R7, there has not been a clear decline in growth rates, as Mr. Smith’s  
17 proposed growth rate range suggests.

18           **Q.     Please summarize your concern with the growth rates used in Staff’s DCF**  
19 **analysis.**

20           A.     Whereas my DCF analysis relies on analysts’ consensus earnings growth  
21 projections, Mr. Smith’s analysis reflects, as noted above, historical growth in DPS, BVPS, and  
22 EPS, and projected growth in EPS. Mr. Smith observes the consensus EPS growth estimates

1 (provided by S&P Global Market Intelligence) average 5.06 percent for his proxy group,<sup>22</sup> and  
2 argues they are not reliable relative to Staff’s “high-end” estimate of long-term GDP growth  
3 (approximately 4.00 percent).<sup>23</sup>

4 **Q. Before discussing Mr. Smith’s analysis, what is the relevance of expected**  
5 **growth rates in the DCF model?**

6 A. As discussed in my Direct Testimony at page 32, the Constant Growth DCF model  
7 assumes the current price of a share of stock represents the present value of the expected cash  
8 flows associated with owning that stock. The expected cash flows include the dividends received  
9 during the period in which the stock is held, and the price at which the stock eventually is sold.  
10 The Cost of Equity is the discount rate that sets the current price equal to the present value of the  
11 expected cash flows.

12 Because both dividends and stock prices are determined by earnings, analysts’ consensus  
13 projected earnings growth rates are the proper measure of growth for the Constant Growth DCF  
14 model. As discussed in more detail below, there is long-standing academic support for the use of  
15 earnings growth projections because they have a statistically meaningful relationship to utility  
16 stock prices. In summary, growth rates are important inputs to DCF analyses, and analysts’  
17 earnings growth rate projections are the appropriate measure of expected growth. Other measures,  
18 such as those proposed by Mr. Smith, often have the effect of unreasonably suppressing ROE  
19 estimates.

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<sup>22</sup> Staff Cost of Service Report, Schedule JS-8-3.

<sup>23</sup> Staff Cost of Service Report at 21-22. I note that on page 23, Mr. Smith states that the high end of his range of long-term GDP growth estimates is 4.20 percent.

1           **Q.     Why does Mr. Smith express concern with the use of analysts' forecasts of EPS**  
2 **growth in his Constant Growth DCF model?**

3           A.     Mr. Smith asserts that because they are higher than his 4.00 percent high-end GDP  
4 growth estimate, analysts' growth rate projections are unsustainable.<sup>24</sup>

5           **Q.     Do you agree with Mr. Smith's assessment of alternative growth rates for his**  
6 **Constant Growth DCF model?**

7           A.     No, I do not. It is important to realize that earnings growth enables both dividend  
8 and book value growth.<sup>25</sup> Corporate decisions to manage the dividend payout ratio for the purpose  
9 of minimizing future dividend reductions or to signal future earnings prospects can influence  
10 dividend growth rates in near-term periods in a manner that is disproportionate to earnings growth.  
11 Similarly, book value can increase over time only through the addition of retained earnings or with  
12 the issuance of new equity, both of which are determined by earnings.

13           Mr. Smith's reference to dividend and book value growth rates also is misplaced because  
14 the only scenario in which dividend growth rates and book value growth rates are relevant is when  
15 the fundamental assumptions underlying the Constant Growth DCF model precisely hold. Because  
16 investors tend to value common equity on the basis of price-to-earnings ratios, the investor-  
17 required ROE is a function of expected growth in earnings, not dividends or book value.

18           **Q.     Is the use of analysts' earnings growth projections in the DCF model**  
19 **supported by financial literature?**

20           A.     Yes, it is. As explained in my Direct Testimony, the relationship between various  
21 growth rates and stock valuation metrics has been the subject of much academic research,

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<sup>24</sup> *Ibid.* at 21.

<sup>25</sup> Direct Testimony of Robert B. Hevert at 34.

1 including published articles that support the use of analysts' earnings growth projections in the  
2 DCF model.<sup>26</sup>

3 **C. Application of the Multi-Stage DCF Model**

4 **Q. Please describe Mr. Smith's Multi-Stage DCF model.**

5 A. Mr. Smith presents a three-stage Multi-Stage DCF model. The first stage utilizes  
6 analyst EPS growth rates from S&P Global Market Intelligence for years one through five; the  
7 second stage transitions linearly between the first and third stage growth rates in years six through  
8 ten; and the third stage is equal to the long-term projection of GDP starting in year 11.<sup>27</sup> Mr. Smith  
9 notes that the results of the Multi-Stage DCF model are used as a relative measure, not an absolute  
10 measure. That is, Mr. Smith compares the current results of his Multi-Stage DCF model to those  
11 based on data as of Spire Missouri's 2017 gas rate cases, which implies that the ROE has decreased  
12 approximately seven basis points.<sup>28</sup>

13 **Q. What are your observations regarding Mr. Smith's Multi-Stage DCF model?**

14 A. I note that a seven-basis point difference is a minor decrease. I do not believe that  
15 such a minor change in the results over an 18-month period can be relied on as an indicator of a  
16 change in investors' expectations. That is, I do not believe seven basis points can be considered  
17 such a meaningful difference that we can conclude that the ROE has decreased since Spire  
18 Missouri's rate case.

19 Although I do not agree with certain inputs and assumptions in Mr. Smith's Multi-Stage  
20 DCF model, I understand he did not rely on its results other than to assess changes in them since

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<sup>26</sup> Direct Testimony of Robert B. Hevert, at 34-35.

<sup>27</sup> Staff Cost of Service Report, at 23-24. Mr. Smith relies on a range of GDP projections from the Congressional Budget Office, the Organization for Economic Cooperation and Development, and the U.S. Energy Information Administration.

<sup>28</sup> *Ibid*, at 22 and Schedule JS-12.



1 Spire Missouri’s rate cases. To limit the scope of contested issues, I will not discuss my other,  
2 more specific concerns with Mr. Smith’s Multi-Stage DCF model at this time.

3 **D. Capital Asset Pricing Model**

4 **Q. Please briefly describe Mr. Smith’s CAPM analyses.**

5 A. Mr. Smith’s CAPM analyses assume a risk-free rate of 3.01 percent, an average  
6 calculated Beta coefficient of 0.61 for his proxy group, and historical MRP estimates of 6.00  
7 percent (using the long-term arithmetic mean) and 4.50 percent (using the long-term geometric  
8 mean).<sup>29</sup> Based on those inputs, Mr. Smith’s CAPM calculations produce Cost of Equity estimates  
9 of 5.76 to 6.68 percent.<sup>30</sup> Again, Mr. Smith considers his results on a relative, not absolute, basis  
10 and compares the current results to those as of June 30, 2017. Mr. Smith reports the CAPM results  
11 as of June 30, 2017 to be in the range of 6.08 percent to 7.14 percent.

12 **Q. Before discussing any specific concerns you have with Mr. Smith’s CAPM**  
13 **analyses, do you have any observations related to how Mr. Smith has characterized the**  
14 **model as it relates to his other methods?**

15 A. Yes. Mr. Smith notes that “Staff has tested the reasonableness of its DCF results  
16 by use of a CAPM analysis and consideration of other evidence.”<sup>31</sup> That is, it appears that Mr.  
17 Smith has primarily relied on the two forms of the DCF model and presented his CAPM analysis  
18 as a test of reasonableness. However, on Schedule JS-12, Mr. Smith averages the results of his  
19 DCF models and CAPM to determine the average result and compares that to the result of those  
20 same three methods in the Spire Missouri rate case. Contrary to his statement that he used CAPM

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<sup>29</sup> *Ibid*, Schedule JS-11.

<sup>30</sup> *Ibid*.

<sup>31</sup> Staff Cost of Service Report, at 24.

1 as a reasonableness test, Mr. Smith's utilization of this averaging convention elevates the CAPM  
2 to a primary method for determining the change in the ROE since the Spire Missouri rate case.

3 As discussed above, the change in DCF results does not suggest a decrease in the ROE. If  
4 the CAPM analysis is provided as a reasonableness test, the results appear to be out of line with  
5 the results of the DCF analysis.

6 That said, there are certain methodological concerns with Mr. Smith's application of the  
7 CAPM, which I discuss below.

8 **Q. Do you agree with Mr. Smith's CAPM analysis?**

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

13 **Q. Before turning to the MRP, do you agree with Mr. Smith's use of the average**  
14 **30-year Treasury yield as the risk-free rate?**

15 A. Although I agree with Mr. Smith that it is appropriate to use the current average 30-  
16 year Treasury yield, I relied on both the current 30-day average 30-year Treasury yield and the  
17 (near-term) projected 30-year Treasury yield as reported in the *Blue Chip Financial Forecast*.<sup>32</sup>

18 **Q. How did Mr. Smith calculate his MRP estimates?**

19 A. Mr. Smith cites Duff & Phelps' 2019 SBBI Yearbook, and states he calculated his  
20 MRP estimates by taking the difference between the long-term average earned return on stocks  
21 and bonds from 1926 – 2018.<sup>33</sup>

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<sup>32</sup> Direct Testimony of Robert B. Hevert, Schedule RBH-D5.

<sup>33</sup> Staff Cost of Service Report at 25, and Schedule JS-11.

1           **Q.     Is it appropriate to rely exclusively on historical data in estimating the MRP,**  
2 **as Mr. Smith has done?**

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

9           It is important to note that the expected equity risk premium, as it is used in discount  
10 rates and cost of capital analysis, is a forward-looking concept. That is, the equity  
11 risk premium that is used in the discount rate should be reflective of what investors  
12 think the risk premium will be going forward.<sup>34</sup>

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

19          **Q.     What is the difference between the geometric and the arithmetic mean risk**  
20 **premium?**

21          A.     The arithmetic mean is the simple average of single period rates of return, whereas  
22 the geometric mean is the compound rate that equates a beginning value to its ending value. The  
23 important distinction between the two methods is that the arithmetic mean assumes that each

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<sup>34</sup> Morningstar, Inc., Ibbotson Stocks, Bonds, Bills and Inflation 2013 Valuation Yearbook at 53.

1 periodic return is an independent observation and, therefore, incorporates uncertainty in the  
2 calculation of the long-term average. The geometric mean, by contrast, is a backward-looking  
3 calculation that equates a beginning value to an ending value over a specific period of time.  
4 Geometric averages, therefore, provide a standardized basis of review of historical performance  
5 across investments or investment managers; they do not, however, reflect forward-looking  
6 uncertainty.

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

13 Lastly, investment risk or volatility is typically measured on the basis of the standard  
14 deviation. The standard deviation, in turn, is a function of the arithmetic, as opposed to the  
15 geometric mean. In that regard, the Beta coefficients applied in CAPM analyses are derived from  
16 the standard deviation of returns.<sup>35</sup> In any case, Morningstar notes that:

17 The arithmetic average equity risk premium can be demonstrated to be the most  
18 appropriate when discounting future cash flows. For use as the expected equity risk  
19 premium in either the CAPM or the building block approach, the arithmetic mean  
20 or the simple difference of the arithmetic means of the stock market returns and the  
21 riskless rates is the relevant number.<sup>36</sup>

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

24 Note that the arithmetic mean, not the geometric mean is the relevant value for this  
25 purpose. The quantity desired is the rate of return that investors expect over the next

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<sup>35</sup> Direct Testimony of Robert B. Hevert at 40.

<sup>36</sup> Morningstar, Inc., Ibbotson Stocks, Bonds, Bills, and Inflation 2013 Valuation Yearbook at 56.

1 year for the random annual rate of return on the market. The arithmetic mean, or  
2 simple average, is the unbiased measure of the expected value of repeated  
3 observations of a random variable, not the geometric mean. ... [The] geometric  
4 mean underestimates the expected annual rate of return.<sup>37</sup>

5 **Q. Putting aside the issue of whether it is more appropriate to use the geometric**  
6 **or arithmetic mean, do you have any concerns with the manner in which Mr. Smith**  
7 **calculated his assumed Market Risk Premium?**

8 A. Yes, I do. Mr. Smith's estimates are derived using the historical difference in the  
9 total returns on stocks and bonds. According to Morningstar, however, the historical MRP is  
10 appropriately calculated by subtracting the *income only* portion of the government bond return  
11 from the total return on large company stocks:

12 Another point to keep in mind when calculating the equity risk premium is  
13 that the income return on the appropriate-horizon Treasury security, rather  
14 than the total return, is used in the calculation. The total return is comprised  
15 of three return components: the income return, the capital appreciation  
16 return, and the reinvestment return. ... The income return is thus used in the  
17 estimation of the equity risk premium because it represents the truly riskless  
18 portion of the return.<sup>38</sup>

19 By subtracting the total return on government bonds from the total return on stocks, Mr.  
20 Smith has understated the historical MRP by 93 basis points (using the arithmetic mean).<sup>39</sup> Based  
21 on Mr. Smith's average Beta coefficient of 0.61, the effect on his mean CAPM estimate would be  
22 approximately 57 basis points. Even that correction, however, produces results that are far too low  
23 to be reasonable estimates of the Company's Cost of Equity.

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<sup>37</sup> Ian Cooper, Arithmetic versus geometric mean estimators: Setting discount rates for capital budgeting, European Financial Management 2.2 at 158 (1996).

<sup>38</sup> Morningstar, Inc., Ibbotson Stocks, Bonds, Bills, and Inflation 2013 Valuation Yearbook, at 55.

<sup>39</sup> See Duff & Phelps, CRSP Deciles Size Study – Supplementary Data Exhibits.

1           **Q.     What are your conclusions regarding Mr. Smith’s CAPM analysis?**

2           A.     As a practical matter, estimates as low as 6.68 percent and lower have little, if any,  
3 practical meaning for the purpose of determining the Company’s ROE, even if only to rationalize  
4 the DCF model estimates. Financial models must be applied giving due consideration to the  
5 reasonableness of the inputs, assumptions, and results.

6           ***E.     Authorized Returns***

7           **Q.     Do you have any observations with regard to the authorized return data**  
8 **presented by Mr. Smith?**

9           A.     Although Mr. Smith does not provide any conclusions related to authorized return  
10 data presented on page 26 of the Staff Cost of Service Report, it is important to review the data in  
11 proper context. Average annual data obscures variation in returns and does not address the number  
12 of cases or the jurisdictions issuing orders within a given year. For example, one year may have  
13 fewer cases decided, and a relatively large portion of those cases decided by a single jurisdiction.

14           Mr. Smith only includes fully litigated rate cases in the average authorized returns. Table  
15 2 below shows the number of natural gas rate cases that were settled versus fully litigated (where  
16 an authorized return was disclosed), from 2014 through 2019.

**Table 2: Natural Gas Authorized Returns<sup>40</sup>**

Year	Fully Litigated	Settled	Total
2014	15	11	26
2015	5	11	16
2016	9	16	25
2017	6	17	23
2018	15	24	39
2019	1	4	5

---

<sup>40</sup> Source: Regulatory Research Associates.

1 In 2015, there were only five fully litigated rate cases, and in 2017 there were only six fully  
2 litigated rate cases.

3 Focusing solely on annual averages of authorized returns does not take into consideration  
4 the jurisdiction in which those returns were authorized. In the data presented by Mr. Smith, 2014  
5 and 2017 are the highest in terms of the average authorized ROE. In 2014, there were five fully  
6 litigated authorized returns in jurisdictions that Regulatory Research Associates considers Above  
7 Average from an investor perspective, which is three more than in any other year. In 2017, of the  
8 six fully litigated authorized returns, two were in Above Average jurisdictions and another,  
9 ENSTAR Natural Gas in Alaska (which is considered a Below Average jurisdiction from an  
10 investor perspective), was authorized an 11.88 percent ROE. Interestingly, although there were  
11 15 fully litigated rate cases for natural gas utilities in 2018, only one was in an Above Average  
12 jurisdiction. That is, given the small number of fully litigated cases in a given year, the jurisdiction  
13 in which returns are authorized can have a significant effect on the average result.

14 Further, the averaging period can have a significant effect on the conclusions drawn from  
15 the data. For example, considering the twelve-month period ending June 30, 2017 as of Staff's  
16 analysis in the Spire Missouri rate case, the average authorized return was 9.57 percent. The  
17 twelve-month average authorized return ending March 31, 2019, as of Staff's analysis in this  
18 proceeding, was also 9.57 percent.<sup>41</sup> Those averaging periods would suggest no change in the  
19 average authorized ROE contrary to Mr. Smith's review of 2017 and 2018 calendar year data.

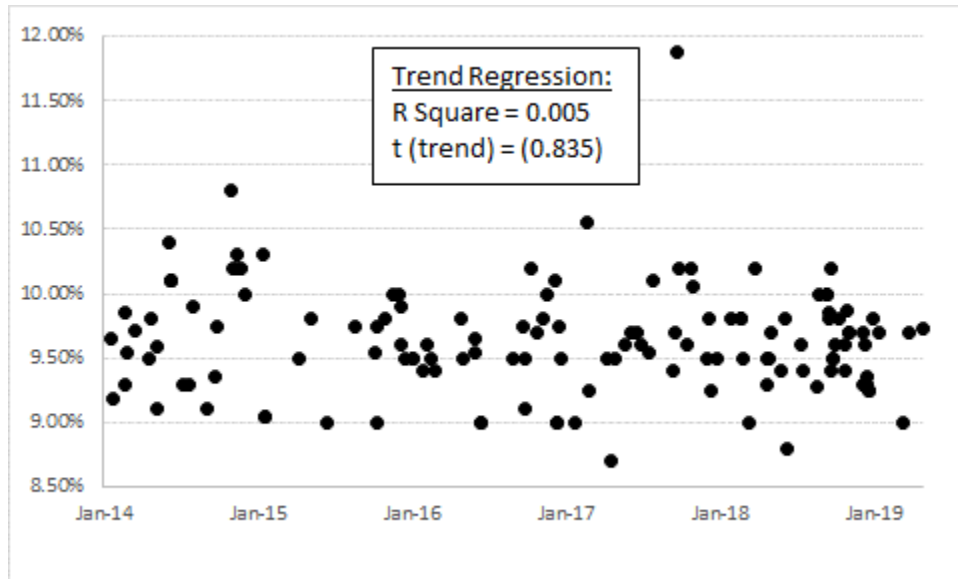
20 As such, it is difficult to make any conclusions regarding trends in authorized returns based  
21 on so few observations and on a simple review of annual averages. However, as shown in Chart  
22 2, if all authorized ROEs (including both fully litigated and settled) are charted, rather than the

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<sup>41</sup> Averages include both fully litigated and settled rate cases for natural gas utilities.

1 simple average, there is no meaningful trend since 2014. Time explains less than 1.00 percent of  
2 the change in ROEs, and the trend is statistically insignificant.

**Chart 2: Natural Gas Authorized Returns (2014-2019)**



3 **III. CONCLUSIONS AND RECOMMENDATION**

4 **Q. What are your overall conclusions and recommendations?**

5 A. Based on the analyses discussed throughout my Rebuttal Testimony, I conclude  
6 that the reasonable range of ROE estimates is from 9.80 percent to 10.60 percent. I believe a ROE  
7 of 9.95 percent is reasonable for Ameren Missouri.

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

9 A. Yes, it does.





Constant Growth Discounted Cash Flow Model  
30 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Sustainable Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$101.34	2.07%	2.15%	6.50%	6.40%	7.50%	10.27%	7.67%	8.54%	9.82%	12.45%
Chesapeake Utilities Corporation	CPK	\$1.48	\$91.97	1.61%	1.67%	6.00%	6.00%	9.00%	10.84%	7.96%	7.66%	9.63%	12.53%
New Jersey Resources Corporation	NJR	\$1.17	\$49.48	2.36%	2.43%	7.00%	6.00%	2.50%	5.48%	5.24%	4.89%	7.67%	9.45%
Northwest Natural Gas Company	NWN	\$1.90	\$64.96	2.92%	3.07%	4.30%	4.00%	25.50%	6.38%	10.05%	6.98%	13.12%	28.80%
ONE Gas, Inc.	OGS	\$2.00	\$88.23	2.27%	2.34%	5.90%	5.00%	9.00%	5.26%	6.29%	7.32%	8.63%	11.37%
South Jersey Industries, Inc.	SJI	\$1.15	\$31.30	3.67%	3.81%	7.20%	5.90%	9.50%	7.01%	7.40%	9.68%	11.21%	13.35%
Southwest Gas Corporation	SWX	\$2.18	\$82.85	2.63%	2.72%	6.20%	6.30%	8.50%	7.15%	7.04%	8.91%	9.76%	11.24%
Spire Inc	SR	\$2.37	\$81.08	2.92%	2.99%	3.40%	2.42%	5.50%	5.72%	4.26%	5.38%	7.25%	8.73%
PROXY GROUP MEAN				2.56%	2.65%	5.81%	5.25%	9.63%	7.26%	6.99%	7.42%	9.64%	13.49%
PROXY GROUP MEDIAN				2.50%	2.58%	6.10%	5.95%	8.75%	6.70%	7.22%	7.49%	9.70%	11.91%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals 30-trading day average as of April 12, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Schedule RBH-R2

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

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model  
90 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Sustainable Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE	
Atmos Energy Corporation	ATO	\$2.10	\$97.45	2.15%	2.24%	6.50%	6.40%	7.50%	10.27%	7.67%	8.62%	9.90%	12.53%	
Chesapeake Utilities Corporation	CPK	\$1.48	\$88.60	1.67%	1.74%	6.00%	6.00%	9.00%	10.84%	7.96%	7.72%	9.70%	12.60%	
New Jersey Resources Corporation	NJR	\$1.17	\$47.87	2.44%	2.51%	7.00%	6.00%	2.50%	5.48%	5.24%	4.97%	7.75%	9.53%	
Northwest Natural Gas Company	NWN	\$1.90	\$63.25	3.00%	3.15%	4.30%	4.00%	25.50%	6.38%	10.05%	7.06%	13.20%	28.89%	
ONE Gas, Inc.	OGS	\$2.00	\$84.26	2.37%	2.45%	5.90%	5.00%	9.00%	5.26%	6.29%	7.43%	8.74%	11.48%	
South Jersey Industries, Inc.	SJI	\$1.15	\$30.24	3.80%	3.94%	7.20%	5.90%	9.50%	7.01%	7.40%	9.82%	11.35%	13.48%	
Southwest Gas Corporation	SWX	\$2.18	\$80.17	2.72%	2.82%	6.20%	6.30%	8.50%	7.15%	7.04%	9.00%	9.85%	11.33%	
Spire Inc	SR	\$2.37	\$78.13	3.03%	3.10%	3.40%	2.42%	5.50%	5.72%	4.26%	5.49%	7.36%	8.84%	
PROXY GROUP MEAN					2.65%	2.74%	5.81%	5.25%	9.63%	7.26%	6.99%	7.52%	9.73%	13.59%
PROXY GROUP MEDIAN					2.58%	2.66%	6.10%	5.95%	8.75%	6.70%	7.22%	7.58%	9.77%	12.01%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals 90-trading day average as of April 12, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Schedule RBH-R2

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

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

Constant Growth Discounted Cash Flow Model  
180 Day Average Stock Price

Company	Ticker	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]
		Annualized Dividend	Average Stock Price	Dividend Yield	Expected Dividend Yield	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Sustainable Growth Estimate	Average Earnings Growth	Low ROE	Mean ROE	High ROE
Atmos Energy Corporation	ATO	\$2.10	\$95.79	2.19%	2.28%	6.50%	6.40%	7.50%	10.27%	7.67%	8.66%	9.94%	12.57%
Chesapeake Utilities Corporation	CPK	\$1.48	\$86.24	1.72%	1.78%	6.00%	6.00%	9.00%	10.84%	7.96%	7.77%	9.74%	12.65%
New Jersey Resources Corporation	NJR	\$1.17	\$47.15	2.48%	2.55%	7.00%	6.00%	2.50%	5.48%	5.24%	5.01%	7.79%	9.57%
Northwest Natural Gas Company	NWN	\$1.90	\$65.02	2.92%	3.07%	4.30%	4.00%	25.50%	6.38%	10.05%	6.98%	13.12%	28.79%
ONE Gas, Inc.	OGS	\$2.00	\$82.43	2.43%	2.50%	5.90%	5.00%	9.00%	5.26%	6.29%	7.49%	8.79%	11.54%
South Jersey Industries, Inc.	SJI	\$1.15	\$31.77	3.62%	3.75%	7.20%	5.90%	9.50%	7.01%	7.40%	9.63%	11.16%	13.29%
Southwest Gas Corporation	SWX	\$2.18	\$80.02	2.72%	2.82%	6.20%	6.30%	8.50%	7.15%	7.04%	9.01%	9.86%	11.34%
Spire Inc	SR	\$2.37	\$76.47	3.10%	3.17%	3.40%	2.42%	5.50%	5.72%	4.26%	5.56%	7.43%	8.91%
PROXY GROUP MEAN				2.65%	2.74%	5.81%	5.25%	9.63%	7.26%	6.99%	7.51%	9.73%	13.58%
PROXY GROUP MEDIAN				2.60%	2.68%	6.10%	5.95%	8.75%	6.70%	7.22%	7.63%	9.80%	12.05%

Notes:

[1] Source: Bloomberg Professional

[2] Source: Bloomberg Professional, equals 180-trading day average as of April 12, 2019

[3] Equals [1] / [2]

[4] Equals [3] x (1 + 0.5 x [9])

[5] Source: Zacks

[6] Source: Yahoo! Finance

[7] Source: Value Line

[8] Schedule RBH-R2

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

[10] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7], [8])) + Minimum([5], [6], [7], [8])

[11] Equals [4] + [9]

[12] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7], [8])) + Maximum([5], [6], [7], [8])

