BEFORE THE STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF DUKE ENERGY INDIANA, LLC PURSUANT TO IND. CODE §§ 8-1-2-42.7 AND 8-1-2-61, FOR (1) AUTHORITY TO MODIFY ITS RATES AND CHARGES FOR ELECTRIC UTILITY SERVICE THROUGH A STEP-IN OF NEW RATES AND CHARGES USING A FORECASTED TEST PERIOD; (2) APPROVAL OF NEW SCHEDULES OF RATES AND CHARGES, GENERAL RULES AND REGULATIONS, AND RIDERS; (3) APPROVAL OF A FEDERAL MANDATE CERTIFICATE UNDER IND. CODE § 8-1-8.4-1; (4) APPROVAL OF REVISED ELECTRIC DEPRECIATION RATES APPLICABLE TO ITS ELECTRIC PLANT IN SERVICE; (5) APPROVAL OF NECESSARY AND APPROPRIATE ACCOUNTING DEFERRAL RELIEF; AND (6) APPROVAL OF A REVENUE DECOUPLING MECHANISM FOR CERTAIN CUSTOMER CLASSES	)	**CAUSE NO. 45253**

VERIFIED DIRECT TESTIMONY
OF
ROBERT B. HEVERT

On Behalf of Petitioner,
DUKE ENERGY INDIANA, LLC

Petitioner's Exhibit 11

July 2, 2019

TABLE OF CONTENTS

Glossary of Frequently Used Terms

TERM	DESCRIPTION
Beta Coefficient	A component of the CAPM that measures the risk of a given stock relative to the risk of the overall market.
Bond Yield Plus Risk Premium Approach	A risk premium model used to estimate the Cost of Equity. The Bond Yield Plus Risk Premium approach assumes that investors require a risk premium over the cost of debt as compensation for assuming the greater risk of common equity investment.
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 ROE 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 sometimes 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.
Empirical Capital Asset Pricing Model ("ECAPM")	Empirical CAPM is a variant of the CAPM model. ECAPM adjusts for the CAPM's tendency to under-estimate returns for companies that have Beta coefficients less than one, and over-estimate returns for relatively high-Beta coefficient stocks
Flotation Costs	Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing,

TERM	DESCRIPTION
	underwriting and other issuance costs of common stock.
Gross Domestic Product ("GDP")	The value of all finished goods and services produced within a country during a given period of time (usually measured annually). GDP includes public and private consumption, government expenditures, investments, and exports less imports.
Market Return	The expected return on the equity market, taken as a portfolio.
Market Risk Premium	The additional compensation required by investing in the equity market as a portfolio over the Risk-Free rate. The Market Risk Premium is a component of the CAPM.
Proxy Group	A group of publicly traded companies used as the "proxy" for the subject company (in this case, Duke Energy Indiana). Proxy companies are sometimes referred to as "Comparable Companies".
Quantitative Easing	Quantitative Easing is a monetary policy in which the central bank purchases government securities or other securities from the market to increase the money supply and encourage lending and investment.
Return on Equity ("ROE")	The return required by investors to invest in equity securities. The terms "Return on Equity" and "Cost of Equity" are sometimes used interchangeably.
Risk-Free Rate	The rate of return on an asset with no default risk.
Risk Premium	The additional compensation required by investors for taking on additional increments of risk. Risk Premium-based approaches are used in addition to the DCF and CAPM to estimate the Cost of Equity.
Treasury Yield	The return on Treasury securities; the yield on long-term Treasury bonds is considered to be a measure of the Risk-Free Rate.
Vertically Integrated Utilities	Electric utilities that own and operate distribution, transmission and generation assets.

I. INTRODUCTION AND PURPOSE

Q. PLEASE STATE YOUR NAME, AFFILIATION AND BUSINESS ADDRESS.

A. My name is Robert B. Hevert. I am a Partner of ScottMadden, Inc. ("ScottMadden"). My business address is 1900 West Park Drive, Suite 250, Westborough, Massachusetts, 01581.

Q. ON WHOSE BEHALF ARE YOU SUBMITTING THIS TESTIMONY?

A. I am submitting this direct testimony ("Direct Testimony") before the Indiana Utility Regulatory Commission ("Commission") on behalf of Duke Energy Indiana, LLC. ("Duke Energy Indiana" or the "Company").

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Bachelor's degree in Business and Economics from the University of Delaware, and an MBA with a concentration in Finance from the University of Massachusetts. I also hold the Chartered Financial Analyst designation.

Q. PLEASE DESCRIBE YOUR EXPERIENCE IN THE ENERGY AND UTILITY INDUSTRIES.

A. I have worked in regulated industries for nearly thirty years, having served as an executive and manager with consulting firms, a financial officer of a publicly traded natural gas utility, and an analyst at a telecommunications utility. In my role as a consultant, I have advised numerous energy and utility clients on a wide range of financial and economic issues including corporate and asset-based transactions, asset and enterprise valuation, transaction due diligence, dividend policy, and strategic matters. As an expert witness, I have provided

testimony in over 250 proceedings regarding various financial and regulatory matters before numerous state utility regulatory agencies (including this Commission), the Federal Energy Regulatory Commission ("FERC"), the Alberta Utilities Commission, and United States Federal Court. A summary of my professional and educational background, including a list of my testimony in prior proceedings, is included in Petitioner's Exhibit 11-A.

Q. WHAT IS THE PURPOSE OF YOUR DIRECT TESTIMONY?

A. The purpose of my Direct Testimony is to present evidence and provide the Commission with a recommendation regarding the Company's return on equity ("ROE") and a fair value rate of return for the Company.[1]

II. SUMMARY OF KEY CONCLUSIONS

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE APPROPRIATE COST OF EQUITY FOR THE COMPANY?

A. Based on the quantitative and qualitative analyses discussed throughout my Direct Testimony, and considering the Commission's orders in prior rate proceedings, I believe an ROE in the range of 10.00 percent to 11.00 percent represents the range of equity investors' required ROE for investment in electric utilities like Duke Energy Indiana in the current capital market environment. Within that range, I believe an ROE of 10.40 percent is reasonable and appropriate. As described in greater detail later in my testimony, that recommendation is based on the use of several widely accepted methods,

[1] Throughout my testimony, I interchangeably use the terms "ROE" and "Cost of Equity."

reflects the results of several analyses regarding the effect of Duke Energy Indiana's business risks on its Cost of Equity, and reflects the Commission's practice of considering the return associated with the Fair Value Rate Base.

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE ANALYSIS THAT LED TO YOUR ROE DETERMINATION.

A. Because all financial models are subject to various assumptions and constraints, equity analysts and investors tend to use multiple methods to develop their return requirements. I therefore relied on three widely accepted approaches to develop my ROE determination: (1) the Constant Growth and Multi-Stage forms of the Discounted Cash Flow ("DCF") model; (2) the traditional and Empirical forms of the Capital Asset Pricing Model ("CAPM"); and (3) the Bond Yield Plus Risk Premium approach. Those analyses indicate the Company's Cost of Equity currently to be in the range of 10.00 percent to 11.00 percent. That range is corroborated by the Expected Earnings approach which, as I discuss later in my Direct Testimony, is supported by recent FERC Orders.

In addition to the methods noted above, I considered: (1) the risks associated with certain aspects of the Company's generation portfolio; (2) the Company's wholesale power operations; (3) the Company's rate mechanisms, including its Transmission, Distribution and Storage System Improvement Charge ("TDSIC") and proposed Revenue Decoupling Mechanism ("RDM"); and (4) the Company's capital expenditure plan. In addition to the methods noted above, I calculated the costs of issuing common stock (that is, "flotation" costs), and considered evolving capital market and business conditions,

including changes in Federal Reserve monetary policy and increases in current and projected government bond yields. Although those factors are very relevant to investors, their effect on the Company's Cost of Equity cannot be directly quantified. Therefore, although I did not make explicit adjustments to my ROE estimates, I considered those factors in determining where the Company's Cost of Equity falls within the range of analytical results. In light of those analyses, I believe that my recommended range is reasonable and appropriate.

My analyses recognize that estimating the Cost of Equity is an empirical, but not entirely mathematical exercise; it relies on both quantitative and qualitative data and analyses, all of which are used to inform the judgment that inevitably must be applied. No single model is more reliable than all others under all market conditions, and all require the use of reasoned judgment in their application, and in interpreting their results. Therefore, the results of each ROE model must be assessed in the context of current and expected capital market conditions, and relative to other appropriate benchmarks.

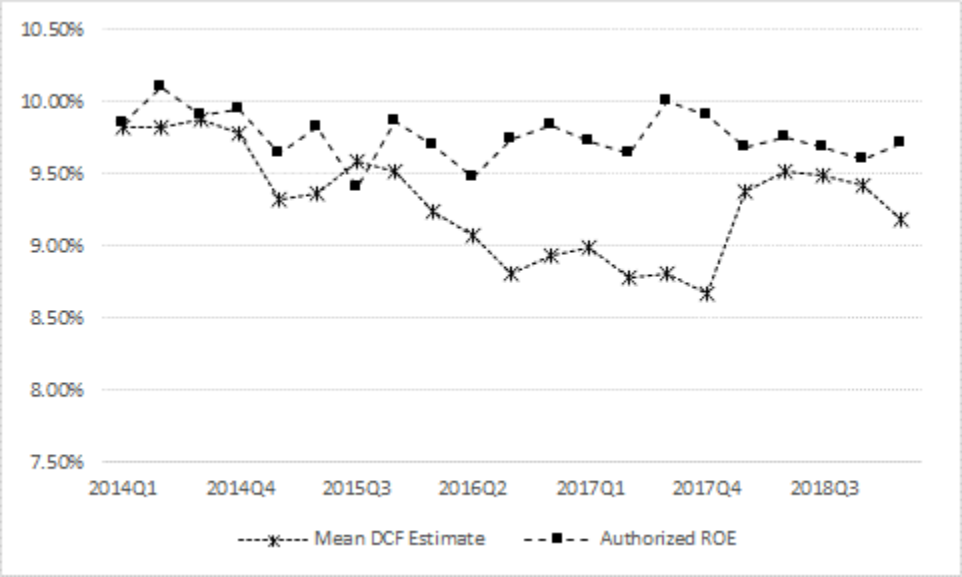
In developing my recommendation, I recognized that the low and high ends of the range of results (set by the low end of the range of Constant Growth DCF model results, and the high end of the range of Empirical CAPM results, respectively) are not likely to be reasonable estimates of the Company's Cost of Equity. In large measure, that is the case because those results are far removed from the returns recently authorized in other jurisdictions and, in the case of DCF-based methods, fail to adequately reflect evolving capital market conditions. Because Risk Premium-based methods directly reflect measures of

capital market risk, they are more likely than other approaches (such as the Constant Growth DCF method) to provide reliable estimates of the Cost of Equity during periods of market instability.

Q. WHAT IS THE BASIS OF YOUR VIEW THAT THE CONSTANT GROWTH DCF METHOD RECENTLY HAS FAILED TO PROVIDE RELIABLE ROE ESTIMATES?

A. Since 2014, the model has produced results (i.e., mean results) consistently and meaningfully below authorized returns (see Chart 1, below). That data suggests state regulatory commissions have recognized the model's results are not necessarily reliable estimates of the Cost of Equity, and that other methods should be given meaningful weight in determining the ROE.

Chart 1: Mean DCF Results vs. Authorized ROE Over Time[2]



For example, in Baltimore Gas and Electric Company's 2016 rate case, the Maryland Public Service Commission discussed the importance of considering multiple analytical methods, given the complexity of determining the investor-required ROE:

> The ROE witnesses used various analyses to estimate the appropriate return on equity […] including the DCF model, the IRR/DCF, the traditional CAPM, the ECAPM, and risk premium methodologies. Although the witnesses argued strongly over the correctness of their competing analyses, we are not willing to rule that there can be only one correct method for calculating an ROE. Neither will we eliminate any particular methodology as unworthy of basing a decision. The subject is far too complex to reduce to a single mathematical formula. That conclusion is made apparent, in practice, by the fact that the expert witnesses used discretion to eliminate outlier returns that they testified were too high or too low to be considered reasonable, even when using their own preferred methodologies.[3]

---

[2] DCF results based on quarterly average stock prices, Earnings Per Share growth rates from Value Line, Zacks, and First Call; assumes my proxy group. Authorized ROEs are quarterly averages for vertically integrated electric utilities; source: S&P Global Market Intelligence. Please note that 2016 Q2 and 2017 Q3 included only one ROE decision.

[3] *In the matter of the application of Baltimore Gas and Electric Company for adjustments to its electric and gas base rates, Public Service Commission of Maryland*, Case No. 9406, Order No. 87591, at 153. Citations omitted.

Similarly, the FERC recently addressed its longstanding focus on the DCF method. In its November 15, 2018 *Order Directing Briefs*, FERC found that "in light of current investor behavior and capital market conditions, relying on the DCF methodology alone will not produce a just and reasonable ROE."[4] In its October 16, 2018 *Order Directing Briefs*, FERC found that although it "previously relied solely on the DCF model to produce the evidentiary zone of reasonableness…", it is "…concerned that relying on that methodology alone will not produce just and reasonable results."[5] As FERC explained, it is important to understand "how investors analyze and compare their investment opportunities."[6] FERC also explained that, although certain investors may give some weight to the DCF approach, other investors "place greater weight on one or more of the other methods…"[7] Those methods include the CAPM and the Risk Premium method, which I have applied in this proceeding.

Since the FERC issued its *Orders Directing Briefs*, the South Carolina Public Service Commission came to a similar finding, explaining that "it is appropriate and reasonable to consider a range of estimates under various methodologies in order to more accurately estimate [South Carolina Electric & Gas's] cost of equity", and relying on a single analytical method is "inconsistent

[4] Docket Nos. EL14-12-003 and EL15-45-000, *Order Directing Briefs*, 165 FERC ¶ 61,118 (November 15, 2018) at para. 34.
[5] Docket No. EL11-66-001, *et al*., *Order Directing Briefs* 165 FERC ¶ 61,030 (October 16, 2018) at para. 30.
[6] *Ibid*., at para. 33.
[7] *Ibid*., at para. 35. *See,* also, Docket No. PL19-4-000, *Inquiry Regarding the Commission's Policy for Determining Return on Equity*, March 21, 2019.

with decisions reached by regulatory commissions over the past several years and departs from the normal practice of estimating the Cost of Equity for utilities."[8]

As another example, in its July 2017 *Order Accepting Stipulation* in which it authorized a 9.90 percent ROE for Duke Energy Carolinas, the North Carolina Utilities Commission noted it "carefully evaluated the DCF analysis recommendations" of the ROE witnesses (which ranged from 8.45 percent to 8.80 percent) and determined that "all of these DCF analyses in the current market produce unrealistically low results."[9]

Q. ARE THERE ASPECTS OF THE CONSTANT GROWTH DCF MODEL THAT MAY EXPLAIN WHY REGULATORY COMMISSIONS CURRENTLY DO NOT RELY PRINCIPALLY ON IT WHEN DETERMINING THE COST OF EQUITY?

A. Yes. Quite simply, the model's underlying structure and assumptions are not compatible with the recent capital market and economic environment. That can most easily be seen by recognizing that the model's fundamental structure requires the assumption of constancy in perpetuity. It assumes there will be no change in growth rates, dividend payout ratios, Price/Earnings ("P/E") ratios, Market/Book ratios, or in the economic and market conditions that support

[8] Public Service Commission of South Carolina, Docket Nos. 2017-207-E, 2017-305-E, and 2017-370-E, Order No. 2018-804, Order Addressing South Carolina Electric & Gas Nuclear Dockets, at 89-90. [clarification added]

[9] State of North Carolina Utilities Commission, Docket No. E-7, Sub 1146, *In the Matter of Application of Duke Energy Carolinas, LLC, for Adjustment of Rates and Charges Applicable to Electric Utility Service in North Carolina*, Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction, July 25, 2017, at 62.

those variables. Equally important, the model assumes the Cost of Equity estimated today will remain unchanged, also in perpetuity. That is, the model requires that the Cost of Equity estimate produced today will be the same forward-looking return equity investors will require every day in the future, in perpetuity.

A concern, of course, is that federal monetary policy has had a significant, intentional effect on capital markets, dampening both interest rates and volatility. At issue is whether we reasonably can assume the market conditions created by those policies will stay in place over the long run. For example, we know that the Federal Reserve is continuing to "normalize" its monetary policy such that the conditions supporting current ROE estimates will not persist in the long-run.[10] Regardless of its eventual disposition, neither the Federal Reserve's unconventional monetary policy initiatives, nor the capital market conditions they supported, will remain in place in perpetuity, as the Constant Growth DCF model requires. On that basis alone, we should be cautious about the weight given the DCF method.

The model also assumes investors use its fundamental structure to find the "intrinsic" value of stock; that is, the price they are willing to pay.[11] In practice, investors also consider relative valuation multiples – Price/Earnings,

[10] I understand that the Federal Reserve recently announced it intends to slow the reduction of its holdings of Treasury securities beginning in May 2019 and conclude the reduction of its aggregate securities holdings in September 2019. *See, Federal Reserve Press Release,* Balance Sheet Normalization Principles and Plans, March 20, 2019.

[11] *See,* Equations [5] and [6], in Appendix A below. *See also*, https://finance.zacks.com/difference-between-market-value-intrinsic-value-2991.html

Market/Book, Enterprise Value/EBITDA[12] – in their buying and selling decisions. They do so because no single financial model produces the most accurate measure of fundamental value, or the most reliable estimate of the Cost of Equity, at all times.

Q. IS IT YOUR VIEW THAT THE DCF MODEL SHOULD BE GIVEN NO WEIGHT IN DETERMINING THE COMPANY'S COST OF EQUITY?

A. No, it is not. It is my view, however, that we should carefully consider the range of results the model produces in arriving at ROE recommendations. As discussed later in my Direct Testimony, doing so fully supports my ROE range and recommendation.

Q. PLEASE SUMMARIZE THE RESULTS OF THE ANALYSES, AND HOW THEY CONTRIBUTED TO YOUR ROE RECOMMENDATION.

A. The range of results produced by the three primary approaches noted above are summarized in Tables 1a and 1b, below.

Table 1a: Summary of Discounted Cash Flow Model Results[13]

	Mean	Mean High
30-Day Average	8.93%	9.79%
90-Day Average	8.99%	9.86%
180-Day Average	9.12%	9.99%

[12] Earnings Before Interest, Taxes, Depreciation, and Amortization.
[13] *See also,* Petitioner's Exhibit 11-B, which includes the Mean Low estimates.

Table 1b: Summary of Risk Premium Results

CAPM	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.85%)	8.09%	8.59%
Near Term Projected 30-Year Treasury (3.03%)	8.27%	8.77%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.85%)	9.32%	9.93%
Near Term Projected 30-Year Treasury (3.03%)	9.50%	10.11%
Empirical CAPM	**Bloomberg Derived Market Risk Premium**	**Value Line Derived Market Risk Premium**
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.85%)	9.53%	10.17%
Near Term Projected 30-Year Treasury (3.03%)	9.71%	10.35%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.85%)	10.45%	11.17%
Near Term Projected 30-Year Treasury (3.03%)	10.63%	11.35%
Bond Yield Plus Risk Premium Approach		
Current 30-Year Treasury (2.85%)	9.91%	
Near Term Projected 30-Year Treasury (3.03%)	9.92%	
Long-Term Projected 30-Year Treasury (3.70%)	10.06%	

Based on those estimates, it is my view that a reasonable range of estimates is from 10.00 percent to 11.00 percent, and within that range, an ROE of 10.40 percent is reasonable and appropriate. That range is supported by the Expected Earnings approach, which results in an average ROE estimate of 10.50 percent and a median ROE estimate of 10.53 percent.

Q. HOW IS THE REMAINDER OF YOUR DIRECT TESTIMONY ORGANIZED?

A. The remainder of my Direct Testimony is organized as follows:

- Section III – Discusses the Cost of Equity analyses;
- Section IV – Provides a discussion of specific business risk and other considerations that have a direct bearing on Duke Energy Indiana's Cost of Equity;
- Section V – Discusses the effect of the current capital market environment on the Cost of Equity;
- Section VI – Discusses the Fair Value Rate of Return;
- Section VII – Summarizes my conclusions and recommendations; and
- Appendix A – Provides the technical details of my analytical approaches.

III. COST OF EQUITY ESTIMATION

Regulatory Guidelines and Financial Considerations

Q. BEFORE ADDRESSING THE SPECIFIC ASPECTS OF THIS PROCEEDING, PLEASE PROVIDE AN OVERVIEW OF THE ISSUES SURROUNDING THE COST OF EQUITY IN REGULATORY PROCEEDINGS, GENERALLY.

A. In general terms, the Cost of Equity is the return that investors require to make an equity investment in a firm. That is, investors will provide funds to a firm only if the return that they *expect* is equal to, or greater than, the return that they *require* to accept the risk of providing funds to the firm. From the firm's perspective, that required return, whether it is provided to debt or equity

investors, has a cost. Individually, we speak of the "Cost of Debt" and the "Cost of Equity" as measures of those costs; together, they are referred to as the "Cost of Capital."

The Cost of Capital (including the costs of both debt and equity) is based on the economic principle of "opportunity costs." Investing in any asset, whether debt or equity securities, implies a forgone opportunity to invest in alternative assets. For any investment to be sensible, its expected return must be at least equal to the return expected on alternative, comparable risk investment opportunities. Because investments with like risks should offer similar returns, the opportunity cost of an investment should equal the return available on an investment of comparable risk. In that important respect, the returns required by debt and equity investors represent a cost to the Company.

Although both debt and equity have required costs, they differ in certain fundamental ways. Most noticeably, the Cost of Debt is contractually defined and can be directly observed as the interest rate or yield on debt securities.[14] The Cost of Equity, on the other hand, is neither directly observable nor a contractual obligation. Rather, equity investors have a claim on cash flows only after debt holders are paid; the uncertainty (or risk) associated with those residual cash flows determines the Cost of Equity. Because equity investors bear the "residual risk," they take greater risks and require higher returns than debt holders. In that basic sense, equity and debt investors differ: they invest

[14] The observed interest rate may be adjusted to reflect issuance or directly observable costs.

in different securities, face different risks, and require different returns.

Whereas the Cost of Debt can be directly observed, the Cost of Equity must be estimated or inferred based on market data and various financial models. As discussed throughout my Direct Testimony, each financial model is subject to specific assumptions, which may be more or less applicable under differing market conditions. In addition, because the Cost of Equity is premised on opportunity costs, the models typically are applied to a group of "comparable" or "proxy" companies. The choice of models (including their inputs), the selection of proxy companies, and the interpretation of the model results all require the application of reasoned judgment. That judgment should consider data and information that is not necessarily included in the models themselves. In the end, the estimated Cost of Equity should reflect the return that investors require in light of the subject company's risks, and the returns available on comparable investments.

Practitioners and academics recognize that financial models are approximations of investor behavior, not precise quantifications of it. They appreciate that models are tools to be used in the ROE estimation process, and that strict adherence to any single approach, or to the specific results of any single approach, can lead to flawed or misleading conclusions. That position is consistent with the *Hope* and *Bluefield* principle that it is the analytical result, as opposed to the method employed, that is controlling in arriving at just and reasonable rates. A reasonable ROE estimate therefore appropriately considers alternative methods and the reasonableness of their individual and collective

results in the context of observable, relevant market information.

As discussed earlier, FERC has found that no individual model is more reliable than all others under all market conditions, and that the application of judgment is important in developing ROE estimates. Commissions in other regulatory jurisdictions, such as Hawaii, Maryland, Massachusetts, North Carolina, and South Carolina have made similar findings.[15] Therefore, it is both prudent and appropriate to use multiple methods to mitigate the effects of assumptions and inputs associated with any single approach. As such, I have considered the results of the Constant Growth DCF model, the traditional and Empirical forms of the Capital Asset Pricing Model, and the Bond Yield Plus Risk Premium approach. I also have provided an Expected Earnings analysis, which I have applied as a corroborating method.

[15] *See*, for example: (1) Public Utilities Commission of the State of Hawaii, Docket No. 7700, Order No. 13704 in Docket No. 7700, *In the Matter of the Application of Hawaiian Electric Company, Inc. For Approval of Rate Increases and Revised Rate Schedules and Rules*, December 28, 1994 at 92; (2) The Public Service Commission of Maryland, Case No. 9418, *In the Matter of the Application of Potomac Electric Power Company for Adjustments to its Retail Rates for the Distribution of Electric Energy*, Order No. 87884, at 97; (3) The Commonwealth of Massachusetts Department of Public Utilities, *Investigation by the Department of Public Utilities*, Docket D.P.U. 15-155, September 30, 2016, at 376-378; (4) State of North Carolina Utilities Commission, *In the Matter of Application of Public Service Company of North Carolina, Inc. for a General Increase in its Rates and Charges*, Docket No. G-5, Sub 565, *Order Approving Rate Increase and Integrity Management Tracker*, October 28, 2016, at 35-36;and (5) Public Service Commission of South Carolina, Docket Nos. 2017-207-E, 2017-305-E, and 2017-370-E, Order No. 2018-804, Order Addressing South Carolina Electric & Gas Nuclear Dockets, at 88-89.

Q. PLEASE PROVIDE A BRIEF SUMMARY OF THE GUIDELINES ESTABLISHED BY THE UNITED STATES SUPREME COURT (THE "COURT") FOR THE PURPOSE OF DETERMINING THE RETURN ON EQUITY.

A. The Court established the guiding principles for establishing a fair return for capital in two cases: (1) *Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. ("*Bluefield*");[16] and (2) *Federal Power Comm'n v. Hope Natural Gas Co.* ("*Hope*").[17] In *Bluefield*, the Court stated:

> A public utility is entitled to such rates as will permit it to earn a return upon the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit, and enable it to raise the money necessary for the proper discharge of its public duties.[18]

The Court therefore recognized that: (1) a regulated public utility cannot remain financially sound unless the return it is allowed to earn on its invested capital is at least equal to the Cost of Capital (the principle relating to the demand for capital); and (2) a regulated public utility will not be able to attract capital if it does not offer investors an opportunity to earn a return on their investment equal to the return they expect to earn on other investments of

[16] *See, Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. 262 U.S. 679, 692 (1923).
[17] *See, Federal Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944).
[18] *Bluefield Water Works and Improvement Co. v. Public Service Comm'n*. 262 U.S. 679, 692 (1923).

similar risk (the principle relating to the supply of capital).

In *Hope*, the Court reiterates the financial integrity and capital attraction principles of the *Bluefield* case:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock... By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[19]

In summary, the Court clearly has recognized that the fair rate of return on equity should be: (1) comparable to returns investors expect to earn on other investments of similar risk; (2) sufficient to assure confidence in the company's financial integrity; and (3) adequate to maintain and support the company's credit and to attract capital.

Q. DOES INDIANA PRECEDENT PROVIDE SIMILAR GUIDANCE?

A. Yes. In a recent order, the Commission stated (as it has in previous rate orders), that it has used the following standards and criteria to determine a fair rate of return on a petitioner's investment in its utility plant:

(1) Return comparable to return on investments in other enterprises having corresponding risks;
(2) Return sufficient to ensure confidence in the financial integrity of the petitioner;
(3) Return sufficient to maintain and support the Petitioner's credit [rating];
(4) Return sufficient to attract capital as reasonably required by the Petitioner in its utility business.[20]

---

[19] *Federal Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944).

[20] Indiana Utility Regulatory Commission, Cause No. 44075, *Petition of Indiana Michigan Power Company, an Indiana Corporation, for Authority to Increase its Rates and Charges for Electric Utility Service, For Approval of: Revised Depreciation Rates; Accounting Relief;*

Citing the State Supreme Court, the Commission noted that:

> The ratemaking process involves a balancing of all these factors and probably others; a balancing of the owner's or investor's interest with the consumer's interest. On the one side, the rates may not be so low as to confiscate the investor's interest or property; on the other side the rates may not be so high as to injure the consumer by charging an exorbitant price for service and at the same time giving the utility owner an unreasonable or excessive profit.[21]

The Commission concluded that:

> …the results of any return computation may be tempered by the Commission's duty to balance the respective interests involved in ratemaking. The end result of the Commission's Orders must be measured as much by the success with which they protect the broad public interest entrusted to our protection as by the effectiveness with which they allow utilities to maintain credit and attract capital.[22]

Based on those standards, the ROE authorized in this proceeding should provide the Company with the opportunity to earn a fair and reasonable return, and enable efficient access to external capital under a variety of market conditions.

Q. WHY IS IT IMPORTANT FOR A UTILITY TO BE ALLOWED THE OPPORTUNITY TO EARN A RETURN ADEQUATE TO ATTRACT CAPITAL AT REASONABLE TERMS?

A. A return that is adequate to attract capital at reasonable terms enables the utility to provide service while maintaining its financial integrity. As discussed above, and in keeping with the *Hope* and *Bluefield* standards, that return should be

---

Inclusion in Basic Rates and Charges of the Costs of Qualified Pollution Control Property; Modifications to Rate Adjustment Mechanisms; and Major Storm Reserves; and for Approval of New Schedules of Rates, Rules and Regulations, Approved February 13, 2013, at 47.

[21] *Ibid*., at 47-48.

[22] *Ibid*., at 48.

commensurate with the returns expected elsewhere in the market for investments of equivalent risk. The consequence of the Commission's order in this case, therefore, should be to provide Duke Energy Indiana with the opportunity to earn an ROE that is: (1) adequate to attract capital at reasonable terms; (2) sufficient to ensure its financial integrity; and (3) commensurate with returns on investments in enterprises having corresponding risks. To the extent Duke Energy Indiana is provided a reasonable opportunity to earn its market-based Cost of Equity, neither customers nor shareholders should be disadvantaged. In fact, a return that is adequate to attract capital at reasonable terms enables Duke Energy Indiana to provide safe, reliable electric utility service while maintaining its financial integrity, all to the benefit of both investors and customers.

Proxy Group Selection

Q. AS A PRELIMINARY MATTER, WHY IS IT NECESSARY TO SELECT A GROUP OF PROXY COMPANIES TO DETERMINE THE COST OF EQUITY FOR DUKE ENERGY INDIANA?

A. First, it is important to bear in mind that the Cost of Equity for a given enterprise depends on the risks attendant to the business in which the company is engaged. According to financial theory, the value of a given company is equal to the aggregate market value of its constituent business units. The value of the individual business units reflects the risks and opportunities inherent in the business sectors in which those units operate. In this proceeding, we are focused on estimating the Cost of Equity for Duke Energy Indiana, whose

parent is Duke Energy Corporation ("Duke Energy"). Because the ROE is a market-based concept and Duke Energy Indiana is not a separate entity with its own stock price, it is necessary to establish a group of companies that are both publicly traded and comparable to the Company in certain fundamental respects to serve as its "proxy" in the ROE estimation process. Even if the Company were a publicly traded entity, short-term events could bias its market value during a given period of time. A significant benefit of using a proxy group is that it moderates the effects of anomalous, temporary events associated with any one company.

Q. DOES THE SELECTION OF A PROXY GROUP SUGGEST THAT ANALYTICAL RESULTS WILL BE TIGHTLY CLUSTERED AROUND AVERAGE (I.E., MEAN) RESULTS?

A. Not necessarily. For example, the Constant Growth DCF approach defines the Cost of Equity as the sum of the expected dividend yield and projected long-term growth. Despite the care taken to ensure risk comparability, market expectations with respect to future risks and growth opportunities will vary from company to company. Therefore, even within a group of similarly situated companies, it is common for analytical results to reflect a seemingly wide range. Consequently, at issue is how to estimate the Cost of Equity from within that range. Such a determination necessarily must consider a wide range of both quantitative and qualitative information.

Q. PLEASE PROVIDE A SUMMARY PROFILE OF DUKE ENERGY INDIANA.

A. Duke Energy Indiana, which is a wholly owned subsidiary of Duke Energy, provides electric generation, transmission and distribution services to approximately 840,000 retail customers in portions of Indiana.[23] Duke Energy's long-term issuer credit ratings are A- (Outlook: Negative) from Standard & Poor's ("S&P") and Baa1 (Outlook: Stable) from Moody's Investors Service ("Moody's"). The Company's long-term issuer credit ratings are A- (S&P) and A2 (Moody's).[24]

Q. HOW DID YOU SELECT THE COMPANIES INCLUDED IN YOUR PROXY GROUP?

A. I began with the universe of companies that Value Line classifies as Electric Utilities, and applied the following screening criteria:

- I excluded companies that do not consistently pay quarterly cash dividends;
- I excluded companies that were not covered by at least two utility industry equity analysts;
- I excluded companies that do not have investment grade senior unsecured bond and/or corporate credit ratings from S&P;
- I excluded companies that were not vertically-integrated, i.e. utilities that own and operate regulated generation, transmission and distribution

[23] *See,* Duke Energy Corp., SEC Form 10-K for the fiscal year ended December 31, 2018, at 24.
[24] Source: S&P Global Market Intelligence.

assets;

- I excluded companies whose regulated operating income over the three most recently reported fiscal years composed less than 60.00 percent of the respective totals for that company;
- I excluded companies whose regulated electric operating income over the three most recently reported fiscal years represented less than 60.00 percent of total regulated operating income; and
- I eliminated companies that are currently known to be party to a merger or other significant transaction.

Q. DID YOU INCLUDE DUKE ENERGY IN YOUR ANALYSIS?

A. No. To avoid the circular logic that otherwise would occur, it is my practice to exclude the subject company, or its parent holding company, from the proxy group.

Q. WHAT COMPANIES MET THOSE SCREENING CRITERIA?

A. The criteria discussed above resulted in a proxy group of the following 19 companies:

Table 2: Proxy Group Screening Results

Company	Ticker
ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Avangrid, Inc.	AGR
CMS Energy Corporation	CMS
DTE Energy Company	DTE
Evergy, Inc.	EVRG
Hawaiian Electric Industries, Inc.	HE
NextEra Energy, Inc.	NEE
NorthWestern Corporation	NWE
OGE Energy Corp.	OGE
Otter Tail Corporation	OTTR
Pinnacle West Capital Corporation	PNW
PNM Resources, Inc.	PNM
Portland General Electric Company	POR
Southern Company	SO
WEC Energy Group, Inc.	WEC
Xcel Energy Inc.	XEL

Cost of Equity

Q. HOW HAVE YOU DETERMINED THE INVESTOR-REQUIRED ROE?

A. As noted earlier, because the Cost of Equity is not directly observable, it must be estimated based on both quantitative and qualitative information. Although several empirical models have been developed for that purpose, all are subject to limiting assumptions or other constraints. Consequently, many finance texts recommend using multiple approaches to estimate the Cost of Equity, as

discussed in Appendix A.[25] When faced with the task of estimating the Cost of Equity, analysts and investors are inclined to gather and evaluate as much relevant data as reasonably can be analyzed and, therefore, rely on multiple analytical approaches. As noted earlier, the use of multiple methods, and the consideration given to them, recently was addressed by FERC.

Consistent with that approach, I applied the Constant Growth DCF model, the traditional and Empirical forms of the Capital Asset Pricing Model, and the Bond Yield Plus Risk Premium approach. I also applied the Expected Earnings method, as a corroborating method. FERC issued similar guidance, using the Expected Earnings analysis in its determination of the "zone of reasonableness", observing that "*investors use those models*".[26]

Q. PLEASE BRIEFLY DESCRIBE THE CONSTANT GROWTH DCF MODEL.

A. The Constant Growth DCF approach defines the Cost of Equity as the sum of (1) the expected dividend yield, and (2) expected long-term growth. As explained in Appendix A, the model often is expressed in the familiar form $k = \frac{D(1+g)}{P_0} + g$, where the expected dividend yield generally equals the expected annual dividend divided by the current stock price, and the growth rate is based on analysts' expectations of earnings growth. The Constant Growth DCF

[25] *See*, *e.g.*, Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed., 1994, at 341, and Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd ed., 2000, at 214.

[26] Docket No. EL11-66-001, *et al*., *Order Directing Briefs* 165 FERC ¶ 61,030 (October 16, 2018), at 29 (italics in original).

formula, which falls from the longer "present value" structure,[27] requires several simplifying assumptions, including the constancy of inputs in perpetuity.

Under the model's strict assumptions, the growth rate equals the rate of capital appreciation (that is, the growth in the stock price).[28] Given that assumption, it does not matter whether the investor holds the stock in perpetuity, or whether they hold the stock for some period of time, collect the dividends, then sell at the prevailing market price. That result also requires the ROE result estimated today will remain unchanged in perpetuity. So, even if market conditions produce an unreasonably low (or high) ROE estimate today, the model assumes investors will require require that same (unreasonably low or high) ROE every day in the future, regardless of whether or how market conditions change.

Q. PLEASE BRIEFLY DESCRIBE THE CAPITAL ASSET PRICING MODEL.

A. Whereas DCF models focus on expected cash flows,[29] Risk Premium-based models such as the CAPM focus on the additional return that investors require for taking on greater risk. In finance, "risk" generally refers to the variation in expected returns, rather than the expected return itself. Consider two firms, X and Y, with expected returns, and the expected variation in returns noted in

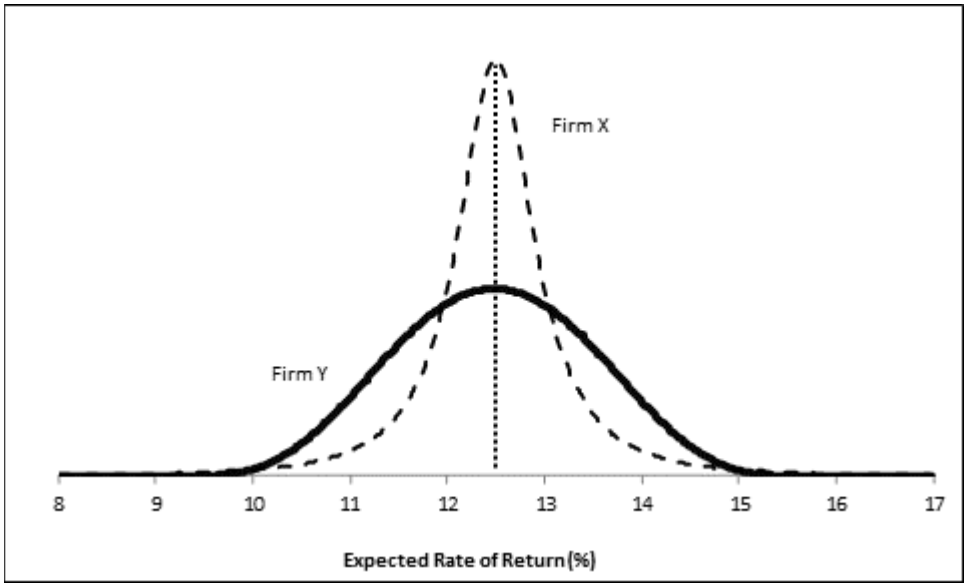
[27] *See,* Appendix A.

[28] As discussed in Appendix A, the model assumes that earnings, dividends, book value, and the stock price all grow at the same constant rate in perpetuity. Additionally, academic research has indicated that analysts forecasts of growth are superior to other measures of growth.

[29] *See,* Appendix A.

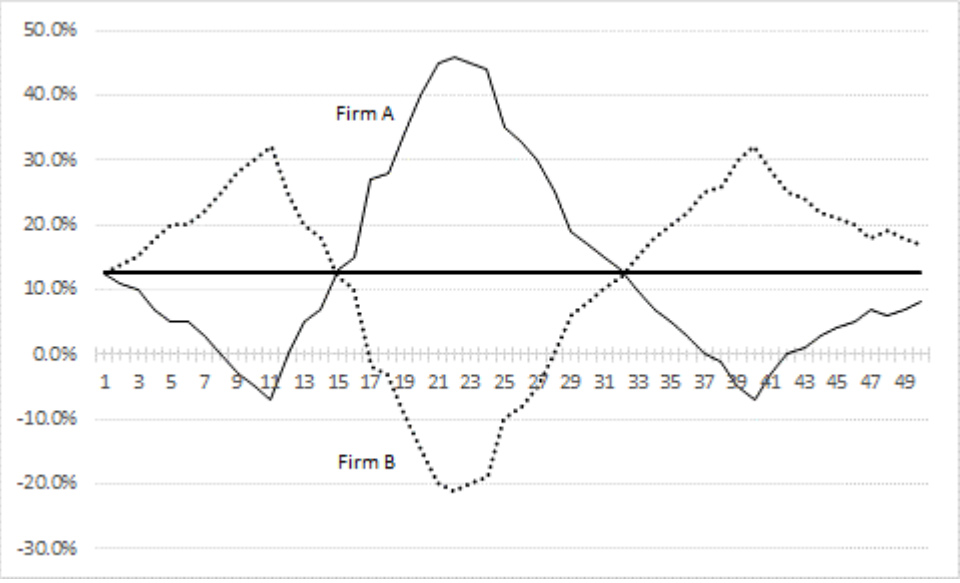
Chart 2, below. Although the two have the same expected return (12.50 percent), Firm Y's are far more variable. From that perspective, Firm Y would be considered the riskier investment.

Chart 2: Expected Return and Risk



Now consider two other firms, Firm A and Firm B. Both have expected returns of 12.50 percent, and both are equally risky as measured by their volatility. But as Firm A's returns go up, Firm B's returns go down. That is, the returns are negatively correlated.

Chart 3: Relative Risk



If we were to combine Firms A and B into a portfolio, we would expect a 12.50 percent return with no uncertainty because of the opposing symmetry of their risk profiles. That is, we can diversify the risk away. As long as two stocks are not perfectly correlated, we can achieve diversification benefits by combining them in a portfolio. That is the essence of the Capital Asset Pricing Model - because we can combine firms into a portfolio, the only risk that matters is the risk that remains after diversification, *i.e.*, the "non-diversifiable" risk.

The CAPM defines the Cost of Equity as the sum of the "risk-free" rate, and a premium to reflect the additional risk associated with equity investments. The "risk-free" rate is the yield on a security viewed as having no default risk, such as long-term Treasury bonds. The risk-free rate essentially sets the baseline of the CAPM. That is, an investor would expect a higher return than the risk-free rate to purchase an asset that carries risk. The difference between

that higher return (*i.e.*, the required return) and the risk-free rate is the risk premium:

Risk-Free Rate + Risk Premium = Cost of Equity [1]

The risk premium is defined as a security's Beta coefficient multiplied by the risk premium of the overall market (the "Market Risk Premium" or "MRP").[30] The Beta coefficient is a measure of the subject company's risk relative to the overall market, *i.e.*, the "non-diversifiable" risk. A Beta coefficient of 1.00 means the security is as risky as the overall market; a value below 1.00 represents a security with less risk than the overall market, and a value over 1.00 represents a security with more risk than the overall market. In general, the CAPM is expressed as follows:

Risk-Free Rate + (Beta Coefficient x MRP) = Cost of Equity [2]

As with the Constant Growth DCF model, it is important to understand the CAPM's inputs, assumptions, and results in the context of observable market data. Appendix A explains that Beta coefficients reflect two aspects of stock price movements: (1) the variability of the subject company's returns relative to the market; and (2) the correlation of the subject company's returns to the market's returns. Both are important factors. When utility stock prices fall but the overall market increases, the correlation will fall. When that happens (all else remaining equal), Beta coefficients also will fall. That is especially the case when they are calculated over relatively short periods, as

[30] As discussed in Appendix A, I have relied on a forward-looking measure of the MRP, using inputs from Value Line and Bloomberg to derive an *ex-ante* market return estimate.

Bloomberg does. The question then becomes whether those Beta coefficients are likely to reflect investors' views of utility risk going forward. Here again, a certain amount of judgment must be applied.

Given that the correlation between the proxy group companies and the S&P 500 has declined since 2010, while the relative risk has increased, the CAPM in the form presented here may not adequately reflect the expected systematic risk, and therefore, the returns required by investors in low-Beta coefficient companies. As such, I have considered the Empirical CAPM ("ECAPM") approach, which is a variant of the CAPM approach. The ECAPM adjusts for the CAPM's tendency to under-estimate returns for companies that (like utilities) have Beta coefficients less than one, and over-estimate returns for relatively high-Beta coefficient stocks.

Q. PLEASE BRIEFLY DESCRIBE THE BOND YIELD PLUS RISK PREMIUM.

A. This approach is based on the basic financial principle that equity investors bear the risk associated with ownership and therefore require a premium over the return they would have earned as a bondholder. That is, because returns to equity holders are more risky than returns to bondholders, equity investors must be compensated for bearing that additional risk (that difference often is referred to as the "Equity Risk Premium"). Bond Yield Plus Risk Premium approaches estimate the Cost of Equity as the sum of the Equity Risk Premium and the yield

on a particular class of bonds.[31]

Bond Yield + Equity Risk Premium = Cost of Equity [3]

Q. WHAT ARE THE RESULTS OF THE DCF-BASED ANALYSIS?

A. The results of the model described above are provided in Table 3, below.[32]

Table 3: Summary of DCF Results[33]

	Mean	Mean High
30-Day Average	8.93%	9.79%
90-Day Average	8.99%	9.86%
180-Day Average	9.12%	9.99%

Q. WHAT ARE THE RESULTS OF THE RISK PREMIUM-BASED ANALYSIS?

A. The Risk Premium-based results, including the CAPM and Bond Yield Plus Risk Premium methods, are provided in Table 4 below.

[31] Prior research has shown that the Equity Risk Premium is inversely related to the level of interest rates (*see,* Appendix A).

[32] *See,* Appendix A for a more detailed description of the models, assumptions, and inputs described in Section III.

[33] Petitioner's Exhibit 11-B.

Table 4: Summary of Risk Premium Results[34]

CAPM	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.85%)	8.09%	8.59%
Near Term Projected 30-Year Treasury (3.03%)	8.27%	8.77%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.85%)	9.32%	9.93%
Near Term Projected 30-Year Treasury (3.03%)	9.50%	10.11%
Empirical CAPM	**Bloomberg Derived Market Risk Premium**	**Value Line Derived Market Risk Premium**
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.85%)	9.53%	10.17%
Near Term Projected 30-Year Treasury (3.03%)	9.71%	10.35%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.85%)	10.45%	11.17%
Near Term Projected 30-Year Treasury (3.03%)	10.63%	11.35%
Bond Yield Plus Risk Premium Approach		
Current 30-Year Treasury (2.85%)	9.91%	
Near Term Projected 30-Year Treasury (3.03%)	9.92%	
Long-Term Projected 30-Year Treasury (3.70%)	10.06%	

Q. PLEASE BRIEFLY DESCRIBE THE EXPECTED EARNINGS ANALYSIS.

A. The Expected Earnings analysis is based on the principle of opportunity costs. By taking historical returns on book equity and comparing those authorized ROEs, investors are able to directly compare returns from investments of

[34] Petitioner's Exhibit 11-E and Petitioner's Exhibit 11-F

similar risk. In addition to historical returns, Value Line also provides projected returns on book equity. Because the Cost of Equity is forward-looking, I relied solely on forward-looking projections in the Expected Earnings analysis.[35] The Expected Earnings analysis results in an average ROE estimate of 10.50 percent and median ROE estimate of 10.53 percent.[36] As noted earlier, I used those results to assess the reasonableness of the DCF, CAPM, and Bond-Yield Plus Risk Premium results.[37]

Flotation Costs

Q. WHAT ARE FLOTATION COSTS?

A. Flotation costs are the costs associated with the sale of new issues of common stock. These include out-of-pocket expenditures for preparation, filing, underwriting, and other costs of issuance.

Q. ARE FLOTATION COSTS PART OF THE UTILITY'S INVESTED COSTS OR PART OF THE UTILITY'S EXPENSES?

A. Flotation costs are part of capital costs, which are properly reflected on the balance sheet under "paid in capital" rather than current expenses on the income statement. Like investments in rate base or the issuance costs of long-term debt, flotation costs are incurred over time. As a result, the great majority of flotation costs are incurred prior to the test year, but remain part of the cost structure during the test year and beyond.

---

35 As described more fully in Appendix A, an adjustment is necessary to accurately reflect the average invested capital over the period in question.

36 Petitioner's Exhibit 11-G

37 *See,* Docket Nos. EL14-12-003 and EL15-45-000, *Order Directing Briefs,* 165 FERC ¶ 61,118 (November 15, 2018).

Q. IS THE NEED TO CONSIDER FLOTATION COSTS ELIMINATED BECAUSE DUKE ENERGY INDIANA IS A WHOLLY OWNED SUBSIDIARY OF DUKE ENERGY?

A. No. Although the Company is a wholly owned subsidiary of Duke Energy, it is appropriate to consider flotation costs because wholly owned subsidiaries receive equity capital from their parents and provide returns on the capital that roll up to the parent, which is designated to attract and raise capital based on the returns of those subsidiaries. To deny recovery of issuance costs associated with the capital that is invested in the subsidiaries ultimately, would penalize the investors that fund the utility operations, and would inhibit the utility's ability to obtain new equity capital at a reasonable cost. This is important for companies such as Duke Energy Indiana that are planning continued capital expenditures in the near term, and for which access to capital to fund such required expenditures will be critical.

Q. HOW DID YOU ESTIMATE THE SIZE OF THE EFFECT OF FLOTATION COSTS ON INVESTOR RETURNS?

A. I modified the DCF calculation to provide a dividend yield that would reimburse investors for issuance costs. The estimate of flotation costs recognizes the costs of issuing equity that were incurred by Duke Energy and the proxy companies in their most recent two issuances. As shown in Petitioner's Exhibit 11-H, an adjustment of 0.08 percent (*i.e.*, eight basis points) reasonably represents flotation costs for the Company.

Q. IS THE NEED TO CONSIDER FLOTATION COSTS RECOGNIZED BY THE ACADEMIC AND FINANCIAL COMMUNITIES?

A. Yes. The need to reimburse investors for equity issuance costs is recognized by the academic and financial communities in the same spirit that investors are reimbursed for the costs of issuing debt. For example, Dr. Morin notes that "[t]he costs of issuing [common stock] are just as real as operating and maintenance expenses or costs incurred to build utility plants, and fair regulatory treatment must permit the recovery of these costs."[38] Dr. Morin further notes that "equity capital raised in a given stock issue remains on the utility's common equity account and continues to provide benefits to ratepayers indefinitely."[39] This treatment is consistent with the philosophy of a fair rate of return. As explained by Dr. Shannon Pratt:

> Flotation costs occur when a company issues new stock. The business usually incurs several kinds of flotation or transaction costs, which reduce the actual proceeds received by the business. Some of these are direct out-of-pocket outlays, such as fees paid to underwriters, legal expenses, and prospectus preparation costs. Because of this reduction in proceeds, the business's required returns must be greater to compensate for the additional costs. Flotation costs can be accounted for either by amortizing the cost, thus reducing the net cash flow to discount, or by incorporating the cost into the cost of equity capital. Since flotation costs typically are not applied to operating cash flow, they must be incorporated into the cost of equity capital.[40]

Similarly, Morningstar has commented on the need to reflect flotation costs in the cost of capital:

---

38 Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 321.
39 *Ibid.*, at 327.
40 Shannon P. Pratt, Roger J. Grabowski, Cost of Capital: Applications and Examples, 4th Ed. (John Wiley & Sons, Inc., 2010), at 586.

> Although the cost of capital estimation techniques set forth later in this book are applicable to rate setting, certain adjustments may be necessary. One such adjustment is for flotation costs (amounts that must be paid to underwriters by the issuer to attract and retain capital).[41]

Q. ARE YOU PROPOSING TO ADJUST YOUR RECOMMENDED ROE BY EIGHT BASIS POINTS TO REFLECT THE EFFECT OF FLOTATION COSTS ON THE COMPANY'S ROE?

A. No. Rather I have considered the effect of flotation costs, in addition to the Company's other business risks (discussed below) in determining where the Company's ROE falls within the range of results.

IV. BUSINESS RISKS AND OTHER CONSIDERATIONS

Q. DO THE MEAN MODEL RESULTS FOR THE PROXY GROUP PROVIDE AN APPROPRIATE ESTIMATE FOR THE COST OF EQUITY FOR DUKE ENERGY INDIANA?

A. No, the mean results of these models do not necessarily provide an appropriate estimate of Duke Energy Indiana's Cost of Equity. In my view, there are additional factors that must be taken into consideration when determining where Duke Energy Indiana's Cost of Equity falls within the range of results. Those factors include: (1) the risks associated with certain aspects of the Company's generation portfolio; (2) the price volatility associated with the Company's wholesale power sales within the Midcontinent Independent System Operator ("MISO") market; (3) the Company's rate mechanisms

[41] Morningstar, Inc. Ibbotson SBBI 2013 Valuation Yearbook, at 25.

currently in place, as well as its proposed RDM; and (4) the Company's capital expenditure plan. Those factors, which are discussed below, should be considered in terms of their overall effect on the Company's Cost of Equity.