## Retention Growth Estimate

		[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	
Company	Ticker	Projected Earnings per share 2022-24	Projected Dividend Declared per share 2022-24	Retention Ratio (B)	Projected Book Value per Share 2022-24	Return on Book Value (R)	B x R	Projected Common Shares Outstanding 2020	Projected Common Shares Outstanding 2022-24	Common Shares Growth Rate	2019 High Price	2019 Low Price	2019 price midpoint	Projected Book Value per Share 2019	Market/Book Ratio	"S"	"V"	S x V	BR + SV	
Atmos Energy Corporation	ATO	5.60	2.70	51.79%	56.05	9.99%	5.17%	125.00	145.00	5.02%	\$ 98.40	\$ 89.20	\$ 93.80	46.55	2.02	10.12%	50.37%	5.10%	10.27%	
Chesapeake Utilities Corporation	CPK	5.00	2.15	57.00%	49.00	10.20%	5.82%	18.00	20.00	3.54%	\$ 91.50	\$ 77.60	\$ 84.55	34.95	2.42	8.56%	58.66%	5.02%	10.84%	
New Jersey Resources Corporation	NJR	2.40	1.33	44.58%	21.40	11.21%	5.00%	88.25	89.00	0.28%	\$ 48.60	\$ 43.90	\$ 46.25	17.05	2.71	0.76%	63.14%	0.48%	5.48%	
Northwest Natural Gas Company	NWN	3.50	2.20	37.14%	29.40	11.90%	4.42%	30.50	32.00	1.60%	\$ 64.50	\$ 57.20	\$ 60.85	27.30	2.23	3.56%	55.14%	1.96%	6.38%	
ONE Gas, Inc.	OGS	4.75	2.65	44.21%	47.90	9.92%	4.38%	53.50	55.00	0.92%	\$ 84.70	\$ 75.80	\$ 80.25	41.05	1.95	1.79%	48.85%	0.88%	5.26%	
South Jersey Industries, Inc.	SJI	2.50	1.40	44.00%	20.40	12.25%	5.39%	92.00	98.00	2.11%	\$ 31.40	\$ 26.60	\$ 29.00	16.40	1.77	3.73%	43.45%	1.62%	7.01%	
Southwest Gas Corporation	SWX	5.75	2.60	54.78%	53.90	10.67%	5.84%	55.00	58.00	1.77%	\$ 82.90	\$ 73.30	\$ 78.10	44.90	1.74	3.08%	42.51%	1.31%	7.15%	
Spire Inc	SR	5.00	2.67	46.60%	47.80	10.46%	4.87%	53.00	55.00	1.23%	\$ 79.50	\$ 71.70	\$ 75.60	44.70	1.69	2.08%	40.87%	0.85%	5.72%	
			Average:	47.51%															Average:	7.26%

## Notes:

- [1] Source: Value Line  
[2] Source: Value Line  
[3] Equals 1 - [2] / [1]  
[4] Source: Value Line  
[5] Equals [1] / [4]  
[6] Equals [3] x [5]  
[7] Source: Value Line  
[8] Source: Value Line  
[9] Equals ([8] / [7]) ^ 0.33 - 1  
[10] Source: Value Line  
[11] Source: Value Line  
[12] Equals Average ([10], [11])  
[13] Source: Value Line  
[14] Equals [12] / [13]  
[15] Equals [9] x [14]  
[16] Equals 1 - (1 / [14])  
[17] Equals [15] x [16]  
[18] Equals [6] + [17]

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

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-day	Implied Market
Market Return	average)	Risk Premium
13.43%	2.95%	10.48%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	25,712.44	0.10%	0.82%	9.50%	10.36%	0.0104%
American Airlines Group Inc	AAL	15,577.74	0.06%	1.16%	11.53%	12.75%	0.0078%
Advance Auto Parts Inc	AAP	12,908.51	0.05%	0.13%	15.47%	15.62%	0.0079%
Apple Inc	AAPL	937,727.73	3.67%	1.55%	8.28%	9.89%	0.3623%
AbbVie Inc	ABBV	119,406.15	0.47%	5.30%	5.20%	10.64%	0.0496%
AmerisourceBergen Corp	ABC	15,776.86	0.06%	2.15%	4.84%	7.05%	0.0043%
ABIOMED Inc	ABMD	12,176.77	0.05%	0.00%	29.00%	29.00%	0.0138%
Abbott Laboratories	ABT	137,022.25	0.54%	1.58%	11.06%	12.73%	0.0682%
Accenture PLC	ACN	114,113.84	0.45%	1.65%	10.33%	12.06%	0.0538%
Adobe Inc	ADBE	132,654.34	0.52%	0.00%	17.12%	17.12%	0.0888%
Analog Devices Inc	ADI	42,065.18	0.16%	1.82%	11.98%	13.90%	0.0229%
Archer-Daniels-Midland Co	ADM	24,296.73	0.09%	3.26%	1.40%	4.68%	0.0044%
Automatic Data Processing Inc	ADP	71,142.68	0.28%	1.77%	16.00%	17.91%	0.0498%
Alliance Data Systems Corp	ADS	9,588.87	0.04%	1.36%	-2.33%	-0.98%	-0.0004%
Autodesk Inc	ADSK	37,731.52	0.15%	0.00%	60.74%	60.74%	0.0896%
Ameren Corp	AEE	17,665.25	0.07%	2.71%	5.82%	8.62%	0.0059%
American Electric Power Co Inc	AEP	41,510.15	0.16%	3.20%	6.05%	9.35%	0.0152%
AES Corp/VA	AES	11,936.52	0.05%	3.09%	7.62%	10.82%	0.0050%
Aflac Inc	AFL	37,075.56	0.14%	2.21%	3.43%	5.68%	0.0082%
Allergan PLC	AGN	48,229.25	0.19%	2.06%	5.36%	7.48%	0.0141%
American International Group Inc	AIG	40,173.13	0.16%	2.92%	11.00%	14.09%	0.0221%
Apartment Investment & Management Co	AIV	7,360.44	0.03%	4.07%	8.75%	13.00%	0.0037%
Assurant Inc	AIZ	5,911.70	N/A	2.60%	N/A	N/A	N/A
Arthur J Gallagher & Co	AJG	14,914.30	0.06%	2.12%	9.84%	12.06%	0.0070%
Akamai Technologies Inc	AKAM	12,572.27	0.05%	0.00%	15.40%	15.40%	0.0076%
Albemarle Corp	ALB	8,858.42	0.03%	1.65%	12.75%	14.50%	0.0050%
Align Technology Inc	ALGN	23,444.69	0.09%	0.00%	20.79%	20.79%	0.0191%
Alaska Air Group Inc	ALK	7,494.63	0.03%	2.26%	14.33%	16.75%	0.0049%
Allstate Corp/The	ALL	32,302.24	0.13%	2.01%	9.00%	11.10%	0.0140%
Allegion PLC	ALLE	8,932.92	0.03%	1.12%	10.22%	11.40%	0.0040%
Alexion Pharmaceuticals Inc	ALXN	30,549.66	0.12%	0.00%	16.38%	16.38%	0.0196%
Applied Materials Inc	AMAT	40,814.39	0.16%	1.97%	9.23%	11.29%	0.0180%
Advanced Micro Devices Inc	AMD	30,121.55	0.12%	0.00%	12.50%	12.50%	0.0147%
AMETEK Inc	AME	19,523.38	0.08%	0.67%	8.98%	9.68%	0.0074%
Affiliated Managers Group Inc	AMG	5,785.60	0.02%	1.14%	8.36%	9.54%	0.0022%
Amgen Inc	AMGN	117,905.03	0.46%	2.97%	5.14%	8.19%	0.0377%
Ameriprise Financial Inc	AMP	19,300.30	0.08%	2.66%	11.80%	14.62%	0.0110%
American Tower Corp	AMT	87,491.83	0.34%	1.87%	21.74%	23.81%	0.0814%
Amazon.com Inc	AMZN	906,883.93	3.54%	0.00%	37.60%	37.60%	1.3329%
Arista Networks Inc	ANET	24,595.12	0.10%	0.00%	21.64%	21.64%	0.0208%
ANSYS Inc	ANSS	15,898.26	0.06%	0.00%	11.70%	11.70%	0.0073%
Anthem Inc	ANTM	65,046.50	0.25%	1.27%	13.64%	15.00%	0.0381%
Aon PLC	AON	42,369.02	0.17%	0.98%	10.57%	11.60%	0.0192%
AO Smith Corp	AOS	9,318.06	0.04%	1.55%	10.00%	11.63%	0.0042%
Apache Corp	APA	13,720.60	0.05%	2.74%	-5.19%	-2.52%	-0.0014%
Anadarko Petroleum Corp	APC	31,009.84	0.12%	1.75%	19.98%	21.90%	0.0265%
Air Products & Chemicals Inc	APD	42,643.59	0.17%	2.34%	12.30%	14.78%	0.0246%
Amphenol Corp	APH	30,938.47	0.12%	0.87%	10.85%	11.76%	0.0142%
Aptiv PLC	APTIV	23,414.68	0.09%	0.99%	8.99%	10.02%	0.0092%
Alexandria Real Estate Equities Inc	ARE	16,306.19	0.06%	2.75%	4.80%	7.61%	0.0049%
Arconic Inc	ARNC	9,383.35	0.04%	0.39%	14.35%	14.76%	0.0054%
Atmos Energy Corp	ATO	11,828.85	0.05%	2.08%	6.50%	8.64%	0.0040%
Activision Blizzard Inc	ATVI	36,114.07	0.14%	0.78%	6.65%	7.45%	0.0105%
AvalonBay Communities Inc	AVB	28,303.21	0.11%	2.99%	5.63%	8.69%	0.0096%
Broadcom Inc	AVGO	125,494.95	0.49%	3.34%	13.36%	16.93%	0.0830%
Avery Dennison Corp	AVY	9,766.88	0.04%	1.81%	5.75%	7.62%	0.0029%
American Water Works Co Inc	AWK	18,802.03	0.07%	1.89%	8.72%	10.69%	0.0079%
American Express Co	AXP	93,025.51	0.36%	1.45%	12.95%	14.50%	0.0527%
AutoZone Inc	AZO	26,388.29	0.10%	0.00%	13.45%	13.45%	0.0139%
Boeing Co/The	BA	214,299.93	0.84%	2.15%	12.36%	14.64%	0.1226%
Bank of America Corp	BAC	290,807.02	1.14%	2.28%	9.45%	11.84%	0.1346%
Baxter International Inc	BAX	40,541.82	0.16%	1.06%	11.62%	12.74%	0.0202%
BB&T Corp	BBT	37,626.22	0.15%	3.45%	9.72%	13.33%	0.0196%
Best Buy Co Inc	BBY	19,702.37	0.08%	2.69%	6.81%	9.60%	0.0074%
Becton Dickinson and Co	BDX	66,380.63	0.26%	1.30%	13.79%	13.79%	0.0358%
Franklin Resources Inc	BEN	18,067.24	0.07%	2.91%	10.00%	13.06%	0.0092%
Brown-Forman Corp	BF/B	25,238.28	0.10%	1.23%	9.91%	11.20%	0.0111%
Baker Hughes a GE Co	BHGE	27,341.42	0.11%	2.41%	40.82%	43.72%	0.0467%
Biogen Inc	BIIB	46,128.21	0.18%	0.00%	4.63%	4.63%	0.0084%
Bank of New York Mellon Corp/The	BK	50,425.19	0.20%	2.28%	7.33%	9.70%	0.0191%
Booking Holdings Inc	BKNG	82,511.48	0.32%	0.00%	12.50%	12.50%	0.0403%
BlackRock Inc	BLK	72,241.00	0.28%	2.92%	8.93%	11.98%	0.0338%
Ball Corp	BLL	19,391.94	0.08%	0.69%	6.75%	7.46%	0.0057%
Bristol-Myers Squibb Co	BMY	74,401.04	0.29%	3.61%	8.48%	12.25%	0.0356%
Broadridge Financial Solutions Inc	BR	12,897.25	0.05%	1.71%	10.00%	11.79%	0.0059%
Berkshire Hathaway Inc	BRK/B	516,582.04	2.02%	0.00%	-1.60%	-1.60%	-0.0323%

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Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Boston Scientific Corp	BSX	52,463.56	0.21%	0.00%	9.62%	9.62%	0.0197%
BorgWarner Inc	BWA	9,182.57	0.04%	1.54%	4.54%	6.12%	0.0022%
Boston Properties Inc	BXP	21,306.14	0.08%	2.81%	4.91%	7.79%	0.0065%
Citigroup Inc	C	157,795.92	0.62%	2.91%	11.90%	14.98%	0.0924%
Conagra Brands Inc	CAG	14,455.96	0.06%	2.83%	6.60%	9.53%	0.0054%
Cardinal Health Inc	CAH	13,944.20	0.05%	4.19%	14.10%	18.58%	0.0101%
Caterpillar Inc	CAT	81,266.63	0.32%	2.48%	13.35%	16.00%	0.0508%
Chubb Ltd	CB	63,772.37	0.25%	2.18%	10.60%	12.89%	0.0321%
Cboe Global Markets Inc	CBOE	10,728.56	0.04%	1.36%	5.94%	7.34%	0.0031%
CBRE Group Inc	CBRE	17,542.96	0.07%	0.00%	8.55%	8.55%	0.0059%
CBS Corp	CBS	19,236.27	0.08%	1.49%	15.05%	16.65%	0.0125%
Crown Castle International Corp	CCI	53,575.99	0.21%	3.55%	16.20%	20.04%	0.0420%
Carnival Corp	CCL	36,746.44	0.14%	3.85%	10.53%	14.59%	0.0210%
Cadence Design Systems Inc	CDNS	18,271.48	0.07%	0.00%	10.35%	10.35%	0.0074%
Celanese Corp	CE	13,461.89	0.05%	2.24%	7.05%	9.36%	0.0049%
Celgene Corp	CELG	66,101.75	0.26%	0.00%	19.07%	19.07%	0.0493%
Cerner Corp	CERN	20,369.87	0.08%	0.32%	13.63%	13.97%	0.0111%
CF Industries Holdings Inc	CF	9,469.67	0.04%	2.83%	18.60%	21.70%	0.0080%
Citizens Financial Group Inc	CFG	16,141.27	0.06%	3.83%	8.10%	12.08%	0.0076%
Church & Dwight Co Inc	CHD	18,171.98	0.07%	1.25%	7.78%	9.08%	0.0064%
CH Robinson Worldwide Inc	CHRW	12,470.79	0.05%	2.23%	9.07%	11.40%	0.0056%
Charter Communications Inc	CHTR	89,426.79	0.35%	0.00%	41.16%	41.16%	0.1439%
Cigna Corp	CI	61,037.47	0.24%	0.02%	11.25%	11.28%	0.0269%
Cincinnati Financial Corp	CINF	14,272.06	N/A	2.66%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	59,129.17	0.23%	2.50%	5.51%	8.08%	0.0187%
Clorox Co/The	CLX	19,928.27	0.08%	2.50%	4.88%	7.44%	0.0058%
Comerica Inc	CMA	12,685.35	0.05%	3.32%	13.20%	16.74%	0.0083%
Comcast Corp	CMCSA	186,922.25	0.73%	2.03%	11.44%	13.59%	0.0993%
CME Group Inc	CME	61,877.52	0.24%	2.79%	8.49%	11.39%	0.0276%
Chipotle Mexican Grill Inc	CMG	19,752.73	0.08%	0.00%	19.43%	19.43%	0.0150%
Cummins Inc	CMI	26,152.66	0.10%	2.78%	6.66%	9.54%	0.0098%
CMS Energy Corp	CMS	15,601.07	0.06%	2.78%	6.84%	9.72%	0.0059%
Centene Corp	CNC	21,866.05	0.09%	0.00%	13.68%	13.68%	0.0117%
CenterPoint Energy Inc	CNP	15,329.03	0.06%	3.83%	6.40%	10.35%	0.0062%
Capital One Financial Corp	COF	41,222.51	0.16%	1.88%	4.10%	6.02%	0.0097%
Cabot Oil & Gas Corp	COG	11,557.93	0.05%	1.04%	27.91%	29.09%	0.0131%
Cooper Cos Inc/The	COO	14,463.66	0.06%	0.02%	5.23%	5.25%	0.0030%
ConocoPhillips	COP	76,245.41	0.30%	1.84%	5.00%	6.88%	0.0205%
Costco Wholesale Corp	COST	106,429.03	0.42%	0.97%	10.09%	11.11%	0.0462%
Coty Inc	COTY	8,414.08	0.03%	4.46%	8.44%	13.09%	0.0043%
Campbell Soup Co	CPB	11,987.51	0.05%	3.54%	1.42%	4.99%	0.0023%
Capri Holdings Ltd	CPRI	7,303.33	0.03%	0.00%	6.73%	6.73%	0.0019%
Copart Inc	CPRT	14,917.82	0.06%	0.00%	20.00%	20.00%	0.0117%
salesforce.com Inc	CRM	123,907.41	0.48%	0.00%	22.30%	22.30%	0.1080%
Cisco Systems Inc	CSCO	247,790.14	0.97%	2.42%	6.84%	9.34%	0.0905%
CSX Corp	CSX	62,300.57	0.24%	1.18%	7.63%	8.85%	0.0216%
Cintas Corp	CTAS	21,688.00	0.08%	0.99%	12.12%	13.17%	0.0112%
CenturyLink Inc	CTL	13,216.39	0.05%	8.25%	2.50%	10.85%	0.0056%
Cognizant Technology Solutions Corp	CTSH	42,724.13	0.17%	1.04%	11.40%	12.50%	0.0209%
Citrix Systems Inc	CTXS	13,471.60	0.05%	1.37%	11.85%	13.30%	0.0070%
CVS Health Corp	CVS	68,568.78	0.27%	3.74%	7.67%	11.55%	0.0309%
Chevron Corp	CVX	227,551.52	0.89%	3.95%	1.41%	5.39%	0.0480%
Concho Resources Inc	CXO	22,845.94	0.09%	0.44%	18.60%	19.08%	0.0170%
Dominion Energy Inc	D	61,106.01	0.24%	4.79%	5.44%	10.36%	0.0247%
Delta Air Lines Inc	DAL	38,022.55	0.15%	2.52%	12.54%	15.21%	0.0226%
Deere & Co	DE	51,423.96	0.20%	1.92%	10.39%	12.41%	0.0250%
Discover Financial Services	DFS	24,862.56	0.10%	2.17%	7.20%	9.44%	0.0092%
Dollar General Corp	DG	31,718.22	0.12%	1.05%	12.77%	13.89%	0.0172%
Quest Diagnostics Inc	DGX	12,096.06	0.05%	2.33%	8.05%	10.47%	0.0050%
DR Horton Inc	DHI	16,934.74	0.07%	1.32%	13.00%	14.40%	0.0095%
Danaher Corp	DHR	94,206.75	0.37%	0.52%	9.01%	9.55%	0.0352%
Walt Disney Co/The	DIS	233,798.64	0.91%	1.35%	6.74%	8.13%	0.0743%
Discovery Inc	DISCA	20,836.30	0.08%	0.00%	12.30%	12.30%	0.0100%
DISH Network Corp	DISH	16,048.74	0.06%	0.00%	-11.00%	-11.00%	-0.0069%
Digital Realty Trust Inc	DLR	26,847.47	0.10%	3.51%	17.36%	21.17%	0.0222%
Dollar Tree Inc	DLTR	24,880.44	0.10%	0.00%	9.41%	9.41%	0.0091%
Dover Corp	DOV	14,104.57	0.06%	2.05%	10.97%	13.12%	0.0072%
Dow Inc	DOW	43,520.95	N/A	4.27%	N/A	N/A	N/A
Duke Realty Corp	DRE	11,086.26	0.04%	2.80%	0.27%	3.07%	0.0013%
Darden Restaurants Inc	DRI	14,326.68	0.06%	2.58%	10.58%	13.29%	0.0074%
DTE Energy Co	DTE	22,795.54	0.09%	3.03%	5.53%	8.65%	0.0077%
Duke Energy Corp	DUK	65,815.54	0.26%	4.19%	5.09%	9.39%	0.0241%
DaVita Inc	DVA	9,075.46	0.04%	0.00%	19.15%	19.15%	0.0068%
Devon Energy Corp	DVN	14,674.28	0.06%	1.03%	5.82%	6.87%	0.0039%
DowDuPont Inc	DWDP	88,662.00	0.35%	3.82%	16.63%	20.77%	0.0720%
DXC Technology Co	DXC	17,700.53	0.07%	1.16%	6.70%	7.89%	0.0055%
Electronic Arts Inc	EA	30,507.82	0.12%	0.00%	11.87%	11.87%	0.0142%
eBay Inc	EBAY	31,642.12	0.12%	1.55%	10.67%	12.30%	0.0152%
Ecolab Inc	ECL	53,373.77	0.21%	1.00%	13.17%	14.24%	0.0297%
Consolidated Edison Inc	ED	27,643.33	0.11%	3.50%	4.13%	7.70%	0.0083%
Equifax Inc	EFX	15,177.90	0.06%	1.28%	11.53%	12.88%	0.0076%
Edison International	EIX	21,871.71	0.09%	3.67%	5.95%	9.73%	0.0083%
Estee Lauder Cos Inc/The	EL	60,501.94	0.24%	0.99%	12.05%	13.10%	0.0310%
Eastman Chemical Co	EMN	11,649.69	0.05%	2.84%	6.73%	9.67%	0.0044%
Emerson Electric Co	EMR	44,314.09	0.17%	2.72%	8.95%	11.80%	0.0204%
EOG Resources Inc	EOG	61,085.91	0.24%	0.83%	9.90%	10.78%	0.0257%
Equinix Inc	EQIX	38,788.54	0.15%	2.12%	18.39%	20.71%	0.0314%
Equity Residential	EQR	28,651.37	0.11%	2.89%	6.73%	9.72%	0.0109%