Environmental Regulations

Q. HOW DO THE RISKS OF ENVIRONMENTAL REGULATIONS AFFECT DUKE ENERGY INDIANA'S ACCESS TO AND COST OF CAPITAL?

A. Environmental regulations, in particular those relating to coal-fired generation, have a direct bearing on the Company's operating and financial risk, and therefore, its Cost of Equity. In general, capital intensive generation assets such as coal-fired generation facilities are subject to certain risks including the recovery of the investors' capital in the event of a change in market structure or a plant failure, and the recovery of replacement power and repair costs in the event of extended or unplanned outage.

Coal-Fired Generation

Q. PLEASE PROVIDE AN OVERVIEW OF THE RISKS ASSOCIATED WITH DUKE ENERGY INDIANA'S GENERATION PORTFOLIO AND CURRENT ENVIRONMENTAL REGULATIONS.

A. Duke Energy Indiana's operations are dependent on coal-fired generation, which represented approximately 55.00 percent of its 2018 reported owned operating capacity[42] and about 90.00 percent of its 2018 on-system energy

[42] *See*, Duke Energy Corporation., SEC Form 10-K for the Period Ending December 31, 2018, at 34.

production.[43] In particular, Duke Energy Indiana and its investors face the risk that environmental regulations will require them to invest additional capital or face closure or curtailment of generating capacity. These risks are compounded in the current regulatory environment as a result of the uncertainty investors, utilities, and the economy as a whole face in light of evolving environmental regulations regarding greenhouse gas emissions and climate change in general, such is the case with the Clean Power Plan, which recently was repealed by the U.S. Environmental Protection Agency ("EPA").

On June 19, 2019, along with that repeal, the EPA finalized the replacement of the Clean Power Plan with the Affordable Clean Energy ("ACE") rule. The ACE rule requires utilities to make heat efficiency upgrades to coal-fired power plants, and imposes associated carbon dioxide rate limits on individual generating units.[44] Because investors consider those risks when establishing their return requirements, the Commission likewise should consider the effect of the additional risk associated with Duke Energy Indiana's generating portfolio in determining its authorized ROE.

In a recent report, S&P noted that power generators have addressed carbon reduction policies targeting coal-fired generating plants by implementing three strategies: Adding "scrubbers" to coal-fired plants; switching to burning natural gas; or retiring coal-fired plants outright.[45] To the

43 Direct Testimony of Stan Pinegar, at 21.
44 *See,* https://www.epa.gov/stationary-sources-air-pollution/affordable-clean-energy-rule
45 *See*, S&P Research, The Clean Power Plan Will Spur Further Coal Plant Closings, But How Will U.S. Utilities Recover the Costs? (Sept. 2, 2014).

extent those strategies increase costs for utilities, their credit profiles may come under pressure. As noted by S&P:

> Higher costs could become a key credit issue for regulated utilities given the importance of managing customer rate increases, which has implications for relations with regulators, as well as economic and political ramifications that could heighten business risk. Any rating actions would likely not occur until there is further clarity from a utility about early plant retirements and related cost recovery. For utilities that have significant coal-fired generation, recovery mechanisms will be extremely important to continue to support operating cash flow and maintain robust financial measures.[46]

Beyond the risk of carbon regulations, coal fired electric generation units continue to be exposed to other existing and evolving environmental regulations as well, including for example periodic updates to National Ambient Air Quality Standards; implementation of the 316(b) cooling water intake structures rule; and implementation of revisions to the Steam Electric Effluent Limitations guidelines. Many regulations, such as the Mercury and Air Toxics Standards ("MATS") rule, also continue to face legal challenges (in the case of MATS, even long-past the date for compliance), adding to the uncertainty of the ultimate outcome and cost to the Company.

Consequently, the risks associated with the Company's generation mix and the potential cost of compliance with related environmental regulations could affect the Company's financial profile.

[46] *Ibid*., at 2.

MISO Price Volatility

Q. DOES DUKE ENERGY INDIANA SELL POWER INTO THE MISO WHOLESALE MARKET?

A. Yes. MISO provides the Company a market into which it may sell power not used by its current customers. Currently, approximately 16.00 percent of the Company's sales are classified as "Wholesale and other sales".[47]

Q. WHY DO SALES INTO THE MISO MARKET REPRESENT INCREMENTAL RISK TO THE COMPANY?

A. The energy prices received from the day-ahead MISO market can be quite volatile (*see* Chart 4, below). In the MISO market, energy prices are established in the Day Ahead Market on an hourly basis at each of the Commercial Pricing Nodes. MISO schedules the generating assets that are most economically able to satisfy supply customers' demands for a given hour. The market clearing price, also referred to as the Locational Marginal Price ("LMP"), is the cost to service the next increment of demand at a specific location, from the least expensive generating unit for a given hour.

In an LMP-based market, each generating plant makes an offer at the minimum price at which it is willing to sell electricity. MISO then identifies the least cost generator (based on those bids) to serve demand, while honoring certain transmission and operational constraints. The same analysis produces the incremental (i.e., marginal) price of electricity at a specific location, which

[47] Duke Energy Corporation., SEC Form 10-K for the Period Ending December 31, 2018, at 10.

is the LMP. If the LMP is at or above a generator's offer price, the offer is taken and the generator is paid the LMP. Because marginal offers during the peak hours often come from natural gas-fired generating units, there tends to be a strong relationship between LMPs and the market price of natural gas. Because natural gas prices can be volatile, even in the day-ahead energy markets, there is the possibility of significant volatility in the revenues received from this market.

Q. HAS THE COMPANY PREVIOUSLY BEEN EXPOSED TO ADVERSE EFFECTS AS A RESULT OF MISO'S PRICING SYSTEM?

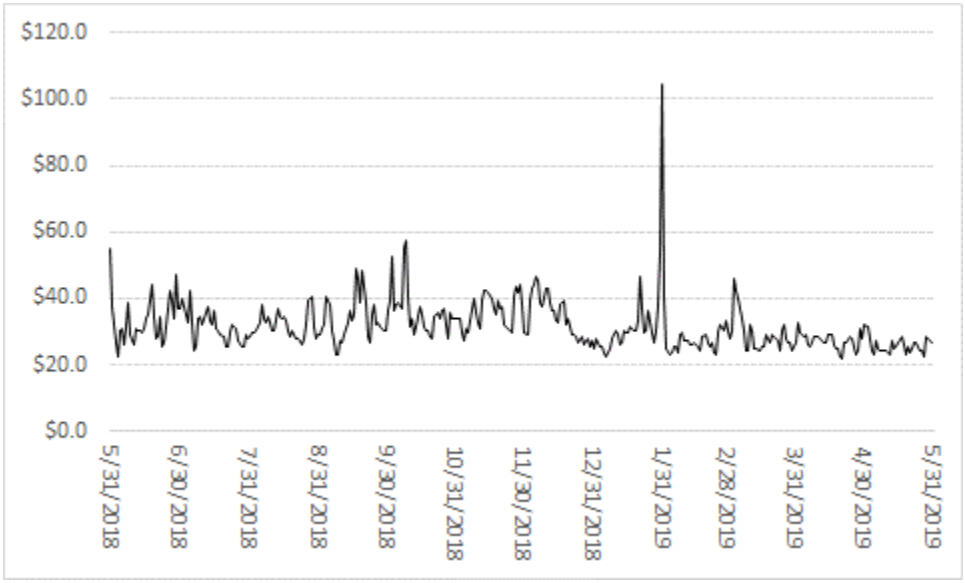
A. Yes. In 2013, due to increased market participation, market prices would have turned negative had the Company bid into the market. Subsequently, the Company did not offer any power in order to balance customer needs and those of Benton County Wind Farm, LLC. Following a legal settlement, Duke Indiana was subject to $29 million in damages. Although the Company ultimately was authorized to recover the settlement amount, the potential for similar instances to arise, and the associated lag between payment and recovery, creates an additional degree of uncertainty for investors.

Q. HAVE YOU ANALYZED THE PRICE VOLATILITY IN THE MISO MARKET?

A. Yes. Based on the Company's generation portfolio mix, the majority of which is coal, any excess power would typically be sold into the day-ahead market, and base loaded during peak hours. Chart 4 (below) provides the day-ahead

(around-the-clock) market price for MISO's Indiana Hub.[48] As shown in Chart 4, the all-hours day-ahead market price at this location has been between $21.58 and $104.39, or a spread of $82.81 over the period from June 2018 through May 2019.[49]

Chart 4: Day-Ahead Around-The-Clock LMPs[50]



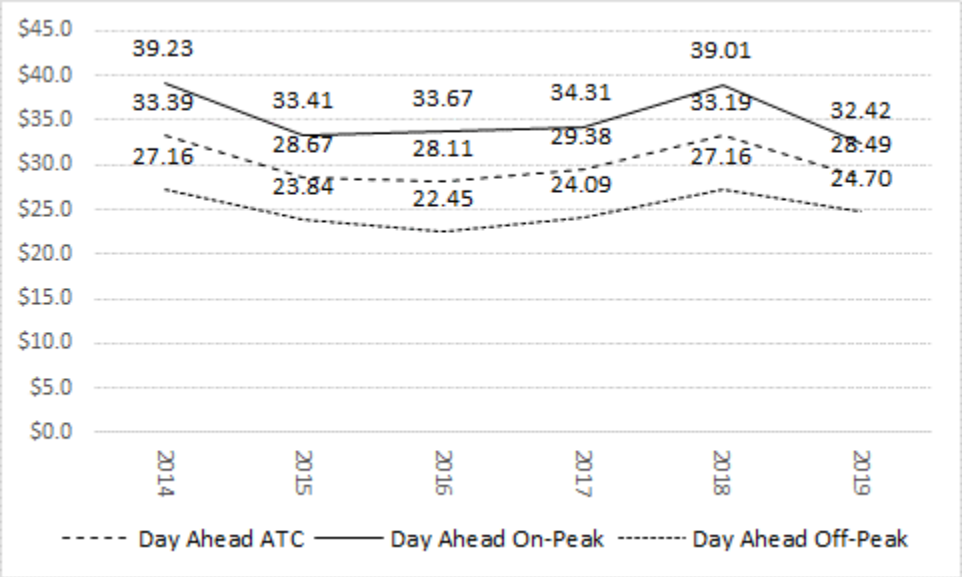
Q. ARE THERE ANY OTHER RISKS THAT THE COMPANY ASSUMES BY SELLING EXCESS POWER THROUGH THE MISO WHOLESALE MARKET?

A. Yes. Not only is the Company subject to the volatility inherent in the wholesale market, but it is also exposed to the decline in prices that has occurred in the wholesale markets. Thus, just when the Company would hope to recover the maximum amount of lost revenues in the MISO wholesale market, the prices at

48 Source: S&P Global Market Intelligence.
49 Removing the $104.39, the adjusted range is from $21.58 to $57.46, a spread of $35.05.
50 Source: Company provided data.

which the Company can sell excess electricity have fallen. As shown in Chart 5, below, the average on-peak day ahead price for electricity at the Indiana Hub averaged between approximately $32.42 and $39.23 per MWh from 2014 through 2019. Since 2014 average annual day-ahead prices generally have been trending downward.

Chart 5: Average Annual Day-Ahead Prices – Indiana Hub[51]



Regulatory Mechanisms and Capital Spending

Q. DOES THE COMPANY HAVE IN PLACE SPECIFIC CAPITAL TRACKING MECHANISMS?

A. Yes. The Company currently has in place a TDSIC mechanism and capital trackers associated with environmental compliance, the Edwardsport IGCC Plant, federal mandates, and renewable generation.

[51] Source: S&P Global Market Intelligence.

Q. ARE YOU AWARE THAT THE COMPANY HAS PROPOSED A REVENUE DECOUPLING MECHANISM IN THIS CASE?

A. Yes, I understand the Company's proposed RDM is a per-customer mechanism that would create a deferral tracking account carrying the difference between authorized (weather normalized) and actual revenue. Under that structure, over-recovery of authorized revenue would produce a rate decrease in future periods; under-recovery would result in a rate increase. As Company Witness Hansen explains, because the Company's revenue would not be affected by residential and small commercial customer consumption decisions, the RDM complements Duke Energy Indiana's proposal's aim of reducing electricity usage.[52]

Q. TURNING TO COST RECOVERY MECHANISMS IN GENERAL, HOW COMMON ARE REVENUE STABILIZATION AND COST RECOVERY MECHANISMS WITHIN THE INDUSTRY?

A. There is little question revenue stabilization and cost recovery structures have become increasingly common. The increased interest in such mechanisms has generally resulted from the growing cost of maintaining system reliability, coupled with flat or declining sales volume brought on by energy efficiency. Adjustment mechanisms to recover purchased power expenses, energy efficiency and demand-side program costs, new plant investment, and other expenses are common.[53] In addition, full or partial decoupling mechanisms

[52] *See*, Direct Testimony of Daniel G. Hansen.
[53] *See*, Petitioner's Exhibit 11-I.

have been implemented by electric utilities in 31 jurisdictions.[54] Although the specific form of the Company's proposed mechanisms may be unique, the adoption and implementation of alternative regulation mechanisms in general is quite common and has become an increasingly visible issue to investors.

Q. ARE REVENUE STABILIZATION MECHANISMS AND COST RECOVERY STRUCTURES COMMON AMONG THE PROXY GROUP COMPANIES?

A. Yes, they are. The use of revenue stabilization and cost recovery mechanisms has been driven by factors that combine to reduce revenues and increase operating costs just as cash flow is required to fund the capital investments needed to provide safe and reliable service. Those factors – declining load, increasing operating costs, continuing capital investment requirements – have affected electric utilities across the United States.

Utilities and regulatory commissions have recognized that under current conditions, traditional cost of service regulation is not likely to provide the timely recovery of costs needed to ensure customers are served by financially sound utility companies. They have addressed those concerns by implementing rate structures similar to those the Company has in place, or has proposed in this proceeding. Those mechanisms have multi-faceted objectives, including:

[54] *See, e.g., Adjustment Clauses: A State-by-State Overview*, Regulatory Research Associates Regulatory Focus, September 28, 2018, and American Council for an Energy-Efficient Economy "Utility Business Model State and Local Policy Database", accessed November 7, 2018, https://database.aceee.org/state/utility-business-model.

- Reducing risk, mitigating regulatory lag and providing more certainty in cost recovery;
- Facilitating new investments and promoting new technologies;
- Promoting social goals and increasing public benefits including energy efficiency; and
- Reducing the frequency and cost of rate cases.[55]

To achieve these objectives, regulatory commissions have adopted several types of ratemaking mechanisms. The most common mechanism (81.00 percent of the proxy group), is the recovery of Energy Efficiency costs. Capital trackers, which focus solely on recovery of investment expenditures, represent approximately half (47.50 percent) of the proxy group's operating companies. To address the limited cost recovery of capital trackers, many jurisdictions have incorporated broader ratemaking policies and rate mechanisms, including performance-based regulation (44.00 percent of the proxy group),[56] future test years (44.00 percent of proxy group), and the allowance of Construction Work in Progress in rate base (71.00 percent of proxy group).[57]

Q. DOES FINANCIAL THEORY REQUIRE A REDUCTION IN THE COST OF EQUITY IN CONNECTION WITH REVENUE DECOUPLING STRUCTURES SUCH AS THE RDM?

[55] Source: National Regulatory Research Institute, *Alternative Rate Mechanisms and Their Compatibility with State Utility Commission Objectives,* April 2014 at pp. 17-18.
[56] Includes multiyear rate plans.
[57] *See,* Petitioner's Exhibit 11-I.

A. No, it does not. Modern Portfolio Theory (which forms the basis of the CAPM) risk is defined as the uncertainty, or variability, of returns. Modern Portfolio Theory was advanced by recognizing that total risk may be separated into two distinct components: non-diversifiable risk, which is that portion of risk that can be attributed to the market as a whole; and non-systematic (or diversifiable) risk, which is attributable to the idiosyncratic nature of the subject company itself. As discussed in Appendix A, non-diversifiable risk is measured by the Beta coefficient within the CAPM structure.[58]

Under Modern Portfolio Theory (and the CAPM), an investor would not be indifferent to a reduction in expected ROE in return for the implementation of rate structures, unless those structures specifically reduce non-diversifiable risk. That is, any reduction in the Cost of Equity depends on the type of risk that is reduced; if the risk assumed to be mitigated by the rate structures is diversifiable, there would be no reduction in the Cost of Equity even if total risk (diversifiable plus non-diversifiable risk) has been reduced. If, however, rate structures mitigate increased systematic risk associated with the factors that drove their implementation in the first place, there likewise would be no effect on the Cost of Equity.

[58] Appendix A.

Q. ARE YOU AWARE OF ANY STUDIES THAT HAVE ADDRESSED THE RELATIONSHIP BETWEEN DECOUPLING MECHANISMS, GENERALLY, AND THE COST OF CAPITAL?

A. Yes. In March 2014, The Brattle Group ("Brattle") published a study addressing the effect of revenue decoupling structures on the cost of capital for electric utilities.[59] In its report, which extended a prior analysis focused on natural gas distribution utilities, Brattle pointed out that although decoupling structures may affect revenue, net income still can vary.[60] Brattle further noted that the distinction between diversifiable and non-diversifiable risk is important to equity investors, and the relationship between decoupling and the Cost of Equity should be examined in that context. Further to that point, Brattle noted that although reductions in total risk may be important to bondholders, only reductions in non-diversifiable business risk would justify a reduction to the ROE.[61] In November 2016 the Brattle study was updated based on data through the fourth quarter of 2015.[62]

Brattle's empirical analysis examined the relationship between decoupling and the After-Tax Weighted Average Cost of Capital for a group of electric utilities that had implemented decoupling structures in various

---

59 The Brattle Group, *The Impact of Revenue Decoupling on the Cost of Capital for Electric Utilities: An Empirical Investigation*, Prepared for the Energy Foundation, March 20, 2014.

60 *Ibid*., page 7.

61 *Ibid*., page 8.

62 Michael J. Vilbert, Joseph B. Wharton, Shirley Zhang and James Hall, *Effect on the Cost of Capital of Innovative Ratemaking that Relaxes the Linkage between Revenue and kWh Sales – An Updated Empirical Investigation*, November 2016. Also available at http://files.brattle.com/files/5711_effect_on_the_cost_of_capital_of_ratemaking_that_relaxes_the_linkage_between_revenue_and_kwh_sales.pdf.

jurisdictions throughout the United States. As with Brattle's 2014 study, the updated study found no statistically significant link between the cost of capital and revenue decoupling structures.[63]

In addition, Dr. Richard A. Michelfelder, together with my colleagues Pauline M. Ahern and Dylan W. D'Ascendis, examined the relationship between decoupling and the Cost of Equity among electric, gas, and water utilities. Using the generalized consumption asset pricing model, they found decoupling to have no statistically significant effect on investor perceived risk, and the Cost of Equity.[64]

Q. PLEASE SUMMARIZE DUKE ENERGY INDIANA'S CAPITAL EXPENDITURE PLANS.

A. Based on Duke Energy's March 2019 investor presentation, Duke Energy Indiana plans to deploy approximately $3.95 billion in capital over the period 2019-2023.[65] That amount includes expenditures in generation, transmission, and distribution facilities and to maintain safe, sufficient, and reliable service.

Q. DO THE COMPANY'S CAPITAL RECOVERY MECHANISMS RECOVER THE ENTIRE AMOUNT OF DUKE ENERGY INDIANA'S PROJECTED CAPITAL EXPENDITURES?

A. No, they do not. The TDSIC mechanism allows the Company to recover new or replacement transmission, distribution, or storage projects that:

---

63 *Ibid.*

64 Dr. Richard A. Michelfelder, Pauline M. Ahern, Dylan W. D'Ascendis, *Decoupling impact and public utility conservation investment*, Energy Policy 130 (2019) 311-319.

65 Duke Energy Corporation, March 2019 Update, at 29.

> (1) a public utility undertakes for purposes of safety, reliability, system modernization, or economic development, including the extension of gas service to rural areas;
>
> (2) were not included in the public utility's rate base in its most recent general rate case; and
>
> (3) either were:
>
> (A) described in the public utility's TDSIC plan and approved by the commission under section 10 of this chapter and authorized for TDSIC treatment;
>
> (B) described in the public utility's update to the public utility's TDSIC plan under section 9 of this chapter and authorized for TDSIC treatment by the commission; or
>
> (C) approved as a targeted economic development project under section 11 of this chapter.

Indiana Code ("IC") § 8-1-39-2 stipulates that a utility's capital expenditure plan must be approved by the Commission to be eligible for recovery under the Company's TDSIC. Subsequently, in Cause No. 44720[66], the Commission approved total recovery of $1.408 billion for the period 2016 through 2022. Approximately $891.4 million of this amount relates to the period 2019-2022, representing 22.57 percent of the Company's total forecasted capital investments (for the period 2019-2023).

IC § 8-1-39-9 further states a utility may recover up to 80.00 percent of approved expenditures, with the remaining 20.00 percent deferred to the Company's next general rate case.[67] Given the Company's projected level of capital expenditures, the additional lag could further strain the Company's cash flows.

---

66 Indiana Utility Regulatory Commission, Cause No. 44720, Order of the Commission, June 29, 2016, at 23.

67 *See*, Ind. Code § 8-1-39-9

Q. DOES THE COMPANY HAVE ADDITIONAL MECHANISMS IN PLACE TO RECOVER THE FUNDS NOT COVERED IN THE COMPANY'S TDSIC?

A. Not entirely. In addition to the TDSIC, the Company has in place a Renewable Energy Project Revenue Adjustment rider which allows for the recovery of capital investments in renewable energy projects. Although this partially reduces the burden of the Company's forecasted capital expenditures, there is still potential drag on cash-flows.

Q. WHAT ARE YOUR CONCLUSIONS REGARDING THE EFFECT OF DUKE ENERGY INDIANA'S CAPITAL INVESTMENT PLAN AND THE ASSOCIATED RECOVERY MECHANISMS?

A. Duke Energy Indiana's capital expenditure plan is larger than its allowed recovery under its capital trackers. Although they will be able to partially mitigate the cash flow dilution associated with those investments, the recovery mechanisms should be viewed as credit supportive, rather than credit enhancing. From that perspective, the mechanisms would not reduce the Company's Cost of Equity.

V. CAPITAL MARKET ENVIRONMENT

Q. DO ECONOMIC CONDITIONS INFLUENCE THE REQUIRED COST OF CAPITAL AND REQUIRED RETURN ON COMMON EQUITY?

A. Yes. As discussed in Section III and Appendix A, the models used to estimate the Cost of Equity are meant to reflect, and therefore are influenced by, current

and expected capital market conditions. Therefore, it is important to assess the reasonableness of any financial model's results in the context of observable market data. To the extent a given model's assumptions are misaligned with such data, or its results are inconsistent with basic financial principles, it is important to consider whether other methods likely provide more meaningful and reliable results.

Q. DOES YOUR RECOMMENDATION CONSIDER THE CAPITAL MARKET ENVIRONMENT?

A. Yes, it does. From an analytical perspective, it is important that the inputs and assumptions used to arrive at an ROE recommendation, including assessments of capital market conditions, are consistent with the recommendation itself. Although all analyses require an element of judgment, the application of that judgment must be made in the context of the quantitative and qualitative information available to the analyst, and the capital market environment in which the analyses were undertaken.

Q. HAS MARKET VOLATILITY INCREASED IN RECENT MONTHS?

A. Yes, it has. A visible and widely reported measure of expected volatility is the Cboe Options Exchange ("Cboe") Volatility Index, often referred to as the VIX. As Cboe explains, the VIX "is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market, derived from real-time, mid-quote prices of S&P 500® Index (SPX^{SM}) call and put options."[68]

[68] Source: http://www.cboe.com/vix

Simply, the VIX is a market-based measure of expected volatility. Because volatility is a measure of risk, increases in the VIX, or in its volatility, are a broad indicator of expected increases in market risk.

Although the VIX is not expressed as a percentage, it should be understood as such. That is, if the VIX stood at 15.00, it would be interpreted as an expected standard deviation in annual market returns of 15.00 percent over the coming 30 days. Since 2000, the VIX has averaged about 19.62, which is highly consistent with the long-term standard deviation on annual market returns (19.80 percent, as reported by Duff & Phelps).[69]

As Table 5 (below) demonstrates, in 2017 market volatility was well below its long-term average; the VIX averaged about 11.09, with a standard deviation of 1.36. Throughout 2018 and into 2019, the VIX average increased to 16.35 with a standard deviation of 4.61. That is, from 2017 to 2019 both the level and the volatility of market volatility increased.

Table 5 also demonstrates the increase in market uncertainty from 2017 to 2019. As that table notes, the standard deviation (that is, the volatility of volatility) in 2018-2019 (4.61) is about 3.40 times higher than its 2017 level (1.36)

[69] Source: Duff & Phelps, 2019 SBBI Yearbook, at 6-17.

Table 5: VIX Levels and Volatility[70]

Long-Term Average	19.23
2018-2019 Average	16.35
2018-2019 Maximum	37.32
2018-2019 Minimum	9.15
2018-2019 Standard Deviation	4.61
2017 Average	11.09
2017 Maximum	16.04
2017 Minimum	9.14
2017 Standard Deviation	1.36

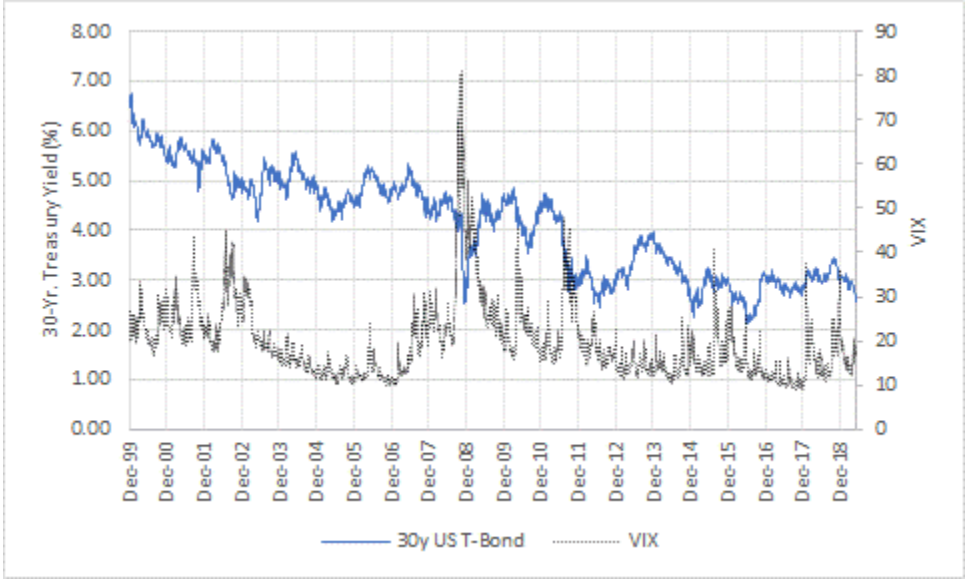
The increase in volatility is not surprising as market participants reassess the Federal Reserve's long-term objective of monetary policy normalization, and the increasing risks associated with federal trade policy initiatives.

Q. IS THERE A RELATIONSHIP BETWEEN EQUITY MARKET VOLATILITY AND INTEREST RATES?

A. Yes, there is. Significant and abrupt increases in volatility tend to be associated with declines in Treasury yields. That relationship makes intuitive sense; as investors see increasing risk their objectives may shift principally to capital preservation (that is, avoiding a capital loss). A means of doing so is to allocate capital to the relative safety of Treasury securities, in a "flight to safety". Because Treasury yields are inversely related to Treasury bond prices, as investors bid up the prices of bonds, they bid down the yields (*see* Chart 6, below, showing decreases in the 30-year Treasury yield coincident with significant increases in the VIX).

[70] Source: Bloomberg Professional.

Chart 6: 30-Year Treasury Yields vs. VIX[71]



In those instances, the fall in yields does not reflect a reduction in required returns, it reflects an increase in risk aversion and, therefore, an increase in required equity returns.

Q. IS MARKET VOLATILITY EXPECTED TO INCREASE FROM ITS CURRENT LEVELS?

A. Yes, it is. One means of assessing market expectations regarding the future level of volatility is to review Cboe's "Term Structure of Volatility." As Cboe points out:

> The implied volatility term structure observed in SPX options markets is analogous to the term structure of interest rates observed in fixed income markets. Similar to the calculation of forward rates of interest, it is possible to observe the option market's expectation of future market volatility through use of the SPX implied volatility term structure.[72]

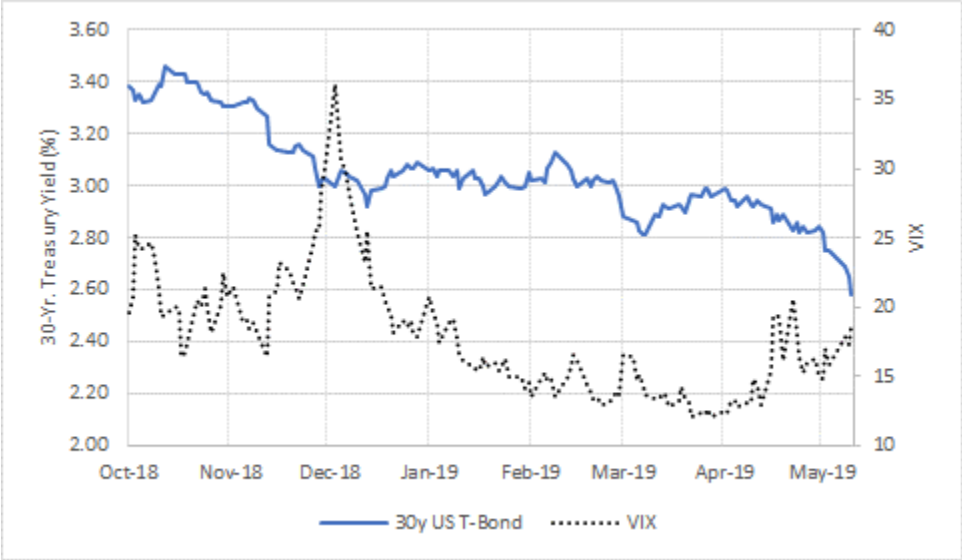
[71] Source: S&P Global Market Intelligence, YahooFinance.
[72] Source: http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data.

Cboe's term structure data is upward sloping, indicating market expectations of increasing volatility. The expected VIX value in June 2020 is about 18.20, suggesting investors see a reversion to long-term average volatility over the coming months.[73]

Q. HAVE RECENT DECLINES IN THE TREASURY YIELD BEEN ASSOCIATED WITH INCREASES IN MARKET VOLATILITY?

A. Yes, they have. Since November 2018, the periods during which Treasury yields fell coincided with increases in the VIX (*see* Chart 7, below).

Chart 7: 30-Year Treasury Yields vs. VIX (11/18 – 5/19)[74]



Q. WHAT CONCLUSIONS DO YOU DRAW FROM THOSE ANALYSES?

A. It is important to consider whether changes in long-term interest rates reflect fundamental changes in investor sentiment, or whether they reflect potentially

[73] Source: http://www.cboe.com/trading-tools/strategy-planning-tools/term-structure-data, accessed June 6, 2019.

[74] Source: S&P Global Market Intelligence, YahooFinance.

transitory factors. The recent, sudden decline in interest appears to be related to the increase in equity market volatility, which may be event-driven rather than a fundamental change. Because the methods used to estimate the Cost of Equity are forward-looking it is important to consider those distinctions in assessing model results.

Q. HAVE UTILITY DIVIDEND YIELDS CLOSELY FOLLOWED LONG-TERM TREASURY YIELDS?

A. Although they have been directionally related over time, the fundamental relationship between Treasury yields and utility dividend yields changed after the 2008/2009 financial crisis. From 2000 through 2008, Treasury yields generally exceeded dividend yields; the exception was the 2002-2003 market contraction. Then, as in 2008-2009, investors sought the safety of Treasury securities, accepting lower yields in exchange for a greater likelihood of capital preservation. Once the contraction ended (in latter half of 2003), the relationship was restored, and Treasury yields again exceeded dividend yields (*see* Chart 8, below).

Chart 8: Utility Dividend Yields and 30-Year Treasury Yields[75]

In the 2008/2009 financial crisis, Treasury bond prices increased (yields decreased), and utility stock prices decreased (yields increased) such that the prior relationship inverted. As the Federal Reserve implemented and maintained "unconventional" monetary policies in reaction to the financial crisis (i.e., Quantitative Easing) with the intended consequence of lowering long-term interest rates, the now-inverted relationship between Treasury yields and utility dividend yields persisted.

Even though the "yield spread"[76] became inverted after the financial crisis, it has not been static. That is, as Treasury yields fell in response to central bank policies, dividend yields did not fall to the same degree; the yield spread widened (see Chart 8, above). That data suggests that, although utility prices are sensitive to long-term Treasury yields, the relationship is not unbounded.

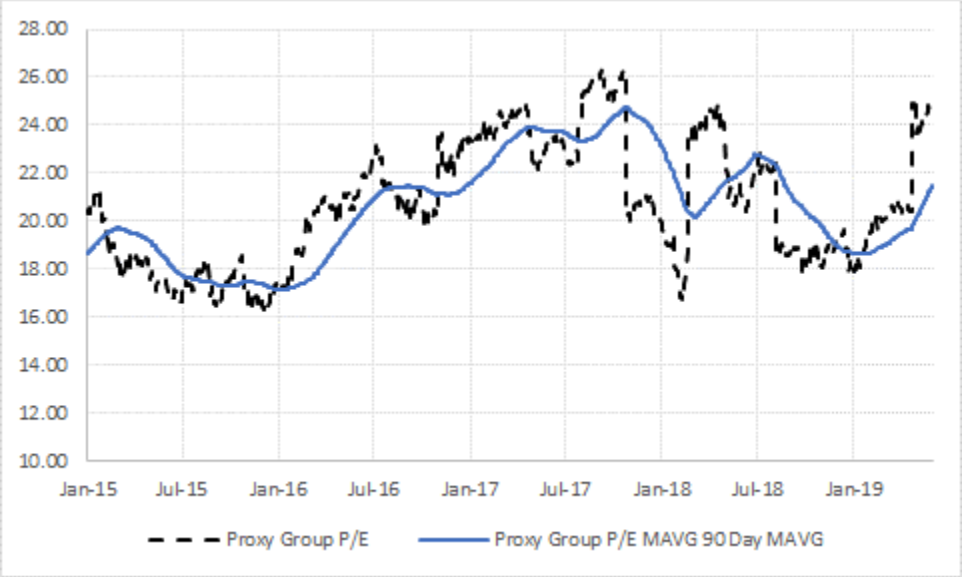
[75] Source: S&P Global Market Intelligence

[76] Defined here as dividend yields less Treasury yields.

Q. IS THAT RELATIONSHIP ALSO SEEN IN UTILITY PRICE/EARNINGS RATIOS?

A. Yes, it is. Looking to the period following the Federal Reserve's Quantitative Easing policy, the proxy group P/E ratio has varied, often reverting once it has largely breached its 90-day moving average.

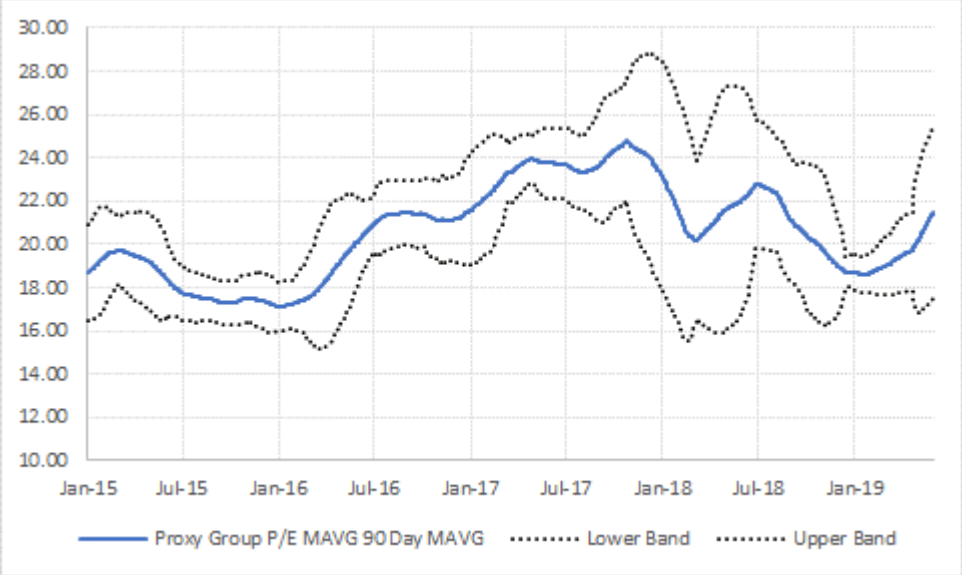
Chart 9: Proxy Group Average Price/Earnings Ratio[77]



From a somewhat different perspective, the proxy group's P/E ratio has traded within a two-standard deviation range, although that range recently has widened, indicating increasing variability in the group's valuation.

[77] Calculated as an index. Source: S&P Global Market Intelligence.

Chart 10: Proxy Group Average P/E Ratio Bands[78]



That data supports the conclusion discussed earlier, that utility stock prices are sensitive to changes in interest rates, but only to a degree. The "reach for yield" that sometimes occurs when interest rates fall has a limit; investors will not accept the incremental risk of capital losses when utility valuation levels become "stretched". That also may be the case when investors see interest rates reacting to market volatility that is event-driven, rather than a fundamental change in the capital market environment or investor risk tolerances. The increasing variability can be seen in Chart 10 (above), when the bands around the 90-day moving average P/E ratios widen. During those periods, the risk of capital loss increases, implying a further limit on valuation levels.

[78] Calculated as an index. Source: S&P Global Market Intelligence. Bands represent two standard deviations calculated over 90 days.

Q. WHAT CONCLUSIONS DO YOU DRAW FROM YOUR ANALYSES OF THE CURRENT CAPITAL MARKET ENVIRONMENT, AND HOW DO THOSE CONCLUSIONS AFFECT YOUR ROE RECOMMENDATION?

A. Because certain models used to estimate the Cost of Equity require long-term assumptions, it is important to understand whether those assumptions hold. The current market environment is one in which changes in interest rates likely are associated with events, more than they are a function of fundamental economic conditions. Further, utility valuations have a limit, even when investors look to them for an alternate source of income as interest rates fall.

On balance, it remains important to consider changes in market conditions, the likely causes of those changes, and how model results are affected by them. Those assessments necessarily involve the application of reasoned and experienced judgment. As discussed throughout my testimony, that judgment supports my recommended range of 10.00 percent to 11.00 percent.

VI. FAIR VALUE RATE OF RETURN

Q. PLEASE BRIEFLY SUMMARIZE THE FAIR VALUE STANDARD IN INDIANA.

A. As the Commission noted in Cause No. 44576:

> Ind. Code § 8-1-2-6 requires the Commission to value a public utility's property at its fair value, "giving such consideration as it deems appropriate in each case to all bases of valuation which may be presented .... "

Although I am not an attorney, I understand that under Indiana Code § 8-1-2-6, the Commission seeks the fair value of a utility's property in setting just and reasonable rates.

Q. HOW DID THE COMPANY ESTABLISH THE FAIR VALUE RATE BASE?

A. As is discussed in the testimony of Company Witness Spanos, the Company calculated the fair value rate base ("FVRB") to be approximately $12.05 billion. Removing the Fair Value portion relating the Company's Edwardsport facility, the FVRB is approximately $9.77 billion.

Q. DOES THE FAIR VALUE STANDARD ALSO REQUIRE CONSIDERATION OF THE FAIR RETURN ON THE FAIR VALUE OF THE COMPANY'S ASSETS?

A. Yes, it does. As the Commission noted in Cause No. 43624:

> It is increasingly clear that a ratemaking agency's rate of return formula must be methodically consistent with its rate base development. Otherwise, the result will be insupportably arbitrary and unlawful since the ratemaking agency has a duty to ensure that the method of selecting the appropriate rate of return is reasonably related to the method of calculating the rate base. When the two methods lack consistency the combination of rate base and rate of return methodology does not produce an acceptable end result.[79]

Citing its Order in Cause No. 39314, the Commission further noted that it "must find the current fair value of Petitioner's used and useful property dedicated to

[79] Indiana Utility Regulatory Commission, Westfield Gas Corporation, Cause No. 43624, March 10, 2010, at 29 (citing Indiana Michigan Power Co., Cause No. 39314 (Nov. 12, 1993 Order at 42).

service of the public in Indiana, and give actual effect to that fair value finding in determining allowed return."[80]

Q. HAVE YOU CALCULATED THE FAIR VALUE RATE OF RETURN ("FVROR") ON THE FVRB?

A. Yes, as explained below I have done so using several alternative methods. My calculation first recognizes that because the nominal overall Rate of Return and the Fair Value Rate Base both include the effect of inflation, applying one to the other would over-state inflation and, therefore, overstate the required Return on Rate Base (that is, Operating Income). Conversely, applying the nominal Rate of Return to the Original Cost Rate Base recognizes inflation in only one term (the nominal Rate of Return), and therefore does not overstate Operating Income. At issue, then, is how to reflect in the overall Rate of Return the portion of the Fair Value Rate Base that is incremental to the Original Cost Rate Base (that is, generally attributable to inflation) without overstating or understating the effect of inflation on the Company's Operating Income.

My FVROR calculations address the effect of inflation in four steps. I first apply the nominal Weighted Average Cost of Capital ("WACC") to the Original Cost Rate Base; as noted above, doing so does not over-state the effect of inflation. That calculation provides a measure of Operating Income which, as shown in Petitioner's Exhibit 11-J, produces an earned Return on Common Equity of 10.40 percent. I then calculate the portion of the Fair Value Rate Base

[80] *Ibid*., at 46.

that is attributable to inflation (that is, the difference between the Fair Value Rate Base and the Original Cost Rate Base, referred to as the "Fair Value Increment"). In the third step, I consider two measures of the Fair Value Rate of Return, each of which adjusts for inflation when applied to the Fair Value Rate Base, but in different fashions. Lastly, I review the Operating Income associated with thos two methods to that provided under the Original Cost Rate Base approach.

Q. PLEASE FIRST DESCRIBE THE OPERATING INCOME ASSOCIATED WITH THE COMPANY'S ORIGINAL COST RATE BASE AND WEIGHTED AVERAGE COST OF CAPITAL.

A. As shown in Table 6, I applied the Company's 6.15 percent WACC, as of December 2020[81], to its (approximately) $8.33 billion Original Cost Rate Base[82]. That calculation produces expected Operating Income of about $512.23 million, and reconciles to the Company's proposed ROE of 10.40 percent (*see*, also, Petitioner's Exhibit 11-J).

Table 6: Operating Income on Original Cost Rate Base ($000's)

	Amount	Percent Of Total	Cost Rate	Weighted Cost Rate
Long Term Debt	$ 3,027,805	36.35%	4.88%	1.77%
Common Equity	3,419,249	41.05%	10.40%	4.27%
Customer Deposits	33,728	0.40%	2.00%	0.01%
Acc. Def. FIT	1,744,467	20.94%	0.00%	0.00%
Acc. Def. JDITC	104,974	1.26%	7.81%	0.10%
Capital Financing Original Cost Rate Base	$ 8,330,224	100.00%		6.15%
Rate of Return	6.15%			
Operating Income	$ 512,232			

[81] Petitioner's Exhibit 4-G (DLD), Schedule CS3
[82] Petitioner's Exhibit 4-F (DLD), Schedule RB1

Q. TURNING TO THE SECOND STEP, HOW DID YOU CALCULATE THE FAIR VALUE INCREMENT?

A. The Fair Value Increment simply is the difference between the $8.33 billion Original Cost Rate Base, and the $9.77 billion Fair Value Rate Base discussed above (that difference being approximately $1.44 billion).

Q. PLEASE NOW DESCRIBE THE FIRST METHOD YOU APPLIED TO MEASURE THE FAIR VALUE RATE OF RETURN.

A. As shown in Table 7 (below), I applied the Company's WACC to the Original Cost Rate Base, and applied the real risk-free rate of return (*i.e.,* 1.74 percent) to the Fair Value Increment. As applied to the Fair Value Rate Base, those components produce an overall Rate of Return (i.e., WACC) of 5.50 percent which, applied to the FVRB produces Operating Income of approximately $537.17 million, about $24.94 million greater than the Operating Income based on the Original Cost Rate Base alone.

Table 7: Operating Income Fair Value Rate Base ($000's): Fair Value Increment at Real Risk-Free Rate[83]

	Amount	Percent Of Total	Cost Rate	Weighted Cost Rate
Long Term Debt	$ 3,027,805	31.00%	4.88%	1.51%
Common Equity	3,419,249	35.01%	10.40%	3.64%
Customer Deposits	33,728	0.35%	2.00%	0.01%
Acc. Def. FIT	1,744,467	17.86%	0.00%	0.00%
Acc. Def. JDITC	104,974	1.07%	7.81%	0.08%
Capital Financing Original Cost Rate Base	$ 8,330,224			
Fair Value Increment	1,437,431	14.72%	1.74%	0.26%
Fair Value Rate Base	$ 9,767,654	100.00%		5.50%
Rate of Return	5.50%			
Operating Income	$ 537,173			
Op. Inc. Difference From OCRB	$ 24,941			

[83] Petitioner's Exhibit 11-J.

Q. HOW DID YOU ESTIMATE THE REAL RISK-FREE RATE OF RETURN?

A. The real risk-free rate of return (1.74 percent) is the inflation-adjusted expected yield on 30-year Treasury securities (represented in Equation [4] as T_{nom}), based on the following formula:

$$Real\ Risk\ Free\ Rate = \left[\frac{(1 + T_{nom})}{(1 + Inflation)}\right] - 1 \quad \text{Equation [4]}$$

The expected nominal 30-year Treasury yield for the year 2020 (3.80 percent) is provided by *Blue Chip Financial Forecast.* The expected rate of inflation (2.03 percent) is an average of two estimates: (1) the *Blue Chip Financial Forecast* projected GDP Chained Price Index (year over year change) as of 2020 (2.10 percent)[84], and (2) the compound annual forward inflation rate starting in five years based on the 100-day average spread between yields on long-term nominal Treasury Securities, and long-term Treasury Inflation Protected Securities (sometimes referred to as the "TIPS spread", 1.96 percent).[85]

Q. HAVE YOU CONSIDERED A MEANS OF MITIGATING THE $24.94 MILLION (POSITIVE) DIFFERENCE BETWEEN THE OPERATING INCOME EXPECTED UNDER THIS APPROACH, AND THE OPERATING INCOME EXPECTED UNDER THE ORIGINAL COST RATE BASE APPROACH?

84 *Blue Chip Financial Forecasts*, December 1, 2018, at 14.

85 Source: Board of Governors of the Federal Reserve System, "Table H.15 Selected Interest Rates"

A. Yes, I have. Adjusting the Real Risk-Free Rate by 50.00 percent reduces the incremental Operating Income by 50.00 percent, from $24.94 million to $12.47 million (see Table 8, below).

Table 8: Operating Income Fair Value Rate Base ($000's): Fair Value Increment at Adjusted Real Risk-Free Rate[86]

	Amount	Percent Of Total	Cost Rate	Weighted Cost Rate
Long Term Debt	$ 3,027,805	31.00%	4.88%	1.51%
Common Equity	3,419,249	35.01%	10.40%	3.64%
Customer Deposits	33,728	0.35%	2.00%	0.01%
Acc. Def. FIT	1,744,467	17.86%	0.00%	0.00%
Acc. Def. JDITC	104,974	1.07%	7.81%	0.08%
Capital Financing Original Cost Rate Base	$ 8,330,224			
Fair Value Increment	1,437,431	14.72%	0.87%	0.13%
Fair Value Rate Base	9,767,654	100.00%		5.37%
Rate of Return	5.37%			
Operating Income	$ 524,702			
Op. Inc. Difference From OCRB	$ 12,741			

Q. PLEASE SUMMARIZE YOUR ASSESSMENTS OF THE APPROACHES YOU CONSIDERED IN DEVELOPING THE FAIR VALUE RATE OF RETURN.

A. As noted earlier, I began with the expected Operating Income produced by the Company's Original Cost Rate Base, and its Weighted Average Cost of Capital. I then calculated the expected Operating Income under the methods discussed above, and considered the extent to which the expected Operating Income under each approach differs from the Original Cost Rate Base method. A natural extension of that assessment is to calculate the expected Return on Common Equity for each method. Those results are summarized in Table 9, below.

[86] Petitioner's Exhibit 11-J.

Table 9: Summary of Fair Value Rate of Return Methods ($000's)[87]

METHOD	RATE BASE	RATE OF RETURN	OPERATING INCOME	DIFFERENCE FROM ORIGINAL COST	RETURN ON ORIGINAL COST EQUITY
1: Original Cost	$ 8,330,224	6.15%	$512,232	$ -	10.40%
2: Fair Value Increment At Real Risk-Free Rate	$ 9,767,654	5.50%	$537,173	$24,941	11.13%
3: Fair Value Increment At Adjusted Real Risk-Free Rate	$ 9,767,654	5.37%	$524,702	$12,741	10.76%

VII. CONCLUSIONS

Q. WHAT IS YOUR CONCLUSION REGARDING THE ROE FOR DUKE ENERGY INDIANA?

A. As discussed throughout my testimony, it is important to consider a variety of empirical and qualitative information in reviewing analytical results and arriving at ROE determinations. As a practical matter, the Constant Growth DCF results are well below a highly observable and relevant benchmark, *i.e.,* the returns authorized for vertically integrated electric utilities. A more balanced approach therefore would be to consider the relative strengths and weaknesses of multiple methods, and give the appropriate weight to their results.

Based on that review, I believe an ROE in the range of 10.00 percent to 11.00 percent represents the range of equity investors' required ROE for investment in integrated electric utilities in the current market environment. Within that range, I conclude that an ROE of 10.40 percent represents the Cost of Equity for Duke Energy Indiana. That conclusion considers the cost

[87] *See*, *also*, Petitioner's Exhibit 11-J.

associated with issuing common stock and the current capital market environment, as well as Duke Energy Indiana's risk profile relative to the proxy group analytical results with respect to (1) the risks associated with certain aspects of the Company's generation portfolio; (2) the Company's wholesale power sales within MISO; (3) the Company's current and proposed rate mechanism; and (4) the Company's capital expenditure plan.

In light of those factors, it is appropriate to establish an ROE that is above the proxy group mean results. As such, an ROE of 10.40 percent reasonably represents the return required to invest in a company with a risk profile comparable to Duke Energy Indiana.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

APPENDIX A

Constant Growth DCF Model

Q. PLEASE DESCRIBE THE CONSTANT GROWTH DCF APPROACH.

A. The Constant Growth DCF approach is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its simplest form, the Constant Growth DCF model expresses the Cost of Equity as the discount rate that sets the current price equal to expected cash flows:

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \ldots + \frac{D_t}{(1+k)^t} \quad [5]$$

where P_0 represents the current stock price, $D_1 \ldots D_t$ represent expected future dividends, and k is the discount rate, or required ROE. Equation [5] is a standard present value calculation that can be simplified and rearranged into the familiar form:

$$k = \frac{D(1+g)}{P_0} + g \quad [6]$$

Equation [6] often is referred to as the "Constant Growth DCF" model, in which the first term is the expected dividend yield and the second term is the expected long-term growth rate.

Q. WHAT ASSUMPTIONS ARE REQUIRED FOR THE CONSTANT GROWTH DCF MODEL?

A. The Constant Growth DCF model assumes: (1) earnings, book value, and dividends all grow at the same, constant rate in perpetuity; (2) the dividend payout ratio remains constant; (3) the P/E multiple remains constant in perpetuity; and (4) the discount rate is greater than the expected growth rate,

and remains constant over time.

Q. WHAT MARKET DATA DID YOU USE TO CALCULATE THE DIVIDEND YIELD IN YOUR DCF MODEL?

A. The dividend yield is based on the proxy companies' current annualized dividend and average closing stock prices over the 30-, 90-, and 180-trading day periods as of May 31, 2019.

Q. WHY DID YOU USE THREE AVERAGING PERIODS TO CALCULATE AN AVERAGE STOCK PRICE?

A. I did so to ensure the model's results are not skewed by anomalous events that may affect stock prices on any given trading day. At the same time, the averaging period should be reasonably representative of expected capital market conditions over the long term. In my view, using 30-, 90-, and 180-trading day averaging periods reasonably balances those concerns.

Q. DID YOU MAKE ANY ADJUSTMENTS TO THE DIVIDEND YIELD TO ACCOUNT FOR PERIODIC GROWTH IN DIVIDENDS?

A. Yes, I did. Because utilities tend to increase their quarterly dividends at different times throughout the year, it is reasonable to assume that dividend increases will be evenly distributed over calendar quarters. Given that assumption, it is appropriate to calculate the expected dividend yield by applying one-half of the long-term growth rate to the current dividend yield.[88] That adjustment ensures that the expected dividend yield is, on average,

[88] Petitioner's Exhibit 11-B.

representative of the coming 12-month period, and does not overstate the dividends to be paid during that time.

Q. IS IT IMPORTANT TO SELECT APPROPRIATE MEASURES OF LONG-TERM GROWTH IN APPLYING THE DCF MODEL?

A. Yes. In its Constant Growth form, the DCF model (*i.e.*, as presented in Equation [5] above) assumes a single growth estimate in perpetuity. Accordingly, to reduce the long-term growth rate to a single measure, we must assume a fixed payout ratio, and the same constant growth rate for earnings per share ("EPS"), dividends per share, and book value per share. Because dividend growth can only be sustained by earnings growth, the model should incorporate a variety of measures of long-term earnings growth. That can be accomplished by averaging measures of long-term growth that tend to be least influenced by capital allocation decisions companies may make in response to near-term changes in the business environment. Because such decisions may directly affect near-term dividend payout ratios, estimates of earnings growth are more indicative of long-term investor expectations than are dividend growth estimates. For the purposes of the Constant Growth DCF model, therefore, growth in EPS represents the appropriate measure of long-term growth.

Q. PLEASE SUMMARIZE THE FINDINGS OF ACADEMIC RESEARCH ON THE APPROPRIATE MEASURE FOR ESTIMATING EQUITY RETURNS USING THE DCF MODEL.

A. The relationship between various growth rates and stock valuation metrics has been the subject of much academic research.[89] As noted over 40 years ago by Charles Phillips in The Economics of Regulation:

> For many years, it was thought that investors bought utility stocks largely on the basis of dividends. More recently, however, studies indicate that the market is valuing utility stocks with reference to total per share earnings, so that the earnings-price ratio has assumed increased emphasis in rate cases.[90]

Subsequent academic research has clearly and consistently indicated that measures of earnings and cash flow are strongly related to returns, and that analysts' forecasts of growth are superior to other measures of growth in predicting stock prices.[91] For example, Vander Weide and Carleton state that "[our] results … are consistent with the hypothesis that investors use analysts' forecasts, rather than historically oriented growth calculations, in making stock buy-and-sell decisions."[92] Other research specifically notes the importance of analysts' growth estimates in determining the Cost of Equity, and in the valuation of equity securities. Dr. Robert Harris noted that "a growing body of knowledge shows that analysts' earnings forecasts are indeed reflected in stock

---

89 *See,* Harris, Robert, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return,* Financial Management (Spring 1986).

90 Charles F. Phillips, Jr., The Economics of Regulation, at 285 (Rev. ed. 1969).

91 *See*, *e.g.*, Christofi, Christofi, Lori and Moliver, *Evaluating Common Stocks Using Value Line's Projected Cash Flows and Implied Growth Rate*, Journal of Investing (Spring 1999); Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts' Growth Forecasts*, Financial Management, 21 (Summer 1992); and Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988).

92 Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988). The Vander Weide and Carleton study was updated in 2004 under the direction of Dr. VanderWeide. The results of the updated study were consistent with the original study's conclusions.

prices."[93] Citing Cragg and Malkiel, Dr. Harris notes that those authors "found that the evaluations of companies that analysts make are the sorts of ones on which market valuation is based."[94] Similarly, Brigham, Shome, and Vinson noted that "evidence in the current literature indicates that (i) analysts' forecasts are superior to forecasts based solely on time series data, and (ii) investors do rely on analysts' forecasts."[95]

To that point, the research of Carleton and Vander Weide demonstrates that earnings growth projections have a statistically significant relationship to stock valuation levels, while dividend growth rates do not.[96] Those findings suggest investors form their investment decisions based on expectations of growth in earnings, not dividends. Consequently, earnings growth, not dividend growth, is the appropriate estimate for the purpose of the Constant Growth DCF model.

Q. PLEASE SUMMARIZE YOUR INPUTS TO THE CONSTANT GROWTH DCF MODEL.

A. I applied the DCF model to the proxy group of electric utility companies using the following inputs for the price and dividend terms:

---

93 Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder Required Rate of Return*, Financial Management (Spring 1986).

94 *Ibid*.

95 Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management (Spring 1985).

96 *See,* Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management (Spring 1988).

- The average daily closing prices for the 30-trading days, 90-trading days, and 180-trading days ended May 31, 2019 for the term P_0; and
- The annualized dividend per share as of May 31, 2019 for the term D_0.

I then calculated the DCF results using each of the following growth terms:

- Zack's consensus long-term earnings growth estimates;
- First Call consensus long-term earnings growth estimates; and
- Value Line earnings growth estimates.

Q. HOW DID YOU CALCULATE THE DCF MODEL RESULTS?

A. For each proxy company, I calculated the mean, mean high, and mean low results. For the mean result, I combined the average of the EPS growth rate estimates reported by Value Line, Zacks, and First Call with the subject company's dividend yield for each proxy company and then calculated the average result for those estimates. I calculated the high DCF result by combining the maximum EPS growth rate estimate as reported by Value Line, Zacks, and First Call with the subject company's dividend yield. The mean high result simply is the average of those estimates. I used the same approach to calculate the low DCF result, using instead the minimum of the Value Line, Zacks, and First Call estimates for each proxy company, and calculating the average result for those estimates.

Q. WHAT ARE THE RESULTS OF YOUR DCF ANALYSES?

A. The Constant Growth DCF results are summarized in Table 10 below (*see* also, Petitioner's Exhibit 11-B).

Table 10: Constant Growth DCF Results

	Mean Low	Mean	Mean High
30-Day Average	8.11%	8.93%	9.79%
90-Day Average	8.18%	8.99%	9.86%
180-Day Average	8.31%	9.12%	9.99%

Q. DO YOU BELIEVE THAT THE CONSTANT GROWTH DCF MODEL CURRENTLY PROVIDES A REASONABLE ESTIMATE OF THE COMPANY'S COST OF EQUITY?

A. No, I do not. The Constant Growth DCF model is predicated on a number of assumptions, one of which is that the P/E ratio will remain constant, in perpetuity. Because the utility sector P/E ratios have expanded to the point that they recently have exceeded both their long-term average and the market P/E ratio, the Constant Growth DCF model's results should be viewed with caution. As a practical matter, as shown in Chart 1 above, the mean Constant Growth DCF results are below a highly observable and relevant benchmark – the returns authorized for electric utilities.[97] As such, it is more appropriate to consider multiple methods in current market conditions, such as the CAPM approach, and the Bond Yield Plus Risk Premium model.

Regardless of the method employed, however, an authorized ROE that is well below returns authorized for other utilities: (1) runs counter to the *Hope* and *Bluefield* "comparable risk" standard, (2) would place the Company at a competitive disadvantage, and (3) would make it difficult for the Company to

[97] The average authorized ROE for vertically-integrated electric utilities since January 2015 is 9.74 percent. Excludes limited issue rider proceedings.

compete for capital at reasonable terms.

Q. PLEASE SUMMARIZE THE REASONS YOU BELIEVE THE CONSTANT GROWTH DCF MODEL SHOULD NOT BE GIVEN UNDUE WEIGHT IN THIS PROCEEDING.

A. As explained earlier, the model assumes that the return estimated today will be the same return required in the future, even though the Federal Reserve only recently has begun its move toward monetary policy normalization. That process of normalization, together with the uncertainty surrounding the "unwinding" of the assets put on the Federal Reserve's balance sheet during its "Quantitative Easing" initiatives introduce a degree of risk, and a likelihood of increasing interest rates not present in the current market. As also discussed earlier in my Direct Testimony, other methods more directly reflect the risk premium required by investors in response to market and industry risks. On balance, it is my view that the Constant Growth DCF method should be given less weight than other methods in establishing the Company's ROE.

Q. WITH THOSE POINTS IN MIND, HOW DID YOU REFLECT THE CONSTANT GROWTH DCF RESULTS IN YOUR ROE RANGE AND RECOMMENDATION?

A. I first recognized that the model's mean low results are well below a reasonable estimate of the Company's Cost of Equity. For example, of the 1,593 electric utility rate cases provided by Regulatory Research Associates that disclosed the awarded ROE since 1980, only eleven included an authorized ROE below 9.00

percent.[98] On that basis alone, the mean low results are highly improbable.

I then considered why the Constant Growth model is producing such low estimates of the Company's Cost of Equity. In one sense, relatively low dividend yields should be associated with relatively high growth rates. That is, low dividend yields are the result of relatively high stock prices which, in turn, should be associated with relatively high growth rates. If those relationships do not hold, the model's results should be viewed with some caution.

I also recognize that, whereas the Constant Growth DCF model assumes existing capital market conditions will remain constant, Risk Premium-based methods (discussed later in this Appendix) directly reflect the changing capital market environment (see, Section V). Because it is important to reflect the results of different models, and the mean low Constant Growth DCF results are far-removed from recently authorized returns, I concluded that they should be given less weight than other methods in determining the Company's ROE.

CAPM Analyses

Q. PLEASE BRIEFLY DESCRIBE THE GENERAL FORM OF THE CAPM.

A. The CAPM is a risk premium method that estimates the Cost of Equity for a given security as a function of a risk-free return plus a risk premium (to compensate investors for the non-diversifiable or "systematic" risk of that security). As shown in Equation [7], the CAPM is defined by four components,

[98] Source: Regulatory Research Associates. Eight of those eleven were the outcome of Illinois formula rate plans. Excluding Illinois formula rate plans, since 2015, only two electric utility rate case included an authorized ROE below 9.00 percent.

each of which theoretically is a forward-looking estimate:

$$K_e = r_f + \beta(r_m - r_f) \quad [7]$$

where:

K_e = the required market ROE for a security;

β = Beta coefficient of a that security;

r_f = the risk-free rate of return; and

r_m = the required return on the market, as a whole.

In Equation [7], the term ($r_m - r_f$) represents the Market Risk Premium.[99] According to the theory underlying the CAPM, because unsystematic risk can be diversified away by adding securities to investment portfolios, investors should be concerned only with systematic or non-diversifiable risk. Non-diversifiable risk is measured by the Beta coefficient, which is defined as:

$$\beta_j = \frac{\sigma_j}{\sigma_m} x \rho_{j,m} \quad [8]$$

where:

σ_j = the standard deviation of returns for company "*j*,"

σ_m = the standard deviation of returns for the broad market (as measured, for example, by the S&P 500 Index); and

$\rho_{j,m}$ = the correlation of returns in between company *j* and the broad market.

The Beta coefficient therefore represents both relative volatility (*i.e.*, the

[99] The Market Risk Premium is defined as the incremental return of the market portfolio over the risk-free rate.

standard deviation) of returns and the correlation in returns between the subject company and the overall market. Intuitively, Beta coefficients approaching unity indicate the subject company's returns have moved in tandem with the overall market.

Q. WHAT ASSUMPTIONS DID YOU INCLUDE IN YOUR CAPM ANALYSIS?

A. Because utility equity is a long duration investment, I used two different measures of the risk-free rate: (1) the current 30-day average yield on 30-year Treasury bonds (*i.e.,* 2.85 percent);[100] and (2) the near-term projected 30-year Treasury yield (*i.e.,* 3.03 percent).[101]

Q. WHY HAVE YOU RELIED ON THE 30-YEAR TREASURY YIELD FOR YOUR CAPM ANALYSIS?

A. In determining the security most relevant to the application of the CAPM, it is important to select the term (or maturity) that best matches the life of the underlying investment. As noted above, electric utilities typically are long-duration investments and, as such, the 30-year Treasury yield is more suitable for the purpose of calculating the Cost of Equity.

Q. PLEASE DESCRIBE YOUR *EX-ANTE* APPROACH TO ESTIMATING THE MARKET RISK PREMIUM.

A. The approach is based on the market-required return, less the current 30-year Treasury yield. To estimate the market required return, I calculated the market

---

100 Bloomberg Professional.

101 *See,* Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 2. Consensus projections of the 30-year Treasury yield for the six quarters ending September 2020.

capitalization weighted average ROE based on the Constant Growth DCF model. To do so, I relied on data from two sources: (1) Bloomberg; and (2) Value Line.[102] With respect to Bloomberg-derived growth estimates, I calculated the expected dividend yield (using the same one-half growth rate assumption described earlier), and combined that amount with the projected earnings growth rate to arrive at the market capitalization weighted average DCF result. I performed that calculation for each of the companies for which Bloomberg provided both dividend yields and consensus growth rates. I then subtracted the current 30-year Treasury yield from that amount to arrive at the market DCF-derived *ex-ante* market risk premium estimate. In the case of Value Line, I performed the same calculation, again using all companies for which five-year earnings growth rates were available. The results of those calculations are provided in Petitioner's Exhibit 11-C.

Q. HOW DID YOU APPLY YOUR EXPECTED MARKET RISK PREMIUM AND RISK-FREE RATE ESTIMATES?

A. I relied on the *ex-ante* Market Risk Premia discussed above, together with the current and near-term projected 30-year Treasury yields as inputs to my CAPM analysis.

Q. WHAT BETA COEFFICIENTS DID YOU USE IN YOUR CAPM MODEL?

A. As shown in Petitioner's Exhibit 11-D, I considered the Beta coefficients

[102] Petitioner's Exhibit 11-C.

reported by Value Line and Bloomberg, both of which adjust their calculated (or "raw") Beta coefficients to reflect the tendency of the Beta coefficient to regress to the market mean of 1.00. A notable difference between the two is that Value Line calculates the Beta coefficient over a five-year period, whereas Bloomberg's calculation is based on two years of data.

Q. HOW DID YOU APPLY YOUR EXPECTED MARKET RISK PREMIUM AND RISK-FREE RATE ESTIMATES?

A. As shown in Table 11 (below) the CAPM analyses suggest an ROE range of 8.09 percent to 10.11 percent (see also, Petitioner's Exhibit 11-E).

Table 11: Summary of CAPM Results[103]

	Bloomberg Derived Market Risk Premium	**Value Line Derived Market Risk Premium**
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.85%)	8.09%	8.59%
Near Term Projected 30-Year Treasury (3.03%)	8.27%	8.77%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.85%)	9.32%	9.93%
Near Term Projected 30-Year Treasury (3.03%)	9.50%	10.11%

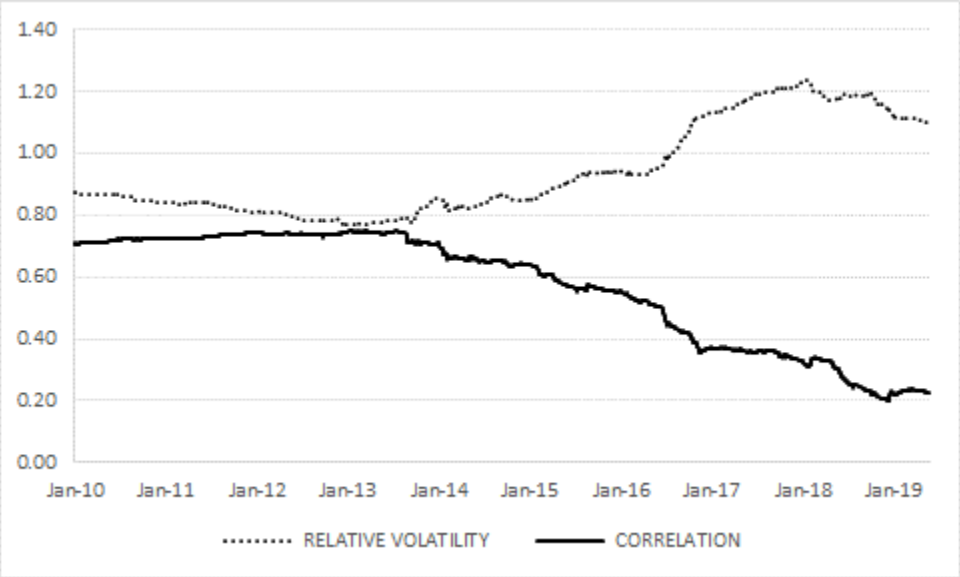
Q. DOES THE RECENT DECLINE IN THE PROXY GROUP AVERAGE BETA COEFFICIENT IMPLY A DECREASE IN RISK RELATIVE TO THE MARKET?

A. Not necessarily. Although the proxy group average Beta coefficient reported by Bloomberg has fallen from approximately 0.76 in 2014 to 0.48 in May 2019,

[103] Petitioner's Exhibit 11-E.

as Chart 11 below demonstrates, when the Beta coefficient is deconstructed into its components shown in Equation [8] above, we see that the correlation between the proxy group companies and the S&P 500 has declined, while the relative risk has increased. Given that the correlation between the proxy group companies and the S&P 500 has declined since 2014, while the relative risk has increased, the CAPM in the form presented here may not adequately reflect the expected systematic risk, and therefore, the returns required by investors in low-Beta coefficient companies such as utilities.

Chart 11: Components of Beta Coefficients Over Time[104]



Q. DID YOU CONSIDER ANOTHER FORM OF THE CAPM IN YOUR ANALYSIS?

A. Yes. I also included the ECAPM approach, which calculates the product of the adjusted Beta coefficient and the Market Risk Premium, and applies a weight

[104] Source: S&P Global Market Intelligence. Calculated as an index.

of 75.00 percent to that result. The model then applies a 25.00 percent weight to the Market Risk Premium, without any effect from the Beta coefficient.[105] The results of the two calculations are summed, along with the risk-free rate, to produce the ECAPM result, as noted in Equation [9] below:

$$k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f) \qquad [9]$$

where:

k_e = the required market ROE.

β = Adjusted Beta coefficient of an individual security.

r_f = the risk-free rate of return.

r_m = the required return on the market as a whole.

Q. WHAT IS THE BENEFIT OF THE ECAPM APPROACH?

A. The ECAPM addresses the tendency of the CAPM to under-estimate the Cost of Equity for companies, such as regulated utilities, with low Beta coefficients. As discussed below, the ECAPM recognizes the results of academic research indicating that the risk-return relationship is different (in essence, flatter) than estimated by the CAPM, and that the CAPM under-estimates the alpha, or the constant return term.[106]

Numerous tests of the CAPM have measured the extent to which security returns and Beta coefficients are related as predicted by the CAPM.

---

105 *See, e.g.*, Roger A. Morin, *New Regulatory Finance* 189-90 (2006).

106 *Ibid,*. at 191 ("The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks.").

The ECAPM method reflects the finding that the actual Security Market Line ("SML") described by the CAPM formula is not as steeply sloped as the predicted SML.[107] Fama and French state that "[t]he returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low."[108] Similarly, Morin states:

> With few exceptions, the empirical studies agree that . . . low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. . . .
>
> Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:
>
> $$K = R_F + x\ \beta(R_M - R_F) + (1-x)\ \beta(R_M - R_F)$$
>
> where x is a fraction to be determined empirically. The value of x that best explains the observed relationship Return = 0.0829 + 0.0520 β is between 0.25 and 0.30. If x = 0.25, the equation becomes:
>
> $$K = R_F + 0.25(R_M - R_F) + 0.75\ \beta(R_M - R_F)$$ [109]

Some analysts claim that using adjusted Beta coefficients addresses the empirical issues with the CAPM by increasing the expected returns for low Beta coefficient stocks and decreasing the returns for high Beta coefficient stocks, concluding that there is no need for the ECAPM approach. I disagree with that conclusion. Beta coefficients are adjusted because of their general regression

---

107 *Ibid,*. at 175-176. The Security Market Line plots the CAPM estimate on the Y-axis, and Beta coefficients on the X-axis.

108 Eugene F. Fama & Kenneth R. French, *The Capital Asset Pricing Model: Theory and Evidence*, Journal of Economic Perspectives, Vol. 18, No. 3, Summer 2004, at 33.

109 Roger A. Morin, *New Regulatory Finance* 175, 190 (2006).

tendency to converge toward 1.00 over time, *i.e.*, over successive calculations. As also noted earlier, numerous studies have determined that at any given point in time, the SML described by the CAPM formula is not as steeply sloped as the predicted SML. To that point, Morin states:

> Some have argued that the use of the ECAPM is inconsistent with the use of adjusted betas, such as those supplied by Value Line and Bloomberg. This is because the reason for using the ECAPM is to allow for the tendency of betas to regress toward the mean value of 1.00 over time, and, since Value Line betas are already adjusted for such trend, an ECAPM analysis results in double-counting. This argument is erroneous. Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. The ECAPM and the use of adjusted betas comprised two separate features of asset pricing. Even if a company's beta is estimated accurately, the CAPM still understates the return for low-beta stocks. Even if the ECAPM is used, the return for low-beta securities is understated if the betas are understated. Referring back to Figure 6-1, the ECAPM is a return (vertical axis) adjustment and not a beta (horizontal axis) adjustment. Both adjustments are necessary. [110]

Therefore, it is appropriate to rely on adjusted Beta coefficients in both the CAPM and ECAPM. As with the CAPM, my application of the ECAPM uses the Market DCF-derived *ex-ante* Market Risk Premium estimate, the current yield on 30-year Treasury securities as the risk-free rate, and two estimates of the Beta coefficient. The results of my ECAPM analyses are shown on Petitioner's Exhibit 11-E and summarized in Table 12 below.

[110] *Ibid.,* at 191.

Table 12: Summary of ECAPM Results[111]

	Bloomberg Derived Market Risk Premium	Value Line Derived Market Risk Premium
Average Bloomberg Beta Coefficient		
Current 30-Year Treasury (2.85%)	9.53%	10.17%
Near Term Projected 30-Year Treasury (3.03%)	9.71%	10.35%
Average Value Line Beta Coefficient		
Current 30-Year Treasury (2.85%)	10.45%	11.17%
Near Term Projected 30-Year Treasury (3.03%)	10.63%	11.35%

Bond Yield Plus Risk Premium Analysis

Q. PLEASE DESCRIBE THE BOND YIELD PLUS RISK PREMIUM APPROACH.

A. This approach is based on the basic financial tenet that equity investors bear the residual risk associated with ownership and therefore require a premium over the return they would have earned as a bondholder. That is, because returns to equity holders have more risk than returns to bondholders, equity investors must be compensated for bearing that additional risk. Risk premium approaches, therefore, estimate the Cost of Equity as the sum of the Equity Risk Premium and the yield on a given class of bonds. Because the Equity Risk Premium is not directly observable, it typically is estimated using a variety of approaches, some of which incorporate *ex-ante*, or forward-looking estimates of the Cost of Equity, and others that consider historical, or *ex-post*, estimates. An alternative approach is to use actual authorized returns for electric utilities to estimate the

[111] Petitioner's Exhibit 11-E.

Equity Risk Premium.

Q. PLEASE EXPLAIN HOW YOU PERFORMED YOUR BOND YIELD PLUS RISK PREMIUM ANALYSIS.

A. As suggested above, I first defined the Equity Risk Premium as the difference between the authorized ROE and the then-prevailing level of the long-term (*i.e.*, 30-year) Treasury yield. I therefore gathered data for the ROE authorized in 1,593 electric utility rate proceedings between January 1980 and May 31, 2019. In addition to the authorized ROE, I also calculated the average period between the filing of the case and the date of the final order (the "lag period"). To reflect the prevailing level of interest rates during the pendency of the proceedings, I calculated the average 30-year Treasury yield over the average lag period (approximately 200 days).[112]

Because the data covers multiple economic cycles[113], the analysis also may be used to assess the stability of the Equity Risk Premium. For example, prior research has shown that the Equity Risk Premium is inversely related to the level of interest rates.[114] That analysis is particularly relevant given the relatively low, but increasing, level of current Treasury yields.

---

112 Regulatory proceedings frequently retroactively apply the newly authorized ROE to a period preceding the decision date.

113 *See,* National Bureau of Economic Research, *U.S. Business Cycle Expansions and Contractions*.

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

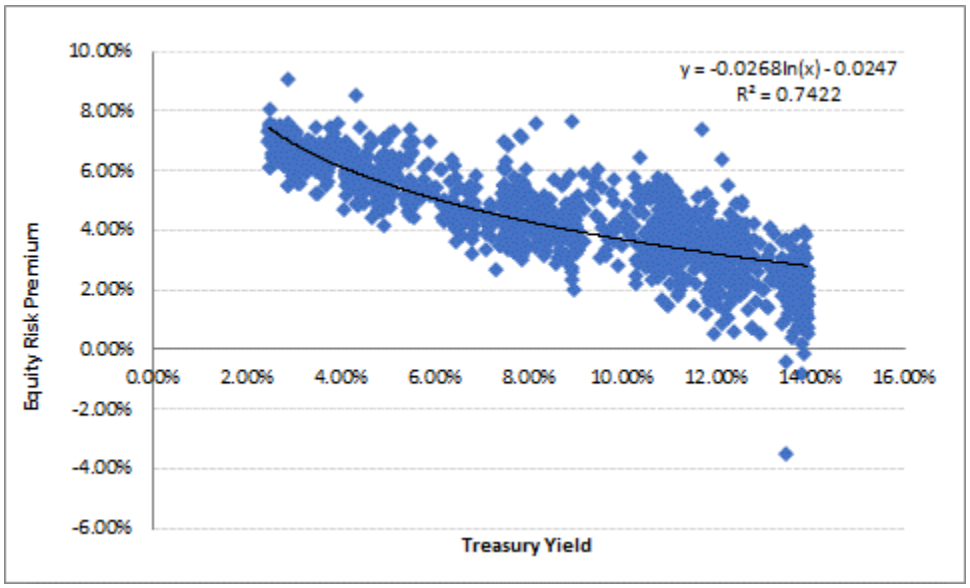
Q. HOW DID YOU ANALYZE THE RELATIONSHIP BETWEEN INTEREST RATES AND THE EQUITY RISK PREMIUM?

A. The basic method used was regression analysis, in which the observed Equity Risk Premium is the dependent variable, and the average 30-year Treasury yield is the independent variable. Relative to the long-term historical average, the analytical period includes interest rates and authorized ROEs that are quite high during one period (*i.e.*, the 1980s) and that are quite low during another (*i.e.*, the post-Lehman bankruptcy period). To account for that variability, I used the semi-log regression, in which the Equity Risk Premium is expressed as a function of the natural log of the 30-year Treasury yield:

$$\text{RP} = \alpha + \beta(LN(T_{30})) \quad [10]$$

As shown on Chart 12 (below), the semi-log form is useful when measuring an absolute change in the dependent variable (in this case, the Risk Premium) relative to a proportional change in the independent variable (the 30-year Treasury yield).

Chart 12: Equity Risk Premium[115]



As Chart 12 illustrates, over time there has been a statistically significant, negative (*i.e.*, inverse) relationship between the 30-year Treasury yield and the Equity Risk Premium. Consequently, simply applying the long-term average Equity Risk Premium of 4.68 percent would significantly understate the Cost of Equity and produce results well below any reasonable estimate. Based on the regression coefficients in Chart 12, however, the implied ROE is between 9.91 percent and 10.06 percent (*see,* Table 13 and Petitioner's Exhibit 11-F).

Table 13: Summary of Bond Yield Plus Risk Premium Results

	Return on Equity
Current 30-Year Treasury (2.85%)	9.91%
Near-Term Projected 30-Year Treasury (3.03%)	9.92%
Long-Term Projected 30-Year Treasury (3.70%)	10.06%

[115] Petitioner's Exhibit 11-F.

Expected Earnings

Q. PLEASE DESCRIBE THE EXPECTED EARNINGS ANALYSIS.

A. The Expected Earnings analysis is based on the principle of opportunity costs. Because investors may invest in, and earn returns on alternative investments of similar risk, those rates of return can provide a useful benchmark in determining the appropriate rate of return for a firm. Further, because those results are based solely on the returns expected by investors, exclusive of market-data or models, the Expected Earnings approach provides a direct comparison.

Q. PLEASE EXPLAIN HOW THE EXPECTED EARNINGS ANALYSIS IS CONDUCTED.

A. The Expected Earnings analysis typically takes the actual earnings on book value of investment for each of the members of the proxy group and compares those values to the rate of return in question. Although the traditional approach uses data based on historical accounting records, it is common to use forecasted data in conducting the analysis. Projected returns on book investment are provided by various industry publications (e.g., Value Line), which I have used in my analysis.

I relied on Value Line's projected Return on Common Equity for the period 2022-2024, and adjusted those projected returns to account for the fact that they reflect common shares outstanding at the end of the period, rather than the average shares outstanding over the course of the year.[116] The Expected

[116] The rationale for that adjustment is straightforward: Earnings are achieved over the course of a year, and should be related to the equity that was, on average, in place during that year. *See,*

Earnings analysis results in an average value of 10.50 percent and a median value of 10.53 (see Petitioner's Exhibit 11-G).

Leopold A. Bernstein, Financial Statement Analysis: Theory, Application, and Interpretation, Irwin, 4th Ed., 1988, at 630.

Resume of:

Robert B. Hevert, Partner
Rates, Regulation & Planning Practice Leader

Summary

Bob Hevert is a financial and economic consultant with more than 30 years of broad experience in the energy and utility industries. He has an extensive background in the areas of corporate finance, mergers and acquisitions, project finance, asset and business unit valuation, rate and regulatory matters, energy market assessment, and corporate strategic planning. He has provided expert testimony on a wide range of financial, strategic, and economic matters on more than 250 occasions at the state, provincial, and federal levels.

Prior to joining ScottMadden, Bob served as managing partner at Sussex Economic Advisors, LLC. Throughout the course of his career, he has worked with numerous leading energy companies and financial institutions throughout North America. He has provided expert testimony and support of litigation in various regulatory proceedings on a variety of energy and economic issues. Bob earned a B.S. in business and economics from the University of Delaware and an M.B.A. with a concentration in finance from the University of Massachusetts at Amherst. Bob also holds the Chartered Financial Analyst designation.

Areas of Specialization

- Regulation and rates
- Utilities
- Fossil/hydro generation
- Markets and RTOs
- Nuclear generation
- Mergers and acquisitions
- Regulatory strategy and rate case support
- Capital project planning
- Strategic and business planning

Recent Expert Testimony Submission/Appearance

- Federal Energy Regulatory Commission – Return on Equity
- New Jersey Board of Public Utilities – Merger Approval
- New Mexico Public Regulation Commission – Cost of Capital and Financial Integrity
- United States District Court – PURPA and FERC Regulations
- Alberta Utilities Commission – Return on Equity and Capital Structure

Recent Assignments

- Provided expert testimony on the cost of capital for ratemaking purposes before numerous state utility regulatory agencies, the Alberta Utilities Commission, and the Federal Energy Regulatory Commission
- For an independent electric transmission provider in Texas, prepared an expert report on the economic damages with respect to failure to meet guaranteed completion dates. The report was filed as part of an arbitration proceeding and included a review of the ratemaking implications of economic damages
- Advised the board of directors of a publicly traded electric and natural gas combination utility on dividend policy issues, earnings payout trends and related capital market considerations
- Assisted a publicly traded utility with a strategic buy-side evaluation of a gas utility with more than $1 billion in assets. The assignment included operational performance benchmarking, calculation of merger synergies, risk analysis, and review of the regulatory implications of the transaction
- Provided testimony before the Arkansas Public Service Commission in support of the acquisition of SourceGas LLC by Black Hills Corporation. The testimony addressed certain balance sheet capitalization and credit rating issues
- For the State of Maine Public Utility Commission, prepared a report that summarized the Northeast and Atlantic Canada natural gas power markets and analyzed the potential benefits and costs associated with natural gas pipeline expansions. The independent report was filed at the Maine Public Utility Commission

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Regulatory Commission of Alaska				
Cook Inlet Natural Gas Storage Alaska, LLC	06/18	Cook Inlet Natural Gas Storage Alaska, LLC	Docket No. U-18-043	Return on Equity
ENSTAR Natural Gas Company	06/16	ENSTAR Natural Gas Company	Matter No. TA 285-4	Return on Equity
ENSTAR Natural Gas Company	08/14	ENSTAR Natural Gas Company	Matter No. TA 262-4	Return on Equity
Alberta Utilities Commission				
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc., and FortisAlberta Inc.	10/17	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc., and FortisAlberta Inc.	2018 General Cost of Capital, Proceeding ID. 22570	Rate of Return
EPCOR Energy Alberta G.P. Inc.	01/17	EPCOR Energy Alberta G.P. Inc.	Proceeding 22357	Energy Price Setting Plan
AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	02/16	AltaLink, L.P., and EPCOR Distribution & Transmission, Inc.	2016 General Cost of Capital, Proceeding ID. 20622	Rate of Return
Arizona Corporation Commission				
Southwest Gas Corporation	05/19	Southwest Gas Corporation	Docket No. G-01551A-19-0055	Return on Equity
Southwest Gas Corporation	05/16	Southwest Gas Corporation	Docket No. G-01551A-16-0107	Return on Equity
Southwest Gas Corporation	11/10	Southwest Gas Corporation	Docket No. G-01551A-10-0458	Return on Equity
Arkansas Public Service Commission				
Southwestern Electric Power Company	02/19	Southwestern Electric Power Company	Docket No. 19-008-U	Return on Equity
Oklahoma Gas and Electric Company	09/16	Oklahoma Gas and Electric Company	Docket No. 16-052-U	Return on Equity
SourceGas Arkansas, Inc.	12/15	SourceGas Arkansas, Inc.	Docket No. 15-078-U	Response to Direct Testimony by Arkansas Attorney General related to Compliance Issues
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Arkansas Gas	11/15	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Arkansas Gas	Docket No. 15-098-U	Return on Equity
SourceGas Arkansas, Inc.	04/15	SourceGas Arkansas, Inc.	Docket No. 15-011-U	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Arkansas Gas	01/07	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Arkansas Gas	Docket No. 06-161-U	Return on Equity
California Public Utilities Commission				
Southwest Gas Corporation	12/12	Southwest Gas Corporation	Docket No. A-12-12-024	Return on Equity
Colorado Public Utilities Commission				
Atmos Energy Corporation	06/17	Atmos Energy Corporation	Docket No. 17AL-0429G	Return on Equity
Xcel Energy, Inc.	03/15	Public Service Company of Colorado	Docket No. 15AL-0135G	Return on Equity (gas)

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Xcel Energy, Inc.	06/14	Public Service Company of Colorado	Docket No. 14AL-0660E	Return on Equity (electric)
Xcel Energy, Inc.	12/12	Public Service Company of Colorado	Docket No. 12AL-1268G	Return on Equity (gas)
Xcel Energy, Inc.	11/11	Public Service Company of Colorado	Docket No. 11AL-947E	Return on Equity (electric)
Xcel Energy, Inc.	12/10	Public Service Company of Colorado	Docket No. 10AL-963G	Return on Equity (electric)
Atmos Energy Corporation	07/09	Atmos Energy Colorado-Kansas Division	Docket No. 09AL-507G	Return on Equity (gas)
Xcel Energy, Inc.	12/06	Public Service Company of Colorado	Docket No. 06S-656G	Return on Equity (gas)
Xcel Energy, Inc.	04/06	Public Service Company of Colorado	Docket No. 06S-234EG	Return on Equity (electric)
Xcel Energy, Inc.	08/05	Public Service Company of Colorado	Docket No. 05S-369ST	Return on Equity (steam)
Xcel Energy, Inc.	05/05	Public Service Company of Colorado	Docket No. 05S-246G	Return on Equity (gas)
Connecticut Public Utilities Regulatory Authority				
Connecticut Light and Power Company	11/17	Connecticut Light and Power Company	Docket No. 17-10-46	Return on Equity
Connecticut Light and Power Company	06/14	Connecticut Light and Power Company	Docket No. 14-05-06	Return on Equity
Southern Connecticut Gas Company	09/08	Southern Connecticut Gas Company	Docket No. 08-08-17	Return on Equity
Southern Connecticut Gas Company	12/07	Southern Connecticut Gas Company	Docket No. 05-03-17PH02	Return on Equity
Connecticut Natural Gas Corporation	12/07	Connecticut Natural Gas Corporation	Docket No. 06-03-04PH02	Return on Equity
Council of the City of New Orleans				
Entergy New Orleans, LLC	09/18	Entergy New Orleans, LLC	Docket No. UD-18-07	Return on Equity
Delaware Public Service Commission				
Delmarva Power & Light Company	08/17	Delmarva Power & Light Company	Docket No. 17-0977 (Electric)	Return on Equity
Delmarva Power & Light Company	08/17	Delmarva Power & Light Company	Docket No. 17-0978 (Gas)	Return on Equity
Delmarva Power & Light Company	05/16	Delmarva Power & Light Company	Case No. 16-649 (Electric)	Return on Equity
Delmarva Power & Light Company	05/16	Delmarva Power & Light Company	Case No. 16-650 (Gas)	Return on Equity
Delmarva Power & Light Company	03/13	Delmarva Power & Light Company	Case No. 13-115	Return on Equity
Delmarva Power & Light Company	12/12	Delmarva Power & Light Company	Case No. 12-546	Return on Equity
Delmarva Power & Light Company	03/12	Delmarva Power & Light Company	Case No. 11-528	Return on Equity
District of Columbia Public Service Commission				
Potomac Electric Power Company	05/19	Potomac Electric Power Company	Formal Case No. 1156	Return on Equity
Potomac Electric Power Company	12/17	Potomac Electric Power Company	Formal Case No. 1150	Return on Equity
Potomac Electric Power Company	06/16	Potomac Electric Power Company	Formal Case No. 1139	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Washington Gas Light Company	02/16	Washington Gas Light Company	Formal Case No. 1137	Return on Equity
Potomac Electric Power Company	03/13	Potomac Electric Power Company	Formal Case No. 1103-2013-E	Return on Equity
Potomac Electric Power Company	07/11	Potomac Electric Power Company	Formal Case No. 1087	Return on Equity
Federal Energy Regulatory Commission				
Sabine Pipeline, LLC	09/15	Sabine Pipeline, LLC	Docket No. RP15-1322-000	Return on Equity
NextEra Energy Transmission West, LLC	07/15	NextEra Energy Transmission West, LLC	Docket No. ER15-2239-000	Return on Equity
Maritimes & Northeast Pipeline, LLC	05/15	Maritimes & Northeast Pipeline, LLC	Docket No. RP15-1026-000	Return on Equity
Public Service Company of New Mexico	12/12	Public Service Company of New Mexico	Docket No. ER13-685-000	Return on Equity
Public Service Company of New Mexico	10/10	Public Service Company of New Mexico	Docket No. ER11-1915-000	Return on Equity
Portland Natural Gas Transmission System	05/10	Portland Natural Gas Transmission System	Docket No. RP10-729-000	Return on Equity
Florida Gas Transmission Company, LLC	10/09	Florida Gas Transmission Company, LLC	Docket No. RP10-21-000	Return on Equity
Maritimes and Northeast Pipeline, LLC	07/09	Maritimes and Northeast Pipeline, LLC	Docket No. RP09-809-000	Return on Equity
Spectra Energy	02/08	Saltville Gas Storage	Docket No. RP08-257-000	Return on Equity
Panhandle Energy Pipelines	08/07	Panhandle Energy Pipelines	Docket No. PL07-2-000	Response to draft policy statement regarding inclusion of MLPs in proxy groups for determination of gas pipeline ROEs
Southwest Gas Storage Company	08/07	Southwest Gas Storage Company	Docket No. RP07-541-000	Return on Equity
Southwest Gas Storage Company	06/07	Southwest Gas Storage Company	Docket No. RP07-34-000	Return on Equity
Sea Robin Pipeline LLC	06/07	Sea Robin Pipeline LLC	Docket No. RP07-513-000	Return on Equity
Transwestern Pipeline Company	09/06	Transwestern Pipeline Company	Docket No. RP06-614-000	Return on Equity
GPU International and Aquila	11/00	GPU International	Docket No. EC01-24-000	Market Power Study
Florida Public Service Commission				
Florida Power & Light Company	03/16	Florida Power & Light Company	Docket No. 160021-EI	Return on Equity
Tampa Electric Company	04/13	Tampa Electric Company	Docket No. 130040-EI	Return on Equity
Georgia Public Service Commission				
Atlanta Gas Light Company	05/10	Atlanta Gas Light Company	Docket No. 31647-U	Return on Equity
Hawaii Public Utilities Commission				
Hawai'i Electric Light Company, Inc.	12/18	Hawai'i Electric Light Company, Inc.	Docket No. 2018-0368	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Maui Electric Company, Limited	10/17	Maui Electric Company, Limited	Docket No. 2017-0150	Return on Equity
Hawaiian Electric Company, Inc.	12/16	Hawaiian Electric Company, Inc.	Docket No. 2016-0328	Return on Equity
Hawai'i Electric Light Company, Inc.	09/16	Hawai'i Electric Light Company, Inc.	Docket No. 2015-0170	Return on Equity
Maui Electric Company, Limited	12/14	Maui Electric Company, Limited	Docket No. 2014-0318	Return on Equity
Hawaiian Electric Company, Inc.	06/14	Hawaiian Electric Company, Inc.	Docket No. 2013-0373	Return on Equity
Hawai'i Electric Light Company, Inc.	08/12	Hawai'i Electric Light Company, Inc.	Docket No. 2012-0099	Return on Equity
Illinois Commerce Commission				
Ameren Illinois Company d/b/a Ameren Illinois	01/18	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 18-0463	Return on Equity
Ameren Illinois Company d/b/a Ameren Illinois	01/15	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 15-0142	Return on Equity
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	04/14	Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	Docket No. 14-0371	Return on Equity
Ameren Illinois Company d/b/a Ameren Illinois	01/13	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 13-0192	Return on Equity
Ameren Illinois Company d/b/a Ameren Illinois	02/11	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 11-0279	Return on Equity (electric)
Ameren Illinois Company d/b/a Ameren Illinois	02/11	Ameren Illinois Company d/b/a Ameren Illinois	Docket No. 11-0282	Return on Equity (gas)
Indiana Utility Regulatory Commission				
Indiana Michigan Power Company	05/19	Indiana Michigan Power Company	Cause No. 45235	Return on Equity
Indiana Michigan Power Company	07/17	Indiana Michigan Power Company	Cause No. 44967	Return on Equity
Duke Energy Indiana, Inc.	12/15	Duke Energy Indiana, Inc.	Cause No. 44720	Return on Equity
Duke Energy Indiana, Inc.	12/14	Duke Energy Indiana, Inc.	Cause No. 44526	Return on Equity
Northern Indiana Public Service Company	05/09	Northern Indiana Public Service Company	Cause No. 43894	Assessment of Valuation Approaches
Kansas Corporation Commission				
Empire District Electric Company	02/19	Empire District Electric Company	Docket No. 19-EPDE-223-RTS	Return on Equity
Empire District Electric Company	12/18	Empire District Electric Company	Docket No. 19-EPDE-223-RTS	Alternative Ratemaking Mechanisms

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Kansas City Power & Light Company	05/18	Kansas City Power & Light Company	Docket No. 18-KCPE-480-RTS	Return on Equity
Westar Energy	02/18	Westar Energy	Docket No. 18-WSEE-328-RTS	Return on Equity
Great Plains Energy, Inc. and Kansas City Power & Light Company	01/17	Great Plains Energy, Inc. and Kansas City Power & Light Company	Docket No. 16-KCPE-593-ACQ	Response to Direct Testimony by Commission Staff related to the ratemaking capital structure processes
Kansas City Power & Light Company	01/15	Kansas City Power & Light Company	Docket No. 15-KCPE-116-RTS	Return on Equity
Maine Public Utilities Commission				
Northern Utilities, Inc.	05/17	Northern Utilities, Inc.	Docket No. 2017-00065	Return on Equity
Central Maine Power Company	06/11	Central Maine Power Company	Docket No. 2010-327	Response to Bench Analysis provided by Commission Staff relating to the Company's credit and collections processes
Maryland Public Service Commission				
Washington Gas Light Company	04/19	Washington Gas Light Company	Case No. 9605	Return on Equity
Potomac Electric Power Company	01/19	Potomac Electric Power Company	Case No. 9602	Return on Equity
Washington Gas Light Company	05/18	Washington Gas Light Company	Case No. 9481	Return on Equity
Potomac Electric Power Company	01/18	Potomac Electric Power Company	Case No. 9472	Return on Equity
Delmarva Power & Light Company	07/17	Delmarva Power & Light Company	Case No. 9455	Return on Equity
Potomac Electric Power Company	03/17	Potomac Electric Power Company	Case No. 9443	Return on Equity
Delmarva Power & Light Company	06/16	Delmarva Power & Light Company	Case No. 9424	Return on Equity
Potomac Electric Power Company	06/16	Potomac Electric Power Company	Case No. 9418	Return on Equity
Potomac Electric Power Company	12/13	Potomac Electric Power Company	Case No. 9336	Return on Equity
Delmarva Power & Light Company	03/13	Delmarva Power & Light Company	Case No. 9317	Return on Equity
Potomac Electric Power Company	11/12	Potomac Electric Power Company	Case No. 9311	Return on Equity
Potomac Electric Power Company	12/11	Potomac Electric Power Company	Case No. 9286	Return on Equity
Delmarva Power & Light Company	12/11	Delmarva Power & Light Company	Case No. 9285	Return on Equity
Delmarva Power & Light Company	12/10	Delmarva Power & Light Company	Case No. 9249	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Massachusetts Department of Public Utilities				
NSTAR Electric Company d/b/a Eversource Energy; Massachusetts Electric Company & Nantucket Electric Company, d/b/a National Grid; and Fitchburg Gas and Electric Light Company, d/b/a Unitil	02/19	NSTAR Electric Company d/b/a Eversource Energy; Massachusetts Electric Company & Nantucket Electric Company, d/b/a National Grid; and Fitchburg Gas and Electric Light Company, d/b/a Unitil	DPU 18-64/DPU 18-65/DPU 18-66	Response to Direct Testimony by Attorney General Witness regarding Remuneration Rate Section 83D
National Grid	11/18	Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid	DPU 18-150	Return on Equity
NSTAR Electric Company d/b/a Eversource Energy	11/18	NSTAR Electric Company d/b/a Eversource Energy	DPU 18-76/DPU 18-77/DPU 18-78	Response to Direct Testimony by Attorney General Witness regarding Remuneration Rate Section 83C
Boston Gas Company, Colonial Gas Company each d/b/a National Grid	11/17	Boston Gas Company, Colonial Gas Company each d/b/a National Grid	DPU 17-170	Return on Equity
NSTAR Electric Company Western and Massachusetts Electric Company each d/b/a Eversource Energy	01/17	NSTAR Electric Company Western Massachusetts Electric Company each d/b/a Eversource Energy	DPU 17-05	Return on Equity
National Grid	11/15	Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid	DPU 15-155	Return on Equity
Fitchburg Gas and Electric Light Company d/b/a Unitil	06/15	Fitchburg Gas and Electric Light Company d/b/a Unitil	DPU 15-80	Return on Equity
NSTAR Gas Company	12/14	NSTAR Gas Company	DPU 14-150	Return on Equity
Fitchburg Gas and Electric Light Company d/b/a Unitil	07/13	Fitchburg Gas and Electric Light Company d/b/a Unitil	DPU 13-90	Return on Equity
Bay State Gas Company d/b/a Columbia Gas of Massachusetts	04/12	Bay State Gas Company d/b/a Columbia Gas of Massachusetts	DPU 12-25	Capital Cost Recovery
National Grid	08/09	Massachusetts Electric Company d/b/a National Grid	DPU 09-39	Revenue Decoupling and Return on Equity
National Grid	08/09	Massachusetts Electric Company and Nantucket Electric Company d/b/a National Grid	DPU 09-38	Return on Equity – Solar Generation

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Bay State Gas Company	04/09	Bay State Gas Company	DPU 09-30	Return on Equity
NSTAR Electric	09/04	NSTAR Electric	DTE 04-85	Divestiture of Power Purchase Agreement
NSTAR Electric	08/04	NSTAR Electric	DTE 04-78	Divestiture of Power Purchase Agreement
NSTAR Electric	07/04	NSTAR Electric	DTE 04-68	Divestiture of Power Purchase Agreement
NSTAR Electric	07/04	NSTAR Electric	DTE 04-61	Divestiture of Power Purchase Agreement
NSTAR Electric	06/04	NSTAR Electric	DTE 04-60	Divestiture of Power Purchase Agreement
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Bay State Gas Company	01/93	Bay State Gas Company	DPU 93-14	Divestiture of Shelf Registration
Bay State Gas Company	01/91	Bay State Gas Company	DPU 91-25	Divestiture of Shelf Registration
Michigan Public Service Commission				
SEMCO Energy Gas Company	05/19	SEMCO Energy Gas Company	Case No. U-20479	Return on Equity
Indiana Michigan Power Company	05/17	Indiana Michigan Power Company	Case No. U-18370	Return on Equity
Minnesota Public Utilities Commission				
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	08/17	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	Docket No. G-008/GR-17-285	Return on Equity
ALLETE, Inc., d/b/a Minnesota Power Inc.	11/16	ALLETE, Inc., d/b/a Minnesota Power Inc.	Docket No. E015/GR-16-664	Return on Equity
Otter Tail Power Corporation	02/16	Otter Tail Power Company	Docket No. E017/GR-15-1033	Return on Equity
Minnesota Energy Resources Corporation	09/15	Minnesota Energy Resources Corporation	Docket No. G-011/GR-15-736	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	08/15	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	Docket No. G-008/GR-15-424	Return on Equity
Xcel Energy, Inc.	11/13	Northern States Power Company	Docket No. E002/GR-13-868	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	08/13	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	Docket No. G-008/GR-13-316	Return on Equity
Xcel Energy, Inc.	11/12	Northern States Power Company	Docket No. E002/GR-12-961	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Otter Tail Power Corporation	04/10	Otter Tail Power Company	Docket No. E-017/GR-10-239	Return on Equity
Minnesota Power a division of ALLETE, Inc.	11/09	Minnesota Power	Docket No. E-015/GR-09-1151	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Minnesota Gas	11/08	CenterPoint Energy Minnesota Gas	Docket No. G-008/GR-08-1075	Return on Equity
Otter Tail Power Corporation	10/07	Otter Tail Power Company	Docket No. E-017/GR-07-1178	Return on Equity
Xcel Energy, Inc.	11/05	Northern States Power Company -Minnesota	Docket No. E-002/GR-05-1428	Return on Equity (electric)
Xcel Energy, Inc.	09/04	Northern States Power Company - Minnesota	Docket No. G-002/GR-04-1511	Return on Equity (gas)
Mississippi Public Service Commission				
CenterPoint Energy Resources, Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Mississippi Gas	07/09	CenterPoint Energy Mississippi Gas	Docket No. 09-UN-334	Return on Equity
Missouri Public Service Commission				
Union Electric Company d/b/a Ameren Missouri	12/18	Union Electric Company d/b/a Ameren Missouri	Case No. GR-2019-0077	Return on Equity
KCP&L Greater Missouri Operations Company	01/18	KCP&L Greater Missouri Operations Company	Case No. ER-2018-0146	Return on Equity
Kansas City Power & Light Company	01/18	Kansas City Power & Light Company	Case No. ER-2018-0145	Return on Equity
Laclede Gas Company and Missouri Gas Energy	11/17	Laclede Gas Company and Missouri Gas Energy	Case No. GR-2017-0215 Case No. GR-2017-0216	Goodwill Adjustment on Capital Structure
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a/ Liberty Utilities	09/17	Liberty Utilities (Midstates Natural Gas) Corp. d/b/a/ Liberty Utilities	Case No. GR-2018-0013	New Ratemaking Mechanisms
Union Electric Company d/b/a Ameren Missouri	07/16	Union Electric Company d/b/a Ameren Missouri	Case No. ER-2016-0179	Return on Equity (electric)
Kansas City Power & Light Company	07/16	Kansas City Power & Light Company	Case No. ER-2016-0285	Return on Equity (electric)
Kansas City Power & Light Company	02/16	Kansas City Power & Light Company	Case No. ER-2016-0156	Return on Equity (electric)
Kansas City Power & Light Company	10/14	Kansas City Power & Light Company	Case No. ER-2014-0370	Return on Equity (electric)
Union Electric Company d/b/a Ameren Missouri	07/14	Union Electric Company d/b/a Ameren Missouri	Case No. ER-2014-0258	Return on Equity (electric)
Union Electric Company d/b/a Ameren Missouri	06/14	Union Electric Company d/b/a Ameren Missouri	Case No. EC-2014-0223	Return on Equity (electric)