		[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
Eversource Energy	ES	22,426.92	0.09%	3.03%	5.63%	8.75%	0.0077%
Essex Property Trust Inc	ESS	19,060.27	0.07%	2.68%	6.54%	9.31%	0.0069%
E*TRADE Financial Corp	ETFC	12,082.79	0.05%	1.00%	12.23%	13.29%	0.0063%
Eaton Corp PLC	ETN	35,583.84	0.14%	3.41%	8.98%	12.54%	0.0174%
Entergy Corp	ETR	18,140.36	0.07%	3.87%	-1.22%	2.63%	0.0019%
Eergy Inc	EVRG	14,585.44	0.06%	3.33%	6.67%	10.12%	0.0058%
Edwards Lifesciences Corp	EW	39,896.65	0.16%	0.00%	14.00%	14.00%	0.0218%
Exelon Corp	EXC	48,206.62	0.19%	2.91%	3.95%	6.92%	0.0130%
Expeditors International of Washington I	EXPD	13,583.57	0.05%	1.20%	7.70%	8.95%	0.0048%
Expedia Group Inc	EXPE	18,515.07	0.07%	1.04%	17.20%	18.33%	0.0133%
Extra Space Storage Inc	EXR	13,014.14	0.05%	3.46%	5.52%	9.07%	0.0046%
Ford Motor Co	F	37,700.96	0.15%	6.35%	-0.70%	5.62%	0.0083%
Diamondback Energy Inc	FANG	17,470.47	0.07%	0.70%	22.91%	23.70%	0.0162%
Fastenal Co	FAST	19,955.57	0.08%	2.50%	14.70%	17.38%	0.0136%
Facebook Inc	FB	511,149.57	2.00%	0.00%	22.05%	22.05%	0.4406%
Fortune Brands Home & Security Inc	FBHS	6,921.15	0.03%	1.77%	9.47%	11.32%	0.0031%
Freerport-McMoRan Inc	FCX	19,852.11	0.08%	1.46%	-12.55%	-11.18%	-0.0087%
FedEx Corp	FDX	51,320.17	0.20%	1.30%	10.63%	12.01%	0.0241%
FirstEnergy Corp	FE	21,984.46	0.09%	3.68%	0.49%	4.17%	0.0036%
F5 Networks Inc	FFIV	9,927.30	0.04%	0.00%	8.41%	8.41%	0.0033%
Fidelity National Information Services I	FIS	36,565.87	0.14%	1.24%	8.10%	9.39%	0.0134%
Fiserv Inc	FISV	33,837.16	0.13%	0.00%	10.55%	10.55%	0.0140%
Fifth Third Bancorp	FITB	21,328.89	0.08%	3.51%	3.95%	7.53%	0.0063%
Foot Locker Inc	FL	6,952.03	0.03%	2.49%	8.18%	10.76%	0.0029%
FLIR Systems Inc	FLIR	6,758.96	N/A	1.36%	N/A	N/A	N/A
Fluor Corp	FLR	5,749.06	0.02%	2.04%	20.49%	22.73%	0.0051%
Flowserve Corp	FLS	6,420.02	0.03%	1.64%	13.05%	14.80%	0.0037%
FleetCor Technologies Inc	FLT	21,583.09	0.08%	0.00%	16.50%	16.50%	0.0139%
FMC Corp	FMC	10,524.71	0.04%	1.79%	9.87%	11.74%	0.0048%
Fox Corp	FOXA	23,133.06	0.09%	0.00%	0.79%	0.79%	0.0007%
First Republic Bank/CA	FRC	16,965.10	0.07%	0.75%	12.37%	13.16%	0.0087%
Federal Realty Investment Trust	FRT	10,304.00	0.04%	3.01%	5.87%	8.97%	0.0036%
TechnipFMC PLC	FTI	11,104.69	0.04%	2.14%	19.96%	22.31%	0.0097%
Fortinet Inc	FTNT	15,819.45	0.06%	0.00%	21.27%	21.27%	0.0132%
Fortive Corp	FTV	29,333.77	0.11%	0.35%	13.89%	14.26%	0.0164%
General Dynamics Corp	GD	50,514.52	0.20%	2.26%	10.09%	12.47%	0.0246%
General Electric Co	GE	78,386.74	0.31%	0.44%	8.87%	9.33%	0.0286%
Gilead Sciences Inc	GILD	83,225.21	0.33%	3.85%	6.68%	10.65%	0.0346%
General Mills Inc	GIS	30,885.62	0.12%	3.82%	5.93%	9.87%	0.0119%
Corning Inc	GLW	27,490.51	0.11%	2.27%	10.39%	12.78%	0.0137%
General Motors Co	GM	55,970.41	0.22%	3.85%	6.03%	10.00%	0.0219%
Alphabet Inc	GOOGL	848,214.63	3.32%	0.00%	15.06%	15.06%	0.4991%
Genuine Parts Co	GPC	16,463.92	0.06%	2.71%	6.34%	9.14%	0.0059%
Global Payments Inc	GP	21,963.30	0.09%	0.03%	16.73%	16.76%	0.0144%
Gap Inc/The	GPS	9,770.98	0.04%	3.79%	7.90%	11.84%	0.0045%
Garmin Ltd	GRMN	16,794.56	0.07%	2.53%	7.28%	9.89%	0.0065%
Goldman Sachs Group Inc/The	GS	79,262.81	0.31%	1.63%	1.13%	2.77%	0.0086%
WW Grainger Inc	GW	16,951.22	0.07%	1.88%	12.47%	14.46%	0.0096%
Halliburton Co	HAL	27,343.70	0.11%	2.27%	27.68%	30.26%	0.0323%
Hasbro Inc	HAS	11,033.53	0.04%	3.11%	10.85%	14.13%	0.0061%
Huntington Bancshares Inc/OH	HBAN	14,387.57	0.06%	4.32%	8.20%	12.70%	0.0071%
Hanesbrands Inc	HBI	6,694.44	0.03%	3.38%	3.72%	7.16%	0.0019%
HCA Healthcare Inc	HCA	43,924.82	0.17%	1.07%	11.56%	12.69%	0.0218%
HCP Inc	HCP	14,748.85	0.06%	4.80%	2.57%	7.43%	0.0043%
Home Depot Inc/The	HD	224,793.82	0.88%	2.65%	9.49%	12.27%	0.1078%
Hess Corp	HES	20,030.56	0.08%	1.54%	-9.23%	-7.76%	-0.0061%
HollyFrontier Corp	HFC	8,580.96	0.03%	2.68%	5.93%	8.69%	0.0029%
Hartford Financial Services Group Inc/Th	HIG	18,423.04	0.07%	2.43%	9.50%	12.05%	0.0087%
Huntington Ingalls Industries Inc	HII	9,134.52	0.04%	1.55%	40.00%	41.86%	0.0149%
Hilton Worldwide Holdings Inc	HLT	25,935.46	0.10%	0.74%	13.26%	14.05%	0.0142%
Harley-Davidson Inc	HOG	6,395.87	0.02%	3.82%	8.60%	12.58%	0.0031%
Hologic Inc	HOLX	12,717.71	0.05%	0.00%	3.10%	3.10%	0.0015%
Honeywell International Inc	HON	118,338.25	0.46%	2.05%	7.88%	10.00%	0.0463%
Helmerich & Payne Inc	HP	6,599.33	0.03%	4.72%	96.36%	103.35%	0.0267%
Hewlett Packard Enterprise Co	HPE	22,474.20	0.09%	2.79%	6.09%	8.97%	0.0079%
HP Inc	HPQ	30,992.07	0.12%	3.14%	3.08%	6.27%	0.0076%
H&R Block Inc	HRB	5,242.93	0.02%	3.89%	10.00%	14.08%	0.0029%
Hormel Foods Corp	HRL	22,043.06	0.09%	2.03%	5.80%	7.89%	0.0068%
Harris Corp	HRS	19,798.55	0.08%	1.61%	7.00%	8.66%	0.0067%
Henry Schein Inc	HSIC	9,234.34	0.04%	0.00%	6.35%	6.35%	0.0023%
Host Hotels & Resorts Inc	HST	14,231.90	0.06%	4.47%	12.53%	17.28%	0.0096%
Hershey Co/The	HSY	24,212.07	0.09%	2.54%	7.20%	9.83%	0.0093%
Humana Inc	HUM	34,358.40	0.13%	0.82%	13.81%	14.69%	0.0197%
International Business Machines Corp	IBM	128,452.19	0.50%	4.51%	1.99%	6.55%	0.0329%
Intercontinental Exchange Inc	ICE	43,719.07	0.17%	1.39%	8.89%	10.34%	0.0177%
IDEXX Laboratories Inc	IDXX	19,387.65	0.08%	0.00%	16.24%	16.24%	0.0123%
International Flavors & Fragrances Inc	IFF	14,236.81	0.06%	2.12%	8.00%	10.21%	0.0057%
Illumina Inc	ILMN	49,715.11	0.19%	0.00%	23.66%	23.66%	0.0460%
Incyte Corp	INCY	17,012.60	0.07%	0.00%	44.36%	44.36%	0.0295%
IHS Markit Ltd	INFO	21,872.27	0.09%	0.00%	11.22%	11.22%	0.0096%
Intel Corp	INTC	253,814.87	0.99%	2.24%	8.54%	10.87%	0.1079%
Intuit Inc	INTU	67,374.52	0.26%	0.70%	16.03%	16.79%	0.0442%
International Paper Co	IP	19,175.21	0.07%	4.22%	6.08%	10.42%	0.0078%
Interpublic Group of Cos Inc/The	IPG	8,431.63	0.03%	4.31%	11.49%	16.05%	0.0053%
IPG Photonics Corp	IPGP	8,971.01	0.04%	0.00%	7.37%	7.37%	0.0026%
IQVIA Holdings Inc	IQV	28,019.41	0.11%	0.00%	17.05%	17.05%	0.0187%
Ingersoll-Rand PLC	IR	27,706.51	0.11%	1.90%	9.21%	11.20%	0.0121%
Iron Mountain Inc	IRM	10,477.50	0.04%	6.75%	7.96%	14.98%	0.0061%



		[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
Intuitive Surgical Inc	ISRG	67,238.37	0.26%	0.00%	12.82%	12.82%	0.0337%
Gartner Inc	IT	14,298.26	0.06%	0.00%	14.02%	14.02%	0.0078%
Illinois Tool Works Inc	ITW	51,130.06	0.20%	2.57%	7.27%	9.93%	0.0198%
Invesco Ltd	IVZ	8,566.09	0.03%	5.81%	7.06%	13.08%	0.0044%
JB Hunt Transport Services Inc	JBHT	11,600.25	0.05%	0.97%	15.43%	16.47%	0.0075%
Johnson Controls International plc	JCI	32,930.69	0.13%	3.00%	7.63%	10.75%	0.0138%
Jacobs Engineering Group Inc	JEC	10,742.80	0.04%	0.77%	13.96%	14.78%	0.0062%
Jefferies Financial Group Inc	JEF	6,063.74	N/A	2.46%	N/A	N/A	N/A
Jack Henry & Associates Inc	JKHY	11,122.69	0.04%	1.08%	11.00%	12.14%	0.0053%
Johnson & Johnson	JNJ	362,083.75	1.42%	2.79%	7.34%	10.24%	0.1449%
Juniper Networks Inc	JNPR	9,694.91	0.04%	2.71%	8.76%	11.59%	0.0044%
JPMorgan Chase & Co	JPM	361,195.07	1.41%	3.05%	6.77%	9.92%	0.1401%
Nordstrom Inc	JWN	6,793.77	0.03%	3.52%	7.75%	11.41%	0.0030%
Kellogg Co	K	19,787.90	0.08%	4.02%	2.65%	6.72%	0.0052%
KeyCorp	KEY	16,906.26	0.07%	4.40%	13.14%	17.83%	0.0118%
Keysight Technologies Inc	KEYS	17,264.88	0.07%	0.00%	17.00%	17.00%	0.0115%
Kraft Heinz Co/The	KHC	40,326.71	0.16%	4.84%	2.44%	7.34%	0.0116%
Kimco Realty Corp	KIM	7,697.26	0.03%	6.18%	3.29%	9.57%	0.0029%
KLAC-Tencor Corp	KLAC	20,201.05	0.08%	2.43%	8.58%	11.12%	0.0088%
Kimberly-Clark Corp	KMB	42,387.39	0.17%	3.33%	6.12%	9.55%	0.0158%
Kinder Morgan Inc/DE	KMI	44,864.74	0.18%	5.02%	14.40%	19.78%	0.0347%
CarMax Inc	KMX	12,490.58	0.05%	0.00%	11.65%	11.65%	0.0057%
Coca-Cola Co/The	KO	199,821.04	0.78%	3.48%	6.22%	9.81%	0.0766%
Kroger Co/The	KR	20,493.06	0.08%	2.27%	6.23%	8.57%	0.0069%
Kohl's Corp	KSS	11,377.57	0.04%	3.84%	9.80%	13.83%	0.0062%
Kansas City Southern	KSU	11,907.25	0.05%	1.28%	12.67%	14.03%	0.0065%
Loews Corp	L	15,099.33	N/A	0.57%	N/A	N/A	N/A
L Brands Inc	LB	7,108.34	0.03%	4.65%	10.72%	15.62%	0.0043%
Leggett & Platt Inc	LEG	5,675.34	0.02%	3.56%	10.00%	13.74%	0.0030%
Lennar Corp	LEN	16,079.28	0.06%	0.31%	10.32%	10.65%	0.0067%
Laboratory Corp of America Holdings	LH	15,536.88	0.06%	0.00%	7.08%	7.08%	0.0043%
Linde PLC	LIN	99,550.35	0.39%	1.99%	18.80%	20.98%	0.0816%
LKQ Corp	LKQ	9,693.91	0.04%	0.00%	13.05%	13.05%	0.0049%
L3 Technologies Inc	LLL	17,216.10	0.07%	1.58%	5.00%	6.61%	0.0045%
Eli Lilly & Co	LLY	127,467.88	0.50%	2.01%	12.95%	15.09%	0.0752%
Lockheed Martin Corp	LMT	87,585.54	0.34%	2.89%	7.01%	10.00%	0.0342%
Lincoln National Corp	LNC	13,260.71	0.05%	2.31%	9.00%	11.41%	0.0059%
Alliant Energy Corp	LNT	11,061.16	0.04%	3.04%	5.37%	8.49%	0.0037%
Lowe's Cos Inc	LOW	92,533.98	0.36%	1.77%	15.45%	17.36%	0.0628%
Lam Research Corp	LRCX	29,615.34	0.12%	2.09%	-0.42%	1.67%	0.0019%
Southwest Airlines Co	LUV	29,043.41	0.11%	1.30%	5.88%	7.22%	0.0082%
Lamb Weston Holdings Inc	LW	10,401.54	0.04%	1.10%	11.83%	13.00%	0.0053%
LyondellBasell Industries NV	LYB	34,177.21	0.13%	4.50%	6.80%	11.46%	0.0153%
Macy's Inc	M	7,484.64	0.03%	6.21%	4.80%	11.16%	0.0033%
Mastercard Inc	MA	245,017.86	0.96%	0.49%	17.68%	18.21%	0.1744%
Mid-America Apartment Communities Inc	MAA	12,546.36	0.05%	3.51%	7.00%	10.64%	0.0052%
Macerich Co/The	MAC	6,143.34	0.02%	6.94%	-0.09%	6.86%	0.0016%
Marriott International Inc/MD	MAR	45,335.87	0.18%	1.26%	10.81%	12.14%	0.0215%
Masco Corp	MAS	11,907.14	0.05%	1.17%	12.38%	13.62%	0.0063%
Mattel Inc	MAT	4,697.39	0.02%	0.00%	10.00%	10.00%	0.0018%
McDonald's Corp	MCD	146,285.48	0.57%	2.44%	8.55%	11.09%	0.0634%
Microchip Technology Inc	MCHP	22,597.36	0.09%	1.53%	12.39%	14.01%	0.0124%
McKesson Corp	MCK	22,261.32	0.09%	1.28%	4.01%	5.32%	0.0046%
Moody's Corp	MCO	35,328.22	0.14%	1.04%	7.05%	8.12%	0.0112%
Mondelez International Inc	MDLZ	71,983.78	0.28%	2.11%	6.89%	9.07%	0.0255%
Medtronic PLC	MDT	116,344.85	0.45%	2.29%	6.80%	9.17%	0.0417%
MetLife Inc	MET	43,900.44	0.17%	3.79%	9.27%	13.23%	0.0227%
MGM Resorts International	MGM	14,684.69	0.06%	1.86%	11.92%	13.89%	0.0080%
Mohawk Industries Inc	MHK	9,569.10	0.04%	0.00%	7.09%	7.09%	0.0027%
McCormick & Co Inc/MD	MKC	20,325.21	0.08%	1.45%	6.20%	7.69%	0.0061%
Martin Marietta Materials Inc	MLM	13,255.65	0.05%	0.92%	13.85%	14.84%	0.0077%
Marsh & McLennan Cos Inc	MMC	48,050.90	0.19%	1.85%	12.27%	14.23%	0.0267%
3M Co	MMM	125,211.45	0.49%	2.64%	7.70%	10.44%	0.0511%
Monster Beverage Corp	MNST	28,797.72	0.11%	0.00%	14.35%	14.35%	0.0162%
Altria Group Inc	MO	105,909.55	0.41%	5.80%	5.57%	11.53%	0.0477%
Mosaic Co/The	MOS	10,339.07	0.04%	0.79%	11.40%	12.23%	0.0049%
Marathon Petroleum Corp	MPC	41,428.59	0.16%	3.53%	10.64%	14.36%	0.0233%
Merck & Co Inc	MRK	205,173.66	0.80%	2.77%	8.74%	11.63%	0.0933%
Marathon Oil Corp	MRO	14,536.64	0.06%	1.13%	0.45%	1.58%	0.0009%
Morgan Stanley	MS	78,743.66	0.31%	2.78%	8.97%	11.87%	0.0365%
MSCI Inc	MSCI	18,456.22	0.07%	1.07%	8.50%	9.62%	0.0069%
Microsoft Corp	MSFT	927,954.22	3.63%	1.48%	11.68%	13.24%	0.4804%
Motorola Solutions Inc	MSI	23,551.52	0.09%	1.61%	4.10%	5.74%	0.0053%
M&T Bank Corp	MTB	23,228.26	0.09%	2.55%	7.47%	10.12%	0.0092%
Mettler-Toledo International Inc	MTD	18,438.56	0.07%	0.00%	12.14%	12.14%	0.0088%
Micron Technology Inc	MU	46,491.92	0.18%	0.00%	-3.70%	-3.70%	-0.0067%
Maxim Integrated Products Inc	MXIM	16,212.52	0.06%	3.10%	8.93%	12.17%	0.0077%
Mylan NV	MYL	13,915.17	0.05%	0.00%	4.86%	4.86%	0.0026%
Noble Energy Inc	NBL	12,993.91	0.05%	1.64%	16.07%	17.84%	0.0091%
Norwegian Cruise Line Holdings Ltd	NCLH	12,758.85	0.05%	0.39%	11.40%	11.40%	0.0057%
Nasdaq Inc	NDAQ	14,523.60	0.06%	2.12%	14.34%	16.61%	0.0094%
NextEra Energy Inc	NEE	91,396.63	0.36%	2.62%	4.95%	7.63%	0.0273%
Newmont Mining Corp	NEM	19,309.27	0.08%	1.55%	5.55%	7.14%	0.0054%
Netflix Inc	NFLX	153,307.23	0.60%	0.00%	32.07%	32.07%	0.1922%
NiSource Inc	NI	10,469.25	0.04%	2.89%	5.73%	8.70%	0.0036%
NIKE Inc	NKE	135,547.68	0.53%	0.98%	19.11%	20.19%	0.1070%
Nektar Therapeutics	NKTR	6,119.77	N/A	0.00%	N/A	N/A	N/A
Nielsen Holdings PLC	NLSN	9,469.11	N/A	4.84%	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
Northrop Grumman Corp	NOC	48,106.90	0.19%	1.84%	6.97%	8.87%	0.0167%
National Oilwell Varco Inc	NOV	10,302.85	0.04%	0.77%	77.76%	78.82%	0.0317%
NRG Energy Inc	NRG	11,792.30	0.05%	0.28%	41.05%	41.39%	0.0191%
Norfolk Southern Corp	NSC	52,330.77	0.20%	1.74%	12.36%	14.21%	0.0291%
NetApp Inc	NTAP	18,678.70	0.07%	2.11%	13.23%	15.48%	0.0113%
Northern Trust Corp	NTRS	20,659.00	0.08%	2.60%	10.65%	13.39%	0.0108%
Nucor Corp	NUE	17,829.96	0.07%	2.71%	0.85%	3.57%	0.0025%
NVIDIA Corp	NVDA	115,620.02	0.45%	0.34%	9.64%	10.00%	0.0452%
Newell Brands Inc	NWL	6,511.24	0.03%	5.96%	-11.72%	-6.10%	-0.0016%
News Corp	NWSA	7,419.65	0.03%	1.71%	-9.13%	-7.50%	-0.0022%
Realty Income Corp	O	21,664.00	0.08%	3.82%	4.39%	8.30%	0.0070%
ONEOK Inc	OKE	29,139.63	0.11%	5.09%	12.82%	18.24%	0.0208%
Omnicom Group Inc	OMC	16,827.34	0.07%	3.39%	3.78%	7.23%	0.0048%
Oracle Corp	ORCL	186,262.14	0.73%	1.52%	7.52%	9.10%	0.0662%
O'Reilly Automotive Inc	ORLY	31,850.95	0.12%	0.00%	12.40%	12.40%	0.0154%
Occidental Petroleum Corp	OXY	48,858.84	0.19%	4.80%	7.67%	12.65%	0.0242%
Paychex Inc	PAYX	29,527.71	0.12%	2.76%	8.77%	11.65%	0.0134%
People's United Financial Inc	PBCT	6,833.91	0.03%	4.15%	2.00%	6.19%	0.0017%
PACCAR Inc	PACR	24,448.84	0.10%	4.01%	5.90%	10.03%	0.0096%
Public Service Enterprise Group Inc	PEG	30,244.42	0.12%	3.13%	6.47%	9.70%	0.0115%
PepsiCo Inc	PEP	171,645.38	0.67%	3.12%	5.74%	8.95%	0.0600%
Pfizer Inc	PFE	231,565.78	0.91%	3.44%	4.65%	8.17%	0.0739%
Principal Financial Group Inc	PFG	15,262.47	0.06%	4.05%	4.60%	8.74%	0.0052%
Procter & Gamble Co/The	PG	262,815.96	1.03%	2.77%	6.56%	9.42%	0.0967%
Progressive Corp/The	PGR	42,403.21	0.17%	3.87%	6.23%	10.22%	0.0169%
Parker-Hannifin Corp	PH	24,403.48	0.10%	1.62%	9.04%	10.73%	0.0102%
PulteGroup Inc	PHM	8,155.18	0.03%	1.49%	7.17%	8.71%	0.0028%
Packaging Corp of America	PKG	9,764.26	0.04%	3.10%	8.25%	11.47%	0.0044%
PerkinElmer Inc	PKI	11,079.18	0.04%	0.28%	13.59%	13.89%	0.0060%
Prologis Inc	PLD	46,943.02	0.18%	2.77%	6.74%	9.60%	0.0176%
Philip Morris International Inc	PM	133,440.52	0.52%	5.46%	7.74%	13.41%	0.0699%
PNC Financial Services Group Inc/The	PNC	60,194.38	0.24%	3.09%	7.47%	10.68%	0.0251%
Pentair PLC	PNR	6,877.15	0.03%	1.80%	7.16%	9.03%	0.0024%
Pinnacle West Capital Corp	PNW	10,700.85	0.04%	3.15%	5.19%	8.43%	0.0035%
PPG Industries Inc	PPG	27,293.36	0.11%	1.68%	8.06%	9.81%	0.0105%
PPL Corp	PPL	22,970.60	0.09%	5.21%	2.37%	7.64%	0.0069%
Perrigo Co PLC	PRGO	6,843.93	0.03%	1.49%	0.25%	1.74%	0.0005%
Prudential Financial Inc	PRU	41,429.54	0.16%	3.98%	11.43%	15.64%	0.0253%
Public Storage	PSA	38,668.58	0.15%	3.67%	5.22%	8.99%	0.0136%
Phillips 66	PSX	44,149.42	0.17%	3.54%	-13.74%	-10.44%	-0.0180%
PVH Corp	PVH	9,705.16	0.04%	0.12%	8.78%	8.91%	0.0034%
Quanta Services Inc	PWR	5,729.02	0.02%	0.40%	22.00%	22.44%	0.0050%
Pioneer Natural Resources Co	PXD	28,359.61	0.11%	0.29%	26.85%	27.18%	0.0301%
PayPal Holdings Inc	PYPL	127,159.46	0.50%	0.00%	22.91%	22.91%	0.1139%
QUALCOMM Inc	QCOM	68,926.91	0.27%	4.44%	11.71%	16.41%	0.0442%
Qorvo Inc	QRVO	9,478.05	0.04%	0.00%	9.05%	9.05%	0.0034%
Royal Caribbean Cruises Ltd	RCL	25,508.21	0.10%	2.29%	11.72%	14.14%	0.0141%
Everest Re Group Ltd	RE	9,245.30	0.04%	2.46%	10.00%	12.58%	0.0045%
Regency Centers Corp	REG	11,546.65	0.05%	3.36%	5.14%	8.59%	0.0039%
Regeneron Pharmaceuticals Inc	REGN	41,846.61	0.16%	0.00%	13.18%	13.18%	0.0216%
Regions Financial Corp	RF	15,876.67	0.06%	3.87%	10.57%	14.64%	0.0091%
Robert Half International Inc	RHI	7,973.50	0.03%	1.80%	9.25%	11.13%	0.0035%
Red Hat Inc	RHT	32,235.81	0.13%	0.00%	20.30%	20.30%	0.0256%
Raymond James Financial Inc	RJF	12,383.14	0.05%	1.48%	17.00%	18.61%	0.0090%
Ralph Lauren Corp	RL	10,075.40	0.04%	1.87%	6.84%	8.77%	0.0035%
ResMed Inc	RMD	14,656.72	0.06%	1.47%	12.50%	14.06%	0.0081%
Rockwell Automation Inc	ROK	22,024.78	0.09%	2.10%	8.94%	11.14%	0.0096%
Rollins Inc	ROL	14,060.90	0.05%	1.83%	10.00%	11.92%	0.0066%
Roper Technologies Inc	ROP	36,393.27	0.14%	0.52%	11.33%	11.88%	0.0169%
Ross Stores Inc	ROST	35,777.75	0.14%	1.08%	10.38%	11.51%	0.0161%
Republic Services Inc	RSG	25,161.64	0.10%	1.93%	13.01%	15.07%	0.0148%
Raytheon Co	RTN	52,047.69	0.20%	2.05%	9.37%	11.51%	0.0234%
SBA Communications Corp	SBAC	23,094.20	0.09%	0.00%	25.05%	25.05%	0.0226%
Starbucks Corp	SBUX	95,321.94	0.37%	1.95%	13.04%	15.12%	0.0563%
Charles Schwab Corp/The	SCHW	60,506.93	0.24%	1.42%	11.45%	12.96%	0.0306%
Sealed Air Corp	SEE	7,273.72	0.03%	1.42%	6.04%	7.51%	0.0021%
Sherwin-Williams Co/The	SHW	40,921.27	0.16%	0.99%	9.47%	10.50%	0.0168%
SVB Financial Group	SIVB	12,831.46	0.05%	0.01%	11.00%	11.01%	0.0055%
JM Smucker Co/The	SJM	13,460.77	0.05%	2.80%	3.20%	6.05%	0.0032%
Schlumberger Ltd	SLB	63,269.65	0.25%	4.38%	30.33%	35.37%	0.0875%
SL Green Realty Corp	SLG	7,723.17	0.03%	3.76%	-0.59%	3.17%	0.0010%
Snap-on Inc	SNA	8,669.66	0.03%	2.42%	7.93%	10.44%	0.0035%
Synopsys Inc	SNPS	17,690.19	0.07%	0.00%	14.50%	14.50%	0.0100%
Southern Co/The	SO	54,643.74	0.21%	4.70%	3.65%	8.44%	0.0180%
Simon Property Group Inc	SPG	57,324.49	0.22%	4.47%	5.20%	9.79%	0.0219%
S&P Global Inc	SPGI	52,890.25	0.21%	1.04%	9.20%	10.29%	0.0213%
Sempra Energy	SRE	35,602.56	0.14%	2.99%	9.95%	13.09%	0.0182%
SunTrust Banks Inc	STI	27,867.45	0.11%	3.37%	7.47%	10.96%	0.0119%
State Street Corp	STT	26,780.11	0.10%	2.84%	8.69%	11.66%	0.0122%
Seagate Technology PLC	STX	13,870.25	0.05%	5.07%	3.37%	8.52%	0.0046%
Constellation Brands Inc	STZ	36,215.92	0.14%	1.56%	8.44%	10.07%	0.0143%
Stanley Black & Decker Inc	SWK	22,123.85	0.09%	1.83%	10.50%	12.43%	0.0107%
Skyworks Solutions Inc	SWKS	15,687.79	0.06%	1.71%	8.87%	10.66%	0.0065%
Synchrony Financial	SYF	22,824.60	0.09%	2.74%	4.03%	6.83%	0.0061%
Stryker Corp	SYK	71,886.18	0.28%	1.17%	9.30%	10.53%	0.0296%
Symantec Corp	SYMC	15,315.64	0.06%	1.27%	7.50%	8.82%	0.0053%
Sysco Corp	SY	35,434.06	0.14%	2.18%	12.83%	15.15%	0.0210%
AT&T Inc	T	234,563.79	0.92%	6.35%	4.92%	11.43%	0.1048%