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	02/14	Liberty Utilities (Midstates Natural Gas) Corp. d/b/a Liberty Utilities	Case No. GR-2014-0152	Return on Equity
Laclede Gas Company	12/12	Laclede Gas Company	Case No. GR-2013-0171	Return on Equity
Union Electric Company d/b/a Ameren Missouri	02/12	Union Electric Company d/b/a Ameren Missouri	Case No. ER-2012-0166	Return on Equity (electric)
Union Electric Company d/b/a AmerenUE	09/10	Union Electric Company d/b/a AmerenUE	Case No. ER-2011-0028	Return on Equity (electric)
Union Electric Company d/b/a AmerenUE	06/10	Union Electric Company d/b/a AmerenUE	Case No. GR-2010-0363	Return on Equity (gas)
Montana Public Service Commission				
Northwestern Corporation	09/12	Northwestern Corporation d/b/a Northwestern Energy	Docket No. D2012.9.94	Return on Equity (gas)
Nevada Public Utilities Commission				
Southwest Gas Corporation	05/18	Southwest Gas Corporation	Docket No. 18-05031	Return on Equity (gas)
Southwest Gas Corporation	04/12	Southwest Gas Corporation	Docket No. 12-04005	Return on Equity (gas)
Nevada Power Company	06/11	Nevada Power Company	Docket No. 11-06006	Return on Equity (electric)
New Hampshire Public Utilities Commission				
Northern Utilities, Inc.	06/17	Northern Utilities, Inc.	Docket No. DG 17-070	Return on Equity
Liberty Utilities d/b/a EnergyNorth Natural Gas	04/17	Liberty Utilities d/b/a EnergyNorth Natural Gas	Docket No. DG 17-048	Return on Equity
Unitil Energy Systems, Inc.	04/16	Unitil Energy Systems, Inc.	Docket No. DE 16-384	Return on Equity
Liberty Utilities d/b/a Granite State Electric Company	04/16	Liberty Utilities d/b/a Granite State Electric Company	Docket No. DE 16-383	Return on Equity
Liberty Utilities d/b/a EnergyNorth Natural Gas	08/14	Liberty Utilities d/b/a EnergyNorth Natural Gas	Docket No. DG 14-180	Return on Equity
Liberty Utilities d/b/a Granite State Electric Company	03/13	Liberty Utilities d/b/a Granite State Electric Company	Docket No. DE 13-063	Return on Equity
EnergyNorth Natural Gas d/b/a National Grid NH	02/10	EnergyNorth Natural Gas d/b/a National Grid NH	Docket No. DG 10-017	Return on Equity
Unitil Energy Systems, Inc., EnergyNorth Natural Gas, Inc. d/b/a National Grid NH, Granite State Electric Company d/b/a National Grid, and Northern Utilities, Inc. – New Hampshire Division	08/08	Unitil Energy Systems, Inc., EnergyNorth Natural Gas, Inc. d/b/a National Grid NH, Granite State Electric Company d/b/a National Grid, and Northern Utilities, Inc. – New Hampshire Division	Docket No. DG 07-072	Carrying Charge Rate on Cash Working Capital

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
New Jersey Board of Public Utilities				
Elizabethtown Gas Company	04/19	Elizabethtown Gas Company	Docket No. GR19040486	Return on Equity
Atlantic City Electric Company	10/18	Atlantic City Electric Company	Docket No. EO18020196	Return on Equity
Atlantic City Electric Company	08/18	Atlantic City Electric Company	Docket No. ER18080925	Return on Equity
Atlantic City Electric Company	06/18	Atlantic City Electric Company	Docket No. ER18060638	Return on Equity
Atlantic City Electric Company	03/17	Atlantic City Electric Company	Docket No. ER17030308	Return on Equity
Pivotal Utility Holdings, Inc.	08/16	Elizabethtown Gas	Docket No. GR16090826	Return on Equity
The Southern Company; AGL Resources Inc.; AMS Corp. and Pivotal Holdings, Inc. d/b/a Elizabethtown Gas	04/16	The Southern Company; AGL Resources Inc.; AMS Corp. and Pivotal Holdings, Inc. d/b/a Elizabethtown Gas	BPU Docket No. GM15101196	Merger Approval
Atlantic City Electric Company	03/16	Atlantic City Electric Company	Docket No. ER16030252	Return on Equity
Pepco Holdings, Inc.	03/14	Atlantic City Electric Company	Docket No. ER14030245	Return on Equity
Orange and Rockland Utilities	11/13	Rockland Electric Company	Docket No. ER13111135	Return on Equity
Atlantic City Electric Company	12/12	Atlantic City Electric Company	Docket No. ER12121071	Return on Equity
Atlantic City Electric Company	08/11	Atlantic City Electric Company	Docket No. ER11080469	Return on Equity
Pepco Holdings, Inc.	09/06	Atlantic City Electric Company	Docket No. EM06090638	Divestiture and Valuation of Electric Generating Assets
Pepco Holdings, Inc.	12/05	Atlantic City Electric Company	Docket No. EM05121058	Market Value of Electric Generation Assets; Auction
Conectiv	06/03	Atlantic City Electric Company	Docket No. EO03020091	Market Value of Electric Generation Assets; Auction Process
New Mexico Public Regulation Commission				
Public Service Company of New Mexico	12/16	Public Service Company of New Mexico	Case No. 16-00276-UT	Return on Equity (electric)
Public Service Company of New Mexico	08/15	Public Service Company of New Mexico	Case No. 15-00261-UT	Return on Equity (electric)
Public Service Company of New Mexico	12/14	Public Service Company of New Mexico	Case No. 14-00332-UT	Return on Equity (electric)
Public Service Company of New Mexico	12/14	Public Service Company of New Mexico	Case No. 13-00390-UT	Cost of Capital and Financial Integrity
Southwestern Public Service Company	02/11	Southwestern Public Service Company	Case No. 10-00395-UT	Return on Equity (electric)
Public Service Company of New Mexico	06/10	Public Service Company of New Mexico	Case No. 10-00086-UT	Return on Equity (electric)

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Public Service Company of New Mexico	09/08	Public Service Company of New Mexico	Case No. 08-00273-UT	Return on Equity (electric)
Xcel Energy, Inc.	07/07	Southwestern Public Service Company	Case No. 07-00319-UT	Return on Equity (electric)
New York State Public Service Commission				
Consolidated Edison Company of New York, Inc.	01/15	Consolidated Edison Company of New York, Inc.	Case No. 15-E-0050	Return on Equity (electric)
Orange and Rockland Utilities, Inc.	11/14	Orange and Rockland Utilities, Inc.	Case Nos. 14-E-0493 and 14-G-0494	Return on Equity (electric and gas)
Consolidated Edison Company of New York, Inc.	01/13	Consolidated Edison Company of New York, Inc.	Case No. 13-E-0030	Return on Equity (electric)
Niagara Mohawk Corporation d/b/a National Grid for Electric Service	04/12	Niagara Mohawk Corporation d/b/a National Grid for Electric Service	Case No. 12-E-0201	Return on Equity (electric)
Niagara Mohawk Corporation d/b/a National Grid for Gas Service	04/12	Niagara Mohawk Corporation d/b/a National Grid for Gas Service	Case No. 12-G-0202	Return on Equity (gas)
Orange and Rockland Utilities, Inc.	07/11	Orange and Rockland Utilities, Inc.	Case No. 11-E-0408	Return on Equity (electric)
Orange and Rockland Utilities, Inc.	07/10	Orange and Rockland Utilities, Inc.	Case No. 10-E-0362	Return on Equity (electric)
Consolidated Edison Company of New York, Inc.	11/09	Consolidated Edison Company of New York, Inc.	Case No. 09-G-0795	Return on Equity (gas)
Consolidated Edison Company of New York, Inc.	11/09	Consolidated Edison Company of New York, Inc.	Case No. 09-S-0794	Return on Equity (steam)
Niagara Mohawk Power Corporation	07/01	Niagara Mohawk Power Corporation	Case No. 01-E-1046	Power Purchase and Sale Agreement; Standard Offer Service Agreement
North Carolina Utilities Commission				
Piedmont Natural Gas Company, Inc.	04/19	Piedmont Natural Gas Company, Inc.	Docket No. G-9, Sub 743	Return on Equity
Virginia Electric and Power Company d/b/a Dominion North Carolina Power	03/19	Virginia Electric and Power Company d/b/a Dominion North Carolina Power	Docket No. E-22, Sub 562	Return on Equity
Duke Energy Carolinas, LLC	08/17	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 1146	Return on Equity
Duke Energy Progress, LLC	06/17	Duke Energy Progress, LLC	Docket No. E-2, Sub 1142	Return on Equity
Public Service Company of North Carolina, Inc.	03/16	Public Service Company of North Carolina, Inc.	Docket No. G-5, Sub 565	Return on Equity
Dominion North Carolina Power	03/16	Dominion North Carolina Power	Docket No. E-22, Sub 532	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Duke Energy Carolinas, LLC	02/13	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 1026	Return on Equity
Carolina Power & Light Company d/b/a Progress Energy Carolinas, Inc.	10/12	Carolina Power & Light Company d/b/a Progress Energy Carolinas, Inc.	Docket No. E-2, Sub 1023	Return on Equity
Virginia Electric and Power Company d/b/a Dominion North Carolina Power	03/12	Virginia Electric and Power Company d/b/a Dominion North Carolina Power	Docket No. E-22, Sub 479	Return on Equity
Duke Energy Carolinas, LLC	07/11	Duke Energy Carolinas, LLC	Docket No. E-7, Sub 989	Return on Equity
North Dakota Public Service Commission				
Otter Tail Power Company	11/17	Otter Tail Power Company	Docket No. 17-398	Return on Equity (electric)
Otter Tail Power Company	11/08	Otter Tail Power Company	Docket No. 08-862	Return on Equity (electric)
Oklahoma Corporation Commission				
Empire District Electric Company	03/19	Empire District Electric Company	Cause No. PUD201800133	Return on Equity
CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Oklahoma Gas	03/16	CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Oklahoma Gas	Cause No. PUD201600094	Return on Equity
Oklahoma Gas & Electric Company	12/15	Oklahoma Gas & Electric Company	Cause No. PUD201500273	Return on Equity
Public Service Company of Oklahoma	07/15	Public Service Company of Oklahoma	Cause No. PUD201500208	Return on Equity
Oklahoma Gas & Electric Company	07/11	Oklahoma Gas & Electric Company	Cause No. PUD201100087	Return on Equity
CenterPoint Energy Resources Corp., d/b/a CenterPoint Energy Oklahoma Gas	03/09	CenterPoint Energy Oklahoma Gas	Cause No. PUD200900055	Return on Equity
Pennsylvania Public Utility Commission				
Pike County Light & Power Company	01/14	Pike County Light & Power Company	Docket No. R-2013-2397237	Return on Equity (electric & gas)
Veolia Energy Philadelphia, Inc.	12/13	Veolia Energy Philadelphia, Inc.	Docket No. R-2013-2386293	Return on Equity (steam)
Rhode Island Public Utilities Commission				
The Narragansett Electric Company d/b/a National Grid	02/19	The Narragansett Electric Company d/b/a National Grid	Docket No. 4929	Support for financial remuneration under new power purchase agreement
The Narragansett Electric Company d/b/a National Grid	11/17	The Narragansett Electric Company d/b/a National Grid	Docket No. 4770	Return on Equity (electric & gas)
The Narragansett Electric Company d/b/a National Grid	04/12	The Narragansett Electric Company d/b/a National Grid	Docket No. 4323	Return on Equity (electric & gas)

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
National Grid RI – Gas	08/08	National Grid RI – Gas	Docket No. 3943	Revenue Decoupling and Return on Equity
South Carolina Public Service Commission				
Duke Energy Carolinas, LLC	11/18	Duke Energy Carolinas, LLC	Docket No. 2018-319-E	Return on Equity
Duke Energy Progress, LLC	11/18	Duke Energy Progress, LLC	Docket No. 2018-318-E	Return on Equity
South Carolina Electric & Gas	08/18	South Carolina Electric & Gas	Docket No. 2017-370-E	Return on Equity
South Carolina Electric & Gas	12/17	South Carolina Electric & Gas	Docket No. 2017-305-E	Return on Equity
Duke Energy Progress, LLC	07/16	Duke Energy Progress, LLC	Docket No. 2016-227-E	Return on Equity
Duke Energy Carolinas, LLC	03/13	Duke Energy Carolinas, LLC	Docket No. 2013-59-E	Return on Equity
South Carolina Electric & Gas	06/12	South Carolina Electric & Gas	Docket No. 2012-218-E	Return on Equity
Duke Energy Carolinas, LLC	08/11	Duke Energy Carolinas, LLC	Docket No. 2011-271-E	Return on Equity
South Carolina Electric & Gas	03/10	South Carolina Electric & Gas	Docket No. 2009-489-E	Return on Equity
South Dakota Public Utilities Commission				
Otter Tail Power Company	04/18	Otter Tail Power Company	Docket No. EL18-021	Return on Equity (electric)
Otter Tail Power Company	08/10	Otter Tail Power Company	Docket No. EL10-011	Return on Equity (electric)
Northern States Power Company	06/09	South Dakota Division of Northern States Power	Docket No. EL09-009	Return on Equity (electric)
Otter Tail Power Company	10/08	Otter Tail Power Company	Docket No. EL08-030	Return on Equity (electric)
Texas Public Utility Commission				
AEP Texas, Inc.	05/19	AEP Texas, Inc.	Docket No. 49494	Return on Equity
CenterPoint Energy Houston Electric LLC	04/19	CenterPoint Energy Houston Electric LLC	Docket No. 49421	Return on Equity
Texas-New Mexico Power Company	05/18	Texas-New Mexico Power Company	Docket No. 48401	Return on Equity
Entergy Texas, Inc.	05/18	Entergy Texas, Inc.	Docket No. 48371	Return on Equity
Southwestern Public Service Company	08/17	Southwestern Public Service Company	Docket No. 47527	Return on Equity
Oncor Electric Delivery Company, LLC	03/17	Oncor Electric Delivery Company, LLC	Docket No. 46957	Return on Equity
El Paso Electric Company	02/17	El Paso Electric Company	Docket No. 46831	Return on Equity
Southwestern Electric Power Company	12/16	Southwestern Electric Power Company	Docket No. 46449	Return on Equity (electric)
Sharyland Utilities, L.P.	04/16	Sharyland Utilities, L.P.	Docket No. 45414	Return on Equity
Southwestern Public Service Company	02/16	Southwestern Public Service Company	Docket No. 44524	Return on Equity (electric)

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Wind Energy Transmission Texas, LLC	05/15	Wind Energy Transmission Texas, LLC	Docket No. 44746	Return on Equity
Cross Texas Transmission	12/14	Cross Texas Transmission	Docket No. 43950	Return on Equity
Southwestern Public Service Company	12/14	Southwestern Public Service Company	Docket No. 43695	Return on Equity (electric)
Sharyland Utilities, L.P.	05/13	Sharyland Utilities, L.P.	Docket No. 41474	Return on Equity
Wind Energy Texas Transmission, LLC	08/12	Wind Energy Texas Transmission, LLC	Docket No. 40606	Return on Equity
Southwestern Electric Power Company	07/12	Southwestern Electric Power Company	Docket No. 40443	Return on Equity
Oncor Electric Delivery Company, LLC	01/11	Oncor Electric Delivery Company, LLC	Docket No. 38929	Return on Equity
Texas-New Mexico Power Company	08/10	Texas-New Mexico Power Company	Docket No. 38480	Return on Equity (electric)
CenterPoint Energy Houston Electric LLC	06/10	CenterPoint Energy Houston Electric LLC	Docket No. 38339	Return on Equity
Xcel Energy, Inc.	05/10	Southwestern Public Service Company	Docket No. 38147	Return on Equity (electric)
Texas-New Mexico Power Company	08/08	Texas-New Mexico Power Company	Docket No. 36025	Return on Equity (electric)
Xcel Energy, Inc.	05/06	Southwestern Public Service Company	Docket No. 32766	Return on Equity (electric)
Texas Railroad Commission				
Atmos Energy Corporation – Mid-Tex Division	10/18	Atmos Energy Corporation – Mid-Tex Division	GUD 10779	Return on Equity
Atmos Energy Corporation – West Texas Division	06/18	Atmos Energy Corporation – West Texas Division	GUD 10743	Return on Equity
Atmos Energy Corporation – Mid-Texas Division	06/18	Atmos Energy Corporation – Mid-Texas Division	GUD 10742	Return on Equity
CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Entex And CenterPoint Energy Texas Gas	11/17	CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Entex And CenterPoint Energy Texas Gas	GUD 10669	Return on Equity
Atmos Pipeline - Texas	01/17	Atmos Pipeline - Texas	GUD 10580	Return on Equity
CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Entex And CenterPoint Energy Texas Gas	12/16	CenterPoint Energy Resources Corp. D/B/A CenterPoint Energy Entex And CenterPoint Energy Texas Gas	GUD 10567	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	03/15	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	GUD 10432	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	07/12	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	GUD 10182	Return on Equity
Atmos Energy Corporation – West Texas Division	06/12	Atmos Energy Corporation – West Texas Division	GUD 10174	Return on Equity
Atmos Energy Corporation – Mid-Texas Division	06/12	Atmos Energy Corporation – Mid-Texas Division	GUD 10170	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	12/10	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	GUD 10038	Return on Equity
Atmos Pipeline – Texas	09/10	Atmos Pipeline - Texas	GUD 10000	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	07/09	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Entex and CenterPoint Energy Texas Gas	GUD 9902	Return on Equity
CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Texas Gas	03/08	CenterPoint Energy Resources Corp. d/b/a CenterPoint Energy Texas Gas	GUD 9791	Return on Equity
Utah Public Service Commission				
Questar Gas Company	12/07	Questar Gas Company	Docket No. 07-057-13	Return on Equity
Vermont Public Service Board				
Central Vermont Public Service Corporation; Green Mountain Power	02/12	Central Vermont Public Service Corporation; Green Mountain Power	Docket No. 7770	Merger Policy
Central Vermont Public Service Corporation	12/10	Central Vermont Public Service Corporation	Docket No. 7627	Return on Equity (electric)
Green Mountain Power	04/06	Green Mountain Power	Docket Nos. 7175 and 7176	Return on Equity (electric)
Vermont Gas Systems, Inc.	12/05	Vermont Gas Systems	Docket Nos. 7109 and 7160	Return on Equity (gas)
Virginia State Corporation Commission				
Virginia Electric and Power Company	03/19	Virginia Electric and Power Company	Case No. PUR-2019-00050	Return on Equity
Virginia Electric and Power Company	03/17	Virginia Electric and Power Company	Case No. PUR-2017-00038	Return on Equity
Virginia Natural Gas, Inc.	03/17	Virginia Natural Gas, Inc.	Case No. PUE-2016-00143	Return on Equity
Virginia Electric and Power Company	10/16	Virginia Electric and Power Company	Case No. PUE-2016-00112; PUE-2016-00113; PUE-2016-00136	Return on Equity
Washington Gas Light Company	06/16	Washington Gas Light Company	Case No. PUE-2016-00001	Return on Equity

SPONSOR	DATE	CASE/APPLICANT	DOCKET NO.	SUBJECT
Virginia Electric and Power Company	06/16	Virginia Electric and Power Company	Case Nos. PUE-2016-00063; PUE-2016-00062; PUE-2016-00061; PUE-2016-00060; PUE-2016-00059	Return on Equity
Virginia Electric and Power Company	12/15	Virginia Electric and Power Company	Case Nos. PUE-2015-00058; PUE-2015-00059; PUE-2015-00060; PUE-2015-00061; PUE-2015-00075; PUE-2015-00089; PUE-2015-00102; PUE-2015-00104	Return on Equity
Virginia Electric and Power Company	03/15	Virginia Electric and Power Company	Case No. PUE-2015-00027	Return on Equity
Virginia Electric and Power Company	03/13	Virginia Electric and Power Company	Case No. PUE-2013-00020	Return on Equity
Virginia Natural Gas, Inc.	02/11	Virginia Natural Gas, Inc.	Case No. PUE-2010-00142	Capital Structure
Columbia Gas of Virginia, Inc.	06/06	Columbia Gas of Virginia, Inc.	Case No. PUE-2005-00098	Merger Synergies
Dominion Resources	10/01	Virginia Electric and Power Company	Case No. PUE000584	Corporate Structure and Electric Generation Strategy

Expert Reports

Matter of Arbitration, City of White Hall, Arkansas				
Liberty Utilities Corporation, White Hall Water and White Hall Sewer	04/19	Liberty Utilities Corporation, White Hall Water and White Hall Sewer	AAA Case No. 01-18-0004-0072	Return on Equity
United States District Court, District of South Carolina, Columbia Division				
South Carolina Electric & Gas Company	07/18	South Carolina Electric & Gas Company	Case No. 3:18-CV-01795-JMC	Return on Equity
United States District Court, Western District of Texas, Austin Division				
Southwestern Public Service Company	02/12	Southwestern Public Service Company	C.A. No. A-09-CA-917-SS	PURPA and FERC regulations
American Arbitration Association				
Confidential Client	11/14	Confidential Client	Confidential	Economic harm related to failure to perform

Constant Growth Discounted Cash Flow Model with Half Year Growth Adjustment
30 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Average Earnings Growth	[9] Low ROE	[10] Mean ROE	[11] High ROE
ALLETE, Inc.	ALE	$2.35	$81.31	2.89%	2.98%	7.20%	6.00%	5.00%	6.07%	7.96%	9.04%	10.19%
Alliant Energy Corporation	LNT	$1.42	$47.20	3.01%	3.10%	5.40%	5.85%	6.50%	5.92%	8.49%	9.01%	9.61%
Ameren Corporation	AEE	$1.90	$73.07	2.60%	2.68%	6.20%	4.90%	6.50%	5.87%	7.56%	8.54%	9.18%
American Electric Power Company, Inc.	AEP	$2.68	$85.25	3.14%	3.22%	5.60%	5.79%	4.00%	5.13%	7.21%	8.35%	9.02%
Avangrid, Inc.	AGR	$1.76	$50.54	3.48%	3.62%	7.90%	6.20%	10.00%	8.03%	9.79%	11.66%	13.66%
CMS Energy Corporation	CMS	$1.53	$55.46	2.76%	2.85%	6.40%	7.08%	7.00%	6.83%	9.25%	9.68%	9.94%
DTE Energy Company	DTE	$3.78	$125.38	3.01%	3.09%	6.00%	4.16%	5.00%	5.05%	7.24%	8.14%	9.11%
Evergy, Inc.	EVRG	$1.90	$57.85	3.28%	3.39%	6.60%	6.15%	NMF	6.38%	9.54%	9.76%	9.99%
Hawaiian Electric Industries, Inc.	HE	$1.28	$41.56	3.08%	3.16%	5.60%	6.10%	4.50%	5.40%	7.65%	8.56%	9.27%
NextEra Energy, Inc.	NEE	$5.00	$194.64	2.57%	2.68%	7.90%	7.85%	10.00%	8.58%	10.52%	11.26%	12.70%
NorthWestern Corporation	NWE	$2.30	$70.39	3.27%	3.31%	2.80%	2.86%	3.00%	2.89%	6.11%	6.20%	6.32%
OGE Energy Corp.	OGE	$1.46	$41.87	3.49%	3.57%	4.60%	3.80%	6.50%	4.97%	7.35%	8.54%	10.10%
Otter Tail Corporation	OTTR	$1.40	$50.75	2.76%	2.85%	7.00%	9.00%	5.00%	7.00%	7.83%	9.85%	11.88%
Pinnacle West Capital Corporation	PNW	$2.95	$94.73	3.11%	3.19%	5.00%	5.01%	5.00%	5.00%	8.19%	8.20%	8.20%
PNM Resources, Inc.	PNM	$1.16	$46.65	2.49%	2.57%	5.20%	5.70%	8.50%	6.47%	7.75%	9.03%	11.09%
Portland General Electric Company	POR	$1.54	$52.39	2.94%	3.01%	4.90%	5.20%	4.50%	4.87%	7.51%	7.88%	8.22%
Southern Company	SO	$2.48	$53.13	4.67%	4.75%	4.50%	2.17%	3.50%	3.39%	6.89%	8.14%	9.27%
WEC Energy Group, Inc.	WEC	$2.36	$79.08	2.98%	3.07%	5.90%	5.82%	6.00%	5.91%	8.89%	8.98%	9.07%
Xcel Energy Inc.	XEL	$1.62	$56.86	2.85%	2.93%	5.70%	6.24%	5.50%	5.81%	8.43%	8.75%	9.18%
Proxy Group Mean				3.07%	3.16%	5.81%	5.57%	5.89%	5.77%	8.11%	8.93%	9.79%
Proxy Group Median				3.01%	3.09%	5.70%	5.82%	5.25%	5.87%	7.83%	8.75%	9.27%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of May 31, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [8])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average([5], [6], [7])
[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Model with Half Year Growth Adjustment
90 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Average Earnings Growth	[9] Low ROE	[10] Mean ROE	[11] High ROE
ALLETE, Inc.	ALE	$2.35	$80.69	2.91%	3.00%	7.20%	6.00%	5.00%	6.07%	7.99%	9.07%	10.22%
Alliant Energy Corporation	LNT	$1.42	$46.26	3.07%	3.16%	5.40%	5.85%	6.50%	5.92%	8.55%	9.08%	9.67%
Ameren Corporation	AEE	$1.90	$71.78	2.65%	2.72%	6.20%	4.90%	6.50%	5.87%	7.61%	8.59%	9.23%
American Electric Power Company, Inc.	AEP	$2.68	$82.78	3.24%	3.32%	5.60%	5.79%	4.00%	5.13%	7.30%	8.45%	9.12%
Avangrid, Inc.	AGR	$1.76	$50.00	3.52%	3.66%	7.90%	6.20%	10.00%	8.03%	9.83%	11.69%	13.70%
CMS Energy Corporation	CMS	$1.53	$54.39	2.81%	2.91%	6.40%	7.08%	7.00%	6.83%	9.30%	9.74%	9.99%
DTE Energy Company	DTE	$3.78	$122.81	3.08%	3.16%	6.00%	4.16%	5.00%	5.05%	7.30%	8.21%	9.17%
Evergy, Inc.	EVRG	$1.90	$57.38	3.31%	3.42%	6.60%	6.15%	NMF	6.38%	9.56%	9.79%	10.02%
Hawaiian Electric Industries, Inc.	HE	$1.28	$39.92	3.21%	3.29%	5.60%	6.10%	4.50%	5.40%	7.78%	8.69%	9.40%
NextEra Energy, Inc.	NEE	$5.00	$189.23	2.64%	2.76%	7.90%	7.85%	10.00%	8.58%	10.60%	11.34%	12.77%
NorthWestern Corporation	NWE	$2.30	$68.66	3.35%	3.40%	2.80%	2.86%	3.00%	2.89%	6.20%	6.28%	6.40%
OGE Energy Corp.	OGE	$1.46	$41.98	3.48%	3.56%	4.60%	3.80%	6.50%	4.97%	7.34%	8.53%	10.09%
Otter Tail Corporation	OTTR	$1.40	$49.96	2.80%	2.90%	7.00%	9.00%	5.00%	7.00%	7.87%	9.90%	11.93%
Pinnacle West Capital Corporation	PNW	$2.95	$93.23	3.16%	3.24%	5.00%	5.01%	5.00%	5.00%	8.24%	8.25%	8.25%
PNM Resources, Inc.	PNM	$1.16	$45.43	2.55%	2.64%	5.20%	5.70%	8.50%	6.47%	7.82%	9.10%	11.16%
Portland General Electric Company	POR	$1.54	$50.93	3.02%	3.10%	4.90%	5.20%	4.50%	4.87%	7.59%	7.96%	8.30%
Southern Company	SO	$2.48	$51.28	4.84%	4.92%	4.50%	2.17%	3.50%	3.39%	7.06%	8.31%	9.44%
WEC Energy Group, Inc.	WEC	$2.36	$77.07	3.06%	3.15%	5.90%	5.82%	6.00%	5.91%	8.97%	9.06%	9.15%
Xcel Energy Inc.	XEL	$1.62	$55.35	2.93%	3.01%	5.70%	6.24%	5.50%	5.81%	8.51%	8.83%	9.26%
Proxy Group Mean				3.14%	3.23%	5.81%	5.57%	5.89%	5.77%	8.18%	8.99%	9.86%
Proxy Group Median				3.07%	3.16%	5.70%	5.82%	5.25%	5.87%	7.87%	8.83%	9.44%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of May 31, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [8])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average([5], [6], [7])
[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

Constant Growth Discounted Cash Flow Model with Half Year Growth Adjustment
180 Day Average Stock Price

Company	Ticker	[1] Annualized Dividend	[2] Average Stock Price	[3] Dividend Yield	[4] Expected Dividend Yield	[5] Zacks Earnings Growth	[6] First Call Earnings Growth	[7] Value Line Earnings Growth	[8] Average Earnings Growth	[9] Low ROE	[10] Mean ROE	[11] High ROE
ALLETE, Inc.	ALE	$2.35	$78.66	2.99%	3.08%	7.20%	6.00%	5.00%	6.07%	8.06%	9.14%	10.29%
Alliant Energy Corporation	LNT	$1.42	$44.89	3.16%	3.26%	5.40%	5.85%	6.50%	5.92%	8.65%	9.17%	9.77%
Ameren Corporation	AEE	$1.90	$68.95	2.76%	2.84%	6.20%	4.90%	6.50%	5.87%	7.72%	8.70%	9.35%
American Electric Power Company, Inc.	AEP	$2.68	$78.59	3.41%	3.50%	5.60%	5.79%	4.00%	5.13%	7.48%	8.63%	9.30%
Avangrid, Inc.	AGR	$1.76	$49.53	3.55%	3.70%	7.90%	6.20%	10.00%	8.03%	9.86%	11.73%	13.73%
CMS Energy Corporation	CMS	$1.53	$52.30	2.93%	3.03%	6.40%	7.08%	7.00%	6.83%	9.42%	9.85%	10.11%
DTE Energy Company	DTE	$3.78	$118.13	3.20%	3.28%	6.00%	4.16%	5.00%	5.05%	7.43%	8.33%	9.30%
Evergy, Inc.	EVRG	$1.90	$57.33	3.31%	3.42%	6.60%	6.15%	NMF	6.38%	9.57%	9.79%	10.02%
Hawaiian Electric Industries, Inc.	HE	$1.28	$38.28	3.34%	3.43%	5.60%	6.10%	4.50%	5.40%	7.92%	8.83%	9.55%
NextEra Energy, Inc.	NEE	$5.00	$181.62	2.75%	2.87%	7.90%	7.85%	10.00%	8.58%	10.71%	11.45%	12.89%
NorthWestern Corporation	NWE	$2.30	$64.75	3.55%	3.60%	2.80%	2.86%	3.00%	2.89%	6.40%	6.49%	6.61%
OGE Energy Corp.	OGE	$1.46	$40.15	3.64%	3.73%	4.60%	3.80%	6.50%	4.97%	7.51%	8.69%	10.25%
Otter Tail Corporation	OTTR	$1.40	$48.87	2.86%	2.97%	7.00%	9.00%	5.00%	7.00%	7.94%	9.97%	11.99%
Pinnacle West Capital Corporation	PNW	$2.95	$89.09	3.31%	3.39%	5.00%	5.01%	5.00%	5.00%	8.39%	8.40%	8.40%
PNM Resources, Inc.	PNM	$1.16	$43.10	2.69%	2.78%	5.20%	5.70%	8.50%	6.47%	7.96%	9.25%	11.31%
Portland General Electric Company	POR	$1.54	$48.69	3.16%	3.24%	4.90%	5.20%	4.50%	4.87%	7.73%	8.11%	8.45%
Southern Company	SO	$2.48	$48.28	5.14%	5.22%	4.50%	2.17%	3.50%	3.39%	7.36%	8.61%	9.75%
WEC Energy Group, Inc.	WEC	$2.36	$73.36	3.22%	3.31%	5.90%	5.82%	6.00%	5.91%	9.13%	9.22%	9.31%
Xcel Energy Inc.	XEL	$1.62	$52.49	3.09%	3.18%	5.70%	6.24%	5.50%	5.81%	8.67%	8.99%	9.42%
Proxy Group Mean				3.27%	3.36%	5.81%	5.57%	5.89%	5.77%	8.31%	9.12%	9.99%
Proxy Group Median				3.20%	3.28%	5.70%	5.82%	5.25%	5.87%	7.96%	8.99%	9.75%

Notes:
[1] Source: Bloomberg Professional
[2] Source: Bloomberg Professional, equals indicated number of trading day average as of May 31, 2019
[3] Equals [1] / [2]
[4] Equals [3] x (1 + 0.5 x [8])
[5] Source: Zacks
[6] Source: Yahoo! Finance
[7] Source: Value Line
[8] Equals Average([5], [6], [7])
[9] Equals [3] x (1 + 0.5 x Minimum([5], [6], [7])) + Minimum([5], [6], [7])
[10] Equals [4] + [8]
[11] Equals [3] x (1 + 0.5 x Maximum([5], [6], [7])) + Maximum([5], [6], [7])

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

[1] S&P 500 Est. Required Market Return	[2] Current 30-Year Treasury (30-day average)	[3] Implied Market Risk Premium
13.85%	2.85%	11.00%

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	21,187.35	0.09%	0.98%	11.00%	12.04%	0.0106%
American Airlines Group Inc	AAL	12,112.86	0.05%	1.77%	14.51%	16.41%	0.0082%
Advance Auto Parts Inc	AAP	11,119.21	0.05%	0.15%	15.68%	15.85%	0.0073%
Apple Inc	AAPL	805,510.20	3.34%	1.70%	9.35%	11.13%	0.3712%
AbbVie Inc	ABBV	113,402.86	0.47%	5.54%	5.12%	10.80%	0.0507%
AmerisourceBergen Corp	ABC	16,364.38	0.07%	2.06%	4.99%	7.11%	0.0048%
ABIOMED Inc	ABMD	11,819.07	0.05%	0.00%	29.00%	29.00%	0.0142%
Abbott Laboratories	ABT	134,307.12	0.56%	1.61%	9.70%	11.39%	0.0633%
Accenture PLC	ACN	113,749.73	0.47%	1.65%	10.33%	12.07%	0.0569%
Adobe Inc	ADBE	132,185.91	0.55%	0.00%	17.12%	17.12%	0.0937%
Analog Devices Inc	ADI	35,726.33	0.15%	2.15%	12.10%	14.38%	0.0213%
Archer-Daniels-Midland Co	ADM	21,465.53	0.09%	3.70%	0.60%	4.31%	0.0038%
Automatic Data Processing Inc	ADP	69,688.75	0.29%	1.79%	13.50%	15.42%	0.0445%
Alliance Data Systems Corp	ADS	7,202.73	0.03%	1.80%	12.47%	14.37%	0.0043%
Autodesk Inc	ADSK	35,427.14	0.15%	0.00%	59.90%	59.90%	0.0879%
Ameren Corp	AEE	17,999.02	0.07%	2.66%	5.81%	8.55%	0.0064%
American Electric Power Co Inc	AEP	42,494.67	0.18%	3.14%	6.19%	9.43%	0.0166%
AES Corp/VA	AES	10,486.89	0.04%	3.52%	8.17%	11.84%	0.0051%
Aflac Inc	AFL	38,242.57	0.16%	2.12%	3.43%	5.59%	0.0088%
Allergan PLC	AGN	39,962.33	0.17%	2.42%	5.84%	8.33%	0.0138%
American International Group Inc	AIG	44,418.32	0.18%	2.55%	11.00%	13.69%	0.0252%
Apartment Investment & Management Co	AIV	7,433.98	0.03%	4.05%	8.75%	12.98%	0.0040%
Assurant Inc	AIZ	6,145.01	N/A	2.48%	N/A	N/A	N/A
Arthur J Gallagher & Co	AJG	15,598.22	0.06%	2.03%	9.83%	11.96%	0.0077%
Akamai Technologies Inc	AKAM	12,366.34	0.05%	0.00%	13.70%	13.70%	0.0070%
Albemarle Corp	ALB	6,707.06	0.03%	2.24%	13.41%	15.81%	0.0044%
Align Technology Inc	ALGN	22,749.39	0.09%	0.00%	22.22%	22.22%	0.0209%
Alaska Air Group Inc	ALK	7,183.51	0.03%	2.40%	13.20%	15.76%	0.0047%
Allstate Corp/The	ALL	31,815.03	0.13%	2.05%	9.00%	11.14%	0.0147%
Allegion PLC	ALLE	9,117.43	0.04%	1.10%	10.15%	11.30%	0.0043%
Alexion Pharmaceuticals Inc	ALXN	25,491.29	0.11%	0.00%	16.37%	16.37%	0.0173%
Applied Materials Inc	AMAT	36,217.90	0.15%	2.15%	9.69%	11.94%	0.0179%
Advanced Micro Devices Inc	AMD	29,646.68	0.12%	0.00%	18.30%	18.30%	0.0225%
AMETEK Inc	AME	18,657.89	0.08%	0.70%	9.06%	9.79%	0.0076%
Affiliated Managers Group Inc	AMG	4,291.53	0.02%	1.53%	9.10%	10.70%	0.0019%
Amgen Inc	AMGN	101,676.28	0.42%	3.44%	5.20%	8.73%	0.0368%
Ameriprise Financial Inc	AMP	18,509.59	0.08%	2.75%	3.20%	6.00%	0.0046%
American Tower Corp	AMT	92,281.23	0.38%	1.79%	20.09%	22.07%	0.0843%
Amazon.com Inc	AMZN	873,923.37	3.62%	0.00%	44.95%	44.95%	1.6265%
Arista Networks Inc	ANET	18,741.11	0.08%	0.00%	21.32%	21.32%	0.0165%
ANSYS Inc	ANSS	15,065.15	0.06%	0.00%	12.95%	12.95%	0.0081%
Anthem Inc	ANTM	71,495.26	0.30%	1.15%	14.18%	15.42%	0.0456%
Aon PLC	AON	43,310.74	0.18%	0.95%	9.95%	10.95%	0.0196%
AO Smith Corp	AOS	6,771.46	0.03%	2.13%	8.00%	10.22%	0.0029%
Apache Corp	APA	9,800.25	0.04%	3.83%	1.05%	4.90%	0.0020%
Anadarko Petroleum Corp	APC	35,334.10	0.15%	1.53%	16.91%	18.57%	0.0272%
Air Products & Chemicals Inc	APD	44,816.79	0.19%	2.24%	12.30%	14.68%	0.0272%
Amphenol Corp	APH	25,989.71	0.11%	1.03%	8.78%	9.86%	0.0106%
Aptiv PLC	APTV	16,511.78	0.07%	1.41%	8.89%	10.37%	0.0071%
Alexandria Real Estate Equities Inc	ARE	16,534.92	0.07%	2.69%	4.76%	7.51%	0.0051%
Arconic Inc	ARNC	9,824.98	0.04%	0.47%	9.90%	10.39%	0.0042%
Atmos Energy Corp	ATO	11,909.40	0.05%	2.06%	7.00%	9.14%	0.0045%
Activision Blizzard Inc	ATVI	33,221.71	0.14%	0.85%	6.99%	7.87%	0.0108%
AvalonBay Communities Inc	AVB	28,300.26	0.12%	2.98%	5.65%	8.71%	0.0102%
Broadcom Inc	AVGO	99,610.60	0.41%	4.21%	13.03%	17.52%	0.0723%
Avery Dennison Corp	AVY	8,784.31	0.04%	2.02%	5.55%	7.62%	0.0028%
American Water Works Co Inc	AWK	20,402.24	0.08%	1.74%	8.58%	10.40%	0.0088%
American Express Co	AXP	95,792.09	0.40%	1.41%	12.95%	14.45%	0.0573%
AutoZone Inc	AZO	25,562.27	0.11%	0.00%	12.58%	12.58%	0.0133%
Boeing Co/The	BA	192,200.18	0.80%	2.37%	12.26%	14.77%	0.1175%
Bank of America Corp	BAC	252,918.21	1.05%	2.58%	10.10%	12.81%	0.1341%
Baxter International Inc	BAX	37,536.45	0.16%	1.09%	11.90%	13.05%	0.0203%
BB&T Corp	BBT	35,806.76	0.15%	3.62%	8.48%	12.25%	0.0182%
Best Buy Co Inc	BBY	16,790.32	0.07%	3.18%	6.81%	10.10%	0.0070%
Becton Dickinson and Co	BDX	62,966.22	0.26%	1.38%	11.35%	12.81%	0.0334%
Franklin Resources Inc	BEN	16,150.55	0.07%	3.26%	10.00%	13.42%	0.0090%
Brown-Forman Corp	BF/B	23,712.73	0.10%	1.31%	9.91%	11.29%	0.0111%
Baker Hughes a GE Co	BHGE	22,204.35	0.09%	3.10%	43.55%	47.32%	0.0435%
Biogen Inc	BIIB	42,518.88	0.18%	0.00%	5.18%	5.18%	0.0091%
Bank of New York Mellon Corp/The	BK	40,876.41	0.17%	2.82%	7.33%	10.25%	0.0174%
Booking Holdings Inc	BKNG	71,699.99	0.30%	0.00%	16.48%	16.48%	0.0489%
BlackRock Inc	BLK	64,614.76	0.27%	3.21%	9.00%	12.35%	0.0330%
Ball Corp	BLL	20,550.02	0.09%	0.81%	6.77%	7.61%	0.0065%
Bristol-Myers Squibb Co	BMY	74,212.83	0.31%	3.63%	8.63%	12.41%	0.0381%
Broadridge Financial Solutions Inc	BR	14,502.26	N/A	1.55%	N/A	N/A	N/A
Berkshire Hathaway Inc	BRK/B	484,926.88	2.01%	0.00%	-1.60%	-1.60%	-0.0321%
Boston Scientific Corp	BSX	53,414.96	0.22%	0.00%	9.08%	9.08%	0.0201%
BorgWarner Inc	BWA	7,353.81	0.03%	1.91%	4.37%	6.33%	0.0019%
Boston Properties Inc	BXP	20,215.83	0.08%	2.97%	4.91%	7.94%	0.0066%
Citigroup Inc	C	143,719.87	0.60%	3.18%	12.72%	16.10%	0.0958%
Conagra Brands Inc	CAG	13,007.94	0.05%	3.15%	6.25%	9.50%	0.0051%
Cardinal Health Inc	CAH	12,539.38	0.05%	4.66%	14.02%	19.00%	0.0099%
Caterpillar Inc	CAT	68,516.41	0.28%	3.19%	13.23%	16.63%	0.0472%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Chubb Ltd	CB	66,881.18	0.28%	2.07%	10.60%	12.78%	0.0354%
Cboe Global Markets Inc	CBOE	12,116.65	0.05%	1.21%	5.35%	6.58%	0.0033%
CBRE Group Inc	CBRE	15,367.89	0.06%	0.00%	7.30%	7.30%	0.0046%
CBS Corp	CBS	18,100.29	0.07%	1.58%	15.35%	17.05%	0.0128%
Crown Castle International Corp	CCI	54,050.52	0.22%	3.53%	16.33%	20.15%	0.0451%
Carnival Corp	CCL	35,061.25	0.15%	4.02%	10.23%	14.45%	0.0210%
Cadence Design Systems Inc	CDNS	17,865.08	0.07%	0.00%	9.35%	9.35%	0.0069%
Celanese Corp	CE	12,019.32	0.05%	2.53%	7.95%	10.58%	0.0053%
Celgene Corp	CELG	66,146.29	0.27%	0.00%	19.24%	19.24%	0.0527%
Cerner Corp	CERN	22,769.68	0.09%	0.29%	13.79%	14.09%	0.0133%
CF Industries Holdings Inc	CF	8,896.17	0.04%	2.99%	20.27%	23.56%	0.0087%
Citizens Financial Group Inc	CFG	14,933.22	0.06%	4.09%	8.04%	12.30%	0.0076%
Church & Dwight Co Inc	CHD	18,321.16	0.08%	1.24%	7.96%	9.24%	0.0070%
CH Robinson Worldwide Inc	CHRW	10,874.47	0.05%	2.54%	8.93%	11.59%	0.0052%
Charter Communications Inc	CHTR	93,905.28	0.39%	0.00%	44.24%	44.24%	0.1720%
Cigna Corp	CI	56,199.10	0.23%	0.07%	11.09%	11.16%	0.0260%
Cincinnati Financial Corp	CINF	16,035.70	N/A	2.43%	N/A	N/A	N/A
Colgate-Palmolive Co	CL	59,769.81	0.25%	2.47%	4.15%	6.67%	0.0165%
Clorox Co/The	CLX	18,953.60	0.08%	2.59%	4.43%	7.07%	0.0056%
Comerica Inc	CMA	10,609.35	0.04%	3.99%	12.60%	16.84%	0.0074%
Comcast Corp	CMCSA	186,090.43	0.77%	2.04%	11.47%	13.63%	0.1050%
CME Group Inc	CME	68,774.17	0.28%	2.77%	6.91%	9.77%	0.0278%
Chipotle Mexican Grill Inc	CMG	18,290.12	0.08%	0.00%	19.37%	19.37%	0.0147%
Cummins Inc	CMI	23,743.53	0.10%	3.09%	7.15%	10.35%	0.0102%
CMS Energy Corp	CMS	15,921.43	0.07%	2.73%	6.07%	8.88%	0.0059%
Centene Corp	CNC	23,871.94	0.10%	0.00%	13.90%	13.90%	0.0137%
CenterPoint Energy Inc	CNP	14,260.96	0.06%	4.11%	6.09%	10.33%	0.0061%
Capital One Financial Corp	COF	40,324.25	0.17%	1.91%	5.20%	7.16%	0.0120%
Cabot Oil & Gas Corp	COG	10,590.62	0.04%	1.35%	35.02%	36.61%	0.0161%
Cooper Cos Inc/The	COO	14,703.12	0.06%	0.02%	6.18%	6.20%	0.0038%
ConocoPhillips	COP	66,635.17	0.28%	2.11%	5.00%	7.16%	0.0198%
Costco Wholesale Corp	COST	105,369.92	0.44%	1.00%	10.51%	11.57%	0.0505%
Coty Inc	COTY	9,272.25	0.04%	4.00%	8.20%	12.36%	0.0047%
Campbell Soup Co	CPB	10,933.59	0.05%	3.88%	1.42%	5.33%	0.0024%
Capri Holdings Ltd	CPRI	4,902.51	0.02%	0.00%	7.32%	7.32%	0.0015%
Copart Inc	CPRT	16,376.99	0.07%	0.00%	20.00%	20.00%	0.0136%
salesforce.com Inc	CRM	117,308.42	0.49%	0.00%	23.01%	23.01%	0.1118%
Cisco Systems Inc	CSCO	222,726.54	0.92%	2.62%	6.96%	9.67%	0.0892%
CSX Corp	CSX	60,258.42	0.25%	1.25%	11.71%	13.04%	0.0325%
Cintas Corp	CTAS	23,196.96	0.10%	0.92%	12.02%	13.00%	0.0125%
CenturyLink Inc	CTL	11,393.78	0.05%	9.57%	1.78%	11.43%	0.0054%
Cognizant Technology Solutions Corp	CTSH	35,255.69	0.15%	1.30%	11.05%	12.43%	0.0181%
Citrix Systems Inc	CTXS	12,391.07	0.05%	1.49%	37.42%	39.19%	0.0201%
CVS Health Corp	CVS	68,033.45	0.28%	3.80%	7.67%	11.61%	0.0327%
Chevron Corp	CVX	216,854.38	0.90%	4.16%	3.93%	8.18%	0.0734%
Concho Resources Inc	CXO	19,660.22	0.08%	0.43%	11.85%	12.30%	0.0100%
Dominion Energy Inc	D	60,321.75	0.25%	4.87%	5.18%	10.17%	0.0254%
Delta Air Lines Inc	DAL	33,714.28	0.14%	2.87%	12.72%	15.76%	0.0220%
Deere & Co	DE	44,433.26	0.18%	2.16%	9.45%	11.71%	0.0216%
Discover Financial Services	DFS	24,133.99	0.10%	2.21%	9.00%	11.31%	0.0113%
Dollar General Corp	DG	32,879.33	0.14%	1.01%	10.60%	11.66%	0.0159%
Quest Diagnostics Inc	DGX	12,887.91	0.05%	2.19%	7.13%	9.40%	0.0050%
DR Horton Inc	DHI	15,957.05	0.07%	1.40%	12.92%	14.41%	0.0095%
Danaher Corp	DHR	94,510.40	0.39%	0.50%	10.24%	10.77%	0.0421%
Walt Disney Co/The	DIS	237,632.25	0.98%	1.34%	7.08%	8.46%	0.0833%
Discovery Inc	DISCA	18,984.81	0.08%	0.00%	13.35%	13.35%	0.0105%
DISH Network Corp	DISH	16,941.63	0.07%	0.00%	-16.48%	-16.48%	-0.0116%
Digital Realty Trust Inc	DLR	25,634.28	0.11%	3.67%	17.36%	21.35%	0.0227%
Dollar Tree Inc	DLTR	24,231.45	0.10%	0.00%	9.77%	9.77%	0.0098%
Dover Corp	DOV	12,993.90	0.05%	2.22%	10.30%	12.63%	0.0068%
Dow Inc	DOW	34,906.34	N/A	5.99%	N/A	N/A	N/A
Duke Realty Corp	DRE	10,815.19	0.04%	2.90%	4.12%	7.08%	0.0032%
Darden Restaurants Inc	DRI	14,304.55	0.06%	2.58%	10.70%	13.41%	0.0079%
DTE Energy Co	DTE	22,987.66	0.10%	3.03%	8.50%	11.66%	0.0111%
Duke Energy Corp	DUK	62,324.08	0.26%	4.43%	4.98%	9.52%	0.0246%
DaVita Inc	DVA	7,225.09	0.03%	0.00%	18.90%	18.90%	0.0057%
Devon Energy Corp	DVN	10,446.43	0.04%	1.38%	13.15%	14.62%	0.0063%
DowDuPont Inc	DWDP	68,559.76	0.28%	3.74%	15.27%	19.29%	0.0548%
DXC Technology Co	DXC	12,753.61	0.05%	1.72%	5.28%	7.04%	0.0037%
Electronic Arts Inc	EA	27,669.07	0.11%	0.00%	11.87%	11.87%	0.0136%
eBay Inc	EBAY	31,313.98	0.13%	1.56%	10.49%	12.13%	0.0157%
Ecolab Inc	ECL	53,062.50	0.22%	1.01%	13.13%	14.21%	0.0312%
Consolidated Edison Inc	ED	28,729.43	0.12%	3.43%	4.27%	7.77%	0.0092%
Equifax Inc	EFX	14,607.62	0.06%	1.30%	11.63%	13.00%	0.0079%
Edison International	EIX	19,343.41	0.08%	4.14%	5.52%	9.77%	0.0078%
Estee Lauder Cos Inc/The	EL	58,272.34	0.24%	1.03%	11.84%	12.93%	0.0312%
Eastman Chemical Co	EMN	9,009.98	0.04%	3.78%	6.50%	10.40%	0.0039%
Emerson Electric Co	EMR	37,049.20	0.15%	3.26%	8.84%	12.24%	0.0188%
EOG Resources Inc	EOG	47,516.98	0.20%	1.16%	9.81%	11.03%	0.0217%
Equinix Inc	EQIX	40,840.38	0.17%	2.02%	18.37%	20.58%	0.0348%
Equity Residential	EQR	28,371.91	0.12%	2.95%	6.72%	9.77%	0.0115%
Eversource Energy	ES	23,710.11	0.10%	2.90%	6.50%	9.49%	0.0093%
Essex Property Trust Inc	ESS	19,172.15	0.08%	2.68%	6.57%	9.34%	0.0074%
E*TRADE Financial Corp	ETFC	10,961.25	0.05%	1.10%	12.73%	13.90%	0.0063%
Eaton Corp PLC	ETN	31,516.72	0.13%	3.82%	8.95%	12.94%	0.0169%
Entergy Corp	ETR	18,436.16	0.08%	3.78%	-1.18%	2.58%	0.0020%
Evergy Inc	EVRG	14,691.57	0.06%	3.31%	8.18%	11.62%	0.0071%
Edwards Lifesciences Corp	EW	35,591.22	0.15%	0.00%	14.00%	14.00%	0.0206%
Exelon Corp	EXC	46,635.30	0.19%	3.01%	3.46%	6.52%	0.0126%
Expeditors International of Washington I	EXPD	11,969.19	0.05%	1.39%	9.80%	11.26%	0.0056%
Expedia Group Inc	EXPE	17,112.88	0.07%	1.10%	21.84%	23.06%	0.0163%
Extra Space Storage Inc	EXR	13,657.93	0.06%	3.31%	5.42%	8.82%	0.0050%
Ford Motor Co	F	37,980.48	0.16%	6.30%	-4.77%	1.39%	0.0022%
Diamondback Energy Inc	FANG	16,147.76	0.07%	0.71%	20.66%	21.44%	0.0143%
Fastenal Co	FAST	17,516.74	0.07%	2.82%	7.55%	10.48%	0.0076%
Facebook Inc	FB	506,623.61	2.10%	0.00%	19.22%	19.22%	0.4031%
Fortune Brands Home & Security Inc	FBHS	6,722.67	0.03%	1.82%	9.47%	11.37%	0.0032%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Freeport-McMoRan Inc	FCX	14,085.66	0.06%	2.06%	-8.10%	-6.12%	-0.0036%
FedEx Corp	FDX	40,201.45	0.17%	1.69%	14.00%	15.81%	0.0263%
FirstEnergy Corp	FE	21,916.68	0.09%	3.69%	0.35%	4.04%	0.0037%
F5 Networks Inc	FFIV	7,884.55	0.03%	0.00%	9.95%	9.95%	0.0032%
Fidelity National Information Services I	FIS	38,932.74	0.16%	1.16%	10.92%	12.14%	0.0196%
Fiserv Inc	FISV	33,694.88	0.14%	0.00%	10.55%	10.55%	0.0147%
Fifth Third Bancorp	FITB	19,461.23	0.08%	3.64%	3.95%	7.66%	0.0062%
Foot Locker Inc	FL	4,419.42	0.02%	3.84%	6.55%	10.52%	0.0019%
FLIR Systems Inc	FLIR	6,544.90	N/A	1.41%	N/A	N/A	N/A
Fluor Corp	FLR	3,878.79	0.02%	3.03%	16.54%	19.82%	0.0032%
Flowserve Corp	FLS	6,091.38	0.03%	1.68%	19.15%	20.99%	0.0053%
FleetCor Technologies Inc	FLT	22,256.00	0.09%	0.00%	19.67%	19.67%	0.0181%
FMC Corp	FMC	9,670.26	0.04%	2.05%	9.33%	11.48%	0.0046%
Fox Corp	FOXA	21,722.69	0.09%	0.26%	3.37%	3.63%	0.0033%
First Republic Bank/CA	FRC	16,168.50	0.07%	0.77%	12.14%	12.96%	0.0087%
Federal Realty Investment Trust	FRT	9,792.46	0.04%	3.18%	5.40%	8.67%	0.0035%
TechnipFMC PLC	FTI	9,319.71	0.04%	2.49%	17.52%	20.23%	0.0078%
Fortinet Inc	FTNT	12,376.73	0.05%	0.00%	24.04%	24.04%	0.0123%
Fortive Corp	FTV	25,517.82	0.11%	0.41%	11.68%	12.11%	0.0128%
General Dynamics Corp	GD	46,456.39	0.19%	2.48%	8.76%	11.35%	0.0218%
General Electric Co	GE	82,324.43	0.34%	0.42%	8.87%	9.31%	0.0317%
Gilead Sciences Inc	GILD	79,154.28	0.33%	4.03%	7.57%	11.75%	0.0385%
General Mills Inc	GIS	29,604.21	0.12%	3.98%	5.93%	10.04%	0.0123%
Corning Inc	GLW	22,632.31	0.09%	2.79%	9.84%	12.77%	0.0120%
General Motors Co	GM	47,289.22	0.20%	4.60%	5.98%	10.72%	0.0210%
Alphabet Inc	GOOGL	767,114.47	3.18%	0.00%	12.45%	12.45%	0.3955%
Genuine Parts Co	GPC	14,445.72	0.06%	3.09%	5.84%	9.02%	0.0054%
Global Payments Inc	GPN	24,212.37	0.10%	0.02%	16.73%	16.76%	0.0168%
Gap Inc/The	GPS	7,079.98	0.03%	5.23%	5.84%	11.22%	0.0033%
Garmin Ltd	GRMN	14,519.51	0.06%	3.04%	7.28%	10.43%	0.0063%
Goldman Sachs Group Inc/The	GS	69,426.53	0.29%	1.87%	1.14%	3.02%	0.0087%
WW Grainger Inc	GWW	14,509.03	0.06%	2.13%	12.47%	14.73%	0.0089%
Halliburton Co	HAL	18,607.00	0.08%	3.41%	13.40%	17.04%	0.0131%
Hasbro Inc	HAS	11,973.76	0.05%	2.85%	10.85%	13.86%	0.0069%
Huntington Bancshares Inc/OH	HBAN	13,237.47	0.05%	4.62%	8.24%	13.05%	0.0072%
Hanesbrands Inc	HBI	5,367.84	0.02%	4.20%	3.25%	7.52%	0.0017%
HCA Healthcare Inc	HCA	41,405.50	0.17%	1.02%	11.62%	12.70%	0.0218%
HCP Inc	HCP	15,156.84	0.06%	4.67%	2.68%	7.41%	0.0047%
Home Depot Inc/The	HD	208,889.32	0.86%	2.85%	9.49%	12.47%	0.1079%
Hess Corp	HES	16,950.08	0.07%	1.89%	-9.23%	-7.42%	-0.0052%
HollyFrontier Corp	HFC	6,485.67	0.03%	3.53%	1.26%	4.81%	0.0013%
Hartford Financial Services Group Inc/Th	HIG	19,036.54	0.08%	2.35%	9.50%	11.97%	0.0094%
Huntington Ingalls Industries Inc	HII	8,523.20	0.04%	1.68%	40.00%	42.02%	0.0148%
Hilton Worldwide Holdings Inc	HLT	26,032.64	0.11%	0.68%	13.10%	13.82%	0.0149%
Harley-Davidson Inc	HOG	5,204.86	0.02%	4.77%	8.60%	13.58%	0.0029%
Hologic Inc	HOLX	11,796.89	0.05%	0.00%	8.39%	8.39%	0.0041%
Honeywell International Inc	HON	119,575.29	0.50%	2.02%	8.18%	10.28%	0.0509%
Helmerich & Payne Inc	HP	5,351.47	0.02%	5.82%	51.02%	58.32%	0.0129%
Hewlett Packard Enterprise Co	HPE	18,373.12	0.08%	3.35%	5.79%	9.23%	0.0070%
HP Inc	HPQ	28,137.53	0.12%	3.39%	3.11%	6.56%	0.0076%
H&R Block Inc	HRB	5,336.44	0.02%	3.82%	10.00%	14.01%	0.0031%
Hormel Foods Corp	HRL	21,153.84	0.09%	2.13%	5.70%	7.89%	0.0069%
Harris Corp	HRS	22,111.93	N/A	1.47%	N/A	N/A	N/A
Henry Schein Inc	HSIC	9,609.34	0.04%	0.00%	1.50%	1.50%	0.0006%
Host Hotels & Resorts Inc	HST	13,417.58	0.06%	4.63%	15.05%	20.02%	0.0111%
Hershey Co/The	HSY	27,553.18	0.11%	2.27%	7.07%	9.41%	0.0107%
Humana Inc	HUM	33,064.67	0.14%	0.86%	13.35%	14.26%	0.0195%
International Business Machines Corp	IBM	112,594.78	0.47%	5.10%	1.92%	7.07%	0.0330%
Intercontinental Exchange Inc	ICE	46,355.34	0.19%	1.33%	9.35%	10.74%	0.0206%
IDEXX Laboratories Inc	IDXX	21,481.80	0.09%	0.00%	18.30%	18.30%	0.0163%
International Flavors & Fragrances Inc	IFF	14,448.11	0.06%	2.12%	7.80%	10.00%	0.0060%
Illumina Inc	ILMN	45,115.77	0.19%	0.00%	27.09%	27.09%	0.0506%
Incyte Corp	INCY	16,861.30	0.07%	0.00%	39.47%	39.47%	0.0276%
IHS Markit Ltd	INFO	22,789.57	0.09%	0.00%	11.15%	11.15%	0.0105%
Intel Corp	INTC	197,167.08	0.82%	2.83%	8.88%	11.83%	0.0966%
Intuit Inc	INTU	63,475.74	0.26%	0.76%	16.16%	16.98%	0.0446%
International Paper Co	IP	16,477.44	0.07%	4.86%	4.77%	9.74%	0.0066%
Interpublic Group of Cos Inc/The	IPG	8,212.97	0.03%	4.43%	11.75%	16.43%	0.0056%
IPG Photonics Corp	IPGP	6,652.01	0.03%	0.00%	10.49%	10.49%	0.0029%
IQVIA Holdings Inc	IQV	26,795.15	0.11%	0.00%	17.28%	17.28%	0.0192%
Ingersoll-Rand PLC	IR	28,538.66	0.12%	1.83%	9.16%	11.07%	0.0131%
Iron Mountain Inc	IRM	8,792.89	0.04%	8.01%	7.62%	15.93%	0.0058%
Intuitive Surgical Inc	ISRG	53,666.31	0.22%	0.00%	12.05%	12.05%	0.0268%
Gartner Inc	IT	13,630.68	0.06%	0.00%	14.00%	14.00%	0.0079%
Illinois Tool Works Inc	ITW	45,491.24	0.19%	2.87%	7.27%	10.24%	0.0193%
Invesco Ltd	IVZ	9,312.26	0.04%	6.35%	7.12%	13.70%	0.0053%
JB Hunt Transport Services Inc	JBHT	9,258.03	0.04%	1.21%	13.13%	14.41%	0.0055%
Johnson Controls International plc	JCI	34,593.61	0.14%	2.79%	7.80%	10.70%	0.0153%
Jacobs Engineering Group Inc	JEC	10,285.28	0.04%	0.77%	13.10%	13.93%	0.0059%
Jefferies Financial Group Inc	JEF	5,136.44	N/A	2.83%	N/A	N/A	N/A
Jack Henry & Associates Inc	JKHY	10,130.66	0.04%	1.16%	9.03%	10.24%	0.0043%
Johnson & Johnson	JNJ	348,210.59	1.44%	2.87%	5.98%	8.94%	0.1289%
Juniper Networks Inc	JNPR	8,473.85	0.04%	3.07%	7.92%	11.11%	0.0039%
JPMorgan Chase & Co	JPM	343,731.38	1.42%	3.21%	6.80%	10.12%	0.1441%
Nordstrom Inc	JWN	4,838.98	0.02%	4.86%	7.45%	12.49%	0.0025%
Kellogg Co	K	17,896.52	0.07%	4.33%	2.52%	6.91%	0.0051%
KeyCorp	KEY	16,102.37	0.07%	4.46%	7.17%	11.79%	0.0079%
Keysight Technologies Inc	KEYS	14,137.28	N/A	0.00%	N/A	N/A	N/A
Kraft Heinz Co/The	KHC	33,717.37	0.14%	5.79%	0.52%	6.32%	0.0088%
Kimco Realty Corp	KIM	7,343.50	0.03%	6.48%	3.77%	10.37%	0.0032%
KLA-Tencor Corp	KLAC	16,658.20	0.07%	2.89%	9.25%	12.27%	0.0085%
Kimberly-Clark Corp	KMB	43,967.98	0.18%	3.21%	4.33%	7.62%	0.0139%
Kinder Morgan Inc/DE	KMI	45,161.66	0.19%	4.98%	13.90%	19.23%	0.0360%
CarMax Inc	KMX	13,009.47	0.05%	0.00%	10.39%	10.39%	0.0056%
Coca-Cola Co/The	KO	209,594.24	0.87%	3.23%	6.49%	9.82%	0.0852%
Kroger Co/The	KR	18,400.42	0.08%	2.54%	6.39%	9.01%	0.0069%
Kohl's Corp	KSS	8,047.35	0.03%	5.44%	5.83%	11.42%	0.0038%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Kansas City Southern	KSU	11,394.50	0.05%	1.33%	12.67%	14.08%	0.0066%
Loews Corp	L	15,659.05	N/A	0.49%	N/A	N/A	N/A
L Brands Inc	LB	6,181.29	0.03%	5.41%	9.38%	15.04%	0.0038%
Leggett & Platt Inc	LEG	4,661.35	0.02%	4.39%	10.00%	14.61%	0.0028%
Lennar Corp	LEN	15,665.74	0.06%	0.32%	10.99%	11.33%	0.0073%
Laboratory Corp of America Holdings	LH	16,046.06	0.07%	0.00%	7.28%	7.28%	0.0048%
Linde PLC	LIN	97,996.44	0.41%	1.99%	15.05%	17.19%	0.0697%
LKQ Corp	LKQ	8,053.95	0.03%	0.00%	13.30%	13.30%	0.0044%
L3 Technologies Inc	LLL	19,231.95	0.08%	1.41%	5.00%	6.45%	0.0051%
Eli Lilly & Co	LLY	112,558.13	0.47%	2.14%	9.32%	11.56%	0.0539%
Lockheed Martin Corp	LMT	95,650.69	0.40%	2.65%	7.82%	10.57%	0.0419%
Lincoln National Corp	LNC	12,029.31	0.05%	2.54%	9.00%	11.65%	0.0058%
Alliant Energy Corp	LNT	11,266.74	0.05%	3.00%	5.37%	8.45%	0.0039%
Lowe's Cos Inc	LOW	74,243.67	0.31%	2.25%	14.39%	16.81%	0.0517%
Lam Research Corp	LRCX	26,178.67	0.11%	2.39%	9.10%	11.60%	0.0126%
Southwest Airlines Co	LUV	25,849.89	0.11%	1.44%	5.01%	6.49%	0.0069%
Lamb Weston Holdings Inc	LW	8,666.73	0.04%	1.32%	11.83%	13.23%	0.0047%
LyondellBasell Industries NV	LYB	27,496.80	0.11%	5.61%	6.20%	11.98%	0.0136%
Macy's Inc	M	6,354.07	0.03%	7.33%	1.83%	9.22%	0.0024%
Mastercard Inc	MA	256,876.87	1.06%	0.49%	17.28%	17.81%	0.1894%
Mid-America Apartment Communities Inc	MAA	13,016.02	0.05%	3.39%	7.00%	10.51%	0.0057%
Macerich Co/The	MAC	5,131.20	0.02%	8.33%	0.10%	8.43%	0.0018%
Marriott International Inc/MD	MAR	41,570.33	0.17%	1.43%	8.26%	9.75%	0.0168%
Masco Corp	MAS	10,250.73	0.04%	1.36%	12.33%	13.77%	0.0058%
Mattel Inc	MAT	3,402.44	0.01%	0.00%	9.00%	9.00%	0.0013%
McDonald's Corp	MCD	151,390.32	0.63%	2.37%	8.72%	11.20%	0.0702%
Microchip Technology Inc	MCHP	19,041.26	0.08%	1.83%	10.34%	12.27%	0.0097%
McKesson Corp	MCK	23,201.90	0.10%	1.32%	4.01%	5.35%	0.0051%
Moody's Corp	MCO	34,674.05	0.14%	1.04%	7.05%	8.13%	0.0117%
Mondelez International Inc	MDLZ	73,246.16	0.30%	2.10%	6.89%	9.05%	0.0275%
Medtronic PLC	MDT	124,121.78	0.51%	2.29%	7.34%	9.71%	0.0499%
MetLife Inc	MET	43,916.57	0.18%	3.75%	9.27%	13.20%	0.0240%
MGM Resorts International	MGM	13,333.34	0.06%	2.09%	14.17%	16.41%	0.0091%
Mohawk Industries Inc	MHK	9,816.70	0.04%	0.00%	6.82%	6.82%	0.0028%
McCormick & Co Inc/MD	MKC	20,597.95	0.09%	1.43%	6.20%	7.67%	0.0065%
Martin Marietta Materials Inc	MLM	13,151.93	0.05%	0.94%	13.90%	14.90%	0.0081%
Marsh & McLennan Cos Inc	MMC	48,884.51	0.20%	1.83%	11.73%	13.66%	0.0277%
3M Co	MMM	92,084.17	0.38%	3.55%	7.10%	10.78%	0.0411%
Monster Beverage Corp	MNST	33,625.62	0.14%	0.00%	14.45%	14.45%	0.0201%
Altria Group Inc	MO	91,787.33	0.38%	6.72%	6.53%	13.46%	0.0512%
Mosaic Co/The	MOS	8,282.87	0.03%	0.89%	13.60%	14.55%	0.0050%
Marathon Petroleum Corp	MPC	30,473.80	0.13%	4.65%	9.50%	14.37%	0.0181%
Merck & Co Inc	MRK	203,937.58	0.84%	2.78%	9.01%	11.91%	0.1006%
Marathon Oil Corp	MRO	10,755.60	0.04%	1.52%	0.45%	1.97%	0.0009%
Morgan Stanley	MS	68,450.12	0.28%	3.18%	9.49%	12.82%	0.0363%
MSCI Inc	MSCI	18,630.15	0.08%	1.05%	10.00%	11.10%	0.0086%
Microsoft Corp	MSFT	947,737.32	3.92%	1.47%	12.82%	14.38%	0.5643%
Motorola Solutions Inc	MSI	24,709.70	0.10%	1.53%	5.50%	7.07%	0.0072%
M&T Bank Corp	MTB	21,804.90	0.09%	2.70%	7.28%	10.08%	0.0091%
Mettler-Toledo International Inc	MTD	17,935.01	0.07%	0.00%	12.97%	12.97%	0.0096%
Micron Technology Inc	MU	36,089.06	0.15%	0.00%	-1.90%	-1.90%	-0.0028%
Maxim Integrated Products Inc	MXIM	14,326.83	0.06%	3.48%	8.97%	12.61%	0.0075%
Mylan NV	MYL	8,659.76	0.04%	0.00%	4.71%	4.71%	0.0017%
Noble Energy Inc	NBL	10,234.15	0.04%	2.11%	11.00%	13.23%	0.0056%
Norwegian Cruise Line Holdings Ltd	NCLH	11,784.28	0.05%	0.25%	10.86%	11.12%	0.0054%
Nasdaq Inc	NDAQ	15,019.46	0.06%	2.04%	7.09%	9.20%	0.0057%
NextEra Energy Inc	NEE	94,929.77	0.39%	2.52%	5.02%	7.60%	0.0299%
Newmont Goldcorp Corp	NEM	27,121.67	0.11%	1.70%	5.10%	6.84%	0.0077%
Netflix Inc	NFLX	150,088.87	0.62%	0.00%	43.23%	43.23%	0.2687%
NiSource Inc	NI	10,390.92	0.04%	2.88%	5.24%	8.20%	0.0035%
NIKE Inc	NKE	121,244.76	0.50%	1.10%	17.51%	18.70%	0.0939%
Nektar Therapeutics	NKTR	5,459.30	0.02%	0.00%	-2.40%	-2.40%	-0.0005%
Nielsen Holdings PLC	NLSN	8,080.38	0.03%	6.20%	12.00%	18.58%	0.0062%
Northrop Grumman Corp	NOC	51,491.75	0.21%	1.72%	7.08%	8.86%	0.0189%
National Oilwell Varco Inc	NOV	8,046.44	0.03%	0.96%	83.89%	85.25%	0.0284%
NRG Energy Inc	NRG	9,093.90	0.04%	0.35%	33.17%	33.58%	0.0126%
Norfolk Southern Corp	NSC	51,900.81	0.21%	1.77%	13.88%	15.76%	0.0339%
NetApp Inc	NTAP	14,620.91	0.06%	3.24%	9.73%	13.13%	0.0079%
Northern Trust Corp	NTRS	18,615.70	0.08%	2.88%	9.68%	12.70%	0.0098%
Nucor Corp	NUE	14,629.71	0.06%	3.34%	0.75%	4.10%	0.0025%
NVIDIA Corp	NVDA	82,495.14	0.34%	0.48%	9.76%	10.26%	0.0351%
Newell Brands Inc	NWL	5,678.00	0.02%	6.85%	-11.58%	-5.13%	-0.0012%
News Corp	NWSA	6,716.90	0.03%	1.80%	-10.26%	-8.55%	-0.0024%
Realty Income Corp	O	22,177.99	0.09%	3.89%	4.69%	8.67%	0.0080%
ONEOK Inc	OKE	26,259.55	0.11%	5.59%	11.96%	17.89%	0.0194%
Omnicom Group Inc	OMC	17,032.17	0.07%	3.36%	4.06%	7.49%	0.0053%
Oracle Corp	ORCL	172,933.29	0.72%	1.64%	7.71%	9.41%	0.0674%
O'Reilly Automotive Inc	ORLY	29,069.63	0.12%	0.00%	15.22%	15.22%	0.0183%
Occidental Petroleum Corp	OXY	37,228.97	0.15%	6.29%	12.23%	18.91%	0.0292%
Paychex Inc	PAYX	30,832.30	0.13%	2.64%	8.77%	11.53%	0.0147%
People's United Financial Inc	PBCT	6,122.80	0.03%	4.61%	2.00%	6.65%	0.0017%
PACCAR Inc	PCAR	22,802.90	0.09%	5.09%	5.00%	10.21%	0.0096%
Public Service Enterprise Group Inc	PEG	29,699.09	0.12%	3.20%	5.87%	9.17%	0.0113%
PepsiCo Inc	PEP	179,433.17	0.74%	2.96%	5.45%	8.50%	0.0631%
Pfizer Inc	PFE	230,848.26	0.96%	3.45%	5.09%	8.63%	0.0825%
Principal Financial Group Inc	PFG	14,364.73	0.06%	4.28%	4.60%	8.98%	0.0053%
Procter & Gamble Co/The	PG	258,132.22	1.07%	2.83%	7.15%	10.07%	0.1077%
Progressive Corp/The	PGR	46,299.52	0.19%	3.48%	6.23%	9.82%	0.0188%
Parker-Hannifin Corp	PH	19,540.43	0.08%	2.03%	9.02%	11.13%	0.0090%
PulteGroup Inc	PHM	8,591.25	0.04%	1.41%	8.80%	10.27%	0.0037%
Packaging Corp of America	PKG	8,417.52	0.03%	3.59%	8.25%	11.99%	0.0042%
PerkinElmer Inc	PKI	9,576.70	0.04%	0.32%	16.09%	16.44%	0.0065%
Prologis Inc	PLD	46,463.68	0.19%	2.87%	7.04%	10.01%	0.0193%
Philip Morris International Inc	PM	119,999.07	0.50%	6.11%	7.28%	13.61%	0.0676%
PNC Financial Services Group Inc/The	PNC	57,449.99	0.24%	3.23%	7.48%	10.83%	0.0258%
Pentair PLC	PNR	5,985.28	0.02%	2.07%	7.20%	9.35%	0.0023%
Pinnacle West Capital Corp	PNW	10,543.97	0.04%	3.21%	5.29%	8.59%	0.0038%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
PPG Industries Inc	PPG	24,703.68	0.10%	1.87%	8.70%	10.66%	0.0109%
PPL Corp	PPL	21,468.00	0.09%	5.59%	5.00%	10.73%	0.0095%
Perrigo Co PLC	PRGO	5,714.36	0.02%	1.80%	-0.80%	0.99%	0.0002%
Prudential Financial Inc	PRU	37,506.28	0.16%	4.32%	11.43%	16.00%	0.0249%
Public Storage	PSA	41,515.27	0.17%	3.38%	5.23%	8.70%	0.0149%
Phillips 66	PSX	36,646.93	0.15%	4.24%	2.51%	6.80%	0.0103%
PVH Corp	PVH	6,393.15	0.03%	0.18%	8.45%	8.64%	0.0023%
Quanta Services Inc	PWR	4,955.65	0.02%	0.46%	22.00%	22.51%	0.0046%
Pioneer Natural Resources Co	PXD	23,909.43	0.10%	0.51%	24.83%	25.41%	0.0252%
PayPal Holdings Inc	PYPL	128,948.90	0.53%	0.00%	19.57%	19.57%	0.1045%
QUALCOMM Inc	QCOM	81,233.00	0.34%	3.78%	15.42%	19.49%	0.0655%
Qorvo Inc	QRVO	7,289.57	0.03%	0.27%	12.19%	12.48%	0.0038%
Royal Caribbean Cruises Ltd	RCL	25,526.73	0.11%	2.35%	12.11%	14.60%	0.0154%
Everest Re Group Ltd	RE	10,088.09	0.04%	2.27%	10.00%	12.39%	0.0052%
Regency Centers Corp	REG	11,060.47	0.05%	3.52%	4.32%	7.91%	0.0036%
Regeneron Pharmaceuticals Inc	REGN	33,080.21	0.14%	0.00%	11.81%	11.81%	0.0162%
Regions Financial Corp	RF	14,012.90	0.06%	4.37%	9.22%	13.80%	0.0080%
Robert Half International Inc	RHI	6,361.80	0.03%	2.34%	9.05%	11.49%	0.0030%
Red Hat Inc	RHT	32,760.39	0.14%	0.00%	20.30%	20.30%	0.0275%
Raymond James Financial Inc	RJF	11,627.70	0.05%	1.58%	17.00%	18.71%	0.0090%
Ralph Lauren Corp	RL	8,207.88	0.03%	2.61%	7.84%	10.55%	0.0036%
ResMed Inc	RMD	16,363.97	0.07%	1.30%	12.30%	13.68%	0.0093%
Rockwell Automation Inc	ROK	17,618.19	0.07%	2.58%	11.59%	14.31%	0.0104%
Rollins Inc	ROL	12,305.29	0.05%	1.48%	10.00%	11.56%	0.0059%
Roper Technologies Inc	ROP	35,713.00	0.15%	0.56%	12.93%	13.53%	0.0200%
Ross Stores Inc	ROST	34,168.36	0.14%	1.10%	9.40%	10.55%	0.0149%
Republic Services Inc	RSG	27,202.97	0.11%	1.80%	13.26%	15.18%	0.0171%
Raytheon Co	RTN	48,837.49	0.20%	2.12%	9.31%	11.53%	0.0233%
SBA Communications Corp	SBAC	24,508.68	0.10%	0.00%	42.50%	42.50%	0.0431%
Starbucks Corp	SBUX	92,123.87	0.38%	1.96%	12.72%	14.80%	0.0565%
Charles Schwab Corp/The	SCHW	55,549.74	0.23%	1.63%	11.14%	12.87%	0.0296%
Sealed Air Corp	SEE	6,523.98	0.03%	1.58%	5.73%	7.35%	0.0020%
Sherwin-Williams Co/The	SHW	38,722.03	0.16%	1.02%	9.46%	10.53%	0.0169%
SVB Financial Group	SIVB	10,478.28	0.04%	0.01%	11.00%	11.01%	0.0048%
JM Smucker Co/The	SJM	13,827.03	0.06%	2.73%	3.20%	5.98%	0.0034%
Schlumberger Ltd	SLB	48,049.89	0.20%	5.76%	32.45%	39.15%	0.0779%
SL Green Realty Corp	SLG	7,340.09	0.03%	3.97%	-0.84%	3.11%	0.0009%
Snap-on Inc	SNA	8,638.66	0.04%	2.44%	7.35%	9.88%	0.0035%
Synopsys Inc	SNPS	17,454.25	0.07%	0.00%	13.25%	13.25%	0.0096%
Southern Co/The	SO	55,684.57	0.23%	4.61%	4.20%	8.91%	0.0205%
Simon Property Group Inc	SPG	50,084.77	0.21%	5.12%	4.87%	10.12%	0.0210%
S&P Global Inc	SPGI	52,657.26	0.22%	1.06%	9.20%	10.31%	0.0225%
Sempra Energy	SRE	36,068.33	0.15%	2.95%	8.67%	11.76%	0.0176%
SunTrust Banks Inc	STI	26,633.97	0.11%	3.51%	6.22%	9.84%	0.0109%
State Street Corp	STT	20,617.31	0.09%	3.63%	7.27%	11.03%	0.0094%
Seagate Technology PLC	STX	11,585.87	0.05%	6.02%	4.60%	10.76%	0.0052%
Constellation Brands Inc	STZ	33,786.05	0.14%	1.69%	8.35%	10.11%	0.0141%
Stanley Black & Decker Inc	SWK	19,277.95	0.08%	2.11%	10.00%	12.21%	0.0098%
Skyworks Solutions Inc	SWKS	11,506.57	0.05%	2.31%	11.22%	13.67%	0.0065%
Synchrony Financial	SYF	23,181.71	0.10%	2.69%	4.03%	6.78%	0.0065%
Stryker Corp	SYK	68,496.96	0.28%	1.25%	8.23%	9.53%	0.0270%
Symantec Corp	SYMC	11,578.77	0.05%	1.68%	7.32%	9.06%	0.0043%
Sysco Corp	SYY	35,371.78	0.15%	2.18%	12.73%	15.05%	0.0220%
AT&T Inc	T	223,172.84	0.92%	6.69%	4.79%	11.64%	0.1076%
Molson Coors Brewing Co	TAP	11,944.73	0.05%	3.78%	-0.23%	3.55%	0.0018%
TransDigm Group Inc	TDG	23,449.68	0.10%	0.00%	11.09%	11.09%	0.0108%
TE Connectivity Ltd	TEL	28,374.23	0.12%	2.12%	9.93%	12.15%	0.0143%
Teleflex Inc	TFX	13,306.22	0.06%	0.47%	12.45%	12.95%	0.0071%
Target Corp	TGT	41,215.54	0.17%	3.27%	6.75%	10.13%	0.0173%
Tiffany & Co	TIF	10,819.63	0.04%	2.60%	9.25%	11.98%	0.0054%
TJX Cos Inc/The	TJX	61,089.73	0.25%	1.81%	10.05%	11.95%	0.0302%
Torchmark Corp	TMK	9,401.01	0.04%	0.79%	7.91%	8.73%	0.0034%
Thermo Fisher Scientific Inc	TMO	106,786.96	0.44%	0.27%	10.83%	11.12%	0.0492%
Tapestry Inc	TPR	8,286.28	0.03%	4.73%	9.48%	14.43%	0.0050%
TripAdvisor Inc	TRIP	5,876.76	0.02%	0.00%	9.34%	9.34%	0.0023%
T Rowe Price Group Inc	TROW	23,917.12	0.10%	2.95%	7.10%	10.16%	0.0101%
Travelers Cos Inc/The	TRV	38,125.98	0.16%	2.22%	13.06%	15.43%	0.0244%
Tractor Supply Co	TSCO	12,158.28	0.05%	1.32%	11.20%	12.60%	0.0063%
Tyson Foods Inc	TSN	27,685.77	0.11%	1.97%	3.10%	5.10%	0.0059%
Total System Services Inc	TSS	21,857.78	0.09%	0.43%	12.14%	12.60%	0.0114%
Take-Two Interactive Software Inc	TTWO	12,171.36	0.05%	0.00%	8.80%	8.80%	0.0044%
Twitter Inc	TWTR	28,008.92	0.12%	0.00%	31.76%	31.76%	0.0368%
Texas Instruments Inc	TXN	97,864.29	0.41%	3.00%	9.87%	13.02%	0.0528%
Textron Inc	TXT	10,544.13	0.04%	0.17%	12.06%	12.24%	0.0053%
Under Armour Inc	UAA	9,651.44	0.04%	0.00%	31.19%	31.19%	0.0125%
United Continental Holdings Inc	UAL	20,520.65	0.08%	0.00%	13.81%	13.81%	0.0117%
UDR Inc	UDR	12,618.77	0.05%	3.04%	5.43%	8.56%	0.0045%
Universal Health Services Inc	UHS	10,776.24	0.04%	0.34%	9.38%	9.74%	0.0043%
Ulta Beauty Inc	ULTA	19,488.64	0.08%	0.00%	21.00%	21.00%	0.0169%
UnitedHealth Group Inc	UNH	229,792.96	0.95%	1.58%	13.38%	15.07%	0.1433%
Unum Group	UNM	6,672.12	0.03%	3.39%	9.00%	12.54%	0.0035%
Union Pacific Corp	UNP	118,053.25	0.49%	2.15%	13.06%	15.35%	0.0751%
United Parcel Service Inc	UPS	79,981.41	0.33%	4.11%	8.79%	13.08%	0.0433%
United Rentals Inc	URI	8,656.51	0.04%	0.00%	17.76%	17.76%	0.0064%
US Bancorp	USB	79,921.53	0.33%	3.14%	6.70%	9.95%	0.0329%
United Technologies Corp	UTX	108,907.41	0.45%	2.35%	8.87%	11.32%	0.0511%
Visa Inc	V	322,025.40	1.33%	0.62%	15.54%	16.21%	0.2162%
Varian Medical Systems Inc	VAR	11,482.81	0.05%	0.00%	8.50%	8.50%	0.0040%
VF Corp	VFC	32,518.28	0.13%	2.40%	-17.49%	-15.30%	-0.0206%
Viacom Inc	VIAB	11,957.81	0.05%	2.77%	3.51%	6.33%	0.0031%
Valero Energy Corp	VLO	29,373.80	0.12%	5.11%	13.09%	18.54%	0.0225%
Vulcan Materials Co	VMC	16,499.63	0.07%	0.97%	16.30%	17.35%	0.0119%
Vornado Realty Trust	VNO	12,634.13	0.05%	4.11%	4.23%	8.42%	0.0044%
Verisk Analytics Inc	VRSK	22,913.19	0.09%	0.53%	9.46%	10.01%	0.0095%
VeriSign Inc	VRSN	23,238.37	0.10%	0.00%	8.80%	8.80%	0.0085%
Vertex Pharmaceuticals Inc	VRTX	42,562.25	0.18%	0.00%	51.38%	51.38%	0.0906%
Ventas Inc	VTR	23,044.41	0.10%	4.94%	3.95%	8.98%	0.0086%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Verizon Communications Inc	VZ	224,775.66	0.93%	4.47%	2.42%	6.94%	0.0646%
Wabtec Corp	WAB	11,734.78	0.05%	0.00%	15.00%	15.00%	0.0073%
Waters Corp	WAT	13,944.38	0.06%	0.00%	9.90%	9.90%	0.0057%
Walgreens Boots Alliance Inc	WBA	45,111.51	0.19%	3.65%	5.66%	9.41%	0.0176%
WellCare Health Plans Inc	WCG	13,895.63	0.06%	0.00%	17.22%	17.22%	0.0099%
Western Digital Corp	WDC	10,905.37	0.05%	5.37%	-5.24%	0.00%	0.0000%
WEC Energy Group Inc	WEC	25,408.56	0.11%	2.93%	5.88%	8.89%	0.0094%
Welltower Inc	WELL	32,889.28	0.14%	4.29%	6.11%	10.53%	0.0143%
Wells Fargo & Co	WFC	199,413.99	0.83%	4.16%	10.36%	14.74%	0.1217%
Whirlpool Corp	WHR	7,276.41	0.03%	4.12%	4.97%	9.20%	0.0028%
Willis Towers Watson PLC	WLTW	22,680.95	0.09%	1.44%	13.97%	15.51%	0.0146%
Waste Management Inc	WM	46,447.44	0.19%	1.86%	7.51%	9.44%	0.0181%
Williams Cos Inc/The	WMB	31,966.50	0.13%	5.78%	3.90%	9.79%	0.0130%
Walmart Inc	WMT	290,841.12	1.20%	2.10%	3.96%	6.10%	0.0735%
Westrock Co	WRK	8,379.59	0.03%	5.56%	3.17%	8.81%	0.0031%
Western Union Co/The	WU	8,355.75	0.03%	4.01%	3.72%	7.80%	0.0027%
Weyerhaeuser Co	WY	16,981.12	0.07%	5.97%	7.10%	13.29%	0.0093%
Wynn Resorts Ltd	WYNN	11,555.33	0.05%	3.52%	23.23%	27.17%	0.0130%
Cimarex Energy Co	XEC	5,800.97	0.02%	1.28%	31.54%	33.02%	0.0079%
Xcel Energy Inc	XEL	29,511.36	0.12%	2.83%	5.57%	8.47%	0.0104%
Xilinx Inc	XLNX	25,978.56	0.11%	1.45%	9.60%	11.12%	0.0120%
Exxon Mobil Corp	XOM	299,434.52	1.24%	4.82%	17.13%	22.36%	0.2772%
DENTSPLY SIRONA Inc	XRAY	12,604.37	0.05%	0.64%	12.57%	13.25%	0.0069%
Xerox Corp	XRX	6,875.82	0.03%	3.31%	6.50%	9.92%	0.0028%
Xylem Inc/NY	XYL	13,354.63	0.06%	1.29%	13.97%	15.35%	0.0085%
Yum! Brands Inc	YUM	31,316.55	0.13%	1.64%	12.20%	13.94%	0.0181%
Zimmer Biomet Holdings Inc	ZBH	23,332.67	0.10%	0.87%	5.66%	6.55%	0.0063%
Zions Bancorp NA	ZION	7,863.09	0.03%	3.01%	7.60%	10.73%	0.0035%
Zoetis Inc	ZTS	48,368.21	0.20%	0.62%	10.81%	11.46%	0.0230%
	Total Market Capitalization:	24,150,546					13.85%

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

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

[1] S&P 500 Est. Required Market Return	[2] Current 30-Year Treasury (30-day average)	[3] Implied Market Risk Premium
14.90%	2.85%	12.04%