		[4]	[5]	[6]	[7]	[8]	[9]
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Molson Coors Brewing Co	TAP	12,977.14	0.05%	3.41%	0.03%	3.45%	0.0017%
TransDigm Group Inc	TDG	24,511.48	0.10%	0.00%	11.07%	11.07%	0.0106%
TE Connectivity Ltd	TEL	29,802.25	0.12%	2.01%	11.18%	13.31%	0.0155%
Teleflex Inc	TFX	14,057.74	0.05%	0.45%	12.45%	12.93%	0.0071%
Target Corp	TGT	41,683.58	0.16%	3.27%	6.44%	9.81%	0.0160%
Tiffany & Co	TIF	12,896.01	0.05%	2.20%	9.78%	12.09%	0.0061%
TJX Cos Inc/The	TJX	65,551.34	0.26%	1.61%	11.57%	13.27%	0.0340%
Torchmark Corp	TMK	9,579.61	0.04%	0.77%	7.53%	8.33%	0.0031%
Thermo Fisher Scientific Inc	TMO	112,250.50	0.44%	0.26%	10.50%	10.77%	0.0473%
Tapestry Inc	TPR	9,444.58	0.04%	4.14%	10.58%	14.94%	0.0055%
TripAdvisor Inc	TRIP	7,264.58	0.03%	0.00%	11.39%	11.39%	0.0032%
T Rowe Price Group Inc	TROW	25,067.16	0.10%	2.85%	6.01%	8.94%	0.0088%
Travelers Cos Inc/The	TRV	36,068.94	0.14%	2.33%	16.80%	19.32%	0.0272%
Tractor Supply Co	TSCO	12,625.74	0.05%	1.28%	11.06%	12.42%	0.0061%
Tyson Foods Inc	TSN	25,875.54	N/A	2.22%	N/A	N/A	N/A
Total System Services Inc	TSS	17,601.73	0.07%	0.54%	12.14%	12.71%	0.0087%
Take-Two Interactive Software Inc	TTWO	10,649.67	0.04%	0.00%	10.30%	10.30%	0.0043%
Twitter Inc	TWTR	26,393.15	0.10%	0.00%	37.35%	37.35%	0.0385%
Texas Instruments Inc	TXN	109,593.00	0.43%	2.69%	10.48%	13.30%	0.0570%
Textron Inc	TXT	12,075.88	0.05%	0.16%	11.26%	11.42%	0.0054%
Under Armour Inc	UA	9,283.32	0.04%	0.00%	34.85%	34.85%	0.0126%
United Continental Holdings Inc	UAL	22,592.54	0.09%	0.00%	11.66%	11.66%	0.0103%
UDR Inc	UDR	12,877.97	0.05%	2.97%	5.49%	8.54%	0.0043%
Universal Health Services Inc	UHS	12,098.02	0.05%	0.30%	10.88%	11.20%	0.0053%
Ulta Beauty Inc	ULTA	20,277.30	0.08%	0.00%	21.20%	21.20%	0.0168%
UnitedHealth Group Inc	UNH	214,188.19	0.84%	1.68%	13.84%	15.64%	0.1309%
Unum Group	UNM	7,871.72	0.03%	2.89%	9.00%	12.02%	0.0037%
Union Pacific Corp	UNP	122,527.79	0.48%	2.09%	13.86%	16.10%	0.0771%
United Parcel Service Inc	UPS	98,455.95	0.38%	3.34%	8.93%	12.42%	0.0478%
United Rentals Inc	URI	9,986.34	0.04%	0.00%	17.76%	17.76%	0.0069%
US Bancorp	USB	80,365.03	0.31%	3.14%	6.70%	9.95%	0.0313%
United Technologies Corp	UTX	116,673.56	0.46%	2.20%	9.10%	11.40%	0.0520%
Visa Inc	V	320,457.64	1.25%	0.62%	15.57%	16.24%	0.2034%
Varian Medical Systems Inc	VAR	12,845.02	0.05%	0.00%	9.00%	9.00%	0.0045%
VF Corp	VFC	35,885.37	0.14%	1.99%	-25.52%	-23.79%	-0.0334%
Viacom Inc	VIAB	12,493.23	0.05%	2.66%	5.09%	7.82%	0.0038%
Valero Energy Corp	VLO	36,921.20	0.14%	4.06%	28.50%	33.14%	0.0478%
Vulcan Materials Co	VMC	16,132.11	0.06%	1.00%	14.70%	15.77%	0.0099%
Vornado Realty Trust	VNO	13,035.39	0.05%	3.79%	0.74%	4.55%	0.0023%
Verisk Analytics Inc	VRSK	22,397.84	0.09%	0.62%	9.57%	10.22%	0.0089%
VersiSign Inc	VRSN	22,639.83	0.09%	0.00%	8.80%	8.80%	0.0078%
Vertex Pharmaceuticals Inc	VRTX	46,728.97	0.18%	0.00%	45.29%	45.29%	0.0827%
Ventas Inc	VTR	22,166.64	0.09%	5.12%	3.71%	8.93%	0.0077%
Verizon Communications Inc	VZ	242,713.68	0.95%	4.15%	2.14%	6.34%	0.0601%
Wabtec Corp	WAB	12,474.17	0.05%	0.00%	16.00%	16.00%	0.0078%
Waters Corp	WAT	17,751.61	0.07%	0.00%	11.50%	11.50%	0.0080%
Walgreens Boots Alliance Inc	WBA	48,869.28	0.19%	3.37%	6.85%	10.33%	0.0197%
WellCare Health Plans Inc	WCG	13,598.70	0.05%	0.00%	17.08%	17.08%	0.0091%
Western Digital Corp	WDC	15,074.80	0.06%	3.86%	2.72%	6.63%	0.0039%
WEC Energy Group Inc	WEC	24,548.35	0.10%	3.02%	4.92%	8.02%	0.0077%
Welltower Inc	WELL	30,559.80	0.12%	4.60%	6.80%	11.56%	0.0138%
Wells Fargo & Co	WFC	211,155.34	0.83%	3.96%	10.36%	14.52%	0.1198%
Whirlpool Corp	WHR	8,899.34	0.03%	3.40%	5.75%	9.24%	0.0032%
Willis Towers Watson PLC	WLTW	23,349.07	0.09%	1.40%	13.97%	15.46%	0.0141%
Waste Management Inc	WM	43,228.35	0.17%	1.98%	7.69%	9.75%	0.0165%
Williams Cos Inc/The	WMB	35,067.65	0.14%	5.27%	3.90%	9.27%	0.0127%
Walmart Inc	WMT	291,445.13	1.14%	2.10%	3.57%	5.71%	0.0650%
Westrock Co	WRK	10,097.44	0.04%	4.59%	4.73%	9.42%	0.0037%
Western Union Co/The	WU	8,334.24	0.03%	4.07%	3.89%	8.04%	0.0026%
Weyerhaeuser Co	WY	20,235.32	0.08%	4.98%	8.70%	13.90%	0.0110%
Wynn Resorts Ltd	WYNN	15,476.38	0.06%	1.95%	24.07%	26.25%	0.0159%
Cimarex Energy Co	XEC	7,183.60	0.03%	1.07%	66.37%	67.80%	0.0190%
Xcel Energy Inc	XEL	28,754.44	0.11%	2.88%	5.79%	8.75%	0.0098%
Xilinx Inc	XLNX	34,027.76	0.13%	1.07%	12.60%	13.74%	0.0183%
Exxon Mobil Corp	XOM	342,542.85	1.34%	4.17%	16.74%	21.26%	0.2847%
DENTSPLY SIRONA Inc	XRAY	11,437.70	0.04%	0.68%	11.94%	12.66%	0.0057%
Xerox Corp	XRX	7,858.34	0.03%	2.98%	-0.10%	2.88%	0.0009%
Xylem Inc/NY	XYL	14,814.56	0.06%	1.17%	14.00%	15.25%	0.0088%
Yum! Brands Inc	YUM	31,018.26	0.12%	1.66%	13.12%	14.88%	0.0180%
Zimmer Biomet Holdings Inc	ZBH	26,169.82	0.10%	0.78%	4.74%	5.54%	0.0057%
Zions Bancorp NA	ZION	9,013.85	0.04%	2.70%	6.76%	9.55%	0.0034%
Zoetis Inc	ZTS	48,722.59	0.19%	0.62%	15.36%	16.03%	0.0305%
		25,583,891.33					13.43%

[1] Equals sum of Col. [9]

[2] Source: Bloomberg Professional

[3] Equals [1] - [2]

[4] Source: Bloomberg Professional

[5] Equals weight in S&P 500 based on market capitalization

[6] Source: Bloomberg Professional

[7] Source: Bloomberg Professional

[8] Equals (([6] x (1 + (0.5 x [7]))) + [7])

[9] Equals Col. [5] x Col. [8]

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

[1]	[2]	[3]
S&P 500	Current 30-Year	
Est. Required	Treasury (30-day	Implied Market
Market Return	average)	Risk Premium
16.14%	2.95%	13.18%

Company	Ticker	[4] Market Capitalization	[5] Weight in Index	[6] Estimated Dividend Yield	[7] Long-Term Growth Est.	[8] DCF Result	[9] Weighted DCF Result
Agilent Technologies Inc	A	25,703.94	0.11%	0.82%	9.50%	10.36%	0.0115%
American Airlines Group Inc	AAL	15,628.53	0.07%	1.18%	1.00%	2.19%	0.0015%
Advance Auto Parts Inc	AAP	12,683.56	0.05%	0.14%	13.00%	13.15%	0.0072%
Apple Inc	AAPL	925,575.20	3.98%	1.62%	12.50%	14.22%	0.5666%
AbbVie Inc	ABBV	124,559.50	0.54%	5.17%	12.50%	17.99%	0.0965%
AmerisourceBergen Corp	ABC	16,031.57	0.07%	2.11%	8.00%	10.19%	0.0070%
ABIOMED Inc	ABMD	12,745.56	0.05%	0.00%	24.50%	24.50%	0.0134%
Abbott Laboratories	ABT	138,082.90	0.59%	1.63%	10.00%	11.71%	0.0696%
Accenture PLC	ACN	113,128.00	0.49%	1.73%	9.50%	11.31%	0.0551%
Adobe Inc	ADBE	130,865.30	0.56%	0.00%	22.00%	22.00%	0.1239%
Analog Devices Inc	ADI	40,713.43	0.18%	1.95%	10.00%	12.05%	0.0211%
Archer-Daniels-Midland Co	ADM	23,886.07	0.10%	3.28%	9.50%	12.94%	0.0133%
Automatic Data Processing Inc	ADP	69,504.11	0.30%	2.11%	15.00%	17.27%	0.0517%
Alliance Data Systems Corp	ADS	9,818.72	0.04%	1.40%	13.50%	14.99%	0.0063%
Autodesk Inc	ADSK	36,147.43	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	17,496.42	0.08%	2.74%	6.50%	9.33%	0.0070%
American Electric Power Co Inc	AEP	40,751.90	0.18%	3.34%	4.00%	7.41%	0.0130%
AES Corp/VA	AES	11,921.35	N/A	3.06%	N/A	N/A	N/A
Aflac Inc	AFL	36,842.85	0.16%	2.24%	7.50%	9.82%	0.0156%
Allergan PLC	AGN	50,360.82	0.22%	1.98%	4.00%	6.02%	0.0131%
American International Group Inc	AIG	39,455.30	0.17%	2.87%	52.00%	55.62%	0.0945%
Apartment Investment & Management Co	AIV	7,710.83	0.03%	3.09%	-3.00%	0.04%	0.0000%
Assurant Inc	AIZ	5,982.48	0.03%	2.50%	7.50%	10.09%	0.0026%
Arthur J Gallagher & Co	AJG	14,451.68	0.06%	2.19%	17.00%	19.38%	0.0121%
Akamai Technologies Inc	AKAM	11,955.60	0.05%	0.00%	18.00%	18.00%	0.0093%
Albemarle Corp	ALB	9,084.30	0.04%	1.72%	8.50%	10.29%	0.0040%
Align Technology Inc	ALGN	23,428.14	0.10%	0.00%	28.50%	28.50%	0.0287%
Alaska Air Group Inc	ALK	7,123.08	0.03%	2.42%	3.50%	5.96%	0.0018%
Allstate Corp/The	ALL	31,895.24	0.14%	2.08%	11.50%	13.70%	0.0188%
Allegion PLC	ALLE	8,907.23	0.04%	1.15%	8.50%	9.70%	0.0037%
Alexion Pharmaceuticals Inc	ALXN	31,218.38	0.13%	0.00%	21.00%	21.00%	0.0282%
Applied Materials Inc	AMAT	40,463.13	0.17%	1.97%	8.50%	10.55%	0.0184%
Advanced Micro Devices Inc	AMD	29,235.45	0.13%	0.00%	30.50%	30.50%	0.0384%
AMETEK Inc	AME	19,079.59	0.08%	0.67%	10.50%	11.21%	0.0092%
Affiliated Managers Group Inc	AMG	6,675.44	0.03%	1.40%	6.50%	7.95%	0.0023%
Amgen Inc	AMGN	121,091.00	0.52%	3.04%	7.00%	10.15%	0.0529%
Ameriprise Financial Inc	AMP	19,194.49	0.08%	2.62%	16.00%	18.83%	0.0156%
American Tower Corp	AMT	85,091.61	0.37%	1.87%	9.50%	11.46%	0.0420%
Amazon.com Inc	AMZN	889,422.60	3.83%	0.00%	57.00%	57.00%	2.1825%
Arista Networks Inc	ANET	23,695.44	0.10%	0.00%	11.00%	11.00%	0.0112%
ANSYS Inc	ANSS	15,470.62	0.07%	0.00%	13.00%	13.00%	0.0087%
Anthem Inc	ANTM	74,953.72	0.32%	1.10%	18.00%	19.20%	0.0619%
Aon PLC	AON	41,616.65	0.18%	0.93%	9.50%	10.47%	0.0188%
AO Smith Corp	AOS	9,218.48	0.04%	1.61%	9.50%	11.19%	0.0044%
Apache Corp	APA	12,732.92	N/A	3.00%	N/A	N/A	N/A
Anadarko Petroleum Corp	APC	22,255.13	N/A	2.66%	N/A	N/A	N/A
Air Products & Chemicals Inc	APD	42,118.63	0.18%	2.42%	9.50%	12.03%	0.0218%
Amphenol Corp	APH	30,645.22	0.13%	0.91%	10.50%	11.46%	0.0151%
Aptiv PLC	APTIV	22,473.62	0.10%	1.02%	11.00%	12.08%	0.0117%
Alexandria Real Estate Equities Inc	ARE	15,889.15	N/A	2.71%	N/A	N/A	N/A
Arconic Inc	ARNC	9,602.59	N/A	0.40%	N/A	N/A	N/A
Atmos Energy Corp	ATO	11,764.11	0.05%	2.16%	7.50%	9.74%	0.0049%
Activision Blizzard Inc	ATVI	35,850.06	0.15%	0.81%	14.50%	15.37%	0.0237%
AvalonBay Communities Inc	AVB	27,857.70	0.12%	3.06%	4.00%	7.12%	0.0085%
Broadcom Inc	AVGO	119,592.00	0.51%	3.51%	33.50%	37.60%	0.1936%
Avery Dennison Corp	AVY	9,883.81	0.04%	1.94%	11.50%	13.55%	0.0058%
American Water Works Co Inc	AWK	18,765.84	0.08%	1.91%	9.50%	11.50%	0.0093%
American Express Co	AXP	94,042.48	0.40%	1.50%	9.00%	10.57%	0.0428%
AutoZone Inc	AZO	25,973.54	0.11%	0.00%	12.50%	12.50%	0.0140%
Boeing Co/The	BA	224,706.40	0.97%	2.08%	17.50%	19.76%	0.1912%
Bank of America Corp	BAC	287,368.10	1.24%	2.06%	13.00%	15.19%	0.1880%
Baxter International Inc	BAX	42,955.79	0.18%	0.94%	12.50%	13.50%	0.0250%
BB&T Corp	BBT	36,983.14	0.16%	3.34%	10.00%	13.51%	0.0215%
Best Buy Co Inc	BBY	20,283.04	0.09%	2.95%	12.00%	15.13%	0.0132%
Becton Dickinson and Co	BDX	67,693.56	0.29%	1.24%	10.00%	11.30%	0.0329%
Franklin Resources Inc	BEN	17,615.44	0.08%	3.11%	9.00%	12.25%	0.0093%
Brown-Forman Corp	BF/B	25,536.34	0.11%	1.24%	15.50%	16.84%	0.0185%
Baker Hughes a GE Co	BHGE	11,296.94	N/A	2.69%	N/A	N/A	N/A
Biogen Inc	BIIB	47,356.57	0.20%	0.00%	5.50%	5.50%	0.0112%
Bank of New York Mellon Corp/The	BK	50,872.57	0.22%	2.18%	9.00%	11.28%	0.0247%
Booking Holdings Inc	BKNG	83,022.26	0.36%	0.00%	14.00%	14.00%	0.0500%
BlackRock Inc	BLK	70,180.98	0.30%	2.99%	9.00%	12.12%	0.0366%
Ball Corp	BLL	19,444.96	0.08%	0.69%	21.00%	21.76%	0.0182%
Bristol-Myers Squibb Co	BMY	76,174.73	0.33%	3.51%	11.50%	15.21%	0.0499%
Broadridge Financial Solutions Inc	BR	12,419.24	0.05%	1.87%	11.00%	12.97%	0.0069%
Berkshire Hathaway Inc	BRK/B	-	N/A	0.00%	N/A	N/A	N/A

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Boston Scientific Corp	BSX	52,802.19	0.23%	0.00%	17.00%	17.00%	0.0386%
BorgWarner Inc	BWA	8,824.53	0.04%	1.61%	8.00%	9.67%	0.0037%
Boston Properties Inc	BXP	21,284.51	0.09%	2.79%	4.50%	7.35%	0.0067%
Citigroup Inc	C	160,741.50	0.69%	3.01%	8.50%	11.64%	0.0805%
Conagra Brands Inc	CAG	13,503.58	0.06%	3.06%	4.50%	7.63%	0.0044%
Cardinal Health Inc	CAH	13,967.26	0.06%	4.16%	10.00%	14.37%	0.0086%
Caterpillar Inc	CAT	82,691.70	0.36%	2.46%	17.00%	19.67%	0.0700%
Chubb Ltd	CB	63,064.78	0.27%	2.14%	8.50%	10.73%	0.0291%
Cboe Global Markets Inc	CBOE	10,685.80	0.05%	1.30%	14.50%	15.89%	0.0073%
CBRE Group Inc	CBRE	17,145.50	0.07%	0.00%	10.50%	10.50%	0.0078%
CBS Corp	CBS	18,622.50	0.08%	1.45%	10.50%	12.03%	0.0096%
Crown Castle International Corp	CCI	53,207.14	0.23%	3.59%	10.50%	14.28%	0.0327%
Carnival Corp	CCL	37,170.00	0.16%	3.77%	13.50%	17.52%	0.0280%
Cadence Design Systems Inc	CDNS	17,963.98	0.08%	0.00%	12.50%	12.50%	0.0097%
Celanese Corp	CE	14,213.84	0.06%	2.29%	10.00%	12.40%	0.0076%
Celgene Corp	CELG	65,955.19	0.28%	0.00%	13.50%	13.50%	0.0383%
Cerner Corp	CERN	18,793.98	0.08%	0.00%	7.50%	7.50%	0.0061%
CF Industries Holdings Inc	CF	9,621.28	N/A	2.83%	N/A	N/A	N/A
Citizens Financial Group Inc	CFG	16,452.00	0.07%	3.69%	12.50%	16.42%	0.0116%
Church & Dwight Co Inc	CHD	17,936.19	0.08%	1.25%	8.50%	9.80%	0.0076%
CH Robinson Worldwide Inc	CHRW	12,313.74	0.05%	2.24%	9.50%	11.85%	0.0063%
Charter Communications Inc	CHTR	77,909.03	0.34%	0.00%	16.00%	16.00%	0.0537%
Cigna Corp	CI	39,325.87	0.17%	0.03%	15.50%	15.53%	0.0263%
Cincinnati Financial Corp	CINF	13,935.25	0.06%	2.62%	7.00%	9.71%	0.0058%
Colgate-Palmolive Co	CL	58,289.78	0.25%	2.55%	6.00%	8.63%	0.0216%
Clorox Co/The	CLX	20,106.29	0.09%	2.52%	6.50%	9.10%	0.0079%
Comerica Inc	CMA	12,853.79	0.06%	3.46%	15.50%	19.23%	0.0106%
Comcast Corp	CMCSA	182,894.20	0.79%	2.08%	12.00%	14.20%	0.1118%
CME Group Inc	CME	60,431.71	0.26%	1.77%	3.00%	4.80%	0.0125%
Chipotle Mexican Grill Inc	CMG	19,548.34	0.08%	0.00%	16.50%	16.50%	0.0139%
Cummins Inc	CMI	26,230.51	0.11%	2.79%	8.00%	10.90%	0.0123%
CMS Energy Corp	CMS	15,463.72	0.07%	2.86%	7.00%	9.96%	0.0066%
Centene Corp	CNC	22,092.00	0.10%	0.00%	15.50%	15.50%	0.0147%
CenterPoint Energy Inc	CNP	15,301.54	0.07%	3.80%	12.50%	16.54%	0.0109%
Capital One Financial Corp	COF	41,066.06	0.18%	1.85%	10.00%	11.94%	0.0211%
Cabot Oil & Gas Corp	COG	11,206.11	N/A	1.08%	N/A	N/A	N/A
Cooper Cos Inc/The	COO	14,332.99	0.06%	0.02%	14.50%	14.52%	0.0090%
ConocoPhillips	COP	75,014.93	N/A	1.87%	N/A	N/A	N/A
Costco Wholesale Corp	COST	107,533.30	0.46%	0.99%	8.50%	9.53%	0.0441%
Coty Inc	COTY	8,488.56	0.04%	4.43%	9.00%	13.63%	0.0050%
Campbell Soup Co	CPB	11,272.45	N/A	3.74%	N/A	N/A	N/A
Capri Holdings Ltd	CPRI	7,313.31	0.03%	0.00%	7.50%	7.50%	0.0024%
Copart Inc	CPRT	14,279.90	0.06%	0.00%	13.00%	13.00%	0.0080%
salesforce.com Inc	CRM	121,267.80	0.52%	0.00%	57.00%	57.00%	0.2976%
Cisco Systems Inc	CSCO	243,939.40	1.05%	2.54%	8.00%	10.64%	0.1118%
CSX Corp	CSX	63,162.62	0.27%	1.28%	16.50%	17.89%	0.0486%
Cintas Corp	CTAS	21,586.16	0.09%	1.10%	15.50%	16.69%	0.0155%
CenturyLink Inc	CTL	13,383.27	0.06%	8.07%	0.50%	8.59%	0.0049%
Cognizant Technology Solutions Corp	CTSH	42,798.20	0.18%	1.08%	10.00%	11.13%	0.0205%
Citrix Systems Inc	CTXS	13,467.25	0.06%	1.40%	7.50%	8.95%	0.0052%
CVS Health Corp	CVS	54,414.60	0.23%	3.75%	8.00%	11.90%	0.0279%
Chevron Corp	CVX	238,464.60	1.03%	3.81%	25.00%	29.29%	0.3006%
Concho Resources Inc	CXO	21,868.21	0.09%	0.46%	30.00%	30.53%	0.0287%
Dominion Energy Inc	D	52,361.21	0.23%	4.77%	6.50%	11.43%	0.0258%
Delta Air Lines Inc	DAL	39,231.12	0.17%	2.60%	9.50%	12.22%	0.0206%
Deere & Co	DE	52,309.29	0.23%	1.85%	14.00%	15.98%	0.0360%
Discover Financial Services	DFS	25,083.80	0.11%	2.16%	8.00%	10.25%	0.0111%
Dollar General Corp	DG	31,588.14	0.14%	1.07%	13.00%	14.14%	0.0192%
Quest Diagnostics Inc	DGX	12,287.70	0.05%	2.33%	8.50%	10.93%	0.0058%
DR Horton Inc	DHI	15,978.49	0.07%	1.45%	5.00%	6.49%	0.0045%
Danaher Corp	DHR	91,524.70	0.39%	0.52%	12.50%	13.05%	0.0514%
Walt Disney Co/The	DIS	172,125.00	0.74%	1.53%	7.00%	8.58%	0.0636%
Discovery Inc	DISCA	15,118.68	0.07%	0.00%	17.00%	17.00%	0.0111%
DISH Network Corp	DISH	15,819.16	0.07%	0.00%	-2.00%	-2.00%	-0.0014%
Digital Realty Trust Inc	DLR	25,052.96	0.11%	3.61%	5.00%	8.70%	0.0094%
Dollar Tree Inc	DLTR	25,136.77	0.11%	0.00%	17.50%	17.50%	0.0189%
Dover Corp	DOV	14,175.77	0.06%	1.98%	11.00%	13.09%	0.0080%
Dow Inc	DOW	N/A	N/A	0.00%	N/A	N/A	N/A
Duke Realty Corp	DRE	10,975.92	0.05%	2.89%	7.00%	9.99%	0.0047%
Darden Restaurants Inc	DRI	14,573.88	0.06%	2.72%	12.00%	14.88%	0.0093%
DTE Energy Co	DTE	22,344.03	0.10%	3.18%	5.00%	8.26%	0.0079%
Duke Energy Corp	DUK	64,957.45	0.28%	4.28%	5.50%	9.90%	0.0277%
DaVita Inc	DVA	9,147.38	0.04%	0.00%	9.50%	9.50%	0.0037%
Devon Energy Corp	DVN	14,670.83	0.06%	1.16%	19.00%	20.27%	0.0128%
DowDuPont Inc	DWDP	85,721.95	N/A	0.00%	N/A	N/A	N/A
DXC Technology Co	DXC	17,466.44	0.08%	1.17%	14.00%	15.25%	0.0115%
Electronic Arts Inc	EA	29,479.94	0.13%	0.00%	11.50%	11.50%	0.0146%
eBay Inc	EBAY	36,642.15	0.16%	1.47%	14.50%	16.08%	0.0254%
Ecolab Inc	ECL	52,736.65	0.23%	1.01%	9.00%	10.06%	0.0228%
Consolidated Edison Inc	ED	26,960.79	0.12%	3.56%	3.00%	6.61%	0.0077%
Equifax Inc	EFX	14,847.07	0.06%	1.27%	7.50%	8.82%	0.0056%
Edison International	EIX	20,750.90	0.09%	3.86%	4.50%	8.45%	0.0075%
Estee Lauder Cos Inc/The	EL	59,008.51	0.25%	1.07%	12.50%	13.64%	0.0346%
Eastman Chemical Co	EMN	11,438.67	0.05%	3.04%	9.50%	12.68%	0.0062%
Emerson Electric Co	EMR	43,795.69	0.19%	2.77%	12.00%	14.94%	0.0282%
EOG Resources Inc	EOG	54,312.77	N/A	0.98%	N/A	N/A	N/A
Equinix Inc	EQIX	36,911.97	0.16%	2.17%	25.00%	27.44%	0.0436%
Equity Residential	EQR	27,704.39	0.12%	3.04%	-12.00%	-9.14%	-0.0109%