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	21,528.60	0.09%	0.98%	9.50%	10.53%	0.0099%
American Airlines Group Inc	AAL	13,104.37	0.06%	1.36%	6.50%	7.90%	0.0045%
Advance Auto Parts Inc	AAP	11,463.57	0.05%	0.15%	14.00%	14.16%	0.0071%
Apple Inc	AAPL	827,744.70	3.61%	1.71%	12.50%	14.32%	0.5165%
AbbVie Inc	ABBV	128,074.00	0.56%	5.27%	12.50%	18.10%	0.1010%
AmerisourceBergen Corp	ABC	16,905.83	0.07%	2.04%	8.00%	10.12%	0.0075%
ABIOMED Inc	ABMD	11,834.03	0.05%	0.00%	24.50%	24.50%	0.0126%
Abbott Laboratories	ABT	133,425.00	0.58%	1.69%	10.00%	11.77%	0.0685%
Accenture PLC	ACN	113,836.80	0.50%	1.72%	9.00%	10.80%	0.0536%
Adobe Inc	ADBE	133,972.20	0.58%	0.00%	19.50%	19.50%	0.1139%
Analog Devices Inc	ADI	36,506.50	0.16%	2.19%	10.00%	12.30%	0.0196%
Archer-Daniels-Midland Co	ADM	21,957.60	0.10%	3.57%	9.50%	13.24%	0.0127%
Automatic Data Processing Inc	ADP	70,172.12	0.31%	2.15%	13.50%	15.80%	0.0483%
Alliance Data Systems Corp	ADS	7,422.94	0.03%	1.78%	12.00%	13.89%	0.0045%
Autodesk Inc	ADSK	37,197.08	N/A	0.00%	N/A	N/A	N/A
Ameren Corp	AEE	18,594.38	0.08%	2.59%	6.50%	9.17%	0.0074%
American Electric Power Co Inc	AEP	43,510.48	0.19%	3.13%	4.00%	7.19%	0.0136%
AES Corp/VA	AES	11,143.44	N/A	3.28%	N/A	N/A	N/A
Aflac Inc	AFL	38,912.33	0.17%	2.12%	7.50%	9.70%	0.0165%
Allergan PLC	AGN	45,249.52	0.20%	2.14%	4.00%	6.18%	0.0122%
American International Group Inc	AIG	45,236.99	N/A	2.45%	N/A	N/A	N/A
Apartment Investment & Management Co	AIV	7,781.02	0.03%	3.06%	-3.00%	0.01%	0.0000%
Assurant Inc	AIZ	6,203.90	0.03%	2.40%	6.50%	8.98%	0.0024%
Arthur J Gallagher & Co	AJG	15,592.99	0.07%	2.04%	15.50%	17.70%	0.0120%
Akamai Technologies Inc	AKAM	12,713.99	0.06%	0.00%	18.00%	18.00%	0.0100%
Albemarle Corp	ALB	7,028.72	0.03%	2.22%	5.50%	7.78%	0.0024%
Align Technology Inc	ALGN	24,628.00	0.11%	0.00%	27.00%	27.00%	0.0290%
Alaska Air Group Inc	ALK	7,578.21	0.03%	2.28%	5.50%	7.84%	0.0026%
Allstate Corp/The	ALL	31,865.36	0.14%	2.08%	11.50%	13.70%	0.0190%
Allegion PLC	ALLE	9,324.52	0.04%	1.09%	8.50%	9.64%	0.0039%
Alexion Pharmaceuticals Inc	ALXN	28,098.99	0.12%	0.00%	21.00%	21.00%	0.0257%
Applied Materials Inc	AMAT	37,383.84	0.16%	2.10%	8.50%	10.69%	0.0174%
Advanced Micro Devices Inc	AMD	28,521.52	0.12%	0.00%	30.50%	30.50%	0.0379%
AMETEK Inc	AME	19,336.87	0.08%	0.66%	10.50%	11.19%	0.0094%
Affiliated Managers Group Inc	AMG	5,161.46	0.02%	1.49%	10.00%	11.56%	0.0026%
Amgen Inc	AMGN	105,744.40	0.46%	3.40%	7.00%	10.52%	0.0485%
Ameriprise Financial Inc	AMP	19,370.80	0.08%	2.69%	13.00%	15.86%	0.0134%
American Tower Corp	AMT	89,684.15	0.39%	2.01%	9.50%	11.61%	0.0454%
Amazon.com Inc	AMZN	893,216.10	3.89%	0.00%	39.00%	39.00%	1.5183%
Arista Networks Inc	ANET	19,448.12	0.08%	0.00%	11.00%	11.00%	0.0093%
ANSYS Inc	ANSS	15,107.26	0.07%	0.00%	11.00%	11.00%	0.0072%
Anthem Inc	ANTM	71,472.34	0.31%	1.15%	18.00%	19.25%	0.0600%
Aon PLC	AON	42,940.43	0.19%	0.99%	10.00%	11.04%	0.0207%
AO Smith Corp	AOS	7,304.79	0.03%	2.01%	9.50%	11.61%	0.0037%
Apache Corp	APA	10,397.67	0.05%	3.62%	50.00%	54.53%	0.0247%
Anadarko Petroleum Corp	APC	35,443.79	N/A	1.66%	N/A	N/A	N/A
Air Products & Chemicals Inc	APD	44,953.36	0.20%	2.27%	9.00%	11.37%	0.0223%
Amphenol Corp	APH	26,668.02	0.12%	1.03%	10.50%	11.58%	0.0135%
Aptiv PLC	APTV	17,460.93	0.08%	1.30%	11.00%	12.37%	0.0094%
Alexandria Real Estate Equities Inc	ARE	15,991.28	N/A	2.69%	N/A	N/A	N/A
Arconic Inc	ARNC	9,964.05	N/A	0.36%	N/A	N/A	N/A
Atmos Energy Corp	ATO	12,091.36	0.05%	2.14%	7.50%	9.72%	0.0051%
Activision Blizzard Inc	ATVI	32,314.34	0.14%	0.88%	9.50%	10.42%	0.0147%
AvalonBay Communities Inc	AVB	28,135.27	0.12%	3.03%	4.00%	7.09%	0.0087%
Broadcom Inc	AVGO	102,995.60	0.45%	4.08%	33.50%	38.26%	0.1718%
Avery Dennison Corp	AVY	8,413.74	0.04%	2.39%	11.50%	14.03%	0.0051%
American Water Works Co Inc	AWK	20,455.73	0.09%	1.77%	9.50%	11.35%	0.0101%
American Express Co	AXP	99,125.91	0.43%	1.44%	10.00%	11.51%	0.0497%
AutoZone Inc	AZO	25,827.04	0.11%	0.00%	13.50%	13.50%	0.0152%
Boeing Co/The	BA	197,503.70	0.86%	2.35%	17.50%	20.06%	0.1726%
Bank of America Corp	BAC	268,419.30	1.17%	2.38%	10.50%	13.00%	0.1522%
Baxter International Inc	BAX	38,268.90	0.17%	1.17%	10.50%	11.73%	0.0196%
BB&T Corp	BBT	36,848.41	0.16%	3.66%	8.00%	11.81%	0.0190%
Best Buy Co Inc	BBY	17,903.04	0.08%	3.04%	10.50%	13.70%	0.0107%
Becton Dickinson and Co	BDX	62,960.74	0.27%	1.33%	10.00%	11.40%	0.0313%
Franklin Resources Inc	BEN	16,835.80	0.07%	3.32%	7.50%	10.94%	0.0080%
Brown-Forman Corp	BF/B	25,137.11	0.11%	1.28%	13.50%	14.87%	0.0163%
Baker Hughes a GE Co	BHGE	11,829.78	N/A	3.12%	N/A	N/A	N/A
Biogen Inc	BIIB	44,422.82	0.19%	0.00%	5.50%	5.50%	0.0106%
Bank of New York Mellon Corp/The	BK	43,318.07	0.19%	2.48%	8.50%	11.09%	0.0209%
Booking Holdings Inc	BKNG	75,864.27	0.33%	0.00%	11.50%	11.50%	0.0380%
BlackRock Inc	BLK	67,036.01	0.29%	3.04%	9.50%	12.68%	0.0371%
Ball Corp	BLL	20,419.33	0.09%	0.98%	21.00%	22.08%	0.0197%
Bristol-Myers Squibb Co	BMY	77,368.90	0.34%	3.47%	11.50%	15.17%	0.0512%
Broadridge Financial Solutions Inc	BR	14,236.45	0.06%	1.75%	11.00%	12.85%	0.0080%
Berkshire Hathaway Inc	BRK/B	-	N/A	0.00%	N/A	N/A	N/A
Boston Scientific Corp	BSX	52,323.36	0.23%	0.00%	16.00%	16.00%	0.0365%
BorgWarner Inc	BWA	7,351.73	0.03%	1.92%	8.00%	10.00%	0.0032%
Boston Properties Inc	BXP	20,306.08	0.09%	2.93%	4.50%	7.50%	0.0066%
Citigroup Inc	C	147,766.70	0.64%	3.10%	10.00%	13.26%	0.0854%
Conagra Brands Inc	CAG	14,038.08	0.06%	3.05%	5.50%	8.63%	0.0053%
Cardinal Health Inc	CAH	13,681.18	0.06%	4.18%	17.00%	21.54%	0.0128%
Caterpillar Inc	CAT	69,896.28	0.30%	3.37%	13.00%	16.59%	0.0505%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Chubb Ltd	CB	67,534.99	0.29%	2.04%	8.50%	10.63%	0.0313%
Cboe Global Markets Inc	CBOE	11,856.33	0.05%	1.17%	14.50%	15.75%	0.0081%
CBRE Group Inc	CBRE	15,922.20	0.07%	0.00%	10.50%	10.50%	0.0073%
CBS Corp	CBS	17,918.34	0.08%	1.50%	9.50%	11.07%	0.0086%
Crown Castle International Corp	CCI	53,119.04	0.23%	3.76%	10.50%	14.46%	0.0335%
Carnival Corp	CCL	27,203.74	0.12%	3.87%	10.00%	14.06%	0.0167%
Cadence Design Systems Inc	CDNS	17,907.23	0.08%	0.00%	12.50%	12.50%	0.0098%
Celanese Corp	CE	12,486.47	0.05%	2.52%	11.00%	13.66%	0.0074%
Celgene Corp	CELG	67,400.02	0.29%	0.00%	13.50%	13.50%	0.0397%
Cerner Corp	CERN	22,731.48	0.10%	0.00%	7.50%	7.50%	0.0074%
CF Industries Holdings Inc	CF	8,971.72	N/A	3.01%	N/A	N/A	N/A
Citizens Financial Group Inc	CFG	15,687.20	0.07%	3.82%	12.00%	16.05%	0.0110%
Church & Dwight Co Inc	CHD	18,499.24	0.08%	1.21%	8.50%	9.76%	0.0079%
CH Robinson Worldwide Inc	CHRW	11,052.42	0.05%	2.48%	9.00%	11.59%	0.0056%
Charter Communications Inc	CHTR	83,891.94	0.37%	0.00%	16.00%	16.00%	0.0585%
Cigna Corp	CI	36,532.54	0.16%	0.03%	15.50%	15.53%	0.0247%
Cincinnati Financial Corp	CINF	16,153.02	0.07%	2.26%	7.00%	9.34%	0.0066%
Colgate-Palmolive Co	CL	61,598.45	0.27%	2.40%	6.00%	8.47%	0.0227%
Clorox Co/The	CLX	19,295.74	0.08%	2.81%	6.50%	9.40%	0.0079%
Comerica Inc	CMA	11,135.70	0.05%	3.74%	15.50%	19.53%	0.0095%
Comcast Corp	CMCSA	193,930.80	0.85%	1.97%	12.00%	14.09%	0.1191%
CME Group Inc	CME	66,690.59	0.29%	1.61%	3.00%	4.63%	0.0135%
Chipotle Mexican Grill Inc	CMG	18,493.90	0.08%	0.00%	26.00%	26.00%	0.0210%
Cummins Inc	CMI	25,081.88	0.11%	2.86%	8.00%	10.97%	0.0120%
CMS Energy Corp	CMS	16,270.20	0.07%	2.72%	7.00%	9.82%	0.0070%
Centene Corp	CNC	22,905.36	0.10%	0.00%	15.50%	15.50%	0.0155%
CenterPoint Energy Inc	CNP	14,745.21	0.06%	3.94%	12.50%	16.69%	0.0107%
Capital One Financial Corp	COF	41,911.53	0.18%	1.79%	6.00%	7.84%	0.0143%
Cabot Oil & Gas Corp	COG	10,842.43	0.05%	1.41%	50.00%	51.76%	0.0245%
Cooper Cos Inc/The	COO	14,392.15	0.06%	0.02%	14.50%	14.52%	0.0091%
ConocoPhillips	COP	67,245.47	0.29%	2.05%	37.00%	39.43%	0.1156%
Costco Wholesale Corp	COST	109,350.50	0.48%	1.05%	8.50%	9.59%	0.0457%
Coty Inc	COTY	9,850.85	0.04%	3.81%	9.00%	12.98%	0.0056%
Campbell Soup Co	CPB	11,471.11	0.05%	3.67%	1.00%	4.69%	0.0023%
Capri Holdings Ltd	CPRI	5,855.40	0.03%	0.00%	7.50%	7.50%	0.0019%
Copart Inc	CPRT	15,855.47	0.07%	0.00%	12.50%	12.50%	0.0086%
salesforce.com Inc	CRM	117,588.10	0.51%	0.00%	57.00%	57.00%	0.2921%
Cisco Systems Inc	CSCO	233,721.50	1.02%	2.58%	8.00%	10.68%	0.1088%
CSX Corp	CSX	65,984.19	0.29%	1.27%	14.50%	15.86%	0.0456%
Cintas Corp	CTAS	23,525.76	0.10%	1.00%	16.00%	17.08%	0.0175%
CenturyLink Inc	CTL	10,434.41	0.05%	10.35%	0.50%	10.88%	0.0049%
Cognizant Technology Solutions Corp	CTSH	34,754.52	0.15%	1.31%	5.00%	6.34%	0.0096%
Citrix Systems Inc	CTXS	12,555.56	0.05%	1.47%	7.00%	8.52%	0.0047%
CVS Health Corp	CVS	68,521.42	0.30%	3.79%	8.00%	11.94%	0.0357%
Chevron Corp	CVX	224,287.50	0.98%	4.04%	16.50%	20.87%	0.2041%
Concho Resources Inc	CXO	20,635.72	0.09%	0.49%	21.00%	21.54%	0.0194%
Dominion Energy Inc	D	62,596.10	0.27%	4.77%	6.50%	11.43%	0.0312%
Delta Air Lines Inc	DAL	35,369.79	0.15%	2.85%	9.50%	12.49%	0.0192%
Deere & Co	DE	43,464.74	0.19%	2.23%	14.00%	16.39%	0.0310%
Discover Financial Services	DFS	24,908.30	0.11%	2.09%	7.50%	9.67%	0.0105%
Dollar General Corp	DG	31,714.33	0.14%	1.06%	12.50%	13.63%	0.0188%
Quest Diagnostics Inc	DGX	13,083.76	0.06%	2.17%	8.50%	10.76%	0.0061%
DR Horton Inc	DHI	16,276.06	0.07%	1.42%	5.00%	6.46%	0.0046%
Danaher Corp	DHR	94,220.76	0.41%	0.52%	12.50%	13.05%	0.0536%
Walt Disney Co/The	DIS	236,126.70	1.03%	1.33%	6.50%	7.87%	0.0810%
Discovery Inc	DISCA	14,298.68	0.06%	0.00%	15.00%	15.00%	0.0093%
DISH Network Corp	DISH	16,036.32	0.07%	0.00%	-2.00%	-2.00%	-0.0014%
Digital Realty Trust Inc	DLR	24,514.63	0.11%	3.62%	5.00%	8.71%	0.0093%
Dollar Tree Inc	DLTR	23,192.56	0.10%	0.00%	15.50%	15.50%	0.0157%
Dover Corp	DOV	13,235.11	0.06%	2.11%	11.00%	13.23%	0.0076%
Dow Inc	DOW	-	N/A	5.85%	N/A	N/A	N/A
Duke Realty Corp	DRE	10,950.97	0.05%	2.90%	7.00%	10.00%	0.0048%
Darden Restaurants Inc	DRI	14,850.58	0.06%	2.57%	12.00%	14.72%	0.0095%
DTE Energy Co	DTE	23,694.80	0.10%	3.02%	5.00%	8.10%	0.0084%
Duke Energy Corp	DUK	64,719.20	0.28%	4.26%	6.00%	10.39%	0.0293%
DaVita Inc	DVA	8,011.97	0.03%	0.00%	9.50%	9.50%	0.0033%
Devon Energy Corp	DVN	11,289.13	0.05%	1.33%	26.50%	28.01%	0.0138%
DowDuPont Inc	DWDP	69,500.95	N/A	0.00%	N/A	N/A	N/A
DXC Technology Co	DXC	14,028.21	0.06%	1.46%	14.50%	16.07%	0.0098%
Electronic Arts Inc	EA	27,725.11	0.12%	0.00%	10.00%	10.00%	0.0121%
eBay Inc	EBAY	31,492.20	0.14%	1.59%	10.00%	11.67%	0.0160%
Ecolab Inc	ECL	52,590.74	0.23%	1.01%	10.00%	11.06%	0.0254%
Consolidated Edison Inc	ED	28,900.26	0.13%	3.41%	3.00%	6.46%	0.0081%
Equifax Inc	EFX	14,624.05	0.06%	1.29%	8.00%	9.34%	0.0060%
Edison International	EIX	20,102.54	0.09%	3.97%	15.00%	19.27%	0.0169%
Estee Lauder Cos Inc/The	EL	59,884.29	0.26%	1.05%	12.50%	13.62%	0.0355%
Eastman Chemical Co	EMN	9,479.47	0.04%	3.62%	8.00%	11.76%	0.0049%
Emerson Electric Co	EMR	39,438.26	0.17%	3.14%	12.00%	15.33%	0.0263%
EOG Resources Inc	EOG	51,560.99	0.22%	1.29%	34.50%	36.01%	0.0809%
Equinix Inc	EQIX	41,720.58	0.18%	2.02%	25.00%	27.27%	0.0496%
Equity Residential	EQR	28,377.87	0.12%	2.97%	-12.00%	-9.21%	-0.0114%
Eversource Energy	ES	23,750.25	0.10%	2.90%	5.50%	8.48%	0.0088%
Essex Property Trust Inc	ESS	19,116.69	0.08%	2.73%	2.00%	4.76%	0.0040%
E*TRADE Financial Corp	ETFC	11,447.23	0.05%	1.21%	17.50%	18.82%	0.0094%
Eaton Corp PLC	ETN	32,591.39	0.14%	3.69%	9.00%	12.86%	0.0183%
Entergy Corp	ETR	18,868.16	N/A	3.70%	N/A	N/A	N/A
Evergy Inc	EVRG	14,553.23	N/A	3.26%	N/A	N/A	N/A
Edwards Lifesciences Corp	EW	35,421.75	0.15%	0.00%	15.00%	15.00%	0.0232%
Exelon Corp	EXC	48,219.86	0.21%	2.96%	10.50%	13.62%	0.0286%
Expeditors International of Washington I	EXPD	12,303.73	0.05%	1.40%	7.50%	8.95%	0.0048%
Expedia Group Inc	EXPE	17,319.05	0.08%	1.10%	24.00%	25.23%	0.0190%
Extra Space Storage Inc	EXR	13,443.69	0.06%	3.42%	6.00%	9.52%	0.0056%
Ford Motor Co	F	38,599.14	0.17%	6.09%	3.50%	9.70%	0.0163%
Diamondback Energy Inc	FANG	17,089.32	0.07%	0.72%	17.00%	17.78%	0.0132%
Fastenal Co	FAST	17,943.15	0.08%	2.74%	9.50%	12.37%	0.0097%
Facebook Inc	FB	516,291.20	2.25%	0.00%	16.50%	16.50%	0.3713%
Fortune Brands Home & Security Inc	FBHS	9,502.13	0.04%	1.68%	11.50%	13.28%	0.0055%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Freeport-McMoRan Inc	FCX	14,437.45	0.06%	2.01%	22.50%	24.74%	0.0156%
FedEx Corp	FDX	41,845.74	0.18%	1.78%	7.50%	9.35%	0.0170%
FirstEnergy Corp	FE	22,931.72	0.10%	3.62%	8.00%	11.76%	0.0118%
F5 Networks Inc	FFIV	8,202.09	0.04%	0.00%	12.00%	12.00%	0.0043%
Fidelity National Information Services I	FIS	38,892.43	0.17%	1.16%	18.00%	19.26%	0.0327%
Fiserv Inc	FISV	34,208.56	0.15%	0.00%	10.50%	10.50%	0.0157%
Fifth Third Bancorp	FITB	19,978.75	0.09%	3.48%	7.00%	10.60%	0.0092%
Foot Locker Inc	FL	5,966.25	0.03%	2.88%	12.00%	15.05%	0.0039%
FLIR Systems Inc	FLIR	6,656.63	0.03%	1.40%	12.00%	13.48%	0.0039%
Fluor Corp	FLR	4,042.14	0.02%	2.91%	17.00%	20.16%	0.0036%
Flowserve Corp	FLS	6,369.82	0.03%	1.56%	13.50%	15.17%	0.0042%
FleetCor Technologies Inc	FLT	22,984.02	0.10%	0.00%	12.50%	12.50%	0.0125%
FMC Corp	FMC	9,439.57	0.04%	2.31%	15.00%	17.48%	0.0072%
Fox Corp	FOXA	N/A	N/A	0.00%	N/A	N/A	N/A
First Republic Bank/CA	FRC	16,338.49	0.07%	0.77%	10.50%	11.31%	0.0081%
Federal Realty Investment Trust	FRT	9,664.09	0.04%	3.12%	4.00%	7.18%	0.0030%
TechnipFMC PLC	FTI	N/A	N/A	0.00%	N/A	N/A	N/A
Fortinet Inc	FTNT	13,227.54	0.06%	0.00%	25.00%	25.00%	0.0144%
Fortive Corp	FTV	26,297.50	N/A	0.36%	N/A	N/A	N/A
General Dynamics Corp	GD	47,253.68	0.21%	2.49%	6.00%	8.56%	0.0176%
General Electric Co	GE	83,193.28	0.36%	0.42%	3.50%	3.93%	0.0142%
Gilead Sciences Inc	GILD	85,574.58	0.37%	3.75%	-5.50%	-1.85%	-0.0069%
General Mills Inc	GIS	31,983.20	0.14%	3.71%	4.00%	7.78%	0.0109%
Corning Inc	GLW	23,170.66	0.10%	2.70%	16.00%	18.92%	0.0191%
General Motors Co	GM	49,828.14	0.22%	4.44%	2.50%	7.00%	0.0152%
Alphabet Inc	GOOGL	N/A	N/A	0.00%	N/A	N/A	N/A
Genuine Parts Co	GPC	14,349.33	0.06%	3.11%	8.50%	11.74%	0.0073%
Global Payments Inc	GPN	23,248.95	0.10%	0.03%	17.50%	17.53%	0.0178%
Gap Inc/The	GPS	8,036.28	0.04%	4.56%	6.00%	10.70%	0.0037%
Garmin Ltd	GRMN	14,675.17	0.06%	2.95%	10.00%	13.10%	0.0084%
Goldman Sachs Group Inc/The	GS	70,697.18	0.31%	1.77%	8.50%	10.35%	0.0319%
WW Grainger Inc	GWW	14,466.45	0.06%	2.21%	8.50%	10.80%	0.0068%
Halliburton Co	HAL	20,500.72	0.09%	3.06%	24.50%	27.93%	0.0250%
Hasbro Inc	HAS	12,325.86	0.05%	2.78%	7.50%	10.38%	0.0056%
Huntington Bancshares Inc/OH	HBAN	13,666.51	0.06%	4.44%	12.50%	17.22%	0.0103%
Hanesbrands Inc	HBI	5,743.77	0.03%	3.78%	4.00%	7.86%	0.0020%
HCA Healthcare Inc	HCA	43,382.46	0.19%	1.26%	12.00%	13.34%	0.0252%
HCP Inc	HCP	14,923.37	0.07%	4.66%	32.50%	37.92%	0.0247%
Home Depot Inc/The	HD	212,160.00	0.92%	2.83%	11.00%	13.99%	0.1293%
Hess Corp	HES	17,955.62	N/A	1.70%	N/A	N/A	N/A
HollyFrontier Corp	HFC	6,994.53	0.03%	3.35%	18.50%	22.16%	0.0068%
Hartford Financial Services Group Inc/Th	HIG	19,124.60	0.08%	2.25%	11.00%	13.37%	0.0111%
Huntington Ingalls Industries Inc	HII	8,499.71	0.04%	1.68%	7.00%	8.74%	0.0032%
Hilton Worldwide Holdings Inc	HLT	26,447.34	0.12%	0.66%	17.00%	17.72%	0.0204%
Harley-Davidson Inc	HOG	5,449.84	0.02%	4.38%	8.50%	13.07%	0.0031%
Hologic Inc	HOLX	11,975.89	0.05%	0.00%	18.50%	18.50%	0.0097%
Honeywell International Inc	HON	121,125.40	0.53%	1.97%	8.00%	10.05%	0.0531%
Helmerich & Payne Inc	HP	5,605.18	N/A	5.54%	N/A	N/A	N/A
Hewlett Packard Enterprise Co	HPE	19,732.96	0.09%	3.28%	5.50%	8.87%	0.0076%
HP Inc	HPQ	29,540.55	0.13%	3.39%	8.00%	11.53%	0.0148%
H&R Block Inc	HRB	5,581.22	0.02%	3.82%	7.00%	10.95%	0.0027%
Hormel Foods Corp	HRL	20,902.07	0.09%	2.20%	9.00%	11.30%	0.0103%
Harris Corp	HRS	22,261.30	0.10%	1.47%	11.50%	13.05%	0.0127%
Henry Schein Inc	HSIC	10,082.56	0.04%	0.00%	7.00%	7.00%	0.0031%
Host Hotels & Resorts Inc	HST	14,146.37	0.06%	4.18%	4.00%	8.26%	0.0051%
Hershey Co/The	HSY	27,167.28	0.12%	2.22%	6.00%	8.29%	0.0098%
Humana Inc	HUM	35,179.64	0.15%	0.85%	13.50%	14.41%	0.0221%
International Business Machines Corp	IBM	118,155.30	0.51%	4.90%	2.00%	6.95%	0.0358%
Intercontinental Exchange Inc	ICE	45,906.25	0.20%	1.35%	10.50%	11.92%	0.0239%
IDEXX Laboratories Inc	IDXX	21,820.97	0.10%	0.00%	13.00%	13.00%	0.0124%
International Flavors & Fragrances Inc	IFF	14,454.93	0.06%	2.27%	8.50%	10.87%	0.0068%
Illumina Inc	ILMN	45,418.59	0.20%	0.00%	14.00%	14.00%	0.0277%
Incyte Corp	INCY	17,252.84	N/A	0.00%	N/A	N/A	N/A
IHS Markit Ltd	INFO	23,086.67	0.10%	0.00%	17.00%	17.00%	0.0171%
Intel Corp	INTC	199,360.80	0.87%	2.83%	12.50%	15.51%	0.1347%
Intuit Inc	INTU	62,579.89	0.27%	0.78%	13.00%	13.83%	0.0377%
International Paper Co	IP	17,304.63	0.08%	4.61%	12.00%	16.89%	0.0127%
Interpublic Group of Cos Inc/The	IPG	8,611.62	0.04%	4.36%	11.00%	15.60%	0.0059%
IPG Photonics Corp	IPGP	6,930.06	0.03%	0.00%	11.00%	11.00%	0.0033%
IQVIA Holdings Inc	IQV	26,511.57	0.12%	0.00%	12.50%	12.50%	0.0144%
Ingersoll-Rand PLC	IR	29,122.24	0.13%	1.76%	12.00%	13.87%	0.0176%
Iron Mountain Inc	IRM	9,101.12	0.04%	7.69%	8.50%	16.52%	0.0066%
Intuitive Surgical Inc	ISRG	54,674.21	0.24%	0.00%	14.00%	14.00%	0.0334%
Gartner Inc	IT	13,757.48	0.06%	0.00%	14.00%	14.00%	0.0084%
Illinois Tool Works Inc	ITW	47,661.29	0.21%	2.73%	10.00%	12.87%	0.0267%
Invesco Ltd	IVZ	8,105.35	0.04%	6.13%	7.00%	13.34%	0.0047%
JB Hunt Transport Services Inc	JBHT	9,898.51	0.04%	1.16%	10.00%	11.22%	0.0048%
Johnson Controls International plc	JCI	34,809.16	0.15%	2.68%	2.00%	4.71%	0.0071%
Jacobs Engineering Group Inc	JEC	10,259.69	0.04%	0.90%	12.50%	13.46%	0.0060%
Jefferies Financial Group Inc	JEF	5,456.15	0.02%	2.73%	18.50%	21.48%	0.0051%
Jack Henry & Associates Inc	JKHY	10,188.34	0.04%	1.21%	10.50%	11.77%	0.0052%
Johnson & Johnson	JNJ	371,231.40	1.62%	2.75%	12.00%	14.92%	0.2413%
Juniper Networks Inc	JNPR	8,852.80	0.04%	3.02%	5.00%	8.10%	0.0031%
JPMorgan Chase & Co	JPM	355,879.20	1.55%	3.00%	8.50%	11.63%	0.1804%
Nordstrom Inc	JWN	5,328.46	0.02%	4.38%	6.50%	11.02%	0.0026%
Kellogg Co	K	19,410.60	0.08%	3.99%	4.50%	8.58%	0.0073%
KeyCorp	KEY	16,737.83	0.07%	4.42%	10.50%	15.15%	0.0111%
Keysight Technologies Inc	KEYS	13,821.92	0.06%	0.00%	16.00%	16.00%	0.0096%
Kraft Heinz Co/The	KHC	38,337.55	0.17%	5.15%	3.50%	8.74%	0.0146%
Kimco Realty Corp	KIM	7,589.22	0.03%	6.33%	5.00%	11.49%	0.0038%
KLA-Tencor Corp	KLAC	16,894.14	0.07%	2.87%	11.50%	14.54%	0.0107%
Kimberly-Clark Corp	KMB	45,006.20	0.20%	3.15%	7.00%	10.26%	0.0201%
Kinder Morgan Inc/DE	KMI	45,157.98	0.20%	5.01%	35.50%	41.40%	0.0815%
CarMax Inc	KMX	13,189.65	0.06%	0.00%	11.50%	11.50%	0.0066%
Coca-Cola Co/The	KO	212,759.80	0.93%	3.21%	6.50%	9.81%	0.0910%
Kroger Co/The	KR	18,776.94	0.08%	2.64%	4.50%	7.20%	0.0059%
Kohl's Corp	KSS	8,439.75	0.04%	5.24%	11.00%	16.53%	0.0061%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Kansas City Southern	KSU	12,159.24	0.05%	1.19%	12.00%	13.26%	0.0070%
Loews Corp	L	16,192.21	0.07%	0.48%	12.00%	12.51%	0.0088%
L Brands Inc	LB	6,671.50	0.03%	4.95%	-4.00%	0.85%	0.0002%
Leggett & Platt Inc	LEG	4,839.89	0.02%	4.34%	9.00%	13.54%	0.0029%
Lennar Corp	LEN	16,507.73	0.07%	0.31%	9.00%	9.32%	0.0067%
Laboratory Corp of America Holdings	LH	16,407.89	0.07%	0.00%	8.50%	8.50%	0.0061%
Linde PLC	LIN	100,625.40	N/A	2.03%	N/A	N/A	N/A
LKQ Corp	LKQ	8,314.03	0.04%	0.00%	10.50%	10.50%	0.0038%
L3 Technologies Inc	LLL	19,355.40	0.08%	1.40%	7.00%	8.45%	0.0071%
Eli Lilly & Co	LLY	113,402.80	0.49%	2.21%	11.50%	13.84%	0.0684%
Lockheed Martin Corp	LMT	96,083.04	0.42%	2.65%	14.00%	16.84%	0.0705%
Lincoln National Corp	LNC	12,829.32	0.06%	2.44%	9.00%	11.55%	0.0065%
Alliant Energy Corp	LNT	11,577.71	0.05%	2.91%	6.50%	9.50%	0.0048%
Lowe's Cos Inc	LOW	75,934.80	0.33%	2.22%	12.00%	14.35%	0.0475%
Lam Research Corp	LRCX	27,796.36	0.12%	2.37%	10.50%	12.99%	0.0157%
Southwest Airlines Co	LUV	27,674.59	0.12%	1.41%	11.00%	12.49%	0.0151%
Lamb Weston Holdings Inc	LW	9,233.84	N/A	1.27%	N/A	N/A	N/A
LyondellBasell Industries NV	LYB	29,548.57	0.13%	5.09%	5.50%	10.73%	0.0138%
Macy's Inc	M	6,540.95	0.03%	7.10%	3.50%	10.72%	0.0031%
Mastercard Inc	MA	255,723.50	1.11%	0.53%	16.00%	16.57%	0.1847%
Mid-America Apartment Communities Inc	MAA	13,088.64	0.06%	3.34%	-3.00%	0.29%	0.0002%
Macerich Co/The	MAC	5,687.01	0.02%	7.55%	3.00%	10.66%	0.0026%
Marriott International Inc/MD	MAR	41,260.67	0.18%	1.55%	12.50%	14.15%	0.0254%
Masco Corp	MAS	10,831.96	0.05%	1.36%	10.50%	11.93%	0.0056%
Mattel Inc	MAT	3,786.84	0.02%	0.00%	18.50%	18.50%	0.0031%
McDonald's Corp	MCD	151,924.70	0.66%	2.41%	8.50%	11.01%	0.0729%
Microchip Technology Inc	MCHP	19,333.81	0.08%	1.85%	13.00%	14.97%	0.0126%
McKesson Corp	MCK	24,785.28	0.11%	1.21%	9.00%	10.26%	0.0111%
Moody's Corp	MCO	36,292.91	0.16%	1.08%	11.00%	12.14%	0.0192%
Mondelez International Inc	MDLZ	75,138.84	0.33%	2.11%	8.50%	10.70%	0.0350%
Medtronic PLC	MDT	122,851.90	0.54%	2.28%	7.50%	9.87%	0.0528%
MetLife Inc	MET	45,294.46	0.20%	3.73%	7.50%	11.37%	0.0224%
MGM Resorts International	MGM	13,627.65	0.06%	2.05%	22.50%	24.78%	0.0147%
Mohawk Industries Inc	MHK	10,262.92	0.04%	0.00%	4.00%	4.00%	0.0018%
McCormick & Co Inc/MD	MKC	20,628.89	0.09%	1.48%	8.50%	10.04%	0.0090%
Martin Marietta Materials Inc	MLM	13,315.62	0.06%	0.93%	10.00%	10.98%	0.0064%
Marsh & McLennan Cos Inc	MMC	48,770.06	0.21%	1.89%	9.50%	11.48%	0.0244%
3M Co	MMM	95,611.95	0.42%	3.47%	8.50%	12.12%	0.0505%
Monster Beverage Corp	MNST	34,368.48	0.15%	0.00%	13.50%	13.50%	0.0202%
Altria Group Inc	MO	98,847.32	0.43%	6.06%	8.50%	14.82%	0.0638%
Mosaic Co/The	MOS	8,340.74	0.04%	0.97%	22.00%	23.08%	0.0084%
Marathon Petroleum Corp	MPC	33,443.38	0.15%	4.23%	11.50%	15.97%	0.0233%
Merck & Co Inc	MRK	209,280.40	0.91%	2.72%	8.50%	11.34%	0.1034%
Marathon Oil Corp	MRO	11,939.20	N/A	1.79%	N/A	N/A	N/A
Morgan Stanley	MS	72,982.29	0.32%	2.81%	10.00%	12.95%	0.0412%
MSCI Inc	MSCI	18,431.21	0.08%	1.16%	18.50%	19.77%	0.0159%
Microsoft Corp	MSFT	967,295.80	4.22%	1.46%	13.50%	15.06%	0.6349%
Motorola Solutions Inc	MSI	24,799.11	0.11%	1.52%	12.50%	14.12%	0.0153%
M&T Bank Corp	MTB	22,542.50	0.10%	2.46%	9.50%	12.08%	0.0119%
Mettler-Toledo International Inc	MTD	17,836.58	0.08%	0.00%	10.00%	10.00%	0.0078%
Micron Technology Inc	MU	39,839.96	0.17%	0.00%	11.50%	11.50%	0.0200%
Maxim Integrated Products Inc	MXIM	14,672.81	0.06%	3.42%	8.00%	11.56%	0.0074%
Mylan NV	MYL	9,900.38	0.04%	0.00%	6.50%	6.50%	0.0028%
Noble Energy Inc	NBL	10,514.91	N/A	2.21%	N/A	N/A	N/A
Norwegian Cruise Line Holdings Ltd	NCLH	11,964.69	0.05%	0.00%	16.00%	16.00%	0.0083%
Nasdaq Inc	NDAQ	14,916.41	0.07%	2.09%	8.00%	10.17%	0.0066%
NextEra Energy Inc	NEE	97,490.87	0.42%	2.54%	10.00%	12.67%	0.0538%
Newmont Goldcorp Corp	NEM	16,990.68	0.07%	1.77%	2.50%	4.29%	0.0032%
Netflix Inc	NFLX	153,983.40	0.67%	0.00%	32.00%	32.00%	0.2148%
NiSource Inc	NI	10,615.67	0.05%	2.81%	12.50%	15.49%	0.0072%
NIKE Inc	NKE	129,992.70	0.57%	1.07%	14.50%	15.65%	0.0887%
Nektar Therapeutics	NKTR	5,761.72	N/A	0.00%	N/A	N/A	N/A
Nielsen Holdings PLC	NLSN	8,322.11	0.04%	5.98%	45.50%	52.84%	0.0192%
Northrop Grumman Corp	NOC	52,846.11	0.23%	1.70%	9.50%	11.28%	0.0260%
National Oilwell Varco Inc	NOV	8,477.55	N/A	0.91%	N/A	N/A	N/A
NRG Energy Inc	NRG	9,505.63	N/A	0.34%	N/A	N/A	N/A
Norfolk Southern Corp	NSC	53,180.11	0.23%	1.72%	15.00%	16.85%	0.0391%
NetApp Inc	NTAP	15,230.02	0.07%	2.60%	18.50%	21.34%	0.0142%
Northern Trust Corp	NTRS	19,619.23	0.09%	2.66%	10.00%	12.79%	0.0109%
Nucor Corp	NUE	15,662.95	0.07%	3.11%	21.50%	24.94%	0.0170%
NVIDIA Corp	NVDA	89,717.88	0.39%	0.43%	18.00%	18.47%	0.0722%
Newell Brands Inc	NWL	6,409.97	0.03%	6.07%	5.50%	11.74%	0.0033%
News Corp	NWSA	6,898.04	N/A	1.70%	N/A	N/A	N/A
Realty Income Corp	O	20,059.82	0.09%	3.90%	4.50%	8.49%	0.0074%
ONEOK Inc	OKE	26,965.15	0.12%	5.62%	16.00%	22.07%	0.0259%
Omnicom Group Inc	OMC	17,435.10	0.08%	3.35%	6.50%	9.96%	0.0076%
Oracle Corp	ORCL	182,754.50	0.80%	1.81%	10.00%	11.90%	0.0948%
O'Reilly Automotive Inc	ORLY	28,654.85	0.12%	0.00%	12.00%	12.00%	0.0150%
Occidental Petroleum Corp	OXY	39,570.23	0.17%	5.95%	27.50%	34.27%	0.0591%
Paychex Inc	PAYX	30,929.96	0.13%	2.88%	10.50%	13.53%	0.0182%
People's United Financial Inc	PBCT	6,329.94	0.03%	4.47%	9.00%	13.67%	0.0038%
PACCAR Inc	PCAR	23,236.29	0.10%	4.92%	7.50%	12.60%	0.0128%
Public Service Enterprise Group Inc	PEG	30,935.52	0.13%	3.10%	6.00%	9.19%	0.0124%
PepsiCo Inc	PEP	182,194.70	0.79%	2.94%	6.50%	9.54%	0.0757%
Pfizer Inc	PFE	239,656.60	1.04%	3.44%	11.00%	14.63%	0.1528%
Principal Financial Group Inc	PFG	14,978.40	0.07%	4.03%	5.50%	9.64%	0.0063%
Procter & Gamble Co/The	PG	267,789.30	1.17%	2.79%	8.50%	11.41%	0.1332%
Progressive Corp/The	PGR	46,486.88	0.20%	0.50%	20.00%	20.55%	0.0416%
Parker-Hannifin Corp	PH	20,348.57	0.09%	2.22%	11.50%	13.85%	0.0123%
PulteGroup Inc	PHM	8,758.52	0.04%	1.43%	7.50%	8.98%	0.0034%
Packaging Corp of America	PKG	8,517.29	0.04%	3.55%	6.00%	9.66%	0.0036%
PerkinElmer Inc	PKI	9,551.04	0.04%	0.33%	11.00%	11.35%	0.0047%
Prologis Inc	PLD	48,121.54	0.21%	2.83%	6.50%	9.42%	0.0198%
Philip Morris International Inc	PM	134,258.10	0.59%	5.29%	7.00%	12.48%	0.0730%
PNC Financial Services Group Inc/The	PNC	58,746.44	0.26%	2.92%	8.00%	11.04%	0.0283%
Pentair PLC	PNR	6,119.36	0.03%	2.02%	6.50%	8.59%	0.0023%
Pinnacle West Capital Corp	PNW	10,926.80	0.05%	3.12%	5.00%	8.20%	0.0039%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
PPG Industries Inc	PPG	25,215.93	0.11%	1.80%	7.50%	9.37%	0.0103%
PPL Corp	PPL	21,900.82	0.10%	5.44%	1.50%	6.98%	0.0067%
Perrigo Co PLC	PRGO	6,496.72	0.03%	1.76%	2.50%	4.28%	0.0012%
Prudential Financial Inc	PRU	39,884.24	0.17%	4.12%	7.00%	11.26%	0.0196%
Public Storage	PSA	40,756.36	0.18%	3.58%	5.50%	9.18%	0.0163%
Phillips 66	PSX	37,313.64	0.16%	4.50%	10.00%	14.73%	0.0239%
PVH Corp	PVH	8,089.99	0.04%	0.14%	9.50%	9.65%	0.0034%
Quanta Services Inc	PWR	4,951.52	0.02%	0.46%	18.50%	19.00%	0.0041%
Pioneer Natural Resources Co	PXD	24,518.87	0.11%	0.44%	37.50%	38.02%	0.0406%
PayPal Holdings Inc	PYPL	128,802.80	0.56%	0.00%	19.00%	19.00%	0.1067%
QUALCOMM Inc	QCOM	82,855.50	0.36%	3.96%	10.50%	14.67%	0.0530%
Qorvo Inc	QRVO	7,461.24	N/A	0.00%	N/A	N/A	N/A
Royal Caribbean Cruises Ltd	RCL	26,072.21	0.11%	2.25%	12.50%	14.89%	0.0169%
Everest Re Group Ltd	RE	10,226.79	0.04%	2.31%	9.00%	11.41%	0.0051%
Regency Centers Corp	REG	11,204.30	0.05%	3.51%	16.00%	19.79%	0.0097%
Regeneron Pharmaceuticals Inc	REGN	33,944.68	0.15%	0.00%	12.00%	12.00%	0.0178%
Regions Financial Corp	RF	14,251.98	0.06%	4.12%	10.50%	14.84%	0.0092%
Robert Half International Inc	RHI	6,649.64	0.03%	2.24%	9.50%	11.85%	0.0034%
Red Hat Inc	RHT	32,886.76	0.14%	0.00%	15.50%	15.50%	0.0222%
Raymond James Financial Inc	RJF	11,899.40	0.05%	1.65%	10.00%	11.73%	0.0061%
Ralph Lauren Corp	RL	8,586.26	0.04%	2.52%	7.50%	10.11%	0.0038%
ResMed Inc	RMD	16,160.83	0.07%	1.31%	14.50%	15.90%	0.0112%
Rockwell Automation Inc	ROK	18,362.68	0.08%	2.54%	9.50%	12.16%	0.0097%
Rollins Inc	ROL	12,072.76	0.05%	1.14%	13.00%	14.21%	0.0075%
Roper Technologies Inc	ROP	36,638.22	0.16%	0.52%	11.50%	12.05%	0.0192%
Ross Stores Inc	ROST	35,068.69	0.15%	1.11%	11.00%	12.17%	0.0186%
Republic Services Inc	RSG	29,920.97	0.13%	1.86%	11.50%	13.47%	0.0176%
Raytheon Co	RTN	50,318.80	0.22%	2.10%	10.00%	12.21%	0.0268%
SBA Communications Corp	SBAC	23,776.45	0.10%	0.00%	28.50%	28.50%	0.0295%
Starbucks Corp	SBUX	92,456.10	0.40%	2.09%	13.50%	15.73%	0.0634%
Charles Schwab Corp/The	SCHW	56,765.42	0.25%	1.60%	12.00%	13.70%	0.0339%
Sealed Air Corp	SEE	6,446.62	0.03%	1.55%	22.50%	24.22%	0.0068%
Sherwin-Williams Co/The	SHW	39,748.50	0.17%	1.05%	12.00%	13.11%	0.0227%
SVB Financial Group	SIVB	11,563.16	0.05%	0.00%	19.50%	19.50%	0.0098%
JM Smucker Co/The	SJM	14,468.53	0.06%	2.72%	5.50%	8.29%	0.0052%
Schlumberger Ltd	SLB	51,928.22	0.23%	5.34%	24.00%	29.98%	0.0679%
SL Green Realty Corp	SLG	8,203.19	0.04%	3.98%	4.00%	8.06%	0.0029%
Snap-on Inc	SNA	8,716.00	0.04%	2.50%	7.00%	9.59%	0.0036%
Synopsys Inc	SNPS	17,466.78	0.08%	0.00%	10.00%	10.00%	0.0076%
Southern Co/The	SO	56,529.68	0.25%	4.60%	3.50%	8.18%	0.0202%
Simon Property Group Inc	SPG	53,357.55	0.23%	5.07%	5.50%	10.71%	0.0249%
S&P Global Inc	SPGI	52,662.94	0.23%	1.07%	13.00%	14.14%	0.0325%
Sempra Energy	SRE	37,231.12	0.16%	2.91%	11.00%	14.07%	0.0228%
SunTrust Banks Inc	STI	27,523.52	0.12%	3.22%	10.00%	13.38%	0.0161%
State Street Corp	STT	22,090.92	0.10%	3.31%	6.00%	9.41%	0.0091%
Seagate Technology PLC	STX	12,115.98	0.05%	5.76%	6.00%	11.93%	0.0063%
Constellation Brands Inc	STZ	39,151.03	0.17%	1.48%	9.50%	11.05%	0.0189%
Stanley Black & Decker Inc	SWK	19,982.52	0.09%	2.05%	9.50%	11.65%	0.0101%
Skyworks Solutions Inc	SWKS	11,823.04	0.05%	2.22%	9.00%	11.32%	0.0058%
Synchrony Financial	SYF	23,937.12	0.10%	2.53%	10.00%	12.66%	0.0132%
Stryker Corp	SYK	68,967.95	0.30%	1.13%	15.00%	16.21%	0.0487%
Symantec Corp	SYMC	12,760.83	0.06%	1.50%	9.00%	10.57%	0.0059%
Sysco Corp	SYY	38,075.22	0.17%	2.09%	12.00%	14.22%	0.0236%
AT&T Inc	T	234,532.80	1.02%	6.38%	5.50%	12.06%	0.1232%
Molson Coors Brewing Co	TAP	12,858.49	0.06%	2.95%	5.50%	8.53%	0.0048%
TransDigm Group Inc	TDG	23,788.40	0.10%	0.00%	6.50%	6.50%	0.0067%
TE Connectivity Ltd	TEL	29,254.72	0.13%	2.12%	8.00%	10.20%	0.0130%
Teleflex Inc	TFX	13,815.00	0.06%	0.47%	15.00%	15.51%	0.0093%
Target Corp	TGT	41,110.22	0.18%	3.22%	8.00%	11.35%	0.0203%
Tiffany & Co	TIF	11,588.67	0.05%	2.52%	10.50%	13.15%	0.0066%
TJX Cos Inc/The	TJX	64,320.85	0.28%	1.76%	13.50%	15.38%	0.0431%
Torchmark Corp	TMK	9,592.66	0.04%	0.80%	10.00%	10.84%	0.0045%
Thermo Fisher Scientific Inc	TMO	108,402.90	0.47%	0.28%	10.00%	10.29%	0.0486%
Tapestry Inc	TPR	8,769.72	0.04%	4.47%	12.00%	16.74%	0.0064%
TripAdvisor Inc	TRIP	6,331.45	0.03%	0.00%	18.00%	18.00%	0.0050%
T Rowe Price Group Inc	TROW	24,302.84	0.11%	3.00%	10.00%	13.15%	0.0139%
Travelers Cos Inc/The	TRV	38,748.08	0.17%	2.23%	6.50%	8.80%	0.0149%
Tractor Supply Co	TSCO	12,312.37	0.05%	1.37%	10.50%	11.94%	0.0064%
Tyson Foods Inc	TSN	29,905.86	0.13%	1.90%	6.50%	8.46%	0.0110%
Total System Services Inc	TSS	17,627.06	0.08%	0.52%	10.00%	10.55%	0.0081%
Take-Two Interactive Software Inc	TTWO	11,804.75	0.05%	0.00%	28.00%	28.00%	0.0144%
Twitter Inc	TWTR	28,558.69	N/A	0.00%	N/A	N/A	N/A
Texas Instruments Inc	TXN	99,353.10	0.43%	2.91%	6.00%	9.00%	0.0390%
Textron Inc	TXT	11,039.90	0.05%	0.17%	13.00%	13.18%	0.0063%
Under Armour Inc	UAA	10,578.56	0.05%	0.00%	12.00%	12.00%	0.0055%
United Continental Holdings Inc	UAL	21,382.17	0.09%	0.00%	8.50%	8.50%	0.0079%
UDR Inc	UDR	12,435.39	0.05%	3.04%	1.50%	4.56%	0.0025%
Universal Health Services Inc	UHS	11,083.62	0.05%	0.33%	10.50%	10.85%	0.0052%
Ulta Beauty Inc	ULTA	20,087.71	0.09%	0.00%	19.00%	19.00%	0.0166%
UnitedHealth Group Inc	UNH	234,914.50	1.02%	1.46%	13.50%	15.06%	0.1542%
Unum Group	UNM	7,140.32	0.03%	3.43%	9.00%	12.58%	0.0039%
Union Pacific Corp	UNP	122,314.90	0.53%	2.04%	14.50%	16.69%	0.0890%
United Parcel Service Inc	UPS	82,802.37	0.36%	3.99%	8.50%	12.66%	0.0457%
United Rentals Inc	URI	9,338.55	0.04%	0.00%	14.50%	14.50%	0.0059%
US Bancorp	USB	81,822.72	0.36%	3.01%	7.00%	10.12%	0.0361%
United Technologies Corp	UTX	112,485.90	0.49%	2.25%	9.00%	11.35%	0.0557%
Visa Inc	V	324,796.60	1.42%	0.67%	15.00%	15.72%	0.2225%
Varian Medical Systems Inc	VAR	11,600.64	0.05%	0.00%	10.00%	10.00%	0.0051%
VF Corp	VFC	33,255.24	0.14%	2.43%	10.00%	12.55%	0.0182%
Viacom Inc	VIAB	11,421.46	0.05%	2.83%	6.00%	8.91%	0.0044%
Valero Energy Corp	VLO	31,463.16	0.14%	4.77%	11.50%	16.54%	0.0227%
Vulcan Materials Co	VMC	16,512.59	0.07%	0.99%	14.00%	15.06%	0.0108%
Vornado Realty Trust	VNO	12,817.23	0.06%	3.93%	-3.50%	0.36%	0.0002%
Verisk Analytics Inc	VRSK	23,264.91	0.10%	0.70%	9.50%	10.23%	0.0104%
VeriSign Inc	VRSN	23,237.07	0.10%	0.00%	10.50%	10.50%	0.0106%
Vertex Pharmaceuticals Inc	VRTX	44,351.29	N/A	0.00%	N/A	N/A	N/A
Ventas Inc	VTR	23,296.71	0.10%	4.93%	3.00%	8.00%	0.0081%

Company	Ticker	Market Capitalization	Weight in Index	Estimated Dividend Yield	Long-Term Growth Est.	DCF Result	Weighted DCF Result
Verizon Communications Inc	VZ	243,469.10	1.06%	4.11%	4.50%	8.70%	0.0923%
Wabtec Corp	WAB	10,316.15	0.04%	0.76%	13.50%	14.31%	0.0064%
Waters Corp	WAT	14,381.39	0.06%	0.00%	10.50%	10.50%	0.0066%
Walgreens Boots Alliance Inc	WBA	51,179.88	0.22%	3.41%	10.00%	13.58%	0.0303%
WellCare Health Plans Inc	WCG	13,807.39	0.06%	0.00%	23.00%	23.00%	0.0138%
Western Digital Corp	WDC	12,156.57	0.05%	4.82%	1.50%	6.36%	0.0034%
WEC Energy Group Inc	WEC	25,938.46	0.11%	2.92%	6.00%	9.01%	0.0102%
Welltower Inc	WELL	30,240.24	0.13%	4.32%	8.00%	12.49%	0.0165%
Wells Fargo & Co	WFC	205,564.30	0.90%	4.04%	5.00%	9.14%	0.0819%
Whirlpool Corp	WHR	7,941.15	0.03%	3.81%	6.50%	10.43%	0.0036%
Willis Towers Watson PLC	WLTW	22,926.20	0.10%	1.46%	16.50%	18.08%	0.0181%
Waste Management Inc	WM	46,545.83	0.20%	1.87%	8.00%	9.94%	0.0202%
Williams Cos Inc/The	WMB	33,654.46	0.15%	5.63%	20.00%	26.19%	0.0384%
Walmart Inc	WMT	295,929.80	1.29%	2.10%	7.00%	9.17%	0.1183%
Westrock Co	WRK	8,909.29	0.04%	5.25%	9.50%	15.00%	0.0058%
Western Union Co/The	WU	8,428.56	0.04%	4.11%	6.00%	10.23%	0.0038%
Weyerhaeuser Co	WY	17,062.61	0.07%	5.94%	17.50%	23.96%	0.0178%
Wynn Resorts Ltd	WYNN	12,258.17	0.05%	3.51%	18.00%	21.83%	0.0117%
Cimarex Energy Co	XEC	6,135.98	0.03%	1.25%	18.00%	19.36%	0.0052%
Xcel Energy Inc	XEL	30,411.73	0.13%	2.79%	5.50%	8.37%	0.0111%
Xilinx Inc	XLNX	25,898.68	0.11%	1.45%	11.00%	12.53%	0.0141%
Exxon Mobil Corp	XOM	312,212.40	1.36%	4.72%	14.50%	19.56%	0.2662%
DENTSPLY SIRONA Inc	XRAY	12,027.01	0.05%	0.65%	3.00%	3.66%	0.0019%
Xerox Corp	XRX	7,217.98	0.03%	3.14%	9.00%	12.28%	0.0039%
Xylem Inc/NY	XYL	13,325.19	0.06%	1.30%	14.00%	15.39%	0.0089%
Yum! Brands Inc	YUM	31,025.34	0.14%	1.72%	12.00%	13.82%	0.0187%
Zimmer Biomet Holdings Inc	ZBH	23,339.01	0.10%	0.86%	4.50%	5.38%	0.0055%
Zions Bancorp NA	ZION	8,200.31	0.04%	2.80%	10.00%	12.94%	0.0046%
Zoetis Inc	ZTS	49,286.98	0.21%	0.64%	13.00%	13.68%	0.0294%
	Total Market Capitalization:	22,942,982.01					14.90%

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

Bloomberg and Value Line Beta Coefficients

Company	Ticker	[1] Bloomberg	[2] Value Line
ALLETE, Inc.	ALE	0.445	0.650
Alliant Energy Corporation	LNT	0.523	0.650
Ameren Corporation	AEE	0.440	0.600
American Electric Power Company, Inc.	AEP	0.487	0.550
Avangrid, Inc.	AGR	0.477	0.400
CMS Energy Corporation	CMS	0.462	0.550
DTE Energy Company	DTE	0.489	0.550
Evergy, Inc.	EVRG	0.408	0.519
Hawaiian Electric Industries, Inc.	HE	0.473	0.600
NextEra Energy, Inc.	NEE	0.541	0.600
NorthWestern Corporation	NWE	0.474	0.600
OGE Energy Corp.	OGE	0.540	0.850
Otter Tail Corporation	OTTR	0.523	0.700
Pinnacle West Capital Corporation	PNW	0.419	0.550
PNM Resources, Inc.	PNM	0.489	0.650
Portland General Electric Company	POR	0.464	0.600
Southern Company	SO	0.468	0.500
WEC Energy Group, Inc.	WEC	0.464	0.550
Xcel Energy Inc.	XEL	0.468	0.500
Mean		0.477	0.588

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

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

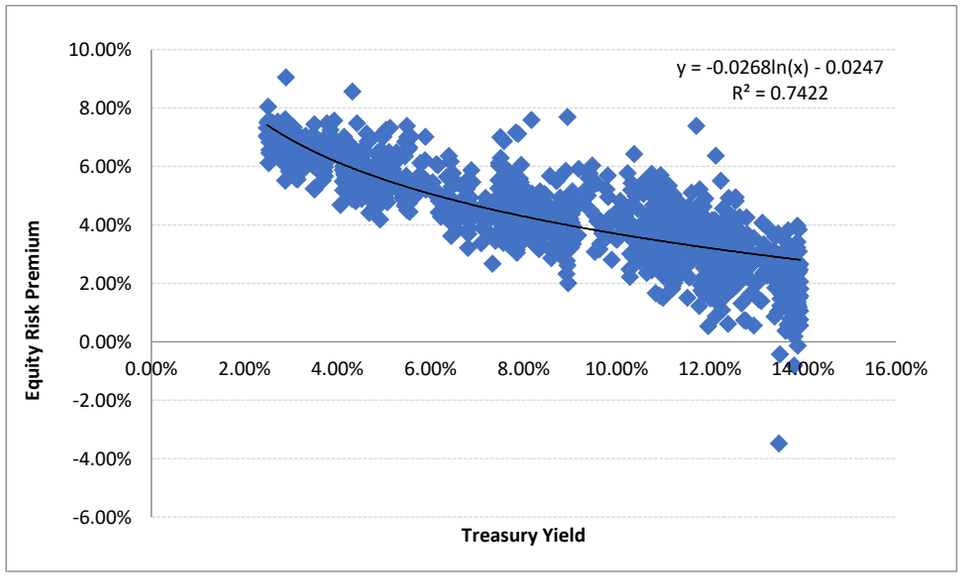
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
					CAPM		ECAPM	
	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg MRP	Value Line MRP	Bloomberg MRP	Value Line MRP
PROXY GROUP AVERAGE BLOOMBERG BETA COEFFICIENT								
Current 30-Year Treasury [9]	2.85%	0.477	11.00%	12.04%	8.09%	8.59%	9.53%	10.17%
Near-Term Projected 30-Year Treasury [10]	3.03%	0.477	11.00%	12.04%	8.27%	8.77%	9.71%	10.35%
Mean					8.18%	8.68%	9.62%	10.26%

	Risk-Free Rate	Average Beta Coefficient	Bloomberg Market DCF Derived	Value Line Market DCF Derived	Bloomberg MRP	Value Line MRP	Bloomberg MRP	Value Line MRP
PROXY GROUP AVERAGE VALUE LINE AVERAGE BETA COEFFICIENT								
Current 30-Year Treasury [9]	2.85%	0.588	11.00%	12.04%	9.32%	9.93%	10.45%	11.17%
Near-Term Projected 30-Year Treasury [10]	3.03%	0.588	11.00%	12.04%	9.50%	10.11%	10.63%	11.35%
Mean					9.41%	10.02%	10.54%	11.26%

Notes:
[1] S*ee Notes [9] and [10]*
[2] Source: Petitioner's Exhibit 11-D
[3] Source: Petitioner's Exhibit 11-E
[4] Source: Petitioner's Exhibit 11-E
[5] Equals Col. [1] + (Col. [2] x Col. [3])
[6] Equals Col. [1] + (Col. [2] x Col. [4])
[7] Equals Col. [1] + (0.75 x Col. [2] x Col. [3]) + (0.25 x Col. [3])
[8] Equals Col. [1] + (0.75 x Col. [2] x Col. [4]) + (0.25 x Col. [4])
[9] Source: Bloomberg Professional
[10] Source: Blue Chip Financial Forecasts, Vol. 38, No. 6, June 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
-2.47%	-2.68%			
Current 30-Year Treasury		2.85%	7.05%	9.91%
Near-Term Projected 30-Year Treasury		3.03%	6.89%	9.92%
Long-Term Projected 30-Year Treasury		3.70%	6.36%	10.06%



Notes:
[1] Constant of regression equation
[2] Slope of regression equation
[3] Source: Current = Bloomberg Professional,
Near Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 2.
Long Term Projected = Blue Chip Financial Forecasts, Vol. 38, No. 6, June 1, 2019, at 14.
[4] Equals [1] + ln([3]) x [2]
[5] Equals [3] + [4]
[6] Source: S&P Global Market Intelligence
[7] Source: S&P Global Market Intelligence
[8] Source: Bloomberg Professional, equals 200-trading day average (i.e. lag period)
[9] Equals [7] - [8]