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Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Eversource Energy	ES	22,296.03	0.10%	3.04%	5.50%	8.62%	0.0083%
Essex Property Trust Inc	ESS	19,009.02	0.08%	2.74%	2.00%	4.77%	0.0039%
E*TRADE Financial Corp	ETFC	11,937.75	0.05%	1.16%	17.50%	18.76%	0.0096%
Eaton Corp PLC	ETN	36,050.21	0.16%	3.41%	9.00%	12.56%	0.0195%
Entergy Corp	ETR	17,697.53	N/A	3.93%	N/A	N/A	N/A
Eergy Inc	EVRG	14,443.79	N/A	3.43%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	39,582.63	0.17%	0.00%	15.00%	15.00%	0.0256%
Exelon Corp	EXC	48,060.80	0.21%	2.92%	7.50%	10.53%	0.0218%
Expeditors International of Washington I	EXPD	13,520.39	0.06%	1.15%	8.50%	9.70%	0.0056%
Expedia Group Inc	EXPE	18,286.91	0.08%	1.04%	20.00%	21.14%	0.0166%
Extra Space Storage Inc	EXR	12,716.63	0.05%	3.62%	6.00%	9.73%	0.0053%
Ford Motor Co	F	36,755.82	0.16%	6.49%	0.50%	7.01%	0.0111%
Diamondback Energy Inc	FANG	9,851.61	N/A	0.75%	N/A	N/A	N/A
Fastenal Co	FAST	19,037.62	0.08%	2.59%	9.50%	12.21%	0.0100%
Facebook Inc	FB	502,361.10	2.16%	0.00%	26.00%	26.00%	0.5623%
Fortune Brands Home & Security Inc	FBHS	6,917.53	0.03%	1.80%	11.50%	13.40%	0.0040%
Freerport-McMoRan Inc	FCX	19,648.44	0.08%	1.48%	22.50%	24.15%	0.0204%
FedEx Corp	FDX	48,902.11	0.21%	1.57%	7.50%	9.13%	0.0192%
FirstEnergy Corp	FE	20,189.93	0.09%	3.91%	6.50%	10.54%	0.0092%
F5 Networks Inc	FFIV	9,969.63	0.04%	0.00%	12.00%	12.00%	0.0052%
Fidelity National Information Services I	FIS	37,287.81	0.16%	1.23%	15.50%	16.83%	0.0270%
Fiserv Inc	FISV	36,122.08	0.16%	0.00%	13.50%	13.50%	0.0210%
Fifth Third Bancorp	FITB	17,297.35	0.07%	3.51%	7.00%	10.63%	0.0079%
Foot Locker Inc	FL	7,308.05	0.03%	2.36%	8.00%	10.45%	0.0033%
FLIR Systems Inc	FLIR	6,497.99	0.03%	1.44%	12.00%	13.53%	0.0038%
Fluor Corp	FLR	5,570.80	0.02%	2.11%	17.00%	19.29%	0.0046%
Flowserve Corp	FLS	6,218.38	0.03%	1.60%	13.50%	15.21%	0.0041%
FleetCor Technologies Inc	FLT	22,013.07	0.09%	0.00%	14.50%	14.50%	0.0137%
FMC Corp	FMC	10,626.13	0.05%	2.05%	15.00%	17.20%	0.0079%
Fox Corp	FOXA	N/A	N/A	0.00%	N/A	N/A	N/A
First Republic Bank/CA	FRC	17,234.00	0.07%	0.69%	11.50%	12.23%	0.0091%
Federal Realty Investment Trust	FRT	10,059.51	0.04%	2.99%	4.00%	7.05%	0.0031%
TechnipFMC PLC	FTI	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	14,220.05	0.06%	0.00%	39.50%	39.50%	0.0242%
Fortive Corp	FTV	30,187.74	N/A	0.32%	N/A	N/A	N/A
General Dynamics Corp	GD	48,839.05	0.21%	2.41%	6.00%	8.48%	0.0178%
General Electric Co	GE	87,283.34	0.38%	0.40%	3.50%	3.91%	0.0147%
Gilead Sciences Inc	GILD	86,490.95	0.37%	3.77%	-5.50%	-1.83%	-0.0068%
General Mills Inc	GIS	30,085.64	0.13%	3.94%	3.00%	7.00%	0.0091%
Corning Inc	GLW	27,272.68	0.12%	2.31%	16.00%	18.49%	0.0217%
General Motors Co	GM	54,306.00	0.23%	4.02%	3.00%	7.08%	0.0166%
Alphabet Inc	GOOGL	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	16,668.89	0.07%	2.69%	8.50%	11.30%	0.0081%
Global Payments Inc	GPN	21,464.26	0.09%	0.03%	20.00%	20.03%	0.0185%
Gap Inc/The	GPS	10,103.94	0.04%	3.63%	7.00%	10.76%	0.0047%
Garmin Ltd	GRMN	16,710.46	0.07%	2.54%	10.00%	12.67%	0.0091%
Goldman Sachs Group Inc/The	GS	74,475.65	0.32%	1.58%	8.50%	10.15%	0.0325%
WW Grainger Inc	GWG	17,520.56	0.08%	1.73%	8.50%	10.30%	0.0078%
Halliburton Co	HAL	26,495.82	N/A	2.37%	N/A	N/A	N/A
Hasbro Inc	HAS	10,901.38	0.05%	3.16%	8.00%	11.29%	0.0053%
Huntington Bancshares Inc/OH	HBAN	13,942.94	0.06%	4.35%	12.50%	17.12%	0.0103%
Hanesbrands Inc	HBI	6,632.56	0.03%	3.26%	4.00%	7.33%	0.0021%
HCA Healthcare Inc	HCA	45,313.46	0.20%	1.21%	12.00%	13.28%	0.0259%
HCP Inc	HCP	14,575.99	0.06%	4.77%	32.50%	38.05%	0.0239%
Home Depot Inc/The	HD	226,709.00	0.98%	2.71%	11.00%	13.86%	0.1353%
Hess Corp	HES	17,997.37	N/A	1.65%	N/A	N/A	N/A
HollyFrontier Corp	HFC	8,675.75	0.04%	2.74%	22.50%	25.55%	0.0095%
Hartford Financial Services Group Inc/Th	HIG	17,933.80	0.08%	2.40%	13.00%	15.56%	0.0120%
Huntington Ingalls Industries Inc	HII	8,777.63	0.04%	1.64%	7.00%	8.70%	0.0033%
Hilton Worldwide Holdings Inc	HLT	25,927.75	0.11%	0.69%	9.00%	9.72%	0.0109%
Harley-Davidson Inc	HOG	6,360.26	0.03%	3.84%	9.00%	13.01%	0.0036%
Hologic Inc	HOLX	12,647.10	0.05%	0.00%	18.50%	18.50%	0.0101%
Honeywell International Inc	HON	117,433.90	0.51%	2.04%	8.00%	10.12%	0.0512%
Helmerich & Payne Inc	HP	6,244.84	0.03%	4.98%	56.50%	62.89%	0.0169%
Hewlett Packard Enterprise Co	HPE	22,144.46	0.10%	2.93%	5.50%	8.51%	0.0081%
HP Inc	HPQ	30,417.99	0.13%	3.29%	8.00%	11.42%	0.0150%
H&R Block Inc	HRB	5,076.82	0.02%	4.16%	8.50%	12.84%	0.0028%
Hormel Foods Corp	HRL	22,210.79	0.10%	2.02%	9.00%	11.11%	0.0106%
Harris Corp	HRS	19,115.90	0.08%	1.71%	11.50%	13.31%	0.0110%
Henry Schein Inc	HSIC	9,353.60	0.04%	0.00%	8.50%	8.50%	0.0034%
Host Hotels & Resorts Inc	HST	14,227.67	0.06%	4.16%	4.00%	8.24%	0.0050%
Hershey Co/The	HSY	24,099.96	0.10%	2.52%	6.50%	9.10%	0.0094%
Humana Inc	HUM	37,228.16	0.16%	0.81%	13.50%	14.36%	0.0230%
International Business Machines Corp	IBM	127,428.10	0.55%	4.51%	2.00%	6.56%	0.0360%
Intercontinental Exchange Inc	ICE	43,960.94	0.19%	1.42%	10.50%	11.99%	0.0227%
IDEXX Laboratories Inc	IDXX	19,553.34	0.08%	0.00%	15.00%	15.00%	0.0126%
International Flavors & Fragrances Inc	IFF	12,093.80	0.05%	2.29%	8.00%	10.38%	0.0054%
Illumina Inc	ILMN	46,307.94	0.20%	0.00%	15.50%	15.50%	0.0309%
Incyte Corp	INCY	17,813.07	N/A	0.00%	N/A	N/A	N/A
IHS Markit Ltd	INFO	21,838.85	0.09%	0.00%	15.50%	15.50%	0.0146%
Intel Corp	INTC	255,218.90	1.10%	2.25%	12.50%	14.89%	0.1636%
Intuit Inc	INTU	68,050.06	0.29%	0.72%	14.50%	15.27%	0.0447%
International Paper Co	IP	18,951.91	0.08%	4.23%	12.00%	16.48%	0.0134%
Interpublic Group of Cos Inc/The	IPG	8,306.97	0.04%	4.43%	11.50%	16.18%	0.0058%
IPG Photonics Corp	IPGP	8,873.08	0.04%	0.00%	11.00%	11.00%	0.0042%
IQVIA Holdings Inc	IQV	28,104.51	0.12%	0.00%	12.50%	12.50%	0.0151%
Ingersoll-Rand PLC	IR	27,175.61	0.12%	1.89%	12.00%	14.00%	0.0164%
Iron Mountain Inc	IRM	10,283.92	0.04%	6.79%	6.50%	13.51%	0.0060%

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Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Intuitive Surgical Inc	ISRG	65,125.98	0.28%	0.00%	15.00%	15.00%	0.0421%
Gartner Inc	IT	13,957.53	0.06%	0.00%	13.50%	13.50%	0.0081%
Illinois Tool Works Inc	ITW	50,353.97	0.22%	2.64%	10.00%	12.77%	0.0277%
Invesco Ltd	IVZ	8,304.15	0.04%	5.94%	4.00%	10.06%	0.0036%
JB Hunt Transport Services Inc	JBHT	11,384.87	0.05%	1.00%	11.50%	12.56%	0.0062%
Johnson Controls International plc	JCI	32,985.45	0.14%	2.88%	2.00%	4.91%	0.0070%
Jacobs Engineering Group Inc	JEC	10,691.46	0.05%	0.89%	12.50%	13.45%	0.0062%
Jefferies Financial Group Inc	JEF	6,116.47	0.03%	2.51%	18.50%	21.24%	0.0056%
Jack Henry & Associates Inc	JKHY	10,938.99	0.05%	1.13%	11.50%	12.69%	0.0060%
Johnson & Johnson	JNJ	363,755.30	1.57%	2.77%	10.50%	13.42%	0.2101%
Juniper Networks Inc	JNPR	9,325.09	0.04%	2.82%	5.00%	7.89%	0.0032%
JPMorgan Chase & Co	JPM	351,030.40	1.51%	3.07%	9.50%	12.72%	0.1922%
Nordstrom Inc	JWN	7,693.40	0.03%	3.25%	7.00%	10.36%	0.0034%
Kellogg Co	K	19,411.18	0.08%	4.00%	5.50%	9.61%	0.0080%
KeyCorp	KEY	16,801.41	0.07%	4.13%	13.00%	17.40%	0.0126%
Keysight Technologies Inc	KEYS	16,717.46	0.07%	0.00%	16.00%	16.00%	0.0115%
Kraft Heinz Co/The	KHC	39,849.11	0.17%	4.89%	9.50%	14.62%	0.0251%
Kimco Realty Corp	KIM	7,656.64	0.03%	6.27%	5.00%	11.43%	0.0038%
KLAC-Tencor Corp	KLAC	18,767.62	0.08%	2.42%	10.50%	13.05%	0.0105%
Kimberly-Clark Corp	KMB	42,086.55	0.18%	3.38%	7.00%	10.50%	0.0190%
Kinder Morgan Inc/DE	KMI	45,062.34	0.19%	4.02%	34.50%	39.21%	0.0761%
CarMax Inc	KMX	12,383.98	0.05%	0.00%	11.50%	11.50%	0.0061%
Coca-Cola Co/The	KO	198,376.70	0.85%	3.57%	6.50%	10.19%	0.0870%
Kroger Co/The	KR	18,896.64	0.08%	2.62%	5.00%	7.69%	0.0063%
Kohl's Corp	KSS	12,120.90	0.05%	3.65%	11.00%	14.85%	0.0077%
Kansas City Southern	KSU	11,823.11	0.05%	1.23%	12.00%	13.30%	0.0068%
Loews Corp	L	15,271.58	0.07%	0.52%	16.50%	17.06%	0.0112%
L Brands Inc	LB	7,623.00	0.03%	4.33%	-4.50%	-0.27%	-0.0001%
Leggett & Platt Inc	LEG	5,599.76	0.02%	3.54%	9.00%	12.70%	0.0031%
Lennar Corp	LEN	16,435.63	0.07%	0.32%	9.00%	9.33%	0.0066%
Laboratory Corp of America Holdings	LH	15,965.43	0.07%	0.00%	8.50%	8.50%	0.0058%
Linde PLC	LIN	52,936.72	N/A	1.90%	N/A	N/A	N/A
LKQ Corp	LKQ	9,469.54	0.04%	0.00%	10.50%	10.50%	0.0043%
L3 Technologies Inc	LLL	16,549.57	0.07%	1.62%	7.00%	8.68%	0.0062%
Eli Lilly & Co	LLY	132,774.20	0.57%	2.05%	11.50%	13.67%	0.0781%
Lockheed Martin Corp	LMT	84,207.27	0.36%	3.00%	14.00%	17.21%	0.0624%
Lincoln National Corp	LNC	12,899.31	0.06%	2.43%	9.00%	11.54%	0.0064%
Alliant Energy Corp	LNT	10,934.44	0.05%	3.07%	6.50%	9.67%	0.0046%
Lowe's Cos Inc	LOW	91,335.93	0.39%	1.85%	12.00%	13.96%	0.0549%
Lam Research Corp	LRCX	29,411.17	0.13%	2.30%	10.50%	12.92%	0.0164%
Southwest Airlines Co	LUV	29,387.43	0.13%	1.20%	11.50%	12.77%	0.0162%
Lamb Weston Holdings Inc	LW	10,293.65	N/A	1.14%	N/A	N/A	N/A
LyondellBasell Industries NV	LYB	35,697.81	0.15%	4.34%	5.50%	9.96%	0.0153%
Macy's Inc	M	7,991.07	0.03%	5.81%	5.00%	10.96%	0.0038%
Mastercard Inc	MA	244,322.10	1.05%	0.56%	16.00%	16.60%	0.1746%
Mid-America Apartment Communities Inc	MAA	12,429.13	0.05%	3.51%	-3.00%	0.46%	0.0002%
Macerich Co/The	MAC	6,185.52	0.03%	6.94%	3.00%	10.04%	0.0027%
Marriott International Inc/MD	MAR	45,097.39	0.19%	1.24%	12.50%	13.82%	0.0268%
Masco Corp	MAS	11,791.27	0.05%	1.25%	10.50%	11.82%	0.0060%
Mattel Inc	MAT	4,646.82	0.02%	0.00%	22.00%	22.00%	0.0044%
McDonald's Corp	MCD	146,370.80	0.63%	2.49%	9.50%	12.11%	0.0763%
Microchip Technology Inc	MCHP	21,627.61	0.09%	1.65%	13.00%	14.76%	0.0137%
McKesson Corp	MCK	22,081.92	0.10%	1.36%	9.00%	10.42%	0.0099%
Moody's Corp	MCO	35,798.31	0.15%	1.07%	11.50%	12.63%	0.0195%
Mondelez International Inc	MDLZ	72,042.10	0.31%	2.18%	9.50%	11.78%	0.0365%
Medtronic PLC	MDT	119,621.10	0.51%	2.38%	7.50%	9.97%	0.0513%
MetLife Inc	MET	42,888.34	0.18%	3.93%	7.50%	11.58%	0.0214%
MGM Resorts International	MGM	14,442.09	0.06%	1.92%	31.00%	33.22%	0.0207%
Mohawk Industries Inc	MHK	9,675.13	0.04%	0.00%	4.00%	17.19%	0.0017%
McCormick & Co Inc/MD	MKC	20,065.22	0.09%	1.50%	10.00%	11.58%	0.0100%
Martin Marietta Materials Inc	MLM	12,741.81	0.05%	0.97%	10.00%	11.02%	0.0060%
Marsh & McLennan Cos Inc	MMC	47,609.23	0.20%	1.76%	9.00%	10.84%	0.0222%
3M Co	MMM	125,209.20	0.54%	2.68%	8.50%	11.29%	0.0609%
Monster Beverage Corp	MNST	33,268.71	0.14%	0.00%	15.00%	15.00%	0.0215%
Altria Group Inc	MO	102,323.60	0.44%	5.86%	10.50%	16.67%	0.0734%
Mosaic Co/The	MOS	10,685.23	0.05%	0.76%	22.00%	22.84%	0.0105%
Marathon Petroleum Corp	MPC	41,718.00	0.18%	3.46%	13.50%	17.19%	0.0309%
Merck & Co Inc	MRK	212,201.00	0.91%	2.69%	8.50%	11.30%	0.1033%
Marathon Oil Corp	MRO	14,037.66	N/A	1.28%	N/A	N/A	N/A
Morgan Stanley	MS	76,775.80	0.33%	2.67%	10.00%	12.80%	0.0423%
MSCI Inc	MSCI	18,274.96	0.08%	1.27%	19.50%	20.89%	0.0164%
Microsoft Corp	MSFT	917,042.90	3.95%	1.54%	15.00%	16.66%	0.6575%
Motorola Solutions Inc	MSI	23,001.18	0.10%	1.62%	12.50%	14.22%	0.0141%
M&T Bank Corp	MTB	23,098.03	0.10%	2.45%	13.00%	15.61%	0.0155%
Mettler-Toledo International Inc	MTD	18,123.28	0.08%	0.00%	10.00%	10.00%	0.0078%
Micron Technology Inc	MU	50,524.42	0.22%	0.00%	11.50%	11.50%	0.0250%
Maxim Integrated Products Inc	MXIM	15,564.55	0.07%	3.23%	8.00%	11.36%	0.0076%
Mylan NV	MYL	14,138.11	0.06%	0.00%	6.50%	6.50%	0.0040%
Noble Energy Inc	NBL	11,932.60	N/A	1.77%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	12,572.67	0.05%	0.00%	16.50%	16.50%	0.0089%
Nasdaq Inc	NDAQ	14,729.41	0.06%	1.97%	8.00%	10.05%	0.0064%
NextEra Energy Inc	NEE	90,055.20	0.39%	2.65%	9.00%	11.77%	0.0456%
Newmont Mining Corp	NEM	19,443.84	0.08%	1.54%	2.50%	4.06%	0.0034%
Netflix Inc	NFLX	160,427.00	0.69%	0.00%	47.00%	47.00%	0.3246%
NiSource Inc	NI	10,135.99	0.04%	2.87%	15.00%	18.09%	0.0079%
NIKE Inc	NKE	134,486.60	0.58%	1.03%	16.00%	17.11%	0.0991%
Nektar Therapeutics	NKTR	6,107.18	N/A	0.00%	N/A	N/A	N/A
Nielsen Holdings PLC	NLSN	9,318.30	0.04%	5.33%	5.00%	10.46%	0.0042%

Company	Ticker	[4]	[5]	[6]	[7]	[8]	[9]
		Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Northrop Grumman Corp	NOC	46,236.20	0.20%	1.77%	9.50%	11.35%	0.0226%
National Oilwell Varco Inc	NOV	10,495.99	0.05%	0.73%	41.50%	42.38%	0.0191%
NRG Energy Inc	NRG	12,246.64	N/A	0.28%	N/A	N/A	N/A
Norfolk Southern Corp	NSC	52,157.18	0.22%	1.80%	13.50%	15.42%	0.0346%
NetApp Inc	NTAP	17,658.03	0.08%	2.24%	18.50%	20.95%	0.0159%
Northern Trust Corp	NTRS	20,974.96	0.09%	2.53%	10.00%	12.66%	0.0114%
Nucor Corp	NUE	19,055.73	0.08%	2.64%	21.50%	24.42%	0.0200%
NVIDIA Corp	NVDA	114,838.60	0.49%	0.34%	18.00%	18.37%	0.0908%
Newell Brands Inc	NWL	6,583.00	0.03%	5.91%	5.50%	11.57%	0.0033%
News Corp	NWSA	7,311.13	N/A	1.60%	N/A	N/A	N/A
Realty Income Corp	O	20,403.72	0.09%	3.83%	4.50%	8.42%	0.0074%
ONEOK Inc	OKE	28,581.22	0.12%	5.18%	18.50%	24.16%	0.0297%
Omnicom Group Inc	OMC	16,574.81	0.07%	3.52%	7.00%	10.64%	0.0076%
Oracle Corp	ORCL	185,302.30	0.80%	1.78%	9.50%	11.36%	0.0907%
O'Reilly Automotive Inc	ORLY	31,465.84	0.14%	0.00%	13.00%	13.00%	0.0176%
Occidental Petroleum Corp	OXY	50,094.96	N/A	4.73%	N/A	N/A	N/A
Paychex Inc	PAYX	28,871.64	0.12%	3.09%	11.00%	14.26%	0.0177%
People's United Financial Inc	PBCT	6,349.96	0.03%	4.22%	9.00%	13.41%	0.0037%
PACCAR Inc	PCAR	24,143.20	0.10%	4.78%	7.00%	11.95%	0.0124%
Public Service Enterprise Group Inc	PEG	29,887.20	0.13%	3.20%	4.50%	7.77%	0.0100%
PepsiCo Inc	PEP	171,515.60	0.74%	3.05%	7.50%	10.66%	0.0787%
Pfizer Inc	PFE	244,344.60	1.05%	3.37%	11.00%	14.56%	0.1531%
Principal Financial Group Inc	PFGB	14,920.20	0.06%	4.11%	6.50%	10.74%	0.0069%
Procter & Gamble Co/The	PG	258,738.40	1.11%	2.78%	8.50%	11.40%	0.1270%
Progressive Corp/The	PGR	42,299.50	0.18%	0.55%	20.00%	20.61%	0.0375%
Parker-Hannifin Corp	PH	23,501.74	0.10%	1.67%	11.50%	13.27%	0.0134%
PulteGroup Inc	PHM	7,922.55	0.03%	1.57%	7.50%	9.13%	0.0031%
Packaging Corp of America	PKG	9,574.44	0.04%	3.16%	6.00%	9.25%	0.0038%
PerkinElmer Inc	PKI	10,866.53	0.05%	0.29%	11.50%	11.81%	0.0055%
Prologis Inc	PLD	45,867.53	0.20%	2.97%	6.50%	9.57%	0.0189%
Philip Morris International Inc	PM	133,802.70	0.58%	5.30%	7.50%	13.00%	0.0749%
PNC Financial Services Group Inc/The	PNC	59,330.05	0.26%	2.96%	9.50%	12.60%	0.0322%
Pentair PLC	PNR	7,731.85	0.03%	1.60%	6.50%	8.15%	0.0027%
Pinnacle West Capital Corp	PNW	10,499.38	0.05%	3.25%	6.00%	9.35%	0.0042%
PPG Industries Inc	PPG	27,586.78	0.12%	1.67%	4.50%	6.21%	0.0074%
PPL Corp	PPL	22,812.63	0.10%	5.31%	3.00%	8.39%	0.0082%
Perrigo Co PLC	PRGO	6,710.74	0.03%	1.58%	2.50%	4.10%	0.0012%
Prudential Financial Inc	PRU	39,880.14	0.17%	4.12%	7.00%	11.26%	0.0193%
Public Storage	PSA	37,851.27	0.16%	3.86%	5.50%	9.47%	0.0154%
Phillips 66	PSX	44,664.57	0.19%	3.59%	12.50%	16.31%	0.0314%
PVH Corp	PVH	9,753.80	0.04%	0.12%	11.00%	11.13%	0.0047%
Quanta Services Inc	PWR	5,816.44	0.03%	0.41%	18.50%	18.95%	0.0047%
Pioneer Natural Resources Co	PXD	25,146.55	0.11%	0.34%	75.00%	75.47%	0.0817%
PayPal Holdings Inc	PYPL	123,053.90	0.53%	0.00%	18.50%	18.50%	0.0980%
QUALCOMM Inc	QCOM	70,010.60	0.30%	4.67%	10.50%	15.42%	0.0465%
Qorvo Inc	QRVO	9,106.99	N/A	0.00%	N/A	N/A	N/A
Royal Caribbean Cruises Ltd	RCL	24,214.28	0.10%	2.42%	11.00%	13.55%	0.0141%
Everest Re Group Ltd	RE	8,750.89	0.04%	2.65%	10.00%	12.78%	0.0048%
Regency Centers Corp	REG	11,610.58	0.05%	3.44%	16.00%	19.72%	0.0099%
Regeneron Pharmaceuticals Inc	REGN	44,314.21	0.19%	0.00%	12.00%	12.00%	0.0229%
Regions Financial Corp	RF	15,474.87	0.07%	3.84%	13.50%	17.60%	0.0117%
Robert Half International Inc	RHI	8,170.97	0.04%	1.87%	9.50%	11.46%	0.0040%
Red Hat Inc	RHT	32,283.45	0.14%	0.00%	17.50%	17.50%	0.0243%
Raymond James Financial Inc	RJF	11,870.89	0.05%	1.66%	10.00%	11.74%	0.0060%
Ralph Lauren Corp	RL	10,089.88	0.04%	1.95%	7.00%	9.02%	0.0039%
ResMed Inc	RMD	14,514.16	0.06%	1.46%	14.50%	16.07%	0.0100%
Rockwell Automation Inc	ROK	22,124.80	0.10%	2.13%	9.50%	11.73%	0.0112%
Rollins Inc	ROL	13,649.16	0.06%	1.01%	13.50%	14.58%	0.0086%
Roper Technologies Inc	ROP	35,689.54	0.15%	0.54%	11.50%	12.07%	0.0185%
Ross Stores Inc	ROST	36,170.73	0.16%	1.05%	11.50%	12.61%	0.0196%
Republic Services Inc	RSG	25,821.93	0.11%	1.95%	12.00%	14.07%	0.0156%
Raytheon Co	RTN	49,899.90	0.21%	2.13%	10.00%	12.24%	0.0263%
SBA Communications Corp	SBAC	23,071.45	0.10%	0.00%	35.50%	35.50%	0.0353%
Starbucks Corp	SBUX	92,439.36	0.40%	2.10%	13.50%	15.74%	0.0626%
Charles Schwab Corp/The	SCHW	59,786.00	0.26%	1.52%	12.00%	13.61%	0.0350%
Sealed Air Corp	SEE	7,153.86	0.03%	1.39%	22.50%	24.05%	0.0074%
Sherwin-Williams Co/The	SHW	41,605.52	0.18%	1.02%	12.00%	13.08%	0.0234%
SVB Financial Group	SIVB	12,568.06	0.05%	0.00%	21.50%	21.50%	0.0116%
JM Smucker Co/The	SJM	13,165.52	0.06%	2.99%	4.50%	7.56%	0.0043%
Schlumberger Ltd	SLB	60,988.71	0.26%	4.54%	26.00%	31.13%	0.0817%
SL Green Realty Corp	SLG	8,615.23	0.04%	3.79%	4.00%	7.87%	0.0029%
Snap-on Inc	SNA	9,055.41	0.04%	2.44%	7.00%	9.53%	0.0037%
Synopsys Inc	SNPS	17,205.55	0.07%	0.00%	10.50%	10.50%	0.0078%
Southern Co/The	SO	52,929.94	0.23%	4.84%	3.50%	8.42%	0.0192%
Simon Property Group Inc	SPG	57,206.58	0.25%	4.73%	5.50%	10.36%	0.0255%
S&P Global Inc	SPGI	53,353.88	0.23%	1.07%	13.00%	14.14%	0.0325%
Sempra Energy	SRE	34,774.14	0.15%	3.11%	9.50%	12.76%	0.0191%
SunTrust Banks Inc	STI	27,738.86	0.12%	3.48%	13.50%	17.21%	0.0206%
State Street Corp	STT	26,079.49	0.11%	2.74%	9.00%	11.86%	0.0133%
Seagate Technology PLC	STX	13,935.66	0.06%	5.12%	6.00%	11.27%	0.0068%
Constellation Brands Inc	STZ	36,348.70	0.16%	1.67%	11.00%	12.76%	0.0200%
Stanley Black & Decker Inc	SWK	21,592.52	0.09%	1.89%	9.50%	11.48%	0.0107%
Skyworks Solutions Inc	SWKS	14,887.29	0.06%	1.78%	9.00%	10.86%	0.0070%
Synchrony Financial	SYF	23,358.07	0.10%	2.59%	11.00%	13.73%	0.0138%
Stryker Corp	SYK	72,483.76	0.31%	1.07%	15.00%	16.15%	0.0504%
Symantec Corp	SYMC	14,722.56	0.06%	1.30%	9.50%	10.86%	0.0069%
Sysco Corp	SY	34,333.68	0.15%	2.33%	13.00%	15.48%	0.0229%
AT&T Inc	T	232,866.50	1.00%	6.41%	5.50%	12.09%	0.1212%



		[4]	[5]	[6]	[7]	[8]	[9]
Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Molson Coors Brewing Co	TAP	13,312.52	0.06%	2.70%	11.00%	13.85%	0.0079%
TransDigm Group Inc	TDG	24,483.15	0.11%	0.00%	6.50%	6.50%	0.0069%
TE Connectivity Ltd	TEL	30,630.48	0.13%	2.04%	8.00%	10.12%	0.0133%
Teleflex Inc	TFX	13,895.76	0.06%	0.45%	12.00%	12.48%	0.0075%
Target Corp	TGT	42,464.98	0.18%	3.15%	7.00%	10.26%	0.0188%
Tiffany & Co	TIF	13,079.87	0.06%	2.19%	12.00%	14.32%	0.0081%
TJX Cos Inc/The	TJX	66,898.12	0.29%	1.70%	13.00%	14.81%	0.0427%
Torchmark Corp	TMK	9,486.05	0.04%	0.82%	10.00%	10.86%	0.0044%
Thermo Fisher Scientific Inc	TMO	110,603.60	0.48%	0.28%	10.50%	10.79%	0.0514%
Tapestry Inc	TPR	9,990.50	0.04%	3.92%	13.00%	17.17%	0.0074%
TripAdvisor Inc	TRIP	7,389.82	0.03%	0.00%	10.50%	10.50%	0.0033%
T Rowe Price Group Inc	TROW	24,990.12	0.11%	2.95%	11.50%	14.62%	0.0157%
Travelers Cos Inc/The	TRV	36,000.32	0.15%	2.26%	6.50%	8.83%	0.0137%
Tractor Supply Co	TSCO	12,161.93	0.05%	1.37%	10.50%	11.94%	0.0063%
Tyson Foods Inc	TSN	25,630.98	0.11%	2.14%	7.00%	9.21%	0.0102%
Total System Services Inc	TSS	17,654.82	0.08%	0.54%	11.50%	12.07%	0.0092%
Take-Two Interactive Software Inc	TTWO	10,596.91	0.05%	0.00%	29.50%	29.50%	0.0135%
Twitter Inc	TWTR	26,305.72	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	107,028.80	0.46%	2.72%	6.00%	8.80%	0.0406%
Textron Inc	TXT	12,419.07	0.05%	0.16%	13.00%	13.17%	0.0070%
Under Armour Inc	UAA	9,867.63	0.04%	0.00%	11.50%	11.50%	0.0049%
United Continental Holdings Inc	UAL	23,061.35	0.10%	0.00%	8.50%	8.50%	0.0084%
UDR Inc	UDR	12,167.16	0.05%	3.02%	1.50%	4.54%	0.0024%
Universal Health Services Inc	UHS	12,393.83	0.05%	0.30%	10.50%	10.82%	0.0058%
Ulta Beauty Inc	ULTA	20,819.68	0.09%	0.00%	20.00%	20.00%	0.0179%
UnitedHealth Group Inc	UNH	237,494.40	1.02%	1.46%	13.50%	15.06%	0.1540%
Unum Group	UNM	7,615.94	0.03%	2.99%	9.00%	12.12%	0.0040%
Union Pacific Corp	UNP	124,485.70	0.54%	2.09%	14.50%	16.74%	0.0897%
United Parcel Service Inc	UPS	97,900.23	0.42%	3.40%	8.50%	12.04%	0.0508%
United Rentals Inc	URI	9,787.64	0.04%	0.00%	14.50%	14.50%	0.0061%
US Bancorp	USB	80,078.95	0.34%	3.09%	7.00%	10.20%	0.0352%
United Technologies Corp	UTX	114,318.70	0.49%	2.22%	9.00%	11.32%	0.0557%
Visa Inc	V	317,014.10	1.36%	0.69%	14.50%	15.24%	0.2080%
Varian Medical Systems Inc	VAR	12,758.88	0.05%	0.00%	9.50%	9.50%	0.0052%
VF Corp	VFC	35,414.52	0.15%	2.28%	12.00%	14.42%	0.0220%
Viacom Inc	VIAB	11,798.74	0.05%	2.73%	4.00%	6.78%	0.0034%
Valero Energy Corp	VLO	35,818.89	0.15%	4.27%	9.00%	13.46%	0.0208%
Vulcan Materials Co	VMC	15,765.32	0.07%	1.04%	14.00%	15.11%	0.0103%
Vornado Realty Trust	VNO	13,160.18	0.06%	3.82%	-3.50%	0.25%	0.0001%
Verisk Analytics Inc	VRSK	22,366.50	0.10%	0.74%	9.50%	10.28%	0.0099%
VeriSign Inc	VRSN	22,342.49	0.10%	0.00%	12.00%	12.00%	0.0115%
Vertex Pharmaceuticals Inc	VRTX	47,070.77	N/A	0.00%	N/A	N/A	N/A
Ventas Inc	VTR	22,163.67	0.10%	5.18%	3.00%	8.26%	0.0079%
Verizon Communications Inc	VZ	243,747.60	1.05%	4.10%	4.50%	8.69%	0.0912%
Wabtec Corp	WAB	7,350.47	0.03%	0.63%	13.50%	14.17%	0.0045%
Waters Corp	WAT	18,808.30	0.08%	0.00%	11.00%	11.00%	0.0089%
Walgreens Boots Alliance Inc	WBA	51,087.55	0.22%	3.25%	10.00%	13.41%	0.0295%
WellCare Health Plans Inc	WCG	13,900.94	0.06%	0.00%	23.00%	23.00%	0.0138%
Western Digital Corp	WDC	14,957.40	0.06%	3.89%	1.50%	5.42%	0.0035%
WEC Energy Group Inc	WEC	24,443.57	0.11%	3.10%	6.00%	9.19%	0.0097%
Welltower Inc	WELL	28,459.65	0.12%	4.59%	8.00%	12.77%	0.0156%
Wells Fargo & Co	WFC	231,667.50	1.00%	3.72%	6.00%	9.83%	0.0981%
Whirlpool Corp	WHR	8,606.08	0.04%	3.42%	6.50%	10.03%	0.0037%
Willis Towers Watson PLC	WLTW	23,180.42	N/A	1.46%	N/A	N/A	N/A
Waste Management Inc	WM	43,566.75	0.19%	2.01%	9.00%	11.10%	0.0208%
Williams Cos Inc/The	WMB	34,887.82	0.15%	5.27%	19.00%	24.77%	0.0372%
Walmart Inc	WMT	285,035.10	1.23%	2.16%	7.00%	9.24%	0.1133%
Westrock Co	WRK	9,998.74	0.04%	4.65%	9.50%	14.37%	0.0062%
Western Union Co/The	WU	8,391.62	0.04%	4.21%	7.00%	11.36%	0.0041%
Weyerhaeuser Co	WY	20,033.13	0.09%	5.07%	17.50%	23.01%	0.0198%
Wynn Resorts Ltd	WYNN	15,186.46	0.07%	2.15%	20.00%	22.37%	0.0146%
Cimarex Energy Co	XEC	6,355.69	0.03%	1.20%	32.50%	33.90%	0.0093%
Xcel Energy Inc	XEL	28,415.91	0.12%	2.93%	5.50%	8.51%	0.0104%
Xilinx Inc	XLNX	32,359.42	0.14%	1.13%	11.00%	12.19%	0.0170%
Exxon Mobil Corp	XOM	347,399.70	1.50%	4.10%	14.00%	18.39%	0.2750%
DENTSPLY SIRONA Inc	XRAY	11,182.85	0.05%	0.70%	3.00%	3.71%	0.0018%
Xerox Corp	XRX	7,589.04	0.03%	0.03%	9.00%	12.17%	0.0040%
Xylem Inc/NY	XYL	14,377.92	0.06%	1.20%	14.00%	15.28%	0.0095%
Yum! Brands Inc	YUM	31,440.85	0.14%	1.67%	10.00%	11.75%	0.0159%
Zimmer Biomet Holdings Inc	ZBH	25,818.24	0.11%	0.76%	4.50%	5.28%	0.0059%
Zions Bancorp NA	ZION	8,942.58	0.04%	2.52%	15.00%	17.71%	0.0068%
Zoetis Inc	ZTS	48,905.73	0.21%	0.65%	13.00%	13.69%	0.0288%
		23,229,343					16.14%

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

### Bloomberg and Value Line Beta Coefficients

Company	Ticker	[1] Bloomberg	[2] Value Line
Atmos Energy Corporation	ATO	0.493	0.60
Chesapeake Utilities Corporation	CPK	0.607	0.70
New Jersey Resources Corporation	NJR	0.609	0.70
Northwest Natural Gas Company	NWN	0.583	0.65
ONE Gas, Inc.	OGS	0.521	0.65
South Jersey Industries, Inc.	SJI	0.724	0.85
Southwest Gas Corporation	SWX	0.587	0.70
Spire Inc	SR	0.462	0.65
Mean		0.573	0.69

Notes:

[1] Source: Bloomberg Professional

[2] Source: Value Line

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

	[1]	[2]	[3]	[4]	[5]	[6]
	Ex-Ante Market Risk Premium				CAPM Result	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg Market DCF Derived	Value Line Market DCF Derived
<b>PROXY GROUP BLOOMBERG BETA COEFFICIENT</b>						
Current 30-Year Treasury (30-day average) [7]	2.95%	0.573	10.48%	13.18%	8.96%	10.51%
Near-Term Projected 30-Year Treasury [8]	3.13%	0.573	10.48%	13.18%	9.14%	10.69%
Mean					9.05%	10.60%
<b>PROXY GROUP VALUE LINE AVERAGE BETA COEFFICIENT</b>						
Current 30-Year Treasury (30-day average) [7]	2.95%	0.688	10.48%	13.18%	10.16%	12.02%
Near-Term Projected 30-Year Treasury [8]	3.13%	0.688	10.48%	13.18%	10.34%	12.20%
Mean					10.25%	12.11%

Notes:

[1] See Notes [7] and [8]

[2] Source: Schedule RBH-R4

[3] Source: Schedule RBH-R3

[4] Source: Schedule RBH-R3

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

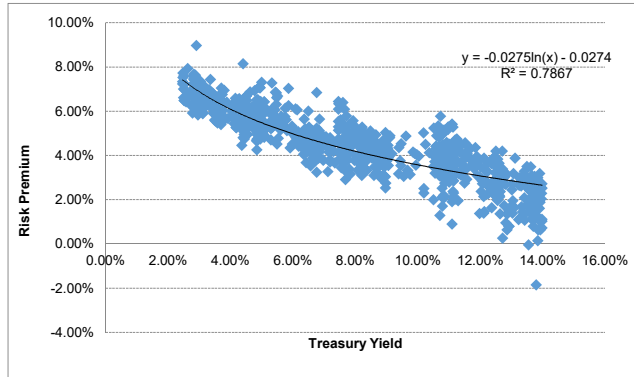
[6] Equals Col. [1] + (Col. [2] x Col. [4])

[7] Source: Bloomberg Professional

[8] Source: Blue Chip Financial Forecasts, Vol. 38, No. 4, April 1, 2019, at 2.

Bond Yield Plus Risk Premium

	[1]	[2]	[3]	[4]	[5]
	Constant	Slope	30-Year Treasury Yield	Risk Premium	Return on Equity
	-2.74%	-2.75%			
Current 30-Year Treasury			2.95%	6.93%	9.88%
Near-Term Projected 30-Year Treasury			3.13%	6.76%	9.90%
Long-Term Projected 30-Year Treasury			4.05%	6.06%	10.11%



Notes:

- [1] Constant of regression equation
- [2] Slope of regression equation
- [3] Source: Current = Bloomberg Professional,  
Near Term Projection = Blue Chip Financial Forecasts, Vol. 38, No. 4, April 1, 2019, at 2,  
Long Term Projection = Blue Chip Financial Forecasts, Vol. 37, No. 12, December 1, 2018, at 14.
- [4] Equals [1] + ln([3]) x [2]
- [5] Equals [3] + [4]
- [6] Source: S&P Global Market Intelligence
- [7] Source: S&P Global Market Intelligence
- [8] Source: Bloomberg Professional, equals 187-trading day average (i.e. lag period)
- [9] Equals [7] - [8]

Bond Yield Plus Risk Premium

[6]	[7]	[8]	[9]
Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
01/03/1980	12.55%	9.39%	3.16%
01/04/1980	13.75%	9.40%	4.35%
01/14/1980	13.20%	9.44%	3.76%
01/18/1980	14.00%	9.47%	4.53%
01/31/1980	12.61%	9.56%	3.05%
02/08/1980	14.50%	9.63%	4.87%
02/14/1980	13.00%	9.67%	3.33%
02/15/1980	13.00%	9.69%	3.31%
02/29/1980	14.00%	9.86%	4.14%
03/05/1980	14.00%	9.91%	4.09%
03/07/1980	13.50%	9.95%	3.55%
03/14/1980	14.00%	10.04%	3.96%
03/27/1980	12.69%	10.20%	2.49%
04/01/1980	14.75%	10.26%	4.49%
04/29/1980	12.50%	10.51%	1.99%
05/07/1980	14.27%	10.56%	3.71%
05/08/1980	13.75%	10.56%	3.19%
05/19/1980	15.50%	10.62%	4.88%
05/27/1980	14.60%	10.65%	3.95%
05/29/1980	16.00%	10.67%	5.33%
06/10/1980	13.78%	10.71%	3.07%
06/25/1980	14.25%	10.74%	3.51%
07/09/1980	14.51%	10.77%	3.74%
07/17/1980	12.90%	10.79%	2.11%
07/18/1980	13.80%	10.79%	3.01%
07/22/1980	14.10%	10.79%	3.31%
07/23/1980	14.19%	10.79%	3.40%
08/01/1980	12.50%	10.80%	1.70%
08/11/1980	14.85%	10.81%	4.04%
08/21/1980	13.03%	10.84%	2.19%
08/28/1980	13.61%	10.87%	2.74%
08/28/1980	14.00%	10.87%	3.13%
09/04/1980	14.00%	10.90%	3.10%
09/24/1980	15.00%	10.98%	4.02%
10/09/1980	14.50%	11.05%	3.45%
10/09/1980	14.50%	11.05%	3.45%
10/24/1980	14.00%	11.09%	2.91%
10/27/1980	15.20%	11.10%	4.10%
10/27/1980	15.20%	11.10%	4.10%
10/28/1980	12.00%	11.10%	0.90%
10/28/1980	13.00%	11.10%	1.90%
10/31/1980	14.50%	11.12%	3.38%
11/04/1980	15.00%	11.12%	3.88%
11/06/1980	14.35%	11.13%	3.22%
11/10/1980	13.25%	11.14%	2.11%
11/17/1980	15.50%	11.15%	4.35%
11/19/1980	13.50%	11.14%	2.36%
12/05/1980	14.60%	11.13%	3.47%
12/08/1980	16.40%	11.13%	5.27%
12/12/1980	15.45%	11.15%	4.30%
12/17/1980	14.20%	11.16%	3.04%
12/17/1980	14.40%	11.16%	3.24%
12/18/1980	14.00%	11.16%	2.84%
12/22/1980	13.45%	11.16%	2.29%
12/26/1980	14.00%	11.15%	2.85%
12/30/1980	14.50%	11.14%	3.36%
12/31/1980	14.56%	11.14%	3.42%
01/07/1981	14.30%	11.13%	3.17%
01/12/1981	14.95%	11.14%	3.81%
01/26/1981	15.25%	11.20%	4.05%
01/30/1981	13.25%	11.23%	2.02%
02/11/1981	14.50%	11.33%	3.17%
02/20/1981	14.50%	11.40%	3.10%
03/12/1981	15.65%	11.60%	4.05%
03/25/1981	15.30%	11.74%	3.56%
04/01/1981	15.30%	11.82%	3.48%
04/09/1981	15.00%	11.91%	3.09%
04/29/1981	13.50%	12.12%	1.38%
04/29/1981	14.25%	12.12%	2.13%
04/30/1981	13.60%	12.14%	1.46%
04/30/1981	15.00%	12.14%	2.86%
05/21/1981	14.00%	12.37%	1.63%
06/03/1981	14.67%	12.46%	2.21%
06/22/1981	16.00%	12.57%	3.43%
06/25/1981	14.75%	12.60%	2.15%
07/02/1981	14.00%	12.64%	1.36%
07/10/1981	16.00%	12.69%	3.31%
07/14/1981	16.90%	12.71%	4.19%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
07/21/1981	15.78%	12.78%	3.00%
07/27/1981	13.77%	12.82%	0.95%
07/27/1981	15.50%	12.82%	2.68%
07/31/1981	13.50%	12.86%	0.64%
07/31/1981	14.20%	12.86%	1.34%
08/12/1981	13.72%	12.93%	0.79%
08/12/1981	13.72%	12.93%	0.79%
08/12/1981	14.41%	12.93%	1.48%
08/25/1981	15.45%	13.02%	2.43%
08/27/1981	14.43%	13.04%	1.39%
08/28/1981	15.00%	13.05%	1.95%
09/23/1981	14.34%	13.24%	1.10%
09/24/1981	16.25%	13.26%	2.99%
09/29/1981	14.50%	13.31%	1.19%
09/30/1981	15.94%	13.32%	2.62%
10/02/1981	14.80%	13.36%	1.44%
10/12/1981	16.25%	13.43%	2.82%
10/20/1981	15.25%	13.50%	1.75%
10/20/1981	16.50%	13.50%	3.00%
10/20/1981	17.00%	13.50%	3.50%
10/23/1981	15.50%	13.54%	1.96%
10/26/1981	13.50%	13.56%	-0.06%
10/29/1981	16.50%	13.60%	2.90%
11/04/1981	15.33%	13.62%	1.71%
11/06/1981	15.17%	13.64%	1.53%
11/12/1981	15.00%	13.65%	1.35%
11/25/1981	15.25%	13.66%	1.59%
11/25/1981	16.10%	13.66%	2.44%
11/25/1981	16.10%	13.66%	2.44%
11/30/1981	16.75%	13.66%	3.09%
12/01/1981	15.70%	13.66%	2.04%
12/01/1981	16.00%	13.66%	2.34%
12/15/1981	15.81%	13.69%	2.12%
12/17/1981	14.75%	13.70%	1.05%
12/22/1981	15.70%	13.72%	1.98%
12/22/1981	16.00%	13.72%	2.28%
12/30/1981	16.00%	13.74%	2.26%
12/30/1981	16.25%	13.74%	2.51%
01/04/1982	15.50%	13.75%	1.75%
01/14/1982	11.95%	13.80%	-1.85%
01/25/1982	16.25%	13.84%	2.41%
01/27/1982	16.84%	13.85%	2.99%
01/31/1982	14.00%	13.86%	0.14%
02/02/1982	16.24%	13.86%	2.38%
02/08/1982	15.50%	13.87%	1.63%
02/09/1982	14.95%	13.88%	1.07%
02/09/1982	15.75%	13.88%	1.87%
02/11/1982	16.00%	13.89%	2.11%
03/01/1982	15.96%	13.91%	2.05%
03/03/1982	15.00%	13.91%	1.09%
03/08/1982	17.10%	13.92%	3.18%
03/26/1982	16.00%	13.97%	2.03%
03/31/1982	16.25%	13.98%	2.27%
04/01/1982	16.50%	13.98%	2.52%
04/06/1982	15.00%	13.99%	1.01%
04/09/1982	16.50%	13.99%	2.51%
04/12/1982	15.10%	13.99%	1.11%
04/12/1982	16.70%	13.99%	2.71%
04/18/1982	14.70%	13.99%	0.71%
04/27/1982	15.00%	13.97%	1.03%
05/10/1982	14.57%	13.94%	0.63%
05/14/1982	15.80%	13.92%	1.88%
05/20/1982	15.82%	13.91%	1.91%
05/21/1982	15.50%	13.90%	1.60%
05/25/1982	16.25%	13.90%	2.35%
06/02/1982	14.50%	13.87%	0.63%
06/07/1982	16.00%	13.85%	2.15%
06/23/1982	15.50%	13.81%	1.69%
06/25/1982	16.50%	13.81%	2.69%
07/01/1982	15.55%	13.79%	1.76%
07/01/1982	16.00%	13.79%	2.21%
07/02/1982	15.10%	13.79%	1.31%
07/13/1982	16.80%	13.75%	3.05%
07/22/1982	14.50%	13.71%	0.79%
07/28/1982	16.10%	13.68%	2.42%
07/30/1982	14.82%	13.66%	1.16%
08/04/1982	15.58%	13.64%	1.94%
08/06/1982	16.50%	13.63%	2.87%
08/11/1982	17.11%	13.62%	3.49%
08/25/1982	16.00%	13.59%	2.41%
08/30/1982	16.25%	13.58%	2.67%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
09/03/1982	15.50%	13.57%	1.93%
09/09/1982	16.04%	13.55%	2.49%
09/15/1982	16.04%	13.52%	2.52%
09/17/1982	15.25%	13.51%	1.74%
09/29/1982	14.50%	13.43%	1.07%
09/30/1982	14.74%	13.42%	1.32%
09/30/1982	15.50%	13.42%	2.08%
09/30/1982	16.50%	13.42%	3.08%
09/30/1982	16.70%	13.42%	3.28%
10/01/1982	16.50%	13.41%	3.09%
10/08/1982	15.00%	13.33%	1.67%
10/15/1982	15.90%	13.26%	2.64%
10/19/1982	15.90%	13.22%	2.68%
10/27/1982	17.00%	13.12%	3.88%
10/28/1982	14.75%	13.11%	1.64%
11/02/1982	16.25%	13.07%	3.18%
11/04/1982	15.75%	13.03%	2.72%
11/05/1982	14.73%	13.01%	1.72%
11/17/1982	16.00%	12.86%	3.14%
11/23/1982	15.50%	12.79%	2.71%
11/24/1982	14.50%	12.77%	1.73%
11/24/1982	16.02%	12.77%	3.25%
11/30/1982	12.98%	12.72%	0.26%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.50%	12.72%	2.78%
11/30/1982	15.65%	12.72%	2.93%
11/30/1982	16.00%	12.72%	3.28%
11/30/1982	16.10%	12.72%	3.38%
12/03/1982	15.33%	12.68%	2.65%
12/08/1982	15.75%	12.63%	3.12%
12/13/1982	16.00%	12.58%	3.42%
12/14/1982	16.40%	12.57%	3.83%
12/17/1982	16.25%	12.52%	3.73%
12/20/1982	15.00%	12.51%	2.49%
12/21/1982	15.70%	12.49%	3.21%
12/28/1982	15.25%	12.42%	2.83%
12/28/1982	15.25%	12.42%	2.83%
12/29/1982	16.25%	12.41%	3.84%
12/29/1982	16.25%	12.41%	3.84%
01/11/1983	15.90%	12.26%	3.64%
01/12/1983	15.50%	12.24%	3.26%
01/18/1983	15.00%	12.18%	2.82%
01/24/1983	15.50%	12.13%	3.37%
01/24/1983	16.00%	12.13%	3.87%
01/28/1983	14.90%	12.08%	2.82%
01/31/1983	15.00%	12.07%	2.93%
02/10/1983	15.00%	11.97%	3.03%
02/25/1983	15.70%	11.84%	3.86%
03/02/1983	15.25%	11.79%	3.46%
03/16/1983	16.00%	11.62%	4.38%
03/21/1983	14.96%	11.57%	3.39%
03/23/1983	15.40%	11.53%	3.87%
03/23/1983	16.10%	11.53%	4.57%
03/24/1983	15.00%	11.51%	3.49%
04/12/1983	13.25%	11.30%	1.95%
04/29/1983	15.05%	11.09%	3.96%
05/03/1983	15.40%	11.06%	4.34%
05/09/1983	15.50%	11.00%	4.50%
05/19/1983	14.85%	10.90%	3.95%
05/31/1983	14.00%	10.84%	3.16%
06/02/1983	14.50%	10.82%	3.68%
06/07/1983	14.50%	10.80%	3.70%
06/09/1983	14.85%	10.79%	4.06%
06/20/1983	14.15%	10.74%	3.41%
06/20/1983	16.50%	10.74%	5.76%
06/27/1983	14.50%	10.71%	3.79%
06/30/1983	14.80%	10.70%	4.10%
06/30/1983	15.90%	10.70%	5.20%
07/01/1983	14.80%	10.70%	4.10%
07/05/1983	15.00%	10.69%	4.31%
07/08/1983	15.50%	10.69%	4.81%
07/19/1983	15.00%	10.70%	4.30%
07/19/1983	15.10%	10.70%	4.40%
08/18/1983	15.30%	10.81%	4.49%
08/19/1983	15.79%	10.82%	4.97%
08/29/1983	16.00%	10.85%	5.15%
08/31/1983	14.75%	10.87%	3.88%
08/31/1983	15.25%	10.87%	4.38%
09/08/1983	14.75%	10.89%	3.86%
09/16/1983	15.51%	10.93%	4.58%
09/26/1983	14.50%	10.96%	3.54%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
09/28/1983	14.25%	10.97%	3.28%
09/30/1983	16.15%	10.98%	5.17%
09/30/1983	16.25%	10.98%	5.27%
10/01/1983	16.25%	10.98%	5.27%
10/13/1983	15.52%	11.02%	4.50%
10/19/1983	15.20%	11.04%	4.16%
10/26/1983	14.75%	11.06%	3.69%
10/27/1983	14.88%	11.07%	3.81%
10/27/1983	15.33%	11.07%	4.26%
11/09/1983	14.82%	11.10%	3.72%
11/09/1983	16.51%	11.10%	5.41%
11/09/1983	16.51%	11.10%	5.41%
12/01/1983	14.50%	11.17%	3.33%
12/08/1983	15.90%	11.20%	4.70%
12/09/1983	15.30%	11.21%	4.09%
12/12/1983	14.50%	11.22%	3.28%
12/12/1983	15.50%	11.22%	4.28%
12/20/1983	15.40%	11.26%	4.14%
12/20/1983	16.00%	11.26%	4.74%
12/22/1983	15.75%	11.27%	4.48%
12/29/1983	15.00%	11.30%	3.70%
12/30/1983	15.00%	11.30%	3.70%
01/10/1984	15.90%	11.34%	4.56%
01/13/1984	15.50%	11.36%	4.14%
01/18/1984	15.53%	11.38%	4.15%
01/26/1984	15.90%	11.42%	4.48%
02/14/1984	14.25%	11.51%	2.74%
02/28/1984	14.50%	11.58%	2.92%
03/20/1984	16.00%	11.70%	4.30%
03/23/1984	15.50%	11.72%	3.78%
04/09/1984	15.20%	11.81%	3.39%
04/18/1984	16.20%	11.86%	4.34%
04/27/1984	15.85%	11.90%	3.95%
05/15/1984	13.35%	11.99%	1.36%
05/16/1984	15.00%	12.00%	3.00%
05/22/1984	14.40%	12.04%	2.36%
06/13/1984	15.50%	12.18%	3.32%
07/10/1984	16.00%	12.37%	3.63%
08/07/1984	16.69%	12.51%	4.18%
08/09/1984	15.33%	12.51%	2.82%
08/17/1984	14.82%	12.54%	2.28%
08/21/1984	14.64%	12.54%	2.10%
08/27/1984	14.52%	12.56%	1.96%
08/28/1984	14.75%	12.57%	2.18%
08/30/1984	15.60%	12.58%	3.02%
09/12/1984	15.60%	12.60%	3.00%
09/12/1984	15.90%	12.60%	3.30%
09/25/1984	16.25%	12.61%	3.64%
10/02/1984	14.80%	12.62%	2.18%
10/09/1984	14.75%	12.63%	2.12%
10/10/1984	15.50%	12.63%	2.87%
10/18/1984	15.00%	12.65%	2.35%
10/24/1984	15.50%	12.65%	2.85%
11/07/1984	15.00%	12.64%	2.36%
11/20/1984	15.92%	12.63%	3.29%
11/30/1984	15.50%	12.60%	2.90%
12/18/1984	15.00%	12.55%	2.45%
12/20/1984	15.00%	12.54%	2.46%
12/28/1984	15.75%	12.51%	3.24%
12/28/1984	16.25%	12.51%	3.74%
01/02/1985	16.00%	12.50%	3.50%
01/31/1985	14.75%	12.37%	2.38%
02/07/1985	14.85%	12.33%	2.52%
02/15/1985	15.00%	12.27%	2.73%
02/20/1985	14.50%	12.25%	2.25%
02/22/1985	14.86%	12.25%	2.61%
03/14/1985	15.50%	12.16%	3.34%
03/28/1985	14.80%	12.08%	2.72%
04/09/1985	15.50%	12.02%	3.48%
04/16/1985	15.70%	11.96%	3.74%
06/10/1985	15.75%	11.58%	4.17%
06/26/1985	14.82%	11.46%	3.36%
07/09/1985	15.00%	11.38%	3.62%
07/26/1985	14.50%	11.26%	3.24%
08/29/1985	14.50%	11.11%	3.39%
08/30/1985	14.38%	11.11%	3.27%
09/12/1985	15.25%	11.07%	4.18%
09/23/1985	15.30%	11.03%	4.27%
09/25/1985	14.50%	11.02%	3.48%
09/26/1985	13.80%	11.02%	2.78%
09/26/1985	14.50%	11.02%	3.48%



Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/25/1985	15.25%	10.91%	4.34%
11/08/1985	12.94%	10.85%	2.09%
11/20/1985	14.90%	10.81%	4.09%
11/25/1985	13.30%	10.79%	2.51%
12/06/1985	12.00%	10.71%	1.29%
12/11/1985	14.90%	10.68%	4.22%
12/20/1985	14.88%	10.59%	4.29%
12/20/1985	15.00%	10.59%	4.41%
12/20/1985	15.00%	10.59%	4.41%
12/30/1985	15.75%	10.53%	5.22%
12/31/1985	14.00%	10.51%	3.49%
12/31/1985	14.50%	10.51%	3.99%
01/17/1986	14.50%	10.38%	4.12%
02/11/1986	12.50%	10.20%	2.30%
02/12/1986	15.20%	10.19%	5.01%
03/11/1986	14.00%	9.98%	4.02%
04/02/1986	12.90%	9.76%	3.14%
04/28/1986	13.01%	9.47%	3.54%
05/21/1986	13.25%	9.18%	4.07%
05/28/1986	14.00%	9.12%	4.88%
05/29/1986	13.90%	9.10%	4.80%
06/02/1986	13.00%	9.08%	3.92%
06/11/1986	14.00%	8.97%	5.03%
06/13/1986	13.55%	8.94%	4.61%
06/27/1986	11.88%	8.77%	3.11%
07/14/1986	12.60%	8.59%	4.01%
07/30/1986	13.30%	8.38%	4.92%
08/14/1986	13.50%	8.22%	5.28%
09/05/1986	13.30%	8.02%	5.28%
09/23/1986	12.75%	7.91%	4.84%
10/30/1986	13.00%	7.67%	5.33%
10/31/1986	13.75%	7.66%	6.09%
11/10/1986	14.00%	7.61%	6.39%
11/19/1986	13.75%	7.56%	6.19%
11/25/1986	13.15%	7.54%	5.61%
12/22/1986	13.80%	7.47%	6.33%
12/30/1986	13.90%	7.47%	6.43%
01/20/1987	12.75%	7.47%	5.28%
01/23/1987	13.55%	7.47%	6.08%
01/27/1987	12.16%	7.47%	4.69%
02/13/1987	12.60%	7.47%	5.13%
02/24/1987	12.00%	7.47%	4.53%
03/30/1987	12.20%	7.46%	4.74%
03/31/1987	13.00%	7.47%	5.53%
05/05/1987	12.85%	7.60%	5.25%
05/28/1987	13.50%	7.73%	5.77%
06/15/1987	13.20%	7.80%	5.40%
06/30/1987	12.60%	7.85%	4.75%
07/10/1987	12.90%	7.88%	5.02%
07/27/1987	13.50%	7.93%	5.57%
08/25/1987	11.40%	8.09%	3.31%
09/18/1987	13.00%	8.27%	4.73%
10/20/1987	12.60%	8.55%	4.05%
10/20/1987	12.98%	8.55%	4.43%
11/12/1987	12.75%	8.68%	4.07%
11/13/1987	12.75%	8.68%	4.07%
11/24/1987	12.50%	8.73%	3.77%
12/08/1987	12.50%	8.81%	3.69%
12/22/1987	12.00%	8.90%	3.10%
12/31/1987	12.85%	8.94%	3.91%
12/31/1987	13.25%	8.94%	4.31%
01/15/1988	13.15%	8.99%	4.16%
01/20/1988	12.75%	8.99%	3.76%
01/29/1988	13.20%	8.99%	4.21%
02/04/1988	12.60%	8.99%	3.61%
03/23/1988	13.00%	8.95%	4.05%
05/27/1988	13.18%	9.02%	4.16%
06/14/1988	13.50%	9.00%	4.50%
06/17/1988	11.72%	8.99%	2.73%
06/24/1988	11.50%	8.97%	2.53%
07/01/1988	12.75%	8.95%	3.80%
07/08/1988	12.00%	8.93%	3.07%
07/18/1988	12.00%	8.91%	3.09%
07/20/1988	13.40%	8.90%	4.50%
08/08/1988	12.74%	8.90%	3.84%
09/20/1988	12.90%	8.93%	3.97%
09/26/1988	12.40%	8.93%	3.47%
09/27/1988	13.65%	8.93%	4.72%
09/30/1988	13.25%	8.94%	4.31%
10/13/1988	13.10%	8.93%	4.17%
10/21/1988	12.80%	8.94%	3.86%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/25/1988	13.25%	8.94%	4.31%
10/26/1988	13.50%	8.94%	4.56%
10/27/1988	12.95%	8.94%	4.01%
10/28/1988	13.00%	8.95%	4.05%
11/15/1988	12.00%	8.98%	3.02%
11/29/1988	12.75%	9.01%	3.74%
12/19/1988	13.00%	9.05%	3.95%
12/21/1988	12.90%	9.05%	3.85%
12/22/1988	13.50%	9.05%	4.45%
01/26/1989	12.60%	9.06%	3.54%
01/27/1989	13.00%	9.06%	3.94%
02/08/1989	13.37%	9.05%	4.32%
03/08/1989	13.00%	9.04%	3.96%
05/04/1989	13.00%	9.04%	3.96%
06/08/1989	13.50%	8.96%	4.54%
07/19/1989	11.80%	8.84%	2.96%
07/25/1989	12.80%	8.82%	3.98%
07/31/1989	13.00%	8.81%	4.19%
08/14/1989	12.50%	8.76%	3.74%
08/22/1989	12.80%	8.73%	4.07%
08/23/1989	12.90%	8.72%	4.18%
09/21/1989	12.10%	8.62%	3.48%
10/06/1989	13.00%	8.58%	4.42%
10/17/1989	12.41%	8.54%	3.87%
10/18/1989	13.25%	8.54%	4.71%
10/20/1989	12.90%	8.53%	4.37%
10/31/1989	13.60%	8.50%	5.10%
11/03/1989	12.93%	8.48%	4.45%
11/05/1989	13.20%	8.48%	4.72%
11/09/1989	12.60%	8.45%	4.15%
11/09/1989	13.00%	8.45%	4.55%
11/28/1989	12.75%	8.37%	4.38%
12/07/1989	13.25%	8.32%	4.93%
12/15/1989	13.00%	8.28%	4.72%
12/20/1989	12.90%	8.26%	4.64%
12/21/1989	12.80%	8.25%	4.55%
12/21/1989	12.90%	8.25%	4.65%
12/27/1989	12.50%	8.23%	4.27%
01/09/1990	13.00%	8.19%	4.81%
01/18/1990	12.50%	8.16%	4.34%
01/26/1990	12.10%	8.14%	3.96%
03/21/1990	12.80%	8.15%	4.65%
03/28/1990	13.00%	8.16%	4.84%
04/05/1990	12.20%	8.17%	4.03%
04/12/1990	13.25%	8.19%	5.06%
04/30/1990	12.45%	8.24%	4.21%
05/31/1990	12.40%	8.31%	4.09%
06/15/1990	13.20%	8.33%	4.87%
06/27/1990	12.90%	8.34%	4.56%
06/29/1990	13.25%	8.35%	4.90%
07/06/1990	12.10%	8.36%	3.74%
07/19/1990	11.70%	8.38%	3.32%
08/31/1990	12.50%	8.53%	3.97%
08/31/1990	12.50%	8.53%	3.97%
09/13/1990	12.50%	8.58%	3.92%
09/18/1990	12.75%	8.60%	4.15%
09/20/1990	12.50%	8.61%	3.89%
10/02/1990	13.00%	8.65%	4.35%
10/17/1990	11.90%	8.68%	3.22%
10/31/1990	12.95%	8.70%	4.25%
11/09/1990	13.25%	8.70%	4.55%
11/19/1990	13.00%	8.70%	4.30%
11/21/1990	12.10%	8.70%	3.40%
11/21/1990	12.50%	8.70%	3.80%
11/28/1990	12.75%	8.70%	4.05%
11/29/1990	12.75%	8.70%	4.05%
12/18/1990	13.10%	8.68%	4.42%
12/20/1990	12.50%	8.67%	3.83%
12/21/1990	12.50%	8.67%	3.83%
12/21/1990	13.00%	8.67%	4.33%
12/21/1990	13.60%	8.67%	4.93%
01/03/1991	13.02%	8.66%	4.36%
01/16/1991	13.25%	8.63%	4.62%
01/25/1991	11.70%	8.61%	3.09%
02/15/1991	12.70%	8.56%	4.14%
02/15/1991	12.80%	8.56%	4.24%
04/03/1991	13.00%	8.51%	4.49%
04/30/1991	12.45%	8.48%	3.97%
04/30/1991	13.00%	8.48%	4.52%
06/25/1991	11.70%	8.34%	3.36%
06/28/1991	12.50%	8.34%	4.16%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
07/01/1991	11.70%	8.34%	3.36%
07/19/1991	12.10%	8.31%	3.79%
07/19/1991	12.30%	8.31%	3.99%
07/22/1991	12.90%	8.30%	4.60%
08/15/1991	12.25%	8.28%	3.97%
08/29/1991	13.30%	8.26%	5.04%
09/27/1991	12.50%	8.23%	4.27%
09/30/1991	12.40%	8.23%	4.17%
10/03/1991	11.30%	8.22%	3.08%
10/09/1991	11.70%	8.21%	3.49%
10/15/1991	13.40%	8.20%	5.20%
11/01/1991	12.90%	8.20%	4.70%
11/08/1991	12.75%	8.20%	4.55%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.00%	8.18%	3.82%
11/27/1991	12.70%	8.18%	4.52%
12/06/1991	12.70%	8.16%	4.54%
12/10/1991	11.75%	8.15%	3.60%
12/19/1991	12.60%	8.14%	4.46%
12/19/1991	12.80%	8.14%	4.66%
12/30/1991	12.10%	8.11%	3.99%
01/22/1992	12.84%	8.05%	4.79%
01/31/1992	12.00%	8.03%	3.97%
02/20/1992	13.00%	8.00%	5.00%
02/27/1992	11.75%	7.98%	3.77%
03/18/1992	12.50%	7.94%	4.56%
05/15/1992	12.75%	7.86%	4.89%
06/24/1992	12.20%	7.85%	4.35%
06/29/1992	11.00%	7.85%	3.15%
07/14/1992	12.00%	7.83%	4.17%
07/22/1992	11.20%	7.82%	3.38%
08/10/1992	12.10%	7.79%	4.31%
08/26/1992	12.43%	7.75%	4.68%
09/30/1992	11.60%	7.72%	3.88%
10/06/1992	12.25%	7.72%	4.53%
10/13/1992	12.75%	7.71%	5.04%
10/23/1992	11.65%	7.71%	3.94%
10/28/1992	12.25%	7.71%	4.54%
10/29/1992	12.75%	7.70%	5.05%
10/30/1992	11.40%	7.70%	3.70%
11/09/1992	10.60%	7.70%	2.90%
11/25/1992	11.00%	7.68%	3.32%
11/25/1992	12.00%	7.68%	4.32%
12/03/1992	11.85%	7.66%	4.19%
12/16/1992	11.90%	7.64%	4.26%
12/22/1992	12.30%	7.62%	4.68%
12/22/1992	12.40%	7.62%	4.78%
12/30/1992	12.00%	7.61%	4.39%
12/31/1992	12.00%	7.61%	4.39%
01/12/1993	12.00%	7.59%	4.41%
01/12/1993	12.00%	7.59%	4.41%
02/02/1993	11.40%	7.53%	3.87%
02/22/1993	11.60%	7.48%	4.12%
04/23/1993	11.75%	7.27%	4.48%
05/03/1993	11.50%	7.25%	4.25%
05/03/1993	11.75%	7.25%	4.50%
06/03/1993	12.00%	7.20%	4.80%
06/07/1993	11.50%	7.20%	4.30%
06/22/1993	11.75%	7.16%	4.59%
07/21/1993	11.78%	7.06%	4.72%
07/21/1993	11.90%	7.06%	4.84%
07/23/1993	11.50%	7.05%	4.45%
07/29/1993	11.50%	7.03%	4.47%
08/12/1993	10.75%	6.97%	3.78%
08/24/1993	11.50%	6.92%	4.58%
08/31/1993	11.90%	6.88%	5.02%
09/01/1993	11.25%	6.87%	4.38%
09/01/1993	11.47%	6.87%	4.60%
09/27/1993	10.50%	6.74%	3.76%
09/29/1993	11.00%	6.72%	4.28%
09/30/1993	11.60%	6.72%	4.88%
10/08/1993	11.50%	6.67%	4.83%
10/14/1993	11.20%	6.65%	4.55%
10/15/1993	11.75%	6.64%	5.11%
10/25/1993	11.55%	6.60%	4.95%
10/28/1993	11.50%	6.58%	4.92%
10/29/1993	10.10%	6.57%	3.53%
10/29/1993	10.20%	6.57%	3.63%
10/29/1993	11.25%	6.57%	4.68%
11/02/1993	10.80%	6.56%	4.24%
11/12/1993	11.80%	6.53%	5.27%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/23/1993	12.50%	6.51%	5.99%
11/26/1993	11.00%	6.50%	4.50%
12/01/1993	11.45%	6.49%	4.96%
12/16/1993	10.60%	6.45%	4.15%
12/16/1993	11.20%	6.45%	4.75%
12/21/1993	11.30%	6.44%	4.86%
12/22/1993	11.00%	6.44%	4.56%
12/23/1993	10.10%	6.44%	3.66%
01/05/1994	11.50%	6.41%	5.09%
01/10/1994	11.00%	6.40%	4.60%
01/25/1994	12.00%	6.37%	5.63%
02/02/1994	10.40%	6.35%	4.05%
02/09/1994	10.70%	6.34%	4.36%
04/06/1994	11.24%	6.35%	4.89%
04/25/1994	11.00%	6.39%	4.61%
06/16/1994	10.50%	6.63%	3.87%
06/23/1994	10.60%	6.67%	3.93%
07/19/1994	10.70%	6.83%	3.87%
09/29/1994	10.90%	7.20%	3.70%
09/29/1994	11.00%	7.20%	3.80%
10/07/1994	11.87%	7.26%	4.61%
10/18/1994	11.50%	7.32%	4.18%
10/18/1994	11.50%	7.32%	4.18%
10/24/1994	11.00%	7.35%	3.65%
11/22/1994	12.12%	7.52%	4.60%
11/29/1994	11.30%	7.55%	3.75%
12/01/1994	11.00%	7.56%	3.44%
12/08/1994	11.50%	7.59%	3.91%
12/08/1994	11.70%	7.59%	4.11%
12/12/1994	11.82%	7.60%	4.22%
12/14/1994	11.50%	7.61%	3.89%
12/19/1994	11.50%	7.62%	3.88%
04/19/1995	11.00%	7.72%	3.28%
09/11/1995	11.30%	7.16%	4.14%
09/15/1995	10.40%	7.13%	3.27%
09/29/1995	11.50%	7.06%	4.44%
10/13/1995	10.76%	6.98%	3.78%
11/07/1995	12.50%	6.86%	5.64%
11/08/1995	11.10%	6.85%	4.25%
11/08/1995	11.30%	6.85%	4.45%
11/17/1995	10.90%	6.81%	4.09%
11/20/1995	11.40%	6.80%	4.60%
11/27/1995	13.60%	6.77%	6.83%
12/14/1995	11.30%	6.68%	4.62%
12/20/1995	11.60%	6.65%	4.95%
01/31/1996	11.30%	6.45%	4.85%
03/11/1996	11.60%	6.40%	5.20%
04/03/1996	11.13%	6.41%	4.72%
04/15/1996	10.50%	6.41%	4.09%
04/17/1996	10.77%	6.40%	4.37%
04/26/1996	10.60%	6.40%	4.20%
05/10/1996	11.00%	6.40%	4.60%
05/13/1996	11.25%	6.41%	4.84%
07/03/1996	11.25%	6.49%	4.76%
07/22/1996	11.25%	6.54%	4.71%
10/03/1996	10.00%	6.77%	3.23%
10/29/1996	11.30%	6.84%	4.46%
11/26/1996	11.30%	6.86%	4.44%
11/27/1996	11.30%	6.86%	4.44%
11/29/1996	11.00%	6.86%	4.14%
12/12/1996	11.96%	6.85%	5.11%
12/17/1996	11.50%	6.85%	4.65%
01/22/1997	11.30%	6.83%	4.47%
01/27/1997	11.25%	6.83%	4.42%
01/31/1997	11.25%	6.83%	4.42%
02/13/1997	11.00%	6.82%	4.18%
02/13/1997	11.80%	6.82%	4.98%
02/20/1997	11.80%	6.81%	4.99%
03/27/1997	10.75%	6.79%	3.96%
04/29/1997	11.70%	6.81%	4.89%
07/17/1997	12.00%	6.77%	5.23%
10/29/1997	10.75%	6.70%	4.05%
10/31/1997	11.25%	6.70%	4.55%
12/24/1997	10.75%	6.53%	4.22%
04/28/1998	10.90%	6.11%	4.79%
04/30/1998	12.20%	6.10%	6.10%
06/30/1998	11.00%	5.94%	5.06%
08/26/1998	10.93%	5.82%	5.11%
09/03/1998	11.40%	5.80%	5.60%
09/15/1998	11.90%	5.77%	6.13%
10/07/1998	11.06%	5.70%	5.36%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/30/1998	11.40%	5.63%	5.77%
12/10/1998	12.20%	5.52%	6.68%
12/17/1998	12.10%	5.49%	6.61%
02/19/1999	11.15%	5.32%	5.83%
03/01/1999	10.65%	5.31%	5.34%
03/01/1999	10.65%	5.31%	5.34%
06/08/1999	11.25%	5.35%	5.90%
11/12/1999	10.25%	5.92%	4.33%
12/14/1999	10.50%	5.99%	4.51%
01/28/2000	10.71%	6.16%	4.55%
02/17/2000	10.60%	6.20%	4.40%
05/25/2000	10.80%	6.19%	4.61%
06/19/2000	11.05%	6.18%	4.87%
06/22/2000	11.25%	6.18%	5.07%
07/17/2000	11.06%	6.15%	4.91%
07/20/2000	12.20%	6.14%	6.06%
08/11/2000	11.00%	6.11%	4.89%
09/27/2000	11.25%	6.00%	5.25%
09/29/2000	11.16%	6.00%	5.16%
10/05/2000	11.30%	5.98%	5.32%
11/28/2000	12.90%	5.87%	7.03%
11/30/2000	12.10%	5.86%	6.24%
02/05/2001	11.50%	5.75%	5.75%
03/15/2001	11.25%	5.66%	5.59%
05/08/2001	10.75%	5.61%	5.14%
10/24/2001	10.30%	5.54%	4.76%
10/24/2001	11.00%	5.54%	5.46%
01/09/2002	10.00%	5.50%	4.50%
01/30/2002	11.00%	5.47%	5.53%
01/31/2002	11.00%	5.47%	5.53%
04/17/2002	11.50%	5.44%	6.06%
04/29/2002	11.00%	5.45%	5.55%
06/11/2002	11.77%	5.48%	6.29%
06/20/2002	12.30%	5.48%	6.82%
08/28/2002	11.00%	5.49%	5.51%
09/11/2002	11.20%	5.45%	5.75%
09/12/2002	12.30%	5.45%	6.85%
10/28/2002	11.30%	5.35%	5.95%
10/30/2002	10.60%	5.34%	5.26%
11/01/2002	12.60%	5.34%	7.26%
11/07/2002	11.40%	5.33%	6.07%
11/08/2002	10.75%	5.33%	5.42%
11/20/2002	10.00%	5.30%	4.70%
11/20/2002	10.50%	5.30%	5.20%
12/04/2002	10.75%	5.27%	5.48%
12/30/2002	11.20%	5.19%	6.01%
01/06/2003	11.25%	5.16%	6.09%
02/28/2003	12.30%	5.01%	7.29%
03/07/2003	9.96%	4.99%	4.97%
03/12/2003	11.40%	4.97%	6.43%
03/20/2003	12.00%	4.95%	7.05%
04/03/2003	12.00%	4.92%	7.08%
05/02/2003	11.40%	4.88%	6.52%
05/15/2003	11.05%	4.87%	6.18%
06/26/2003	11.00%	4.80%	6.20%
07/01/2003	11.00%	4.80%	6.20%
07/29/2003	11.71%	4.78%	6.93%
08/22/2003	10.20%	4.81%	5.39%
09/17/2003	9.90%	4.85%	5.05%
09/25/2003	10.25%	4.85%	5.40%
10/17/2003	10.54%	4.87%	5.67%
10/22/2003	10.46%	4.87%	5.59%
10/22/2003	10.71%	4.87%	5.84%
10/30/2003	11.00%	4.88%	6.12%
10/31/2003	10.20%	4.88%	5.32%
10/31/2003	10.75%	4.88%	5.87%
11/10/2003	10.60%	4.89%	5.71%
12/09/2003	10.50%	4.93%	5.57%
12/18/2003	10.50%	4.94%	5.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
01/13/2004	10.25%	4.95%	5.30%
01/13/2004	12.00%	4.95%	7.05%
02/09/2004	11.25%	4.98%	6.27%
03/16/2004	10.90%	5.05%	5.85%
03/16/2004	10.90%	5.05%	5.85%
05/25/2004	10.00%	5.06%	4.94%
06/02/2004	11.22%	5.07%	6.15%
06/30/2004	10.50%	5.10%	5.40%
07/08/2004	10.00%	5.10%	4.90%
07/22/2004	10.25%	5.10%	5.15%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
08/26/2004	10.50%	5.10%	5.40%
08/26/2004	10.50%	5.10%	5.40%
09/09/2004	10.40%	5.10%	5.30%
09/21/2004	10.50%	5.09%	5.41%
09/27/2004	10.30%	5.09%	5.21%
09/27/2004	10.50%	5.09%	5.41%
10/20/2004	10.20%	5.08%	5.12%
11/30/2004	10.60%	5.08%	5.52%
12/08/2004	9.90%	5.09%	4.81%
12/21/2004	11.50%	5.09%	6.41%
12/22/2004	11.50%	5.09%	6.41%
12/28/2004	10.25%	5.09%	5.16%
02/18/2005	10.30%	4.95%	5.35%
03/29/2005	11.00%	4.86%	6.14%
04/13/2005	10.60%	4.84%	5.76%
04/28/2005	11.00%	4.80%	6.20%
05/17/2005	10.00%	4.77%	5.23%
06/08/2005	10.18%	4.71%	5.47%
06/10/2005	10.90%	4.71%	6.19%
07/06/2005	10.50%	4.65%	5.85%
07/19/2005	11.50%	4.63%	6.87%
08/11/2005	10.40%	4.60%	5.80%
09/19/2005	9.45%	4.53%	4.92%
09/30/2005	10.51%	4.52%	5.99%
10/04/2005	9.90%	4.52%	5.38%
10/04/2005	10.75%	4.52%	6.23%
10/14/2005	10.40%	4.52%	5.88%
10/31/2005	10.25%	4.53%	5.72%
11/02/2005	9.70%	4.53%	5.17%
11/30/2005	10.00%	4.53%	5.47%
12/09/2005	9.70%	4.53%	5.17%
12/12/2005	11.00%	4.53%	6.47%
12/20/2005	10.13%	4.53%	5.60%
12/21/2005	10.40%	4.52%	5.88%
12/21/2005	11.00%	4.52%	6.48%
12/22/2005	10.20%	4.52%	5.68%
12/22/2005	11.00%	4.52%	6.48%
12/28/2005	10.00%	4.52%	5.48%
01/05/2006	11.00%	4.52%	6.48%
01/25/2006	11.20%	4.52%	6.68%
01/25/2006	11.20%	4.52%	6.68%
02/03/2006	10.50%	4.52%	5.98%
02/15/2006	9.50%	4.53%	4.97%
04/26/2006	10.60%	4.65%	5.95%
07/24/2006	9.60%	4.87%	4.73%
07/24/2006	10.00%	4.87%	5.13%
09/20/2006	11.00%	4.93%	6.07%
09/26/2006	10.75%	4.93%	5.82%
10/20/2006	9.80%	4.96%	4.84%
11/02/2006	9.71%	4.97%	4.74%
11/09/2006	10.00%	4.97%	5.03%
11/21/2006	11.00%	4.98%	6.02%
12/05/2006	10.20%	4.97%	5.23%
01/05/2007	10.40%	4.95%	5.45%
01/09/2007	11.00%	4.94%	6.06%
01/11/2007	10.90%	4.94%	5.96%
01/19/2007	10.80%	4.93%	5.87%
01/26/2007	10.00%	4.92%	5.08%
02/08/2007	10.40%	4.91%	5.49%
03/14/2007	10.10%	4.86%	5.24%
03/20/2007	10.25%	4.84%	5.41%
03/21/2007	11.35%	4.84%	6.51%
03/22/2007	10.50%	4.84%	5.66%
03/29/2007	10.00%	4.83%	5.17%
06/13/2007	10.75%	4.81%	5.94%
06/29/2007	9.53%	4.84%	4.69%
06/29/2007	10.10%	4.84%	5.26%
07/03/2007	10.25%	4.85%	5.40%
07/13/2007	9.50%	4.86%	4.64%
07/24/2007	10.40%	4.87%	5.53%
08/01/2007	10.15%	4.88%	5.27%
08/29/2007	10.50%	4.91%	5.59%
09/10/2007	9.71%	4.91%	4.80%
09/19/2007	10.00%	4.91%	5.09%
09/25/2007	9.70%	4.92%	4.78%
10/08/2007	10.48%	4.92%	5.56%
10/19/2007	10.50%	4.91%	5.59%
10/25/2007	9.65%	4.91%	4.74%
11/15/2007	10.00%	4.89%	5.11%
11/20/2007	9.90%	4.89%	5.01%
11/27/2007	10.00%	4.88%	5.12%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/29/2007	10.90%	4.88%	6.02%
12/14/2007	10.80%	4.87%	5.93%
12/18/2007	10.40%	4.86%	5.54%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	9.80%	4.86%	4.94%
12/19/2007	10.20%	4.86%	5.34%
12/21/2007	9.10%	4.86%	4.24%
01/08/2008	10.75%	4.83%	5.92%
01/17/2008	10.75%	4.81%	5.94%
01/17/2008	10.75%	4.81%	5.94%
02/05/2008	9.99%	4.78%	5.21%
02/05/2008	10.19%	4.78%	5.41%
02/13/2008	10.20%	4.76%	5.44%
03/31/2008	10.00%	4.63%	5.37%
05/28/2008	10.50%	4.53%	5.97%
06/24/2008	10.00%	4.52%	5.48%
06/27/2008	10.00%	4.52%	5.48%
07/31/2008	10.70%	4.50%	6.20%
07/31/2008	10.82%	4.50%	6.32%
08/27/2008	10.25%	4.50%	5.75%
09/02/2008	10.25%	4.50%	5.75%
09/19/2008	10.70%	4.48%	6.22%
09/24/2008	10.68%	4.48%	6.20%
09/24/2008	10.68%	4.48%	6.20%
09/24/2008	10.68%	4.48%	6.20%
09/30/2008	10.20%	4.48%	5.72%
10/03/2008	10.30%	4.48%	5.82%
10/08/2008	10.15%	4.47%	5.68%
10/20/2008	10.06%	4.47%	5.59%
10/24/2008	10.60%	4.46%	6.14%
10/24/2008	10.60%	4.46%	6.14%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/21/2008	10.50%	4.42%	6.08%
11/24/2008	10.50%	4.41%	6.09%
12/03/2008	10.39%	4.37%	6.02%
12/24/2008	10.00%	4.26%	5.74%
12/26/2008	10.10%	4.24%	5.86%
12/29/2008	10.20%	4.23%	5.97%
01/13/2009	10.45%	4.14%	6.31%
02/02/2009	10.05%	4.04%	6.01%
03/09/2009	10.30%	3.89%	6.41%
03/25/2009	10.17%	3.84%	6.33%
04/02/2009	10.75%	3.81%	6.94%
05/05/2009	10.75%	3.71%	7.04%
05/15/2009	10.20%	3.70%	6.50%
05/29/2009	9.54%	3.70%	5.84%
06/03/2009	10.10%	3.71%	6.39%
06/22/2009	10.00%	3.73%	6.27%
06/29/2009	10.21%	3.74%	6.47%
06/30/2009	9.31%	3.74%	5.57%
07/17/2009	9.26%	3.75%	5.51%
07/17/2009	10.50%	3.75%	6.75%
10/16/2009	10.40%	4.09%	6.31%
10/26/2009	10.10%	4.11%	5.99%
10/28/2009	10.15%	4.12%	6.03%
10/28/2009	10.15%	4.12%	6.03%
10/30/2009	9.95%	4.12%	5.83%
11/20/2009	9.45%	4.18%	5.27%
12/14/2009	10.50%	4.24%	6.26%
12/16/2009	10.75%	4.25%	6.50%
12/17/2009	10.30%	4.26%	6.04%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.40%	4.26%	6.14%
12/18/2009	10.50%	4.26%	6.24%
12/22/2009	10.20%	4.27%	5.93%
12/22/2009	10.40%	4.27%	6.13%
12/28/2009	10.85%	4.29%	6.56%
12/29/2009	10.38%	4.30%	6.08%
01/11/2010	10.24%	4.34%	5.90%
01/21/2010	10.23%	4.37%	5.86%
01/21/2010	10.33%	4.37%	5.96%
01/26/2010	10.40%	4.37%	6.03%
02/10/2010	10.00%	4.39%	5.61%
02/23/2010	10.50%	4.40%	6.10%
03/09/2010	9.60%	4.40%	5.20%
03/24/2010	10.13%	4.42%	5.71%
03/31/2010	10.70%	4.43%	6.27%
04/01/2010	9.50%	4.43%	5.07%
04/02/2010	10.10%	4.44%	5.66%
04/08/2010	10.35%	4.44%	5.91%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
04/29/2010	9.19%	4.46%	4.73%
04/29/2010	9.40%	4.46%	4.94%
04/29/2010	9.40%	4.46%	4.94%
05/17/2010	10.55%	4.46%	6.09%
05/24/2010	10.05%	4.46%	5.59%
06/03/2010	11.00%	4.46%	6.54%
06/16/2010	10.00%	4.46%	5.54%
06/18/2010	10.30%	4.46%	5.84%
08/09/2010	12.55%	4.41%	8.14%
08/17/2010	10.10%	4.40%	5.70%
09/16/2010	9.60%	4.31%	5.29%
09/16/2010	10.00%	4.31%	5.69%
09/16/2010	10.00%	4.31%	5.69%
09/16/2010	10.30%	4.31%	5.99%
10/21/2010	10.40%	4.20%	6.20%
11/02/2010	9.75%	4.17%	5.58%
11/02/2010	9.75%	4.17%	5.58%
11/03/2010	10.75%	4.17%	6.58%
11/19/2010	10.20%	4.15%	6.05%
12/01/2010	10.00%	4.13%	5.87%
12/06/2010	9.56%	4.12%	5.44%
12/06/2010	10.09%	4.12%	5.97%
12/09/2010	10.25%	4.12%	6.13%
12/14/2010	10.33%	4.11%	6.22%
12/17/2010	10.10%	4.11%	5.99%
12/20/2010	10.10%	4.11%	5.99%
12/23/2010	9.92%	4.10%	5.82%
01/06/2011	10.35%	4.09%	6.26%
01/12/2011	10.30%	4.09%	6.21%
01/13/2011	10.30%	4.09%	6.21%
03/10/2011	10.10%	4.16%	5.94%
03/31/2011	9.45%	4.20%	5.25%
04/18/2011	10.05%	4.23%	5.82%
05/26/2011	10.50%	4.32%	6.18%
06/21/2011	10.00%	4.36%	5.64%
06/29/2011	8.83%	4.38%	4.45%
08/01/2011	9.20%	4.41%	4.79%
09/01/2011	10.10%	4.33%	5.77%
11/14/2011	9.60%	3.93%	5.67%
12/13/2011	9.50%	3.76%	5.74%
12/20/2011	10.00%	3.72%	6.28%
12/22/2011	10.40%	3.70%	6.70%
01/10/2012	9.06%	3.59%	5.47%
01/10/2012	9.45%	3.59%	5.86%
01/10/2012	9.45%	3.59%	5.86%
01/23/2012	10.20%	3.53%	6.67%
01/31/2012	10.00%	3.49%	6.51%
04/24/2012	9.50%	3.16%	6.34%
04/24/2012	9.75%	3.16%	6.59%
05/07/2012	9.80%	3.13%	6.67%
05/22/2012	9.60%	3.10%	6.50%
05/24/2012	9.70%	3.09%	6.61%
06/07/2012	10.30%	3.06%	7.24%
06/15/2012	10.40%	3.05%	7.35%
06/18/2012	9.60%	3.05%	6.55%
07/02/2012	9.75%	3.04%	6.71%
10/24/2012	10.30%	2.92%	7.38%
10/26/2012	9.50%	2.92%	6.58%
10/31/2012	9.30%	2.92%	6.38%
10/31/2012	9.90%	2.92%	6.98%
10/31/2012	10.00%	2.92%	7.08%
11/01/2012	9.45%	2.91%	6.54%
11/08/2012	10.10%	2.91%	7.19%
11/09/2012	10.30%	2.90%	7.40%
11/26/2012	10.00%	2.89%	7.11%
11/28/2012	10.40%	2.88%	7.52%
11/28/2012	10.50%	2.88%	7.62%
12/04/2012	10.00%	2.87%	7.13%
12/04/2012	10.50%	2.87%	7.63%
12/20/2012	9.50%	2.84%	6.66%
12/20/2012	10.10%	2.84%	7.26%
12/20/2012	10.25%	2.84%	7.41%
12/20/2012	10.30%	2.84%	7.46%
12/20/2012	10.40%	2.84%	7.56%
12/20/2012	10.50%	2.84%	7.66%
12/26/2012	9.80%	2.83%	6.97%
02/22/2013	9.60%	2.86%	6.74%
03/14/2013	9.30%	2.89%	6.41%
03/27/2013	9.80%	2.92%	6.88%
04/23/2013	9.80%	2.96%	6.84%
05/10/2013	9.25%	2.96%	6.29%



Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
06/13/2013	9.40%	3.01%	6.39%
06/18/2013	9.28%	3.02%	6.26%
06/18/2013	9.28%	3.02%	6.26%
06/25/2013	9.80%	3.04%	6.76%
09/23/2013	9.60%	3.33%	6.27%
11/06/2013	10.20%	3.42%	6.78%
11/13/2013	9.84%	3.44%	6.40%
11/14/2013	10.25%	3.44%	6.81%
11/22/2013	9.50%	3.47%	6.03%
12/05/2013	10.20%	3.50%	6.70%
12/13/2013	9.60%	3.52%	6.08%
12/16/2013	9.73%	3.53%	6.20%
12/17/2013	10.00%	3.53%	6.47%
12/18/2013	9.08%	3.53%	5.55%
12/23/2013	9.72%	3.55%	6.17%
12/30/2013	10.00%	3.57%	6.43%
01/21/2014	9.65%	3.66%	5.99%
01/22/2014	9.18%	3.66%	5.52%
02/20/2014	9.30%	3.71%	5.59%
02/21/2014	9.85%	3.72%	6.13%
02/28/2014	9.55%	3.73%	5.82%
03/16/2014	9.72%	3.74%	5.98%
04/21/2014	9.50%	3.73%	5.77%
04/22/2014	9.80%	3.73%	6.07%
05/08/2014	9.10%	3.71%	5.39%
05/08/2014	9.59%	3.71%	5.88%
06/06/2014	10.40%	3.66%	6.74%
06/12/2014	10.10%	3.66%	6.44%
06/12/2014	10.10%	3.66%	6.44%
06/12/2014	10.10%	3.66%	6.44%
07/07/2014	9.30%	3.63%	5.67%
07/25/2014	9.30%	3.60%	5.70%
07/31/2014	9.90%	3.59%	6.31%
09/04/2014	9.10%	3.50%	5.60%
09/24/2014	9.35%	3.46%	5.89%
09/30/2014	9.75%	3.44%	6.31%
10/29/2014	10.80%	3.37%	7.43%
11/06/2014	10.20%	3.35%	6.85%
11/14/2014	10.20%	3.33%	6.87%
11/14/2014	10.30%	3.33%	6.97%
11/26/2014	10.20%	3.30%	6.90%
12/03/2014	10.00%	3.29%	6.71%
01/13/2015	10.30%	3.16%	7.14%
01/21/2015	9.05%	3.13%	5.92%
01/21/2015	9.05%	3.13%	5.92%
04/09/2015	9.50%	2.88%	6.62%
05/11/2015	9.80%	2.82%	6.98%
06/17/2015	9.00%	2.79%	6.21%
08/21/2015	9.75%	2.78%	6.97%
10/07/2015	9.55%	2.82%	6.73%
10/13/2015	9.75%	2.83%	6.92%
10/15/2015	9.00%	2.84%	6.16%
10/30/2015	9.80%	2.87%	6.93%
11/19/2015	10.00%	2.89%	7.11%
12/03/2015	10.00%	2.91%	7.09%
12/09/2015	9.60%	2.92%	6.68%
12/11/2015	9.90%	2.92%	6.98%
12/18/2015	9.50%	2.94%	6.56%
01/06/2016	9.50%	2.97%	6.53%
01/06/2016	9.50%	2.97%	6.53%
01/28/2016	9.40%	2.97%	6.43%
02/10/2016	9.60%	2.95%	6.65%
02/16/2016	9.50%	2.94%	6.56%
02/29/2016	9.40%	2.92%	6.48%
04/29/2016	9.80%	2.83%	6.97%
05/05/2016	9.49%	2.82%	6.67%
06/01/2016	9.55%	2.80%	6.75%
06/03/2016	9.65%	2.79%	6.86%
06/15/2016	9.00%	2.77%	6.23%
06/15/2016	9.00%	2.77%	6.23%
09/02/2016	9.50%	2.56%	6.94%
09/23/2016	9.75%	2.52%	7.23%
09/27/2016	9.50%	2.51%	6.99%
09/29/2016	9.11%	2.50%	6.61%
10/13/2016	10.20%	2.48%	7.72%
10/28/2016	9.70%	2.47%	7.23%
11/09/2016	9.80%	2.47%	7.33%
11/18/2016	10.00%	2.49%	7.51%
12/09/2016	10.10%	2.51%	7.59%
12/15/2016	9.00%	2.53%	6.47%
12/15/2016	9.00%	2.53%	6.47%

Date of Natural Gas Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/20/2016	9.75%	2.53%	7.22%
12/22/2016	9.50%	2.54%	6.96%
01/24/2017	9.00%	2.59%	6.41%
02/21/2017	10.55%	2.63%	7.92%
03/01/2017	9.25%	2.65%	6.60%
04/11/2017	9.50%	2.77%	6.73%
04/20/2017	8.70%	2.79%	5.91%
04/28/2017	9.50%	2.81%	6.69%
05/23/2017	9.60%	2.88%	6.72%
06/06/2017	9.70%	2.91%	6.79%
06/22/2017	9.70%	2.93%	6.77%
06/30/2017	9.60%	2.94%	6.66%
07/20/2017	9.55%	2.97%	6.58%
07/31/2017	10.10%	2.98%	7.12%
09/13/2017	9.40%	2.93%	6.47%
09/19/2017	9.70%	2.92%	6.78%
09/22/2017	11.88%	2.92%	8.96%
09/27/2017	10.20%	2.92%	7.28%
10/20/2017	9.60%	2.90%	6.70%
10/26/2017	10.20%	2.90%	7.30%
10/30/2017	10.05%	2.90%	7.15%
12/05/2017	9.50%	2.86%	6.64%
12/07/2017	9.80%	2.86%	6.94%
12/13/2017	9.25%	2.85%	6.40%
12/28/2017	9.50%	2.84%	6.66%
01/31/2018	9.80%	2.83%	6.97%
02/21/2018	9.80%	2.84%	6.96%
02/21/2018	9.80%	2.84%	6.96%
02/28/2018	9.50%	2.85%	6.65%
03/15/2018	9.00%	2.87%	6.13%
03/26/2018	10.19%	2.88%	7.31%
04/26/2018	9.50%	2.91%	6.59%
04/27/2018	9.30%	2.91%	6.39%
05/02/2018	9.50%	2.91%	6.59%
05/03/2018	9.70%	2.91%	6.79%
05/29/2018	9.40%	2.95%	6.45%
06/06/2018	9.80%	2.96%	6.84%
06/14/2018	8.80%	2.97%	5.83%
07/16/2018	9.60%	2.98%	6.62%
07/20/2018	9.40%	2.99%	6.41%
08/24/2018	9.28%	3.02%	6.26%
08/28/2018	10.00%	3.03%	6.97%
09/13/2018	10.00%	3.04%	6.96%
09/14/2018	10.00%	3.05%	6.95%
09/19/2018	9.85%	3.05%	6.80%
09/20/2018	9.80%	3.05%	6.75%
09/26/2018	9.40%	3.06%	6.34%
09/26/2018	10.20%	3.06%	7.14%
09/28/2018	9.50%	3.07%	6.43%
09/28/2018	9.50%	3.07%	6.43%
10/05/2018	9.61%	3.08%	6.53%
10/15/2018	9.80%	3.09%	6.71%
10/26/2018	9.40%	3.11%	6.29%
10/29/2018	9.60%	3.11%	6.49%
11/01/2018	9.87%	3.11%	6.76%
11/08/2018	9.70%	3.12%	6.58%
11/08/2018	9.70%	3.12%	6.58%
12/11/2018	9.70%	3.14%	6.56%
12/12/2018	9.30%	3.14%	6.16%
12/13/2018	9.60%	3.14%	6.46%
12/19/2018	9.30%	3.14%	6.16%
12/21/2018	9.35%	3.14%	6.21%
12/24/2018	9.25%	3.14%	6.11%
12/24/2018	9.25%	3.14%	6.11%
01/04/2019	9.80%	3.14%	6.66%
01/18/2019	9.70%	3.14%	6.56%
03/14/2019	9.00%	3.12%	5.88%
03/27/2019	9.70%	3.12%	6.58%

# of Cases: 1,118  
Average: 4.70%

Earnings Per Share Projected Growth Rates as of June 30, 2017

Company	Ticker	Zacks EPS Growth	First Call EPS Growth	Value Line EPS Growth	
Atmos Energy Corporation	ATO	7.00%	7.00%	6.00%	
Spire Inc	SR	4.40%	4.21%	8.00%	
Northwest Natural Gas Company	NWN	4.30%	4.50%	7.00%	
ONE Gas, Inc.	OGS	5.50%	5.50%	9.50%	[1]
Southwest Gas Corporation	SWX	5.00%	4.00%	7.50%	
Mean		5.24%	5.04%	7.60%	
Median		5.00%	4.50%	7.50%	

Earnings Per Share Projected Growth Rates as of March 31, 2019

Company	Ticker	Zacks EPS Growth	First Call EPS Growth	Value Line EPS Growth
Atmos Energy Corporation	ATO	6.50%	6.40%	7.50%
Spire Inc	SR	3.90%	2.42%	5.50%
Northwest Natural Gas Company	NWN	4.30%	4.00%	25.50%
ONE Gas, Inc.	OGS	5.90%	5.00%	9.00%
Southwest Gas Corporation	SWX	6.20%	6.30%	8.50%
Mean		5.36%	4.82%	11.20%
Median		5.90%	5.00%	8.50%

Difference

Company	Ticker	Zacks EPS Growth	First Call EPS Growth	Value Line EPS Growth
Atmos Energy Corporation	ATO	-0.50%	-0.60%	1.50%
Spire Inc	SR	-0.50%	-1.79%	-2.50%
Northwest Natural Gas Company	NWN	0.00%	-0.50%	18.50%
ONE Gas, Inc.	OGS	0.40%	-0.50%	-0.50%
Southwest Gas Corporation	SWX	1.20%	2.30%	1.00%
Mean		0.12%	-0.22%	3.60%
Median		0.00%	-0.50%	1.00%

Notes

[1] Mr. Hevert did not track the growth rates for OGS as of June 30, 2017. The growth rates presented are as of August, 13, 2017.