Bond Yield Plus Risk Premium

[6] Date of Electric Rate Case	[7] Return on Equity	[8] 30-Year Treasury Yield	[9] Risk Premium
1/1/1980	14.50%	9.36%	5.14%
1/7/1980	14.39%	9.38%	5.01%
1/9/1980	15.00%	9.40%	5.60%
1/14/1980	15.17%	9.42%	5.75%
1/17/1980	13.93%	9.44%	4.49%
1/23/1980	15.50%	9.47%	6.03%
1/30/1980	13.86%	9.52%	4.34%
1/31/1980	12.61%	9.53%	3.08%
2/6/1980	13.71%	9.58%	4.13%
2/13/1980	12.80%	9.63%	3.17%
2/14/1980	13.00%	9.65%	3.35%
2/19/1980	13.50%	9.68%	3.82%
2/27/1980	13.75%	9.78%	3.97%
2/29/1980	13.75%	9.81%	3.94%
2/29/1980	14.00%	9.81%	4.19%
2/29/1980	14.77%	9.81%	4.96%
3/7/1980	12.70%	9.89%	2.81%
3/14/1980	13.50%	9.97%	3.53%
3/26/1980	14.16%	10.10%	4.06%
3/27/1980	14.24%	10.12%	4.12%
3/28/1980	14.50%	10.13%	4.37%
4/11/1980	12.75%	10.27%	2.48%
4/14/1980	13.85%	10.29%	3.56%
4/16/1980	15.50%	10.31%	5.19%
4/22/1980	13.25%	10.35%	2.90%
4/22/1980	13.90%	10.35%	3.55%
4/24/1980	16.80%	10.38%	6.43%
4/29/1980	15.50%	10.41%	5.09%
5/6/1980	13.70%	10.45%	3.25%
5/7/1980	15.00%	10.45%	4.55%
5/8/1980	13.75%	10.46%	3.29%
5/9/1980	14.35%	10.47%	3.88%
5/13/1980	13.60%	10.48%	3.12%
5/15/1980	13.25%	10.49%	2.76%
5/19/1980	13.75%	10.51%	3.24%
5/27/1980	13.62%	10.54%	3.08%
5/27/1980	14.60%	10.54%	4.06%
5/29/1980	16.00%	10.56%	5.44%
5/30/1980	13.80%	10.56%	3.24%
6/2/1980	15.63%	10.57%	5.06%
6/9/1980	15.90%	10.60%	5.30%
6/10/1980	13.78%	10.60%	3.18%
6/12/1980	14.25%	10.61%	3.64%
6/19/1980	13.40%	10.62%	2.78%
6/30/1980	13.00%	10.65%	2.35%
6/30/1980	13.40%	10.65%	2.75%
7/9/1980	14.75%	10.67%	4.08%
7/10/1980	15.00%	10.68%	4.32%
7/15/1980	15.80%	10.70%	5.10%
7/18/1980	13.80%	10.71%	3.09%
7/22/1980	14.10%	10.72%	3.38%
7/24/1980	15.00%	10.73%	4.27%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/25/1980	13.48%	10.73%	2.75%
7/31/1980	14.58%	10.75%	3.83%
8/8/1980	13.50%	10.78%	2.72%
8/8/1980	14.00%	10.78%	3.22%
8/8/1980	15.45%	10.78%	4.67%
8/11/1980	14.85%	10.78%	4.07%
8/14/1980	14.00%	10.79%	3.21%
8/14/1980	16.25%	10.79%	5.46%
8/25/1980	13.75%	10.82%	2.93%
8/27/1980	13.80%	10.83%	2.97%
8/29/1980	12.50%	10.84%	1.66%
9/15/1980	13.50%	10.88%	2.62%
9/15/1980	13.93%	10.88%	3.05%
9/15/1980	15.80%	10.88%	4.92%
9/24/1980	12.50%	10.93%	1.57%
9/24/1980	15.00%	10.93%	4.07%
9/26/1980	13.75%	10.94%	2.81%
9/30/1980	14.10%	10.96%	3.14%
9/30/1980	14.20%	10.96%	3.24%
10/1/1980	13.90%	10.97%	2.93%
10/3/1980	15.50%	10.98%	4.52%
10/7/1980	12.50%	10.99%	1.51%
10/9/1980	13.25%	11.00%	2.25%
10/9/1980	14.50%	11.00%	3.50%
10/9/1980	14.50%	11.00%	3.50%
10/16/1980	16.10%	11.02%	5.08%
10/17/1980	14.50%	11.03%	3.47%
10/31/1980	13.75%	11.11%	2.64%
10/31/1980	14.25%	11.11%	3.14%
11/4/1980	15.00%	11.12%	3.88%
11/5/1980	13.75%	11.12%	2.63%
11/5/1980	14.00%	11.12%	2.88%
11/8/1980	13.75%	11.14%	2.61%
11/10/1980	14.85%	11.15%	3.70%
11/17/1980	14.00%	11.18%	2.82%
11/18/1980	14.00%	11.19%	2.81%
11/19/1980	13.00%	11.19%	1.81%
11/24/1980	14.00%	11.21%	2.79%
11/26/1980	14.00%	11.21%	2.79%
12/8/1980	14.15%	11.22%	2.93%
12/8/1980	15.10%	11.22%	3.88%
12/9/1980	15.35%	11.22%	4.13%
12/12/1980	15.45%	11.23%	4.22%
12/17/1980	13.25%	11.23%	2.02%
12/18/1980	15.80%	11.23%	4.57%
12/19/1980	14.50%	11.23%	3.27%
12/19/1980	14.64%	11.23%	3.41%
12/22/1980	13.45%	11.23%	2.22%
12/22/1980	15.00%	11.23%	3.77%
12/30/1980	14.50%	11.22%	3.28%
12/30/1980	14.95%	11.22%	3.73%
12/31/1980	13.39%	11.22%	2.17%
1/2/1981	15.25%	11.22%	4.03%
1/7/1981	14.30%	11.21%	3.09%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/19/1981	15.25%	11.20%	4.05%
1/23/1981	13.10%	11.20%	1.90%
1/23/1981	14.40%	11.20%	3.20%
1/26/1981	15.25%	11.20%	4.05%
1/27/1981	15.00%	11.21%	3.79%
1/31/1981	13.47%	11.22%	2.25%
2/3/1981	15.25%	11.23%	4.02%
2/5/1981	15.75%	11.25%	4.50%
2/11/1981	15.60%	11.28%	4.32%
2/20/1981	15.25%	11.33%	3.92%
3/11/1981	15.40%	11.49%	3.91%
3/12/1981	14.51%	11.50%	3.01%
3/12/1981	16.00%	11.50%	4.50%
3/13/1981	13.02%	11.52%	1.50%
3/18/1981	16.19%	11.55%	4.64%
3/19/1981	13.75%	11.56%	2.19%
3/23/1981	14.30%	11.58%	2.72%
3/25/1981	15.30%	11.60%	3.70%
4/1/1981	14.53%	11.68%	2.85%
4/3/1981	19.10%	11.71%	7.39%
4/9/1981	15.00%	11.78%	3.22%
4/9/1981	15.30%	11.78%	3.52%
4/9/1981	16.50%	11.78%	4.72%
4/9/1981	17.00%	11.78%	5.22%
4/10/1981	13.75%	11.80%	1.95%
4/13/1981	13.57%	11.82%	1.75%
4/15/1981	15.30%	11.85%	3.45%
4/16/1981	13.50%	11.87%	1.63%
4/17/1981	14.10%	11.87%	2.23%
4/21/1981	14.00%	11.90%	2.10%
4/21/1981	16.80%	11.90%	4.90%
4/24/1981	16.00%	11.95%	4.05%
4/27/1981	12.50%	11.97%	0.53%
4/27/1981	13.61%	11.97%	1.64%
4/29/1981	13.65%	12.00%	1.65%
4/30/1981	13.50%	12.02%	1.48%
5/4/1981	16.22%	12.05%	4.17%
5/5/1981	14.40%	12.07%	2.33%
5/7/1981	16.25%	12.11%	4.14%
5/7/1981	16.27%	12.11%	4.16%
5/8/1981	13.00%	12.13%	0.87%
5/8/1981	16.00%	12.13%	3.87%
5/12/1981	13.50%	12.16%	1.34%
5/15/1981	15.75%	12.22%	3.53%
5/18/1981	14.88%	12.23%	2.65%
5/20/1981	16.00%	12.26%	3.74%
5/21/1981	14.00%	12.27%	1.73%
5/26/1981	14.90%	12.30%	2.60%
5/27/1981	15.00%	12.31%	2.69%
5/29/1981	15.50%	12.34%	3.16%
6/1/1981	16.50%	12.35%	4.15%
6/3/1981	14.67%	12.37%	2.30%
6/5/1981	13.00%	12.39%	0.61%
6/10/1981	16.75%	12.42%	4.33%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/17/1981	14.40%	12.46%	1.94%
6/18/1981	16.33%	12.47%	3.86%
6/25/1981	14.75%	12.51%	2.24%
6/26/1981	16.00%	12.52%	3.48%
6/30/1981	15.25%	12.54%	2.71%
7/1/1981	15.50%	12.56%	2.94%
7/1/1981	17.50%	12.56%	4.94%
7/10/1981	16.00%	12.62%	3.38%
7/14/1981	16.90%	12.64%	4.26%
7/15/1981	16.00%	12.65%	3.35%
7/17/1981	15.00%	12.67%	2.33%
7/20/1981	15.00%	12.68%	2.32%
7/21/1981	14.00%	12.69%	1.31%
7/28/1981	13.48%	12.74%	0.74%
7/31/1981	13.50%	12.78%	0.72%
7/31/1981	15.00%	12.78%	2.22%
7/31/1981	16.00%	12.78%	3.22%
8/5/1981	15.71%	12.83%	2.88%
8/10/1981	14.50%	12.87%	1.63%
8/11/1981	15.00%	12.88%	2.12%
8/20/1981	13.50%	12.95%	0.55%
8/20/1981	16.50%	12.95%	3.55%
8/24/1981	15.00%	12.97%	2.03%
8/28/1981	15.00%	13.01%	1.99%
9/3/1981	14.50%	13.05%	1.45%
9/10/1981	14.50%	13.11%	1.39%
9/11/1981	16.00%	13.12%	2.88%
9/16/1981	16.00%	13.15%	2.85%
9/17/1981	16.50%	13.16%	3.34%
9/23/1981	15.85%	13.20%	2.65%
9/28/1981	15.50%	13.23%	2.27%
10/9/1981	15.75%	13.33%	2.42%
10/15/1981	16.25%	13.37%	2.88%
10/16/1981	15.50%	13.38%	2.12%
10/16/1981	16.50%	13.38%	3.12%
10/19/1981	14.25%	13.39%	0.86%
10/20/1981	15.25%	13.41%	1.84%
10/20/1981	17.00%	13.41%	3.59%
10/23/1981	16.00%	13.45%	2.55%
10/27/1981	10.00%	13.48%	-3.48%
10/29/1981	14.75%	13.51%	1.24%
10/29/1981	16.50%	13.51%	2.99%
11/3/1981	15.17%	13.53%	1.64%
11/5/1981	16.60%	13.55%	3.05%
11/6/1981	15.17%	13.56%	1.61%
11/24/1981	15.50%	13.61%	1.89%
11/25/1981	15.25%	13.61%	1.64%
11/25/1981	15.35%	13.61%	1.74%
11/25/1981	16.10%	13.61%	2.49%
11/25/1981	16.10%	13.61%	2.49%
12/1/1981	15.70%	13.61%	2.09%
12/1/1981	16.00%	13.61%	2.39%
12/1/1981	16.49%	13.61%	2.88%
12/1/1981	16.50%	13.61%	2.89%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/4/1981	16.00%	13.61%	2.39%
12/11/1981	16.25%	13.63%	2.62%
12/14/1981	14.00%	13.63%	0.37%
12/15/1981	15.81%	13.63%	2.18%
12/15/1981	16.00%	13.63%	2.37%
12/16/1981	15.25%	13.63%	1.62%
12/17/1981	16.50%	13.63%	2.87%
12/18/1981	15.45%	13.63%	1.82%
12/30/1981	14.25%	13.67%	0.58%
12/30/1981	16.00%	13.67%	2.33%
12/30/1981	16.25%	13.67%	2.58%
12/31/1981	16.15%	13.67%	2.48%
1/4/1982	15.50%	13.67%	1.83%
1/11/1982	14.50%	13.72%	0.78%
1/11/1982	17.00%	13.72%	3.28%
1/13/1982	14.75%	13.74%	1.01%
1/14/1982	15.75%	13.75%	2.00%
1/15/1982	15.00%	13.76%	1.24%
1/15/1982	16.50%	13.76%	2.74%
1/22/1982	16.25%	13.79%	2.46%
1/27/1982	16.84%	13.81%	3.03%
1/28/1982	13.00%	13.81%	-0.81%
1/29/1982	15.50%	13.82%	1.68%
2/1/1982	15.85%	13.82%	2.03%
2/3/1982	16.44%	13.84%	2.60%
2/8/1982	15.50%	13.86%	1.64%
2/11/1982	16.00%	13.88%	2.12%
2/11/1982	16.20%	13.88%	2.32%
2/17/1982	15.00%	13.89%	1.11%
2/19/1982	15.17%	13.89%	1.28%
2/26/1982	15.25%	13.89%	1.36%
3/1/1982	15.03%	13.89%	1.14%
3/1/1982	16.00%	13.89%	2.11%
3/3/1982	15.00%	13.88%	1.12%
3/8/1982	17.10%	13.88%	3.22%
3/12/1982	16.25%	13.88%	2.37%
3/17/1982	17.30%	13.88%	3.42%
3/22/1982	15.10%	13.89%	1.21%
3/27/1982	15.40%	13.89%	1.51%
3/30/1982	15.50%	13.90%	1.60%
3/31/1982	17.00%	13.91%	3.09%
4/1/1982	14.70%	13.91%	0.79%
4/1/1982	16.50%	13.91%	2.59%
4/2/1982	15.50%	13.91%	1.59%
4/5/1982	15.50%	13.92%	1.58%
4/8/1982	16.40%	13.93%	2.47%
4/13/1982	14.50%	13.94%	0.56%
4/23/1982	15.75%	13.94%	1.81%
4/27/1982	15.00%	13.94%	1.06%
4/28/1982	15.75%	13.94%	1.81%
4/30/1982	14.70%	13.94%	0.76%
4/30/1982	15.50%	13.94%	1.56%
5/3/1982	16.60%	13.94%	2.66%
5/4/1982	16.00%	13.94%	2.06%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/14/1982	15.50%	13.92%	1.58%
5/18/1982	15.42%	13.92%	1.50%
5/19/1982	14.69%	13.92%	0.77%
5/20/1982	15.00%	13.91%	1.09%
5/20/1982	15.10%	13.91%	1.19%
5/20/1982	15.50%	13.91%	1.59%
5/20/1982	16.30%	13.91%	2.39%
5/21/1982	17.75%	13.91%	3.84%
5/27/1982	15.00%	13.89%	1.11%
5/28/1982	15.50%	13.89%	1.61%
5/28/1982	17.00%	13.89%	3.11%
6/1/1982	13.75%	13.89%	-0.14%
6/1/1982	16.60%	13.89%	2.71%
6/9/1982	17.86%	13.88%	3.98%
6/14/1982	15.75%	13.88%	1.87%
6/15/1982	14.85%	13.88%	0.97%
6/18/1982	15.50%	13.87%	1.63%
6/21/1982	14.90%	13.87%	1.03%
6/23/1982	16.00%	13.86%	2.14%
6/23/1982	16.17%	13.86%	2.31%
6/24/1982	14.85%	13.86%	0.99%
6/25/1982	14.70%	13.86%	0.84%
7/1/1982	16.00%	13.84%	2.16%
7/2/1982	15.62%	13.84%	1.78%
7/2/1982	17.00%	13.84%	3.16%
7/13/1982	14.00%	13.82%	0.18%
7/13/1982	16.80%	13.82%	2.98%
7/14/1982	15.76%	13.82%	1.94%
7/14/1982	16.02%	13.82%	2.20%
7/19/1982	16.50%	13.80%	2.70%
7/22/1982	14.50%	13.77%	0.73%
7/22/1982	17.00%	13.77%	3.23%
7/27/1982	16.75%	13.75%	3.00%
7/29/1982	16.50%	13.74%	2.76%
8/11/1982	17.50%	13.68%	3.82%
8/18/1982	17.07%	13.63%	3.44%
8/20/1982	15.73%	13.60%	2.13%
8/25/1982	16.00%	13.57%	2.43%
8/26/1982	15.50%	13.56%	1.94%
8/30/1982	15.00%	13.55%	1.45%
9/3/1982	16.20%	13.53%	2.67%
9/8/1982	15.00%	13.52%	1.48%
9/15/1982	13.08%	13.50%	-0.42%
9/15/1982	16.25%	13.50%	2.75%
9/16/1982	16.00%	13.50%	2.50%
9/17/1982	15.25%	13.50%	1.75%
9/23/1982	17.17%	13.47%	3.70%
9/24/1982	14.50%	13.46%	1.04%
9/27/1982	15.25%	13.46%	1.79%
10/1/1982	15.50%	13.42%	2.08%
10/15/1982	15.90%	13.32%	2.58%
10/22/1982	15.75%	13.24%	2.51%
10/22/1982	17.15%	13.24%	3.91%
10/29/1982	15.54%	13.16%	2.38%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/1/1982	15.50%	13.15%	2.35%
11/3/1982	17.20%	13.13%	4.07%
11/4/1982	16.25%	13.11%	3.14%
11/5/1982	16.20%	13.09%	3.11%
11/9/1982	16.00%	13.05%	2.95%
11/23/1982	15.50%	12.89%	2.61%
11/23/1982	15.85%	12.89%	2.96%
11/30/1982	16.50%	12.81%	3.69%
12/1/1982	17.04%	12.79%	4.25%
12/6/1982	15.00%	12.73%	2.27%
12/6/1982	16.35%	12.73%	3.62%
12/10/1982	15.50%	12.66%	2.84%
12/13/1982	16.00%	12.65%	3.35%
12/14/1982	15.30%	12.63%	2.67%
12/14/1982	16.40%	12.63%	3.77%
12/20/1982	16.00%	12.57%	3.43%
12/21/1982	14.75%	12.56%	2.19%
12/21/1982	15.85%	12.56%	3.29%
12/22/1982	16.25%	12.54%	3.71%
12/22/1982	16.58%	12.54%	4.04%
12/22/1982	16.75%	12.54%	4.21%
12/29/1982	14.90%	12.48%	2.42%
12/29/1982	16.25%	12.48%	3.77%
12/30/1982	16.00%	12.47%	3.53%
12/30/1982	16.35%	12.47%	3.88%
12/30/1982	16.77%	12.47%	4.30%
1/5/1983	17.33%	12.40%	4.93%
1/11/1983	15.90%	12.34%	3.56%
1/12/1983	14.63%	12.33%	2.30%
1/12/1983	15.50%	12.33%	3.17%
1/20/1983	17.75%	12.24%	5.51%
1/21/1983	15.00%	12.22%	2.78%
1/24/1983	14.50%	12.21%	2.29%
1/24/1983	15.50%	12.21%	3.29%
1/25/1983	15.85%	12.19%	3.66%
1/27/1983	16.14%	12.17%	3.97%
2/1/1983	18.50%	12.13%	6.37%
2/4/1983	14.00%	12.10%	1.90%
2/10/1983	15.00%	12.06%	2.94%
2/21/1983	15.50%	11.98%	3.52%
2/22/1983	15.50%	11.97%	3.53%
2/23/1983	15.10%	11.96%	3.14%
2/23/1983	16.00%	11.96%	4.04%
3/2/1983	15.25%	11.89%	3.36%
3/9/1983	15.20%	11.82%	3.38%
3/15/1983	13.00%	11.77%	1.23%
3/18/1983	15.25%	11.73%	3.52%
3/23/1983	15.40%	11.69%	3.71%
3/24/1983	15.00%	11.67%	3.33%
3/29/1983	15.50%	11.63%	3.87%
3/30/1983	16.71%	11.61%	5.10%
3/31/1983	15.00%	11.59%	3.41%
4/4/1983	15.20%	11.58%	3.62%
4/8/1983	15.50%	11.51%	3.99%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/11/1983	14.81%	11.49%	3.32%
4/19/1983	14.50%	11.38%	3.12%
4/20/1983	16.00%	11.36%	4.64%
4/29/1983	16.00%	11.24%	4.76%
5/1/1983	14.50%	11.24%	3.26%
5/9/1983	15.50%	11.15%	4.35%
5/11/1983	16.46%	11.12%	5.34%
5/12/1983	14.14%	11.11%	3.03%
5/18/1983	15.00%	11.05%	3.95%
5/23/1983	14.90%	11.01%	3.89%
5/23/1983	15.50%	11.01%	4.49%
5/25/1983	15.50%	10.98%	4.52%
5/27/1983	15.00%	10.96%	4.04%
5/31/1983	14.00%	10.95%	3.05%
5/31/1983	15.50%	10.95%	4.55%
6/2/1983	14.50%	10.93%	3.57%
6/17/1983	15.03%	10.84%	4.19%
7/1/1983	14.80%	10.78%	4.02%
7/1/1983	14.90%	10.78%	4.12%
7/8/1983	16.25%	10.76%	5.49%
7/13/1983	13.20%	10.75%	2.45%
7/19/1983	15.00%	10.74%	4.26%
7/19/1983	15.10%	10.74%	4.36%
7/25/1983	16.25%	10.73%	5.52%
7/28/1983	15.90%	10.74%	5.16%
8/3/1983	16.34%	10.75%	5.59%
8/3/1983	16.50%	10.75%	5.75%
8/19/1983	15.00%	10.80%	4.20%
8/22/1983	15.50%	10.80%	4.70%
8/22/1983	16.40%	10.80%	5.60%
8/31/1983	14.75%	10.84%	3.91%
9/7/1983	15.00%	10.86%	4.14%
9/14/1983	15.78%	10.89%	4.89%
9/16/1983	15.00%	10.90%	4.10%
9/19/1983	14.50%	10.91%	3.59%
9/20/1983	16.50%	10.91%	5.59%
9/28/1983	14.50%	10.94%	3.56%
9/29/1983	15.50%	10.95%	4.55%
9/30/1983	15.25%	10.95%	4.30%
9/30/1983	16.15%	10.95%	5.20%
10/4/1983	14.80%	10.96%	3.84%
10/7/1983	16.00%	10.97%	5.03%
10/13/1983	15.52%	10.99%	4.53%
10/17/1983	15.50%	11.00%	4.50%
10/18/1983	14.50%	11.00%	3.50%
10/19/1983	16.25%	11.01%	5.24%
10/19/1983	16.50%	11.01%	5.49%
10/26/1983	15.00%	11.04%	3.96%
10/27/1983	15.20%	11.04%	4.16%
11/1/1983	16.00%	11.06%	4.94%
11/9/1983	14.90%	11.09%	3.81%
11/10/1983	14.35%	11.10%	3.25%
11/23/1983	16.00%	11.13%	4.87%
11/23/1983	16.15%	11.13%	5.02%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/30/1983	15.00%	11.14%	3.86%
12/5/1983	15.25%	11.15%	4.10%
12/6/1983	15.07%	11.15%	3.92%
12/8/1983	15.90%	11.16%	4.74%
12/9/1983	14.75%	11.17%	3.58%
12/12/1983	14.50%	11.17%	3.33%
12/15/1983	15.56%	11.19%	4.37%
12/19/1983	14.80%	11.21%	3.59%
12/20/1983	14.69%	11.22%	3.47%
12/20/1983	16.00%	11.22%	4.78%
12/20/1983	16.25%	11.22%	5.03%
12/22/1983	14.75%	11.23%	3.52%
12/22/1983	15.75%	11.23%	4.52%
1/3/1984	14.75%	11.27%	3.48%
1/10/1984	15.90%	11.30%	4.60%
1/12/1984	15.60%	11.31%	4.29%
1/18/1984	13.75%	11.33%	2.42%
1/19/1984	15.90%	11.33%	4.57%
1/30/1984	16.10%	11.37%	4.73%
1/31/1984	15.25%	11.37%	3.88%
2/1/1984	14.80%	11.38%	3.42%
2/6/1984	13.75%	11.40%	2.35%
2/6/1984	14.75%	11.40%	3.35%
2/9/1984	15.25%	11.42%	3.83%
2/15/1984	15.70%	11.44%	4.26%
2/20/1984	15.00%	11.46%	3.54%
2/20/1984	15.00%	11.46%	3.54%
2/22/1984	14.75%	11.47%	3.28%
2/28/1984	14.50%	11.51%	2.99%
3/2/1984	14.25%	11.54%	2.71%
3/20/1984	16.00%	11.64%	4.36%
3/23/1984	15.50%	11.67%	3.83%
3/26/1984	14.71%	11.68%	3.03%
4/2/1984	15.50%	11.71%	3.79%
4/6/1984	14.74%	11.75%	2.99%
4/11/1984	15.72%	11.78%	3.94%
4/17/1984	15.00%	11.81%	3.19%
4/18/1984	16.20%	11.82%	4.38%
4/25/1984	14.64%	11.85%	2.79%
4/30/1984	14.40%	11.87%	2.53%
5/16/1984	14.69%	11.98%	2.71%
5/16/1984	15.00%	11.98%	3.02%
5/22/1984	14.40%	12.02%	2.38%
5/29/1984	15.10%	12.06%	3.04%
6/13/1984	15.25%	12.15%	3.10%
6/15/1984	15.60%	12.17%	3.43%
6/22/1984	16.25%	12.21%	4.04%
6/29/1984	15.25%	12.26%	2.99%
7/2/1984	13.35%	12.27%	1.08%
7/10/1984	16.00%	12.31%	3.69%
7/12/1984	16.50%	12.32%	4.18%
7/13/1984	16.25%	12.33%	3.92%
7/17/1984	14.14%	12.35%	1.79%
7/18/1984	15.30%	12.36%	2.94%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/18/1984	15.50%	12.36%	3.14%
7/19/1984	14.30%	12.37%	1.93%
7/24/1984	16.79%	12.39%	4.40%
7/31/1984	16.00%	12.43%	3.57%
8/3/1984	14.25%	12.44%	1.81%
8/17/1984	14.30%	12.49%	1.81%
8/20/1984	15.00%	12.49%	2.51%
8/27/1984	16.30%	12.51%	3.79%
8/31/1984	15.55%	12.52%	3.03%
9/6/1984	16.00%	12.53%	3.47%
9/10/1984	14.75%	12.54%	2.21%
9/13/1984	15.00%	12.55%	2.45%
9/17/1984	17.38%	12.56%	4.82%
9/26/1984	14.50%	12.57%	1.93%
9/28/1984	15.00%	12.57%	2.43%
9/28/1984	16.25%	12.57%	3.68%
10/9/1984	14.75%	12.58%	2.17%
10/12/1984	15.60%	12.59%	3.01%
10/22/1984	15.00%	12.59%	2.41%
10/26/1984	16.40%	12.58%	3.82%
10/31/1984	16.25%	12.58%	3.67%
11/7/1984	15.60%	12.58%	3.02%
11/9/1984	16.00%	12.58%	3.42%
11/14/1984	15.75%	12.58%	3.17%
11/20/1984	15.25%	12.58%	2.67%
11/20/1984	15.92%	12.58%	3.34%
11/23/1984	15.00%	12.58%	2.42%
11/28/1984	16.15%	12.57%	3.58%
12/3/1984	15.80%	12.56%	3.24%
12/4/1984	16.50%	12.56%	3.94%
12/18/1984	16.40%	12.53%	3.87%
12/19/1984	14.75%	12.53%	2.22%
12/19/1984	15.00%	12.53%	2.47%
12/20/1984	16.00%	12.53%	3.47%
12/28/1984	16.00%	12.50%	3.50%
1/3/1985	14.75%	12.49%	2.26%
1/10/1985	15.75%	12.47%	3.28%
1/11/1985	16.30%	12.46%	3.84%
1/23/1985	15.80%	12.43%	3.37%
1/24/1985	15.82%	12.43%	3.39%
1/25/1985	16.75%	12.42%	4.33%
1/30/1985	14.90%	12.40%	2.50%
1/31/1985	14.75%	12.39%	2.36%
2/8/1985	14.47%	12.35%	2.12%
3/1/1985	13.84%	12.31%	1.53%
3/8/1985	16.85%	12.28%	4.57%
3/14/1985	15.50%	12.25%	3.25%
3/15/1985	15.62%	12.25%	3.37%
3/29/1985	15.62%	12.17%	3.45%
4/3/1985	14.60%	12.14%	2.46%
4/9/1985	15.50%	12.11%	3.39%
4/16/1985	15.70%	12.06%	3.64%
4/22/1985	14.00%	12.02%	1.98%
4/26/1985	15.50%	11.98%	3.52%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/29/1985	15.00%	11.97%	3.03%
5/2/1985	14.68%	11.94%	2.74%
5/8/1985	15.62%	11.89%	3.73%
5/10/1985	16.50%	11.87%	4.63%
5/29/1985	14.61%	11.73%	2.88%
5/31/1985	16.00%	11.71%	4.29%
6/14/1985	15.50%	11.61%	3.89%
7/9/1985	15.00%	11.45%	3.55%
7/16/1985	14.50%	11.39%	3.11%
7/26/1985	14.50%	11.33%	3.17%
8/2/1985	14.80%	11.29%	3.51%
8/7/1985	15.00%	11.27%	3.73%
8/28/1985	14.25%	11.15%	3.10%
8/28/1985	15.50%	11.15%	4.35%
8/29/1985	14.50%	11.15%	3.35%
9/9/1985	14.60%	11.11%	3.49%
9/9/1985	14.90%	11.11%	3.79%
9/17/1985	14.90%	11.08%	3.82%
9/23/1985	15.00%	11.06%	3.94%
9/27/1985	15.50%	11.05%	4.45%
9/27/1985	15.80%	11.05%	4.75%
10/2/1985	14.00%	11.03%	2.97%
10/2/1985	14.75%	11.03%	3.72%
10/3/1985	15.25%	11.03%	4.22%
10/24/1985	15.40%	10.96%	4.44%
10/24/1985	15.82%	10.96%	4.86%
10/24/1985	15.85%	10.96%	4.89%
10/28/1985	16.00%	10.95%	5.05%
10/29/1985	16.65%	10.94%	5.71%
10/31/1985	15.06%	10.93%	4.13%
11/4/1985	14.50%	10.92%	3.58%
11/7/1985	15.50%	10.90%	4.60%
11/8/1985	14.30%	10.89%	3.41%
12/12/1985	14.75%	10.73%	4.02%
12/18/1985	15.00%	10.69%	4.31%
12/20/1985	14.50%	10.67%	3.83%
12/20/1985	14.50%	10.67%	3.83%
12/20/1985	15.00%	10.67%	4.33%
1/24/1986	15.40%	10.41%	4.99%
1/31/1986	15.00%	10.35%	4.65%
2/5/1986	15.00%	10.32%	4.68%
2/5/1986	15.75%	10.32%	5.43%
2/10/1986	13.30%	10.29%	3.01%
2/11/1986	12.50%	10.28%	2.22%
2/14/1986	14.40%	10.24%	4.16%
2/18/1986	16.00%	10.23%	5.77%
2/24/1986	14.50%	10.18%	4.32%
2/26/1986	14.00%	10.15%	3.85%
3/5/1986	14.90%	10.08%	4.82%
3/11/1986	14.50%	10.02%	4.48%
3/12/1986	13.50%	10.00%	3.50%
3/27/1986	14.10%	9.86%	4.24%
3/31/1986	13.50%	9.84%	3.66%
4/1/1986	14.00%	9.83%	4.17%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/2/1986	15.50%	9.81%	5.69%
4/4/1986	15.00%	9.78%	5.22%
4/14/1986	13.40%	9.69%	3.71%
4/23/1986	15.00%	9.57%	5.43%
5/16/1986	14.50%	9.32%	5.18%
5/16/1986	14.50%	9.32%	5.18%
5/29/1986	13.90%	9.19%	4.71%
5/30/1986	15.10%	9.18%	5.92%
6/2/1986	12.81%	9.17%	3.64%
6/11/1986	14.00%	9.07%	4.93%
6/24/1986	16.63%	8.94%	7.69%
6/26/1986	12.00%	8.91%	3.09%
6/26/1986	14.75%	8.91%	5.84%
6/30/1986	13.00%	8.87%	4.13%
7/10/1986	14.34%	8.75%	5.59%
7/11/1986	12.75%	8.73%	4.02%
7/14/1986	12.60%	8.71%	3.89%
7/17/1986	12.40%	8.66%	3.74%
7/25/1986	14.25%	8.57%	5.68%
8/6/1986	13.50%	8.44%	5.06%
8/14/1986	13.50%	8.35%	5.15%
9/16/1986	12.75%	8.06%	4.69%
9/19/1986	13.25%	8.03%	5.22%
10/1/1986	14.00%	7.95%	6.05%
10/3/1986	13.40%	7.93%	5.47%
10/31/1986	13.50%	7.77%	5.73%
11/5/1986	13.00%	7.75%	5.25%
12/3/1986	12.90%	7.58%	5.32%
12/4/1986	14.44%	7.58%	6.86%
12/16/1986	13.60%	7.52%	6.08%
12/22/1986	13.80%	7.51%	6.29%
12/30/1986	13.00%	7.49%	5.51%
1/2/1987	13.00%	7.49%	5.51%
1/12/1987	12.40%	7.47%	4.93%
1/27/1987	12.71%	7.46%	5.25%
3/2/1987	12.47%	7.47%	5.00%
3/3/1987	13.60%	7.47%	6.13%
3/4/1987	12.38%	7.47%	4.91%
3/10/1987	13.50%	7.47%	6.03%
3/13/1987	13.00%	7.47%	5.53%
3/31/1987	13.00%	7.46%	5.54%
4/6/1987	13.00%	7.47%	5.53%
4/14/1987	12.50%	7.49%	5.01%
4/16/1987	14.50%	7.50%	7.00%
4/27/1987	12.00%	7.54%	4.46%
5/5/1987	12.85%	7.58%	5.27%
5/12/1987	12.65%	7.62%	5.03%
5/28/1987	13.50%	7.70%	5.80%
6/15/1987	13.20%	7.78%	5.42%
6/29/1987	15.00%	7.83%	7.17%
6/30/1987	12.50%	7.84%	4.66%
7/8/1987	12.00%	7.86%	4.14%
7/10/1987	12.90%	7.86%	5.04%
7/15/1987	13.50%	7.88%	5.62%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
7/16/1987	13.50%	7.88%	5.62%
7/16/1987	15.00%	7.88%	7.12%
7/27/1987	13.00%	7.92%	5.08%
7/27/1987	13.40%	7.92%	5.48%
7/27/1987	13.50%	7.92%	5.58%
7/31/1987	12.98%	7.95%	5.03%
8/26/1987	12.63%	8.06%	4.57%
8/26/1987	12.75%	8.06%	4.69%
8/27/1987	13.25%	8.06%	5.19%
9/9/1987	13.00%	8.14%	4.86%
9/30/1987	12.75%	8.31%	4.44%
9/30/1987	13.00%	8.31%	4.69%
10/2/1987	11.50%	8.33%	3.17%
10/15/1987	13.00%	8.43%	4.57%
11/2/1987	13.00%	8.55%	4.45%
11/19/1987	13.00%	8.64%	4.36%
11/30/1987	12.00%	8.68%	3.32%
12/3/1987	14.20%	8.70%	5.50%
12/15/1987	13.25%	8.77%	4.48%
12/16/1987	13.50%	8.78%	4.72%
12/16/1987	13.72%	8.78%	4.94%
12/17/1987	11.75%	8.79%	2.96%
12/18/1987	13.50%	8.80%	4.70%
12/21/1987	12.01%	8.81%	3.20%
12/22/1987	12.00%	8.81%	3.19%
12/22/1987	12.00%	8.81%	3.19%
12/22/1987	12.75%	8.81%	3.94%
12/22/1987	13.00%	8.81%	4.19%
1/20/1988	13.80%	8.94%	4.86%
1/26/1988	13.90%	8.95%	4.95%
1/29/1988	13.20%	8.96%	4.24%
2/4/1988	12.60%	8.96%	3.64%
3/1/1988	11.56%	8.94%	2.62%
3/23/1988	12.87%	8.92%	3.95%
3/24/1988	11.24%	8.92%	2.32%
3/30/1988	12.72%	8.92%	3.80%
4/1/1988	12.50%	8.92%	3.58%
4/7/1988	13.25%	8.93%	4.32%
4/25/1988	10.96%	8.96%	2.00%
5/3/1988	12.91%	8.97%	3.94%
5/11/1988	13.50%	8.99%	4.51%
5/16/1988	13.00%	8.99%	4.01%
6/30/1988	12.75%	9.00%	3.75%
7/1/1988	12.75%	8.99%	3.76%
7/20/1988	13.40%	8.96%	4.44%
8/5/1988	12.75%	8.92%	3.83%
8/23/1988	11.70%	8.93%	2.77%
8/29/1988	12.75%	8.94%	3.81%
8/30/1988	13.50%	8.94%	4.56%
9/8/1988	12.60%	8.95%	3.65%
10/13/1988	13.10%	8.93%	4.17%
12/19/1988	13.00%	9.02%	3.98%
12/20/1988	12.25%	9.02%	3.23%
12/20/1988	13.00%	9.02%	3.98%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/21/1988	12.90%	9.02%	3.88%
12/27/1988	13.00%	9.03%	3.97%
12/28/1988	13.10%	9.03%	4.07%
12/30/1988	13.40%	9.04%	4.36%
1/27/1989	13.00%	9.05%	3.95%
1/31/1989	13.00%	9.05%	3.95%
2/17/1989	13.00%	9.05%	3.95%
2/20/1989	12.40%	9.05%	3.35%
3/1/1989	12.76%	9.05%	3.71%
3/8/1989	13.00%	9.05%	3.95%
3/30/1989	14.00%	9.05%	4.95%
4/5/1989	14.20%	9.05%	5.15%
4/18/1989	13.00%	9.05%	3.95%
5/5/1989	12.40%	9.05%	3.35%
6/2/1989	13.20%	9.00%	4.20%
6/8/1989	13.50%	8.98%	4.52%
6/27/1989	13.25%	8.91%	4.34%
6/30/1989	13.00%	8.90%	4.10%
8/14/1989	12.50%	8.77%	3.73%
9/28/1989	12.25%	8.63%	3.62%
10/24/1989	12.50%	8.54%	3.96%
11/9/1989	13.00%	8.49%	4.51%
12/15/1989	13.00%	8.34%	4.66%
12/20/1989	12.90%	8.32%	4.58%
12/21/1989	12.90%	8.31%	4.59%
12/27/1989	12.50%	8.29%	4.21%
12/27/1989	13.00%	8.29%	4.71%
1/10/1990	12.80%	8.24%	4.56%
1/11/1990	12.90%	8.24%	4.66%
1/17/1990	12.80%	8.22%	4.58%
1/26/1990	12.00%	8.20%	3.80%
2/9/1990	12.10%	8.17%	3.93%
2/24/1990	12.86%	8.15%	4.71%
3/30/1990	12.90%	8.16%	4.74%
4/4/1990	15.76%	8.17%	7.59%
4/12/1990	12.52%	8.18%	4.34%
4/19/1990	12.75%	8.20%	4.55%
5/21/1990	12.10%	8.28%	3.82%
5/29/1990	12.40%	8.30%	4.10%
5/31/1990	12.00%	8.30%	3.70%
6/4/1990	12.90%	8.30%	4.60%
6/6/1990	12.25%	8.31%	3.94%
6/15/1990	13.20%	8.32%	4.88%
6/20/1990	12.92%	8.32%	4.60%
6/27/1990	12.90%	8.33%	4.57%
6/29/1990	12.50%	8.33%	4.17%
7/6/1990	12.10%	8.34%	3.76%
7/6/1990	12.35%	8.34%	4.01%
8/10/1990	12.55%	8.41%	4.14%
8/16/1990	13.21%	8.43%	4.78%
8/22/1990	13.10%	8.45%	4.65%
8/24/1990	13.00%	8.46%	4.54%
9/26/1990	11.45%	8.59%	2.86%
10/2/1990	13.00%	8.61%	4.39%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/5/1990	12.84%	8.62%	4.22%
10/19/1990	13.00%	8.67%	4.33%
10/25/1990	12.30%	8.68%	3.62%
11/21/1990	12.70%	8.69%	4.01%
12/13/1990	12.30%	8.67%	3.63%
12/17/1990	12.87%	8.67%	4.20%
12/18/1990	13.10%	8.67%	4.43%
12/19/1990	12.00%	8.66%	3.34%
12/20/1990	12.75%	8.66%	4.09%
12/21/1990	12.50%	8.66%	3.84%
12/27/1990	12.79%	8.66%	4.13%
1/2/1991	13.10%	8.65%	4.45%
1/4/1991	12.50%	8.65%	3.85%
1/15/1991	12.75%	8.64%	4.11%
1/25/1991	11.70%	8.63%	3.07%
2/4/1991	12.50%	8.60%	3.90%
2/7/1991	12.50%	8.59%	3.91%
2/12/1991	13.00%	8.58%	4.43%
2/14/1991	12.72%	8.57%	4.15%
2/22/1991	12.80%	8.55%	4.25%
3/6/1991	13.10%	8.53%	4.57%
3/8/1991	12.30%	8.52%	3.78%
3/8/1991	13.00%	8.52%	4.48%
4/22/1991	13.00%	8.49%	4.51%
5/7/1991	13.50%	8.47%	5.03%
5/13/1991	13.25%	8.47%	4.78%
5/30/1991	12.75%	8.44%	4.31%
6/12/1991	12.00%	8.41%	3.59%
6/25/1991	11.70%	8.39%	3.31%
6/28/1991	12.50%	8.38%	4.12%
7/1/1991	12.00%	8.38%	3.62%
7/3/1991	12.50%	8.37%	4.13%
7/19/1991	12.10%	8.34%	3.76%
8/1/1991	12.90%	8.32%	4.58%
8/16/1991	13.20%	8.29%	4.91%
9/27/1991	12.50%	8.23%	4.27%
9/30/1991	12.25%	8.23%	4.02%
10/17/1991	13.00%	8.20%	4.80%
10/23/1991	12.50%	8.20%	4.30%
10/23/1991	12.55%	8.20%	4.35%
10/31/1991	11.80%	8.19%	3.61%
11/1/1991	12.00%	8.19%	3.81%
11/5/1991	12.25%	8.19%	4.06%
11/12/1991	12.50%	8.18%	4.32%
11/12/1991	13.25%	8.18%	5.07%
11/25/1991	12.40%	8.18%	4.22%
11/26/1991	11.60%	8.18%	3.42%
11/26/1991	12.50%	8.18%	4.32%
11/27/1991	12.10%	8.18%	3.92%
12/18/1991	12.25%	8.15%	4.10%
12/19/1991	12.60%	8.15%	4.45%
12/19/1991	12.80%	8.15%	4.65%
12/20/1991	12.65%	8.14%	4.51%
1/9/1992	12.80%	8.09%	4.71%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
1/16/1992	12.75%	8.07%	4.68%
1/21/1992	12.00%	8.06%	3.94%
1/22/1992	13.00%	8.06%	4.94%
1/27/1992	12.65%	8.05%	4.60%
1/31/1992	12.00%	8.04%	3.96%
2/11/1992	12.40%	8.03%	4.37%
2/25/1992	12.50%	8.01%	4.49%
3/16/1992	11.43%	7.98%	3.45%
3/18/1992	12.28%	7.98%	4.30%
4/2/1992	12.10%	7.95%	4.15%
4/9/1992	11.45%	7.94%	3.51%
4/10/1992	11.50%	7.93%	3.57%
4/14/1992	11.50%	7.93%	3.57%
5/5/1992	11.50%	7.89%	3.61%
5/12/1992	11.87%	7.88%	3.99%
5/12/1992	12.46%	7.88%	4.58%
6/1/1992	12.30%	7.87%	4.43%
6/12/1992	10.90%	7.86%	3.04%
6/26/1992	12.35%	7.85%	4.50%
6/29/1992	11.00%	7.85%	3.15%
6/30/1992	13.00%	7.85%	5.15%
7/13/1992	11.90%	7.84%	4.06%
7/13/1992	13.50%	7.84%	5.66%
7/22/1992	11.20%	7.83%	3.37%
8/3/1992	12.00%	7.81%	4.19%
8/6/1992	12.50%	7.80%	4.70%
9/22/1992	12.00%	7.71%	4.29%
9/28/1992	11.40%	7.71%	3.69%
9/30/1992	11.75%	7.70%	4.05%
10/2/1992	13.00%	7.70%	5.30%
10/12/1992	12.20%	7.70%	4.50%
10/16/1992	13.16%	7.70%	5.46%
10/30/1992	11.75%	7.71%	4.04%
11/3/1992	12.00%	7.71%	4.29%
12/3/1992	11.85%	7.68%	4.17%
12/15/1992	11.00%	7.66%	3.34%
12/16/1992	11.90%	7.66%	4.24%
12/16/1992	12.40%	7.66%	4.74%
12/17/1992	12.00%	7.66%	4.34%
12/22/1992	12.30%	7.65%	4.65%
12/22/1992	12.40%	7.65%	4.75%
12/29/1992	12.25%	7.63%	4.62%
12/30/1992	12.00%	7.63%	4.37%
12/31/1992	11.90%	7.63%	4.27%
1/12/1993	12.00%	7.61%	4.39%
1/21/1993	11.25%	7.59%	3.66%
2/2/1993	11.40%	7.56%	3.84%
2/15/1993	12.30%	7.52%	4.78%
2/24/1993	11.90%	7.49%	4.41%
2/26/1993	11.80%	7.48%	4.32%
2/26/1993	12.20%	7.48%	4.72%
4/23/1993	11.75%	7.29%	4.46%
5/11/1993	11.75%	7.25%	4.50%
5/14/1993	11.50%	7.24%	4.26%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/25/1993	11.50%	7.23%	4.27%
5/28/1993	11.00%	7.22%	3.78%
6/3/1993	12.00%	7.21%	4.79%
6/16/1993	11.50%	7.19%	4.31%
6/18/1993	12.10%	7.18%	4.92%
6/25/1993	11.67%	7.17%	4.50%
7/21/1993	11.38%	7.10%	4.28%
7/23/1993	10.46%	7.09%	3.37%
8/24/1993	11.50%	6.96%	4.54%
9/21/1993	10.50%	6.81%	3.69%
9/29/1993	11.47%	6.77%	4.70%
9/30/1993	11.60%	6.76%	4.84%
11/2/1993	10.80%	6.60%	4.20%
11/12/1993	12.00%	6.57%	5.43%
11/26/1993	11.00%	6.52%	4.48%
12/14/1993	10.55%	6.48%	4.07%
12/16/1993	10.60%	6.48%	4.12%
12/21/1993	11.30%	6.47%	4.83%
1/4/1994	10.07%	6.44%	3.63%
1/13/1994	11.00%	6.42%	4.58%
1/21/1994	11.00%	6.40%	4.60%
1/28/1994	11.35%	6.39%	4.96%
2/3/1994	11.40%	6.38%	5.02%
2/17/1994	10.60%	6.36%	4.24%
2/25/1994	11.25%	6.35%	4.90%
2/25/1994	12.00%	6.35%	5.65%
3/1/1994	11.00%	6.35%	4.65%
3/4/1994	11.00%	6.35%	4.65%
4/25/1994	11.00%	6.41%	4.59%
5/10/1994	11.75%	6.45%	5.30%
5/13/1994	10.50%	6.46%	4.04%
6/3/1994	11.00%	6.54%	4.46%
6/27/1994	11.40%	6.65%	4.75%
8/5/1994	12.75%	6.88%	5.87%
10/31/1994	10.00%	7.33%	2.67%
11/9/1994	10.85%	7.39%	3.46%
11/9/1994	10.85%	7.39%	3.46%
11/18/1994	11.20%	7.45%	3.75%
11/22/1994	11.60%	7.47%	4.13%
11/28/1994	11.06%	7.49%	3.57%
12/8/1994	11.50%	7.54%	3.96%
12/8/1994	11.70%	7.54%	4.16%
12/14/1994	10.95%	7.56%	3.39%
12/15/1994	11.50%	7.57%	3.93%
12/19/1994	11.50%	7.58%	3.92%
12/28/1994	12.15%	7.61%	4.54%
1/9/1995	12.28%	7.64%	4.64%
1/31/1995	11.00%	7.69%	3.31%
2/10/1995	12.60%	7.70%	4.90%
2/17/1995	11.90%	7.70%	4.20%
3/9/1995	11.50%	7.71%	3.79%
3/20/1995	12.00%	7.72%	4.28%
3/23/1995	12.81%	7.72%	5.09%
3/29/1995	11.60%	7.72%	3.88%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/6/1995	11.10%	7.71%	3.39%
4/7/1995	11.00%	7.71%	3.29%
4/19/1995	11.00%	7.70%	3.30%
5/12/1995	11.63%	7.68%	3.95%
5/25/1995	11.20%	7.65%	3.55%
6/9/1995	11.25%	7.60%	3.65%
6/21/1995	12.25%	7.56%	4.69%
6/30/1995	11.10%	7.52%	3.58%
9/11/1995	11.30%	7.20%	4.10%
9/27/1995	11.30%	7.12%	4.18%
9/27/1995	11.50%	7.12%	4.38%
9/27/1995	11.75%	7.12%	4.63%
9/29/1995	11.00%	7.11%	3.89%
11/9/1995	11.38%	6.90%	4.48%
11/9/1995	12.36%	6.90%	5.46%
11/17/1995	11.00%	6.86%	4.14%
12/4/1995	11.35%	6.78%	4.57%
12/11/1995	11.40%	6.74%	4.66%
12/20/1995	11.60%	6.70%	4.90%
12/27/1995	12.00%	6.66%	5.34%
2/5/1996	12.25%	6.48%	5.77%
3/29/1996	10.67%	6.42%	4.25%
4/8/1996	11.00%	6.42%	4.58%
4/11/1996	12.59%	6.43%	6.16%
4/11/1996	12.59%	6.43%	6.16%
4/24/1996	11.25%	6.43%	4.82%
4/30/1996	11.00%	6.43%	4.57%
5/13/1996	11.00%	6.44%	4.56%
5/23/1996	11.25%	6.43%	4.82%
6/25/1996	11.25%	6.48%	4.77%
6/27/1996	11.20%	6.48%	4.72%
8/12/1996	10.40%	6.57%	3.83%
9/27/1996	11.00%	6.71%	4.29%
10/16/1996	12.25%	6.76%	5.49%
11/5/1996	11.00%	6.81%	4.19%
11/26/1996	11.30%	6.83%	4.47%
12/18/1996	11.75%	6.83%	4.92%
12/31/1996	11.50%	6.83%	4.67%
1/3/1997	10.70%	6.83%	3.87%
2/13/1997	11.80%	6.82%	4.98%
2/20/1997	11.80%	6.82%	4.98%
3/31/1997	10.02%	6.80%	3.22%
4/2/1997	11.65%	6.80%	4.85%
4/28/1997	11.50%	6.81%	4.69%
4/29/1997	11.70%	6.81%	4.89%
7/17/1997	12.00%	6.77%	5.23%
12/12/1997	11.00%	6.60%	4.40%
12/23/1997	11.12%	6.57%	4.55%
2/2/1998	12.75%	6.39%	6.36%
3/2/1998	11.25%	6.29%	4.96%
3/6/1998	10.75%	6.27%	4.48%
3/20/1998	10.50%	6.22%	4.28%
4/30/1998	12.20%	6.12%	6.08%
7/10/1998	11.40%	5.94%	5.46%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/15/1998	11.90%	5.78%	6.12%
11/30/1998	12.60%	5.58%	7.02%
12/10/1998	12.20%	5.54%	6.66%
12/17/1998	12.10%	5.52%	6.58%
2/5/1999	10.30%	5.38%	4.92%
3/4/1999	10.50%	5.34%	5.16%
4/6/1999	10.94%	5.32%	5.62%
7/29/1999	10.75%	5.52%	5.23%
9/23/1999	10.75%	5.70%	5.05%
11/17/1999	11.10%	5.90%	5.20%
1/7/2000	11.50%	6.05%	5.45%
1/7/2000	11.50%	6.05%	5.45%
2/17/2000	10.60%	6.17%	4.43%
3/28/2000	11.25%	6.20%	5.05%
5/24/2000	11.00%	6.18%	4.82%
7/18/2000	12.20%	6.16%	6.04%
9/29/2000	11.16%	6.03%	5.13%
11/28/2000	12.90%	5.89%	7.01%
11/30/2000	12.10%	5.88%	6.22%
1/23/2001	11.25%	5.79%	5.46%
2/8/2001	11.50%	5.77%	5.73%
5/8/2001	10.75%	5.62%	5.13%
6/26/2001	11.00%	5.62%	5.38%
7/25/2001	11.02%	5.60%	5.42%
7/25/2001	11.02%	5.60%	5.42%
7/31/2001	11.00%	5.59%	5.41%
8/31/2001	10.50%	5.56%	4.94%
9/7/2001	10.75%	5.55%	5.20%
9/10/2001	11.00%	5.55%	5.45%
9/20/2001	10.00%	5.55%	4.45%
10/24/2001	10.30%	5.54%	4.76%
11/28/2001	10.60%	5.49%	5.11%
12/3/2001	12.88%	5.49%	7.39%
12/20/2001	12.50%	5.50%	7.00%
1/22/2002	10.00%	5.50%	4.50%
3/27/2002	10.10%	5.45%	4.65%
4/22/2002	11.80%	5.45%	6.35%
5/28/2002	10.17%	5.46%	4.71%
6/10/2002	12.00%	5.47%	6.53%
6/18/2002	11.16%	5.48%	5.68%
6/20/2002	11.00%	5.48%	5.52%
6/20/2002	12.30%	5.48%	6.82%
7/15/2002	11.00%	5.48%	5.52%
9/12/2002	12.30%	5.45%	6.85%
9/26/2002	10.45%	5.41%	5.04%
12/4/2002	11.55%	5.29%	6.26%
12/13/2002	11.75%	5.27%	6.48%
12/20/2002	11.40%	5.25%	6.15%
1/8/2003	11.10%	5.19%	5.91%
1/31/2003	12.45%	5.13%	7.32%
2/28/2003	12.30%	5.05%	7.25%
3/6/2003	10.75%	5.03%	5.72%
3/7/2003	9.96%	5.02%	4.94%
3/20/2003	12.00%	4.98%	7.02%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/3/2003	12.00%	4.96%	7.04%
4/15/2003	11.15%	4.94%	6.21%
6/25/2003	10.75%	4.79%	5.96%
6/26/2003	10.75%	4.79%	5.96%
7/9/2003	9.75%	4.79%	4.96%
7/16/2003	9.75%	4.79%	4.96%
7/25/2003	9.50%	4.80%	4.70%
8/26/2003	10.50%	4.83%	5.67%
12/17/2003	9.85%	4.94%	4.91%
12/17/2003	10.70%	4.94%	5.76%
12/18/2003	11.50%	4.94%	6.56%
12/19/2003	12.00%	4.94%	7.06%
12/19/2003	12.00%	4.94%	7.06%
12/23/2003	10.50%	4.94%	5.56%
1/13/2004	12.00%	4.95%	7.05%
3/2/2004	10.75%	4.99%	5.76%
3/26/2004	10.25%	5.02%	5.23%
4/5/2004	11.25%	5.03%	6.22%
5/18/2004	10.50%	5.07%	5.43%
5/25/2004	10.25%	5.08%	5.17%
5/27/2004	10.25%	5.08%	5.17%
6/2/2004	11.22%	5.08%	6.14%
6/30/2004	10.50%	5.10%	5.40%
6/30/2004	10.50%	5.10%	5.40%
7/16/2004	11.60%	5.11%	6.49%
8/25/2004	10.25%	5.10%	5.15%
9/9/2004	10.40%	5.10%	5.30%
11/9/2004	10.50%	5.07%	5.43%
11/23/2004	11.00%	5.06%	5.94%
12/14/2004	10.97%	5.07%	5.90%
12/21/2004	11.25%	5.07%	6.18%
12/21/2004	11.50%	5.07%	6.43%
12/22/2004	10.70%	5.07%	5.63%
12/22/2004	11.50%	5.07%	6.43%
12/29/2004	9.85%	5.07%	4.78%
1/6/2005	10.70%	5.08%	5.62%
2/18/2005	10.30%	4.98%	5.32%
2/25/2005	10.50%	4.96%	5.54%
3/10/2005	11.00%	4.93%	6.07%
3/24/2005	10.30%	4.90%	5.40%
4/4/2005	10.00%	4.88%	5.12%
4/7/2005	10.25%	4.87%	5.38%
5/18/2005	10.25%	4.78%	5.47%
5/25/2005	10.75%	4.76%	5.99%
5/26/2005	9.75%	4.76%	4.99%
6/1/2005	9.75%	4.75%	5.00%
7/19/2005	11.50%	4.64%	6.86%
8/5/2005	11.75%	4.62%	7.13%
8/15/2005	10.13%	4.61%	5.52%
9/28/2005	10.00%	4.54%	5.46%
10/4/2005	10.75%	4.54%	6.21%
12/12/2005	11.00%	4.55%	6.45%
12/13/2005	10.75%	4.55%	6.20%
12/21/2005	10.29%	4.54%	5.75%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/21/2005	10.40%	4.54%	5.86%
12/22/2005	11.00%	4.54%	6.46%
12/22/2005	11.15%	4.54%	6.61%
12/28/2005	10.00%	4.54%	5.46%
12/28/2005	10.00%	4.54%	5.46%
1/5/2006	11.00%	4.53%	6.47%
1/27/2006	9.75%	4.52%	5.23%
3/3/2006	10.39%	4.53%	5.86%
4/17/2006	10.20%	4.61%	5.59%
4/26/2006	10.60%	4.64%	5.96%
5/17/2006	11.60%	4.69%	6.91%
6/6/2006	10.00%	4.74%	5.26%
6/27/2006	10.75%	4.80%	5.95%
7/6/2006	10.20%	4.83%	5.37%
7/24/2006	9.60%	4.86%	4.74%
7/26/2006	10.50%	4.86%	5.64%
7/28/2006	10.05%	4.86%	5.19%
8/23/2006	9.55%	4.89%	4.66%
9/1/2006	10.54%	4.90%	5.64%
9/14/2006	10.00%	4.91%	5.09%
10/6/2006	9.67%	4.92%	4.75%
11/21/2006	10.08%	4.95%	5.13%
11/21/2006	10.08%	4.95%	5.13%
11/21/2006	10.12%	4.95%	5.17%
12/1/2006	10.25%	4.95%	5.30%
12/1/2006	10.50%	4.95%	5.55%
12/7/2006	10.75%	4.95%	5.80%
12/21/2006	10.90%	4.95%	5.95%
12/21/2006	11.25%	4.95%	6.30%
12/22/2006	10.25%	4.95%	5.30%
1/5/2007	10.00%	4.95%	5.05%
1/11/2007	10.10%	4.95%	5.15%
1/11/2007	10.10%	4.95%	5.15%
1/11/2007	10.90%	4.95%	5.95%
1/12/2007	10.10%	4.95%	5.15%
1/13/2007	10.40%	4.95%	5.45%
1/19/2007	10.80%	4.94%	5.86%
3/21/2007	11.35%	4.87%	6.48%
3/22/2007	9.75%	4.86%	4.89%
5/15/2007	10.00%	4.81%	5.19%
5/17/2007	10.25%	4.81%	5.44%
5/17/2007	10.25%	4.81%	5.44%
5/22/2007	10.20%	4.80%	5.40%
5/22/2007	10.50%	4.80%	5.70%
5/23/2007	10.70%	4.80%	5.90%
5/25/2007	9.67%	4.80%	4.87%
6/15/2007	9.90%	4.82%	5.08%
6/21/2007	10.20%	4.83%	5.37%
6/22/2007	10.50%	4.83%	5.67%
6/28/2007	10.75%	4.84%	5.91%
7/12/2007	9.67%	4.86%	4.81%
7/19/2007	10.00%	4.87%	5.13%
7/19/2007	10.00%	4.87%	5.13%
8/15/2007	10.40%	4.88%	5.52%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/9/2007	10.00%	4.91%	5.09%
10/17/2007	9.10%	4.91%	4.19%
10/31/2007	9.96%	4.90%	5.06%
11/29/2007	10.90%	4.87%	6.03%
12/6/2007	10.75%	4.86%	5.89%
12/13/2007	9.96%	4.86%	5.10%
12/14/2007	10.70%	4.86%	5.84%
12/14/2007	10.80%	4.86%	5.94%
12/19/2007	10.20%	4.86%	5.34%
12/20/2007	10.20%	4.85%	5.35%
12/20/2007	11.00%	4.85%	6.15%
12/28/2007	10.25%	4.85%	5.40%
12/31/2007	11.25%	4.85%	6.40%
1/8/2008	10.75%	4.83%	5.92%
1/17/2008	10.75%	4.81%	5.94%
1/28/2008	9.40%	4.80%	4.60%
1/30/2008	10.00%	4.79%	5.21%
1/31/2008	10.71%	4.79%	5.92%
2/29/2008	10.25%	4.75%	5.50%
3/12/2008	10.25%	4.73%	5.52%
3/25/2008	9.10%	4.68%	4.42%
4/22/2008	10.25%	4.60%	5.65%
4/24/2008	10.10%	4.60%	5.50%
5/1/2008	10.70%	4.59%	6.11%
5/19/2008	11.00%	4.56%	6.44%
5/27/2008	10.00%	4.55%	5.45%
6/10/2008	10.70%	4.54%	6.16%
6/27/2008	10.50%	4.54%	5.96%
6/27/2008	11.04%	4.54%	6.50%
7/10/2008	10.43%	4.52%	5.91%
7/16/2008	9.40%	4.52%	4.88%
7/30/2008	10.80%	4.51%	6.29%
7/31/2008	10.70%	4.51%	6.19%
8/11/2008	10.25%	4.51%	5.74%
8/26/2008	10.18%	4.50%	5.68%
9/10/2008	10.30%	4.50%	5.80%
9/24/2008	10.65%	4.48%	6.17%
9/24/2008	10.65%	4.48%	6.17%
9/24/2008	10.65%	4.48%	6.17%
9/30/2008	10.20%	4.48%	5.72%
10/8/2008	10.15%	4.46%	5.69%
11/13/2008	10.55%	4.45%	6.10%
11/17/2008	10.20%	4.44%	5.76%
12/1/2008	10.25%	4.40%	5.85%
12/23/2008	11.00%	4.27%	6.73%
12/29/2008	10.00%	4.24%	5.76%
12/29/2008	10.20%	4.24%	5.96%
12/31/2008	10.75%	4.22%	6.53%
1/14/2009	10.50%	4.15%	6.35%
1/21/2009	10.50%	4.12%	6.38%
1/21/2009	10.50%	4.12%	6.38%
1/21/2009	10.50%	4.12%	6.38%
1/27/2009	10.76%	4.09%	6.67%
1/30/2009	10.50%	4.08%	6.42%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
2/4/2009	8.75%	4.06%	4.69%
3/4/2009	10.50%	3.96%	6.54%
3/12/2009	11.50%	3.93%	7.57%
4/2/2009	11.10%	3.85%	7.25%
4/21/2009	10.61%	3.80%	6.81%
4/24/2009	10.00%	3.79%	6.21%
4/30/2009	11.25%	3.78%	7.47%
5/4/2009	10.74%	3.77%	6.97%
5/20/2009	10.25%	3.74%	6.51%
5/28/2009	10.50%	3.74%	6.76%
6/22/2009	10.00%	3.76%	6.24%
6/24/2009	10.80%	3.77%	7.03%
7/8/2009	10.63%	3.77%	6.86%
7/17/2009	10.50%	3.78%	6.72%
8/31/2009	10.25%	3.82%	6.43%
10/14/2009	10.70%	4.01%	6.69%
10/23/2009	10.88%	4.06%	6.82%
11/2/2009	10.70%	4.09%	6.61%
11/3/2009	10.70%	4.10%	6.60%
11/24/2009	10.25%	4.15%	6.10%
11/25/2009	10.75%	4.16%	6.59%
11/30/2009	10.35%	4.17%	6.18%
12/3/2009	10.50%	4.18%	6.32%
12/7/2009	10.70%	4.18%	6.52%
12/16/2009	10.90%	4.21%	6.69%
12/16/2009	11.00%	4.21%	6.79%
12/18/2009	10.40%	4.22%	6.18%
12/18/2009	10.40%	4.22%	6.18%
12/22/2009	10.20%	4.23%	5.97%
12/22/2009	10.40%	4.23%	6.17%
12/22/2009	10.40%	4.23%	6.17%
12/30/2009	10.00%	4.26%	5.74%
1/4/2010	10.80%	4.28%	6.52%
1/11/2010	11.00%	4.30%	6.70%
1/26/2010	10.13%	4.35%	5.78%
1/27/2010	10.40%	4.35%	6.05%
1/27/2010	10.40%	4.35%	6.05%
1/27/2010	10.70%	4.35%	6.35%
2/9/2010	9.80%	4.38%	5.42%
2/18/2010	10.60%	4.40%	6.20%
2/24/2010	10.18%	4.41%	5.77%
3/2/2010	9.63%	4.41%	5.22%
3/4/2010	10.50%	4.41%	6.09%
3/5/2010	10.50%	4.41%	6.09%
3/11/2010	11.90%	4.42%	7.48%
3/17/2010	10.00%	4.41%	5.59%
3/25/2010	10.15%	4.42%	5.73%
4/2/2010	10.10%	4.43%	5.67%
4/27/2010	10.00%	4.46%	5.54%
4/29/2010	9.90%	4.46%	5.44%
4/29/2010	10.06%	4.46%	5.60%
4/29/2010	10.26%	4.46%	5.80%
5/12/2010	10.30%	4.45%	5.85%
5/12/2010	10.30%	4.45%	5.85%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
5/28/2010	10.10%	4.44%	5.66%
5/28/2010	10.20%	4.44%	5.76%
6/7/2010	10.30%	4.44%	5.86%
6/16/2010	10.00%	4.44%	5.56%
6/28/2010	9.67%	4.43%	5.24%
6/28/2010	10.50%	4.43%	6.07%
6/30/2010	9.40%	4.43%	4.97%
7/1/2010	10.25%	4.43%	5.82%
7/15/2010	10.53%	4.43%	6.10%
7/15/2010	10.70%	4.43%	6.27%
7/30/2010	10.70%	4.41%	6.29%
8/4/2010	10.50%	4.41%	6.09%
8/6/2010	9.83%	4.41%	5.42%
8/25/2010	9.90%	4.37%	5.53%
9/3/2010	10.60%	4.35%	6.25%
9/14/2010	10.70%	4.33%	6.37%
9/16/2010	10.00%	4.33%	5.67%
9/16/2010	10.00%	4.33%	5.67%
9/30/2010	9.75%	4.29%	5.46%
10/14/2010	10.35%	4.24%	6.11%
10/28/2010	10.70%	4.21%	6.49%
11/2/2010	10.38%	4.20%	6.18%
11/4/2010	10.70%	4.20%	6.50%
11/19/2010	10.20%	4.18%	6.02%
11/22/2010	10.00%	4.18%	5.82%
12/1/2010	10.13%	4.16%	5.97%
12/6/2010	9.86%	4.15%	5.71%
12/9/2010	10.25%	4.15%	6.10%
12/13/2010	10.70%	4.15%	6.55%
12/14/2010	10.13%	4.15%	5.98%
12/15/2010	10.44%	4.15%	6.29%
12/17/2010	10.00%	4.15%	5.85%
12/20/2010	10.60%	4.15%	6.45%
12/21/2010	10.30%	4.14%	6.16%
12/27/2010	9.90%	4.14%	5.76%
12/29/2010	11.15%	4.14%	7.01%
1/5/2011	10.15%	4.13%	6.02%
1/12/2011	10.30%	4.12%	6.18%
1/13/2011	10.30%	4.12%	6.18%
1/18/2011	10.00%	4.12%	5.88%
1/20/2011	9.30%	4.12%	5.18%
1/20/2011	10.13%	4.12%	6.01%
1/31/2011	9.60%	4.12%	5.48%
2/3/2011	10.00%	4.12%	5.88%
2/25/2011	10.00%	4.14%	5.86%
3/25/2011	9.80%	4.18%	5.62%
3/30/2011	10.00%	4.18%	5.82%
4/12/2011	10.00%	4.21%	5.79%
4/25/2011	10.74%	4.23%	6.51%
4/26/2011	9.67%	4.23%	5.44%
4/27/2011	10.40%	4.24%	6.16%
5/4/2011	10.00%	4.24%	5.76%
5/4/2011	10.00%	4.24%	5.76%
5/24/2011	10.50%	4.27%	6.23%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
6/8/2011	10.75%	4.30%	6.45%
6/16/2011	9.20%	4.32%	4.88%
6/17/2011	9.95%	4.32%	5.63%
7/13/2011	10.20%	4.36%	5.84%
8/1/2011	9.20%	4.39%	4.81%
8/8/2011	10.00%	4.38%	5.62%
8/11/2011	10.00%	4.38%	5.62%
8/12/2011	10.35%	4.37%	5.98%
8/19/2011	10.25%	4.36%	5.89%
9/2/2011	12.88%	4.32%	8.56%
9/22/2011	10.00%	4.24%	5.76%
10/12/2011	10.30%	4.14%	6.16%
10/20/2011	10.50%	4.10%	6.40%
11/30/2011	10.90%	3.87%	7.03%
11/30/2011	10.90%	3.87%	7.03%
12/14/2011	10.00%	3.80%	6.20%
12/14/2011	10.30%	3.80%	6.50%
12/20/2011	10.20%	3.76%	6.44%
12/21/2011	10.20%	3.76%	6.44%
12/22/2011	9.90%	3.75%	6.15%
12/22/2011	10.40%	3.75%	6.65%
12/23/2011	10.19%	3.74%	6.45%
1/25/2012	10.50%	3.57%	6.93%
1/27/2012	10.50%	3.56%	6.94%
2/15/2012	10.20%	3.47%	6.73%
2/23/2012	9.90%	3.44%	6.46%
2/27/2012	10.25%	3.43%	6.82%
2/29/2012	10.40%	3.41%	6.99%
3/29/2012	10.37%	3.32%	7.05%
4/4/2012	10.00%	3.30%	6.70%
4/26/2012	10.00%	3.21%	6.79%
5/2/2012	10.00%	3.18%	6.82%
5/7/2012	9.80%	3.17%	6.63%
5/15/2012	10.00%	3.14%	6.86%
5/29/2012	10.05%	3.11%	6.94%
6/7/2012	10.30%	3.08%	7.22%
6/14/2012	9.40%	3.06%	6.34%
6/15/2012	10.40%	3.06%	7.34%
6/18/2012	9.60%	3.06%	6.54%
6/19/2012	9.25%	3.05%	6.20%
6/26/2012	10.10%	3.04%	7.06%
6/29/2012	10.00%	3.04%	6.96%
7/9/2012	10.20%	3.03%	7.17%
7/16/2012	9.80%	3.02%	6.78%
7/20/2012	9.31%	3.01%	6.30%
7/20/2012	9.81%	3.01%	6.80%
9/13/2012	9.80%	2.94%	6.86%
9/19/2012	9.80%	2.94%	6.86%
9/19/2012	10.05%	2.94%	7.11%
9/26/2012	9.50%	2.94%	6.56%
10/12/2012	9.60%	2.93%	6.67%
10/23/2012	9.75%	2.93%	6.82%
10/24/2012	10.30%	2.93%	7.37%
11/9/2012	10.30%	2.92%	7.38%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
11/28/2012	10.40%	2.90%	7.50%
11/29/2012	9.75%	2.89%	6.86%
11/29/2012	9.88%	2.89%	6.99%
12/5/2012	9.71%	2.89%	6.82%
12/5/2012	10.40%	2.89%	7.51%
12/12/2012	9.80%	2.88%	6.92%
12/13/2012	9.50%	2.88%	6.62%
12/13/2012	10.50%	2.88%	7.62%
12/14/2012	10.40%	2.88%	7.52%
12/19/2012	9.71%	2.87%	6.84%
12/19/2012	10.25%	2.87%	7.38%
12/20/2012	9.50%	2.87%	6.63%
12/20/2012	9.80%	2.87%	6.93%
12/20/2012	10.25%	2.87%	7.38%
12/20/2012	10.25%	2.87%	7.38%
12/20/2012	10.30%	2.87%	7.43%
12/20/2012	10.40%	2.87%	7.53%
12/20/2012	10.45%	2.87%	7.58%
12/21/2012	10.20%	2.87%	7.33%
12/26/2012	9.80%	2.86%	6.94%
1/9/2013	9.70%	2.85%	6.85%
1/9/2013	9.70%	2.85%	6.85%
1/9/2013	9.70%	2.85%	6.85%
1/16/2013	9.60%	2.84%	6.76%
1/16/2013	9.60%	2.84%	6.76%
2/13/2013	10.20%	2.84%	7.36%
2/22/2013	9.75%	2.85%	6.90%
2/27/2013	10.00%	2.86%	7.14%
3/14/2013	9.30%	2.88%	6.42%
3/27/2013	9.80%	2.90%	6.90%
5/1/2013	9.84%	2.94%	6.90%
5/15/2013	10.30%	2.96%	7.34%
5/30/2013	10.20%	2.98%	7.22%
5/31/2013	9.00%	2.98%	6.02%
6/11/2013	10.00%	3.00%	7.00%
6/21/2013	9.75%	3.02%	6.73%
6/25/2013	9.80%	3.03%	6.77%
7/12/2013	9.36%	3.07%	6.29%
8/8/2013	9.83%	3.14%	6.69%
8/14/2013	9.15%	3.16%	5.99%
9/11/2013	10.20%	3.26%	6.94%
9/11/2013	10.25%	3.26%	6.99%
9/24/2013	10.20%	3.31%	6.89%
10/3/2013	9.65%	3.33%	6.32%
11/6/2013	10.20%	3.41%	6.79%
11/21/2013	10.00%	3.44%	6.56%
11/26/2013	10.00%	3.45%	6.55%
12/3/2013	10.25%	3.47%	6.78%
12/4/2013	9.50%	3.47%	6.03%
12/5/2013	10.20%	3.48%	6.72%
12/9/2013	8.72%	3.48%	5.24%
12/9/2013	9.75%	3.48%	6.27%
12/13/2013	9.75%	3.50%	6.25%
12/16/2013	9.95%	3.50%	6.45%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
12/16/2013	9.95%	3.50%	6.45%
12/16/2013	10.12%	3.50%	6.62%
12/17/2013	9.50%	3.51%	5.99%
12/17/2013	10.95%	3.51%	7.44%
12/18/2013	8.72%	3.51%	5.21%
12/18/2013	9.80%	3.51%	6.29%
12/19/2013	10.15%	3.51%	6.64%
12/30/2013	9.50%	3.54%	5.96%
2/20/2014	9.20%	3.68%	5.52%
2/26/2014	9.75%	3.69%	6.06%
3/17/2014	9.55%	3.72%	5.83%
3/26/2014	9.40%	3.73%	5.67%
3/26/2014	9.96%	3.73%	6.23%
4/2/2014	9.70%	3.73%	5.97%
5/16/2014	9.80%	3.70%	6.10%
5/30/2014	9.70%	3.68%	6.02%
6/6/2014	10.40%	3.67%	6.73%
6/30/2014	9.55%	3.64%	5.91%
7/2/2014	9.62%	3.64%	5.98%
7/10/2014	9.95%	3.63%	6.32%
7/23/2014	9.75%	3.61%	6.14%
7/29/2014	9.45%	3.60%	5.85%
7/31/2014	9.90%	3.60%	6.30%
8/20/2014	9.75%	3.57%	6.18%
8/25/2014	9.60%	3.56%	6.04%
8/29/2014	9.80%	3.54%	6.26%
9/11/2014	9.60%	3.51%	6.09%
9/15/2014	10.25%	3.51%	6.74%
10/9/2014	9.80%	3.45%	6.35%
11/6/2014	9.56%	3.37%	6.19%
11/6/2014	10.20%	3.37%	6.83%
11/14/2014	10.20%	3.35%	6.85%
11/26/2014	9.70%	3.33%	6.37%
11/26/2014	10.20%	3.33%	6.87%
12/4/2014	9.68%	3.31%	6.37%
12/10/2014	9.25%	3.29%	5.96%
12/10/2014	9.25%	3.29%	5.96%
12/11/2014	10.07%	3.29%	6.78%
12/12/2014	10.20%	3.28%	6.92%
12/17/2014	9.17%	3.27%	5.90%
12/18/2014	9.83%	3.26%	6.57%
1/23/2015	9.50%	3.14%	6.36%
2/24/2015	9.83%	3.04%	6.79%
3/18/2015	9.75%	2.98%	6.77%
3/25/2015	9.50%	2.96%	6.54%
3/26/2015	9.72%	2.95%	6.77%
4/23/2015	10.20%	2.87%	7.33%
4/29/2015	9.53%	2.86%	6.67%
5/1/2015	9.60%	2.85%	6.75%
5/26/2015	9.75%	2.83%	6.92%
6/17/2015	9.00%	2.82%	6.18%
6/17/2015	9.00%	2.82%	6.18%
9/2/2015	9.50%	2.79%	6.71%
9/10/2015	9.30%	2.79%	6.51%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
10/15/2015	9.00%	2.81%	6.19%
11/19/2015	10.00%	2.88%	7.12%
11/19/2015	10.30%	2.88%	7.42%
12/3/2015	10.00%	2.90%	7.10%
12/9/2015	9.14%	2.90%	6.24%
12/9/2015	9.14%	2.90%	6.24%
12/11/2015	10.30%	2.90%	7.40%
12/15/2015	9.60%	2.91%	6.69%
12/17/2015	9.70%	2.91%	6.79%
12/18/2015	9.50%	2.91%	6.59%
12/30/2015	9.50%	2.93%	6.57%
1/6/2016	9.50%	2.94%	6.56%
2/23/2016	9.75%	2.94%	6.81%
3/16/2016	9.85%	2.91%	6.94%
4/29/2016	9.80%	2.83%	6.97%
6/3/2016	9.75%	2.80%	6.95%
6/8/2016	9.48%	2.80%	6.68%
6/15/2016	9.00%	2.78%	6.22%
6/15/2016	9.00%	2.78%	6.22%
7/18/2016	9.98%	2.71%	7.27%
8/9/2016	9.85%	2.66%	7.19%
8/18/2016	9.50%	2.63%	6.87%
8/24/2016	9.75%	2.62%	7.13%
9/1/2016	9.50%	2.59%	6.91%
9/8/2016	10.00%	2.58%	7.42%
9/28/2016	9.58%	2.54%	7.04%
9/30/2016	9.90%	2.53%	7.37%
11/9/2016	9.80%	2.48%	7.32%
11/10/2016	9.50%	2.48%	7.02%
11/15/2016	9.55%	2.49%	7.06%
11/18/2016	10.00%	2.50%	7.50%
11/29/2016	10.55%	2.51%	8.04%
12/1/2016	10.00%	2.51%	7.49%
12/6/2016	8.64%	2.52%	6.12%
12/6/2016	8.64%	2.52%	6.12%
12/7/2016	10.10%	2.52%	7.58%
12/12/2016	9.60%	2.53%	7.07%
12/14/2016	9.10%	2.53%	6.57%
12/19/2016	9.00%	2.54%	6.46%
12/19/2016	9.37%	2.54%	6.83%
12/22/2016	9.60%	2.55%	7.05%
12/22/2016	9.90%	2.55%	7.35%
12/28/2016	9.50%	2.55%	6.95%
1/18/2017	9.45%	2.58%	6.87%
1/24/2017	9.00%	2.59%	6.41%
1/31/2017	10.10%	2.60%	7.50%
2/15/2017	9.60%	2.62%	6.98%
2/22/2017	9.60%	2.64%	6.96%
2/24/2017	9.75%	2.64%	7.11%
2/28/2017	10.10%	2.64%	7.46%
3/2/2017	9.41%	2.65%	6.76%
3/20/2017	9.50%	2.68%	6.82%
4/4/2017	10.25%	2.71%	7.54%
4/12/2017	9.40%	2.74%	6.66%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
4/20/2017	9.50%	2.76%	6.74%
5/3/2017	9.50%	2.79%	6.71%
5/11/2017	9.20%	2.81%	6.39%
5/18/2017	9.50%	2.83%	6.67%
5/23/2017	9.70%	2.84%	6.86%
6/16/2017	9.65%	2.89%	6.76%
6/22/2017	9.70%	2.90%	6.80%
6/22/2017	9.70%	2.90%	6.80%
7/24/2017	9.50%	2.95%	6.55%
8/15/2017	10.00%	2.97%	7.03%
9/22/2017	9.60%	2.93%	6.67%
9/28/2017	9.80%	2.92%	6.88%
10/20/2017	9.50%	2.91%	6.59%
10/26/2017	10.20%	2.91%	7.29%
10/26/2017	10.25%	2.91%	7.34%
10/26/2017	10.30%	2.91%	7.39%
11/6/2017	10.25%	2.90%	7.35%
11/15/2017	11.95%	2.89%	9.06%
11/30/2017	10.00%	2.88%	7.12%
11/30/2017	10.00%	2.88%	7.12%
12/5/2017	9.50%	2.88%	6.62%
12/6/2017	8.40%	2.87%	5.53%
12/6/2017	8.40%	2.87%	5.53%
12/7/2017	9.80%	2.87%	6.93%
12/14/2017	9.60%	2.86%	6.74%
12/14/2017	9.65%	2.86%	6.79%
12/18/2017	9.50%	2.86%	6.64%
12/20/2017	9.58%	2.86%	6.72%
12/21/2017	9.10%	2.85%	6.25%
12/28/2017	9.50%	2.85%	6.65%
12/29/2017	9.51%	2.85%	6.66%
1/18/2018	9.70%	2.84%	6.86%
1/31/2018	9.30%	2.84%	6.46%
2/2/2018	9.98%	2.84%	7.14%
2/23/2018	9.90%	2.85%	7.05%
3/12/2018	9.25%	2.86%	6.39%
3/15/2018	9.00%	2.87%	6.13%
3/29/2018	10.00%	2.88%	7.12%
4/12/2018	9.90%	2.89%	7.01%
4/13/2018	9.73%	2.89%	6.84%
4/18/2018	9.25%	2.89%	6.36%
4/18/2018	10.00%	2.89%	7.11%
4/26/2018	9.50%	2.90%	6.60%
5/30/2018	9.95%	2.94%	7.01%
5/31/2018	9.50%	2.94%	6.56%
6/14/2018	8.80%	2.96%	5.84%
6/22/2018	9.50%	2.97%	6.53%
6/22/2018	9.90%	2.97%	6.93%
6/28/2018	9.35%	2.97%	6.38%
6/29/2018	9.50%	2.97%	6.53%
8/8/2018	9.53%	2.99%	6.54%
8/21/2018	9.70%	3.00%	6.70%
8/24/2018	9.28%	3.01%	6.27%
9/5/2018	9.56%	3.02%	6.54%

Date of Electric Rate Case	Return on Equity	30-Year Treasury Yield	Risk Premium
9/14/2018	10.00%	3.03%	6.97%
9/20/2018	9.80%	3.04%	6.76%
9/26/2018	9.77%	3.05%	6.72%
9/26/2018	10.00%	3.05%	6.95%
9/27/2018	9.30%	3.05%	6.25%
10/4/2018	9.85%	3.06%	6.79%
10/29/2018	9.60%	3.10%	6.50%
10/31/2018	9.99%	3.11%	6.88%
11/1/2018	8.69%	3.11%	5.58%
12/4/2018	8.69%	3.14%	5.55%
12/13/2018	9.30%	3.14%	6.16%
12/14/2018	9.50%	3.14%	6.36%
12/19/2018	9.84%	3.14%	6.70%
12/20/2018	9.65%	3.14%	6.51%
12/21/2018	9.30%	3.14%	6.16%
1/9/2019	10.00%	3.14%	6.86%
2/27/2019	9.75%	3.12%	6.63%
3/13/2019	9.60%	3.12%	6.48%
3/14/2019	9.00%	3.12%	5.88%
3/14/2019	9.40%	3.12%	6.28%
3/22/2019	9.65%	3.12%	6.53%
4/30/2019	9.73%	3.11%	6.62%
4/30/2019	9.73%	3.11%	6.62%
5/1/2019	9.50%	3.11%	6.39%
5/2/2019	10.00%	3.11%	6.89%
5/8/2019	9.50%	3.10%	6.40%
5/14/2019	8.75%	3.10%	5.65%
5/16/2019	9.50%	3.09%	6.41%
5/23/2019	9.90%	3.09%	6.81%

# of Cases:	1,593
Average:	4.68%

Expected Earnings Analysis

Company	Ticker	[1] Expected ROE 2022-24	[2] Shares Outstanding 2019	[3] Shares Outstanding 2021-23/ 2022-24	[4] Shares Outstanding % Increase	[5] Adjustment Factor	[6] Adjusted ROE
ALLETE, Inc.	ALE	9.00%	51.50	51.50	0.00%	1.000	9.00%
Alliant Energy Corporation	LNT	10.00%	240.00	250.00	0.82%	1.004	10.04%
Ameren Corporation	AEE	10.50%	246.50	253.00	0.52%	1.003	10.53%
American Electric Power Company, Inc.	AEP	11.00%	495.00	520.00	0.99%	1.005	11.05%
Avangrid, Inc.	AGR	6.00%	309.00	309.00	0.00%	1.000	6.00%
CMS Energy Corporation	CMS	14.00%	285.00	297.00	0.83%	1.004	14.06%
DTE Energy Company	DTE	10.50%	192.00	200.00	0.82%	1.004	10.54%
Evergy, Inc.	EVRG	8.50%	225.00	212.00	-1.18%	0.994	8.45%
Hawaiian Electric Industries, Inc.	HE	10.00%	109.00	113.00	0.72%	1.004	10.04%
NextEra Energy, Inc.	NEE	13.50%	535.00	535.00	0.00%	1.000	13.50%
NorthWestern Corporation	NWE	9.00%	50.50	51.10	0.24%	1.001	9.01%
OGE Energy Corp.	OGE	11.50%	199.70	199.70	0.00%	1.000	11.50%
Otter Tail Corporation	OTTR	10.50%	39.75	41.75	0.99%	1.005	10.55%
Pinnacle West Capital Corporation	PNW	10.50%	112.50	114.50	0.35%	1.002	10.52%
PNM Resources, Inc.	PNM	9.50%	79.65	84.00	1.07%	1.005	9.55%
Portland General Electric Company	POR	9.00%	89.40	90.00	0.13%	1.001	9.01%
Southern Company	SO	12.50%	1045.00	1085.00	0.75%	1.004	12.55%
WEC Energy Group, Inc.	WEC	12.50%	315.50	315.50	0.00%	1.000	12.50%
Xcel Energy Inc.	XEL	11.00%	515.50	521.50	0.23%	1.001	11.01%
						Median	10.53%
						Average	10.50%

Notes:

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

Flotation Cost Adjustment

Two most recent open market common stock issuances per company, if available

Company	Date	[1] Shares Issued	[2] Offering Price	[3] Underwriting Discount	[4] Offering Expense	[5] Net Proceeds Per Share	[6] Total Flotation Costs	[7] Gross Equity Issue Before Costs	[8] Net Proceeds	[9] Flotation Cost Percentage
Duke Energy Corporation	3/6/2018	21,275,000	$74.07	$0.0000	$450,000	$74.05	$450,000	$1,575,881,800	$1,575,431,800	0.029%
Duke Energy Corporation	3/2/2016	10,637,500	$72.00	$2.1600	$400,000	$69.80	$23,377,000	$765,900,000	$742,523,000	3.052%
ALLETE, Inc.	2/27/2014	3,220,000	$49.75	$1.7413	$450,000	$47.87	$6,056,825	$160,195,000	$154,138,175	3.781%
ALLETE, Inc.	5/25/2001	7,475,000	$23.68	$0.9472	$350,000	$22.69	$7,430,320	$177,008,000	$169,577,680	4.198%
Alliant Energy Corporation	12/13/2018	8,358,973	$44.85	$0.5200	$1,000,000	$44.21	$5,346,666	$374,899,939	$369,553,273	1.426%
Alliant Energy Corporation	7/1/2003	17,250,000	$19.25	$0.7700	$370,000	$18.46	$13,652,500	$332,062,500	$318,410,000	4.111%
Ameren Corp.	9/9/2009	21,850,000	$25.25	$0.7575	$450,000	$24.47	$17,001,375	$551,712,500	$534,711,125	3.082%
Ameren Corp.	6/30/2004	10,925,000	$42.00	$1.2600	$400,000	$40.70	$14,165,500	$458,850,000	$444,684,500	3.087%
American Electric Power Company, Inc.	4/1/2009	69,000,000	$24.50	$0.7350	$400,000	$23.76	$51,115,000	$1,690,500,000	$1,639,385,000	3.024%
American Electric Power Company, Inc.	2/27/2003	57,500,000	$20.95	$0.6285	$550,000	$20.31	$36,688,750	$1,204,625,000	$1,167,936,250	3.046%
Avangrid, Inc.	9/26/2013	5,750,000	$37.25	$1.3038	$250,000	$35.90	$7,746,563	$214,187,500	$206,440,938	3.617%
Avangrid, Inc.	9/16/2010	20,355,000	$25.75	$1.0944	$325,000	$24.64	$22,601,003	$524,141,250	$501,540,247	4.312%
CMS Energy Corporation	3/30/2005	23,000,000	$12.25	$0.4288	$325,000	$11.81	$10,187,400	$281,750,000	$271,562,600	3.616%
CMS Energy Corporation	10/7/2004	32,775,000	$9.10	$0.3185	$325,000	$8.77	$10,763,838	$298,252,500	$287,488,663	3.609%
DTE Energy Company	6/19/2002	6,325,000	$43.25	$1.4056	$250,000	$41.80	$9,140,420	$273,556,250	$264,415,830	3.341%
Evergy, Inc.	9/27/2016	60,490,000	$26.45	$0.7935	$500,000	$25.65	$48,498,815	$1,599,960,500	$1,551,461,685	3.031%
Evergy, Inc.	9/23/2013	8,916,000	$31.15	$1.0900	$250,000	$30.03	$9,968,440	$277,733,400	$267,764,960	3.589%
Hawaiian Electric Industries, Inc	3/19/2013	7,000,000	$26.75	$1.0031	$450,000	$25.68	$7,471,840	$187,250,000	$179,778,160	3.990%
Hawaiian Electric Industries, Inc	12/2/2008	5,750,000	$23.00	$0.8625	$300,000	$22.09	$5,259,375	$132,250,000	$126,990,625	3.977%
NextEra Energy, Inc.	11/1/2016	13,800,000	$124.00	$0.0000	$750,000	$123.95	$750,000	$1,711,200,000	$1,710,450,000	0.044%
NextEra Energy, Inc.	11/18/2013	11,100,000	$88.03	$0.0000	$750,000	$87.96	$750,000	$977,133,000	$976,383,000	0.077%
NorthWestern Corporation	9/29/2015	1,100,000	$51.81	$1.3300	$1,000,000	$49.57	$2,463,000	$56,991,000	$54,528,000	4.322%
NorthWestern Corporation	11/5/2014	7,766,990	$51.50	$1.8025	$1,000,000	$49.57	$14,999,999	$399,999,985	$384,999,986	3.750%
OGE Energy Corp.	8/21/2003	5,324,074	$21.60	$0.7900	$325,000	$20.75	$4,531,018	$114,999,998	$110,468,980	3.940%
Otter Tail Corporation	9/18/2008	5,175,000	$30.00	$1.0875	$400,000	$28.84	$6,027,813	$155,250,000	$149,222,188	3.883%
Otter Tail Corporation	12/7/2004	3,335,000	$25.45	$0.9500	$300,000	$24.41	$3,468,250	$84,875,750	$81,407,500	4.086%
Pinnacle West Capital Corporation	4/8/2010	6,900,000	$38.00	$1.3300	$190,000	$36.64	$9,367,000	$262,200,000	$252,833,000	3.572%
Pinnacle West Capital Corporation	4/27/2005	6,095,000	$42.00	$1.3650	$250,000	$40.59	$8,569,675	$255,990,000	$247,420,325	3.348%
PNM Resources, Inc.	12/6/2006	5,750,000	$30.79	$1.0780	$250,000	$29.67	$6,448,500	$177,042,500	$170,594,000	3.642%
PNM Resources, Inc.	3/23/2005	3,910,000	$26.76	$0.8697	$200,000	$25.84	$3,600,527	$104,631,600	$101,031,073	3.441%
Portland General Electric Company	6/11/2013	12,765,000	$29.50	$0.9588	$600,000	$28.49	$12,838,444	$376,567,500	$363,729,056	3.409%
Portland General Electric Company	3/5/2009	12,477,500	$14.10	$0.4935	$375,000	$13.58	$6,532,646	$175,932,750	$169,400,104	3.713%
Southern Company	8/16/2016	32,500,000	$49.30	$1.6600	$557,000	$47.62	$54,507,000	$1,602,250,000	$1,547,743,000	3.402%
Southern Company	5/5/2016	18,300,000	$48.60	$2.0200	$395,000	$46.56	$37,361,000	$889,380,000	$852,019,000	4.201%
WEC Energy Group, Inc.	11/16/2005	5,290,000	$53.70	$1.7450	$0	$51.96	$9,231,050	$284,073,000	$274,841,950	3.250%
WEC Energy Group, Inc.	11/20/2003	4,025,000	$43.00	$1.5050	$0	$41.50	$6,057,625	$173,075,000	$167,017,375	3.500%
Xcel Energy Inc.	11/7/2018	9,359,103	$49.15	$0.1500	$650,000	$48.93	$2,053,865	$459,999,912	$457,946,047	0.446%
Xcel Energy Inc.	8/3/2010	21,850,000	$21.50	$0.6450	$600,000	$20.83	$14,693,250	$469,775,000	$455,081,750	3.128%
Mean							$13,451,902	$521,370,609		
								WEIGHTED AVERAGE FLOTATION COSTS:	2.580%	[10]

Constant Growth Discounted Cash Flow Model Adjusted for Flotation Costs - 30 Day Average Stock Price

		[11]	[12]	[13]	[14]	[15]	[16]	[17]	[18]	[19]	[20]	[21]
					Expected Dividend Yield							
Company	Ticker	Annualized Dividend	Average Stock Price	Dividend Yield	Current	Adjusted for Flot. Costs	Zacks Earnings Growth	First Call Earnings Growth	Value Line Earnings Growth	Average Earnings Growth	DCF k(e)	Flotation Adjusted DCF k(e)
ALLETE, Inc.	ALE	$2.35	$81.31	2.89%	2.98%	3.06%	7.20%	6.00%	5.00%	6.07%	9.04%	9.12%
Alliant Energy Corporation	LNT	$1.42	$47.20	3.01%	3.10%	3.18%	5.40%	5.85%	6.50%	5.92%	9.01%	9.10%
Ameren Corporation	AEE	$1.90	$73.07	2.60%	2.68%	2.75%	6.20%	4.90%	6.50%	5.87%	8.54%	8.61%
American Electric Power Company, Inc.	AEP	$2.68	$85.25	3.14%	3.22%	3.31%	5.60%	5.79%	4.00%	5.13%	8.35%	8.44%
Avangrid, Inc.	AGR	$1.76	$50.54	3.48%	3.62%	3.72%	7.90%	6.20%	10.00%	8.03%	11.66%	11.75%
CMS Energy Corporation	CMS	$1.53	$55.46	2.76%	2.85%	2.93%	6.40%	7.08%	7.00%	6.83%	9.68%	9.76%
DTE Energy Company	DTE	$3.78	$125.38	3.01%	3.09%	3.17%	6.00%	4.16%	5.00%	5.05%	8.14%	8.23%
Evergy, Inc.	EVRG	$1.90	$57.85	3.28%	3.39%	3.48%	6.60%	6.15%	NMF	6.38%	9.76%	9.85%
Hawaiian Electric Industries, Inc.	HE	$1.28	$41.56	3.08%	3.16%	3.25%	5.60%	6.10%	4.50%	5.40%	8.56%	8.65%
NextEra Energy, Inc.	NEE	$5.00	$194.64	2.57%	2.68%	2.75%	7.90%	7.85%	10.00%	8.58%	11.26%	11.33%
NorthWestern Corporation	NWE	$2.30	$70.39	3.27%	3.31%	3.40%	2.80%	2.86%	3.00%	2.89%	6.20%	6.29%
OGE Energy Corp.	OGE	$1.46	$41.87	3.49%	3.57%	3.67%	4.60%	3.80%	6.50%	4.97%	8.54%	8.63%
Otter Tail Corporation	OTTR	$1.40	$50.75	2.76%	2.85%	2.93%	7.00%	9.00%	5.00%	7.00%	9.85%	9.93%
Pinnacle West Capital Corporation	PNW	$2.95	$94.73	3.11%	3.19%	3.28%	5.00%	5.01%	5.00%	5.00%	8.20%	8.28%
PNM Resources, Inc.	PNM	$1.16	$46.65	2.49%	2.57%	2.63%	5.20%	5.70%	8.50%	6.47%	9.03%	9.10%
Portland General Electric Company	POR	$1.54	$52.39	2.94%	3.01%	3.09%	4.90%	5.20%	4.50%	4.87%	7.88%	7.96%
Southern Company	SO	$2.48	$53.13	4.67%	4.75%	4.87%	4.50%	2.17%	3.50%	3.39%	8.14%	8.26%
WEC Energy Group, Inc.	WEC	$2.36	$79.08	2.98%	3.07%	3.15%	5.90%	5.82%	6.00%	5.91%	8.98%	9.06%
Xcel Energy Inc.	XEL	$1.62	$56.86	2.85%	2.93%	3.01%	5.70%	6.24%	5.50%	5.81%	8.75%	8.82%
PROXY GROUP MEAN											8.93%	9.01%

DCF Result Adjusted For Flotation Costs:	9.01%
DCF Result Unadjusted For Flotation Costs:	8.93%
Difference (Flotation Cost Adjustment):	0.08% [22]

Notes:
The proxy group DCF result is adjusted for flotation costs by dividing each company's expected dividend yield by (1 - flotation cost). The flotation cost adjustment is derived as the difference between the unadjusted DCF result and the DCF result adjusted for flotation costs.

[1] Source: SEC Form 424B
[2] Source: SEC Form 424B
[3] Source: SEC Form 424B
[4] Source: SEC Form 424B
[5] Equals [8] / [1]
[6] Equals [4] + ([1] x [3])
[7] Equals [1] x [2]
[8] Equals [7] - [6]
[9] Equals [6] / [7]
[10] Equals Average [6] / Average [7]
[11] Source: Bloomberg Professional
[12] Source: Bloomberg Professional
[13] Equals [11] / [12]
[14] Equals [13] x (1 + 0.5 x [19])
[15] Equals [14] / (1 - 0.0258)
[16] Source: Zacks
[17] Source: Yahoo! Finance
[18] Source: Value Line
[19] Equals Average([16], [17], [18])
[20] Equals [14] + [19]
[21] Equals [15] + [19]
[22] Equals Average [21] - Average [20]

Summary of Adjustment Clauses & Alternative Ratemaking Mechanisms

			Adjustment Clauses							Alternative Regulation / Incentive Plans								
Company	Parent	State	Fuel/ Purchased Power	Decoupling (F/P) [1]	New Capital Investment [2]	Energy Efficiency [3]	Renewables & RPS [4]	Environmental [5]	Other [6]	Formula-Based Rates	Performance Based Ratemaking [7]	CWIP Allowed in Rate Base (L/F)	Forward Test Year	Price Freeze/ Cap	Earnings Sharing	Formula-Based ROE	Service Quality/ Performance	Merger Savings
Ameren Illinois Company	AEE	Illinois	✓		✓	✓	✓	✓	✓	✓		L			✓	✓	✓	
Union Electric Company	AEE	Missouri	✓	P		✓		✓	✓									
Southwestern Electric Power Company	AEP	Arkansas	✓	P	✓	✓		✓	✓									
Indiana Michigan Power Company	AEP	Indiana	✓	P	✓	✓	✓	✓	✓			F	✓					
Kentucky Power Company	AEP	Kentucky	✓	P	✓	✓		✓	✓		✓	F						
Southwestern Electric Power Company	AEP	Louisiana	✓	P	✓	✓		✓	✓	✓		L		✓	✓			
Indiana Michigan Power Company	AEP	Michigan	✓	P		✓	✓	✓	✓			L	✓					
Ohio Power Company	AEP	Ohio	✓	P	✓	✓	✓		✓		✓	F		✓	✓			
Public Service Company of Oklahoma	AEP	Oklahoma	✓	P		✓			✓		✓	F						
Kingsport Power Company	AEP	Tennessee	✓		✓				✓			F	✓					
AEP Texas Central Company	AEP	Texas	NA		✓	✓		✓	✓			L						
AEP Texas North Company	AEP	Texas	NA		✓	✓			✓			L						
Southwestern Electric Power Company	AEP	Texas	✓		✓	✓	✓		✓			L						
Appalachian Power Company	AEP	Virginia	✓		✓	✓	✓	✓	✓		✓	F	✓		✓	✓	✓	
Appalachian Power / Wheeling Power	AEP	West Virginia	✓		✓	✓			✓			L						
United Illuminating Company	AGR	Connecticut	✓	F		✓	✓	✓	✓		✓				✓			
Central Maine Power Company	AGR	Maine	✓	F					✓						✓			
New York State Electric & Gas Corporation	AGR	New York	✓	F		✓	✓		✓		✓			✓	✓			
Rochester Gas and Electric Corporation	AGR	New York	✓	F		✓	✓		✓		✓			✓	✓			
ALLETE (Minnesota Power)	ALE	Minnesota	✓			✓	✓	✓	✓			L	✓					
Superior Water, Light and Power Company	ALE	Wisconsin	✓						✓			L	✓					
Consumers Energy Company	CMS	Michigan	✓			✓	✓		✓			L	✓					
DTE Electric Company	DTE	Michigan	✓			✓	✓	✓	✓			L	✓					
Kansas City Power & Light Company	EVRG	Kansas	✓			✓		✓	✓			F		✓			✓	
Kansas City Power & Light Company	EVRG	Missouri	✓	P		✓		✓	✓									
KCP&L Greater Missouri Operations Company	EVRG	Missouri	✓			✓	✓	✓	✓									
Westar Energy (KPL)	EVRG	Kansas	✓	P		✓		✓	✓			F		✓				✓
Hawaii Electric Light Company, Inc.	HE	Hawaii	✓	F	✓	✓	✓		✓		✓		✓		✓			
Hawaiian Electric Company, Inc.	HE	Hawaii	✓	F	✓	✓	✓		✓		✓		✓		✓			
Maui Electric Company	HE	Hawaii	✓	F	✓	✓	✓		✓		✓		✓		✓			
Interstate Power and Light Company	LNT	Iowa	✓			✓	✓	✓	✓		✓			✓				
Wisconsin Power and Light Company	LNT	Wisconsin	✓						✓		✓	L	✓	✓	✓			
Gulf Power Company	NEE	Florida	✓			✓		✓	✓		✓	F	✓	✓				
Florida Power & Light Company	NEE	Florida	✓			✓		✓	✓			F	✓	✓				
NorthWestern Energy	NWE	Montana	✓			✓			✓				✓					
NorthWestern Energy	NWE	South Dakota	✓					✓	✓		✓	L		✓				
Oklahoma Gas and Electric Company	OGE	Arkansas	✓	P	✓	✓		✓	✓	✓								
Oklahoma Gas and Electric Company	OGE	Oklahoma	✓	P		✓			✓		✓	F						
Otter Tail Power Company	OTTR	Minnesota	✓		✓	✓	✓	✓	✓			L						
Otter Tail Power Company	OTTR	North Dakota	✓		✓		✓	✓	✓			F	✓					
Otter Tail Power Company	OTTR	South Dakota	✓		✓	✓		✓	✓			L						
Arizona Public Service Company	PNW	Arizona	✓	P		✓	✓	✓	✓		✓			✓				
Public Service Company of New Mexico	PNM	New Mexico	✓			✓	✓		✓		✓	F	✓		✓			
Texas-New Mexico Power Company	PNM	Texas	NA		✓	✓			✓			L						
Portland General Electric Company	POR	Oregon	✓	P		✓	✓	✓	✓				✓					
Alabama Power Company	SO	Alabama	✓		✓			✓	✓	✓	✓							
Georgia Power Company	SO	Georgia	✓		✓	✓		✓	✓		✓	L	✓	✓	✓			
Mississippi Power Company	SO	Mississippi	✓	P	✓	✓	✓	✓	✓	✓	✓	F	✓			✓	✓	
Upper Michigan Energy Resources Corp	WEC	Michigan	✓			✓	✓		✓			L	✓					
Wisconsin Electric Power	WEC	Wisconsin	✓						✓		✓	L	✓	✓	✓			
Wisconsin Public Service Company	WEC	Wisconsin	✓						✓		✓	L	✓		✓			
Public Service Company of Colorado	XEL	Colorado	✓		✓	✓	✓	✓	✓		✓	L		✓	✓			
Northern States Power Company - WI	XEL	Michigan	✓			✓			✓			L	✓					
Northern States Power Company - MN	XEL	Minnesota	✓	F	✓	✓	✓	✓	✓		✓	L	✓					
Southwestern Public Service Company	XEL	New Mexico	✓			✓	✓		✓			F		✓				
Northern States Power Company - MN	XEL	North Dakota	✓		✓		✓		✓		✓	F			✓			
Northern States Power Company - MN	XEL	South Dakota	✓	P	✓	✓		✓	✓		✓	L		✓				
Southwestern Public Service Company	XEL	Texas	✓		✓	✓			✓			L		✓				
Northern States Power Company - WI	XEL	Wisconsin	✓						✓			L	✓		✓			
			56	24.00	28	48	28	32	59	5	26	42.00	26	18	19	3	4	1
Duke Energy Indiana, LLC	DUK	Indiana	✓	P	✓	✓	✓	✓	✓			F		✓				

A mechanism may cover one or more cost categories; therefore, designations may not indicate separate mechanisms for each category. Texas T&D utilities do not have retail obligation, thus do not need a purchased power clause

[1] Full or partial decoupling (such as Straight-Fixed Variable rate design, weather normalization clauses, and recovery of lost revenues as a result of Energy Efficiency programs).

[2] Includes recovery of costs related to targeted new generation projects, infrastructure replacement, system integrity/hardening, Smart Grid, AMI metering, and other capital expenditures.

[3] Utility-sponsored conservation, energy efficiency, load control, or other demand side management programs.

[4] Recovers costs associated with renewable energy projects, Distributed Energy Resources, REC purchases, net metering, RPS expense, and renewable PPAs.

[5] EPA upgrade costs, emissions control & allowance purchase costs, nuclear/coal plant decommissioning, and other costs to comply with state and federal environmental mandates.

[6] Pension expenses, bad debt costs, storm costs, vegetation management, RTO/Transmission Expense, capacity costs, transmission costs, government & franchise fees and taxes, economic development, and low income programs.

[7] Includes multiyear rate plans.

Sources: *Alternative Regulation/Incentive Plans: A State-by-State Overview* , November 19, 2013; Regulatory Research Associates, *Adjustment Clauses: A State-by-State Overview* , September 28, 2018; Regulatory Research Associates, *Rate Freezes: Their historical context and prevalence today* , October 15, 2018; ACEEE Utility Business Model Database; Regulatory Research Associates *Commission Profiles* ; SEC Form 10-Ks; Company Tariffs.

Fair Value Rate of Return Scenarios

Line			[A] Amount	[B] Percent of Total	[C] Cost Rate	[D] Weighted Cost Rate	Notes
1	**1: ORIGINAL COST**						
2	Long Term Debt	$	3,027,805	36.35%	4.88%	1.77%	Col [A]: Col [B] x L7; Col [B], [C] See WP 8-RBH
3	Common Equity		3,419,249	41.05%	10.40%	4.27%	Col [A]: Col [B] x L7; Col [B], [C] See WP 8-RBH
4	Customer Deposits		33,728	0.40%	2.00%	0.01%	Col [A]: Col [B] x L7; Col [B], [C] See WP 8-RBH
5	Acc. Def. FIT		1,744,467	20.94%	0.00%	0.00%	Col [A]: Col [B] x L7; Col [B], [C] See WP 8-RBH
6	Acc. Def. JDITC		104,974	1.26%	7.81%	0.10%	Col [A]: Col [B] x L7; Col [B], [C] See WP 8-RBH
7	Capital Financing Original Cost Rate Base	$	8,330,224	100.00%		6.15%	Sum L 2 - L 6
8	Rate of Return		6.15%				Col [D] L7
9	Operating Income	$	512,232				L7 x L8
10							
11	**2: FAIR VALUE INCREMENT AT REAL RISK-FREE RATE**						
12	Long Term Debt	$	3,027,805	31.00%	4.88%	1.51%	Col [A] Ref: L2 Col [A]; Col [B] = Col[A] L12/Col[A] L19
13	Common Equity		3,419,249	35.01%	10.40%	3.64%	Col [A] Ref: L3 Col [A]; Col [B] = Col[A] L13/Col[A] L19
14	Customer Deposits		33,728	0.35%	2.00%	0.01%	Col [A] Ref: L4 Col [A]; Col [B] = Col[A] L14/Col[A] L19
15	Acc. Def. FIT		1,744,467	17.86%	0.00%	0.00%	Col [A] Ref: L5 Col [A]; Col [B] = Col[A] L15/Col[A] L19
16	Acc. Def. JDITC		104,974	1.07%	7.81%	0.08%	Col [A] Ref: L6 Col [A]; Col [B] = Col[A] L16/Col[A] L19
17	Capital Financing Original Cost Rate Base	$	8,330,224				Sum L 12 - L 16
18	Fair Value Increment		1,437,431	14.72%	1.74%	0.26%	Col[A] L18 = Col[A] L 19 - Col[A] L 17; Col [B] = Col [A] L18/Col [A] L19; Col [C] See WP 6-RBH
19	Fair Value Rate Base	$	9,767,654	100.00%		5.50%	Col[A] = L17+L18; Cols [B] [C], [D]: Sum L 12 - L 18
20	Rate of Return		5.50%				Col [D] L19
21	Operating Income	$	537,173				L 19 x L 20
22	Difference from Original Cost	$	24,941				L 21 - L 9
23							
24	**3: FAIR VALUE INCREMENT AT ADJUSTED REAL RISK-FREE RATE**						
25	Long Term Debt	$	3,027,805	31.00%	4.88%	1.51%	Col [A] Ref: L2 Col [A]; Col [B] = Col[A] L12/Col[A] L19
26	Common Equity	$	3,419,249	35.01%	10.40%	3.64%	Col [A] Ref: L3 Col [A]; Col [B] = Col[A] L13/Col[A] L19
27	Customer Deposits	$	33,728	0.35%	2.00%	0.01%	Col [A] Ref: L4 Col [A]; Col [B] = Col[A] L14/Col[A] L19
28	Acc. Def. FIT	$	1,744,467	17.86%	0.00%	0.00%	Col [A] Ref: L5 Col [A]; Col [B] = Col[A] L15/Col[A] L19
29	Acc. Def. JDITC	$	104,974	1.07%	7.81%	0.08%	Col [A] Ref: L6 Col [A]; Col [B] = Col[A] L16/Col[A] L19
30	Capital Financing Original Cost Rate Base	$	8,330,224				Sum L 12 - L 16
31	Fair Value Increment		1,437,431	14.72%	0.87%	0.13%	Col[A] L31 = Col[A] L 31 - Col[A] L 29; Col [B] = Col [A] L31/Col [A] L32; Col [C] = Col [C] L18/2
32	Fair Value Rate Base		9,767,654	100.00%		5.37%	Col[A] = L17+L18; Cols [B] [C], [D]: Sum L 12 - L 18
33	Rate of Return		5.37%				Col [D] L19
34	Operating Income	$	524,702				L 32 x L 33
35	Difference from Original Cost	$	12,471				L 34 - L 9

Sources:
Company Provided Data
Blue Chip Financial Forecasts, Vol. 37, No. 12, December 1, 2018
Federal Reserve Schedule H-15

VERIFICATION

I hereby verify under the penalties of perjury that the foregoing representations are true to the best of my knowledge, information and belief.

Signed: _____ Dated: 7/2/2019

Robert B. Hevert