BEFORE THE CORPORATION COMMISSION OF OKLAHOMA

APPLICATION OF PUBLIC SERVICE COMPANY OF OKLAHOMA, AN OKLAHOMA CORPORATION, FOR AN ADJUSTMENT IN ITS RATES AND CHARGES AND THE ELECTRIC SERVICE RULES, REGULATIONS AND CONDITIONS OF SERVICE FOR ELECTRIC SERVICE IN THE STATE OF OKLAHOMA	CAUSE NO. PUD 201500208

RESPONSIVE TESTIMONY
OF
DAVID J. GARRETT

COST OF CAPITAL

THE PUBLIC UTILITY DIVISION

OCTOBER 14, 2015

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INTRODUCTION

Q. State your name and occupation.

A. My name is David Garrett. I am employed as a public utility regulatory analyst at the Public Utility Division ("PUD") of the Oklahoma Corporation Commission (the "Commission").

Q. Summarize your educational background and professional experience.

A. I received a B.B.A. degree with a major in Finance, an M.B.A. degree, and a Juris Doctor degree from the University of Oklahoma. I worked in private legal practice before joining the Commission in 2011. At the Commission, I worked in the Office of General Counsel representing PUD in regulatory proceedings before joining PUD as a regulatory analyst in 2012. I have attended numerous training courses and seminars covering a variety of regulatory issues. I am a Certified Depreciation Professional through the Society of Depreciation Professionals. I am also a Certified Rate of Return Analyst through the Society of Utility and Regulatory Financial Analysts. I have testified in many regulatory proceedings and the Commission has accepted my credentials. A more complete description of my qualifications and regulatory experience is included in my curriculum vitae.[1]

Q. Describe the general organization of your testimony.

A. In this cause, I am testifying on the two primary capital recovery mechanisms in the rate base rate of return model: cost of capital and depreciation. Because these are two separate

[1] Exhibit DG-C-1.

issues, and the testimonies are voluminous, I have filed two separate responsive testimony documents. The exhibits attached to both testimonies each have a different number. The cost of capital exhibits are labeled "DG-C," and the depreciation exhibits are labeled "DG-D." In this testimony, I will address the cost of capital, capital structure, and other related issues. I will also address incentive compensation in this testimony.

EXECUTIVE SUMMARY

Q. Summarize the key points of your testimony.

A. According to the U.S. Supreme Court, PSO's allowed rate of return in this case should be based on the Company's risk, and should be sufficient enough for PSO to remain financially sound under efficient and economical management. In addition, the Company has no right to profits anticipated in highly profitable enterprises. The allowed rate of return should be based on the utility's cost of capital. A utility's cost of capital is comprised of two components: debt and equity. While the cost of debt is determined by fixed, contractual interest payments, the cost of equity must be estimated through financial models. I have employed three widely-used financial models on a group of proxy companies to arrive at a fair, reasonable and accurate estimate of the Company's cost of equity in this case, including: 1) the Discounted Cash Flow Model; 2) the Capital Asset Pricing Model; and 3) the Comparable Earnings Model. Finally, I conducted an objective analysis to determine the Company's optimal capital structure. I will summarize each of these issues in turn.

Discounted Cash Flow Model ("DCF" Model)

The most important component of the DCF Model is the growth rate. I considered historical dividend growth, projected earnings growth, and the fundamental growth rate in estimating a reasonable, sustainable growth rate for each proxy company. Out of the several variations of the DCF Model, I used the model that results in the highest cost of equity estimate, all else held constant.

Capital Asset Pricing Model ("CAPM")

Out of the three models I used to estimate the cost of equity in this case, the CAPM is the only model that specifically measures the risk of the utility, as instructed by the Supreme Court. In fact, all three of the inputs to the CAPM model relate to risk: 1) risk-free rate; 2) beta; and 3) equity risk premium. The risk-free rate and equity risk premium are single figures that apply to every company. Beta, on the other hand, is a term used to measure the risk of each individual company. There are two primary types of risk: firm-specific risk and market risk. Since firm-specific risk can be eliminated through diversification, it is not rewarded by the market. Beta measures market risk – the type of risk that is rewarded by the market. I conducted regression analyses to determine the beta for each company in the proxy group. Finally, I conducted extensive analyses to estimate the equity risk premium. The equity risk premium is the amount of return on the market above the risk-free rate that equity investors expect. I incorporated three widely-accepted methods of estimating the equity risk premium, including: 1) a historical study; 2) a survey of experts; and 3) the implied equity risk premium calculation.

Comparable Earnings Model ("CEM")

The CEM simply compares the actual returns on equity earned by a group of companies with comparable risk to the target utility. The CEM should be conducted on a group of competitive, non-regulated firms with risk profiles and operations similar to those of public utilities. Unfortunately, however, such a group of competitive firms does not exist in the market. As a result, expert witnesses in utility rate cases usually conduct the CEM on the same group of proxy utility companies used to conduct the other two models. When the CEM is conducted this way, it is clearly the weakest of the three models for these reasons: 1) the earned returns of other utilities are heavily influenced by commission-awarded returns in the past, which may not be appropriate under current economic conditions, if they ever were at all; 2) the CEM, unlike the other two models, has no way of measuring risk and does not consider any forward-looking projections; and 3) the returns of other utilities were not earned under the restraints of competition. I have included the CEM in this case only because regulators are familiar with seeing it, but for the reasons stated above, the Commission should give much less consideration to the CEM than the other two superior models.

Capital Structure

A firm's capital structure refers to the ratios of debt and equity used to finance the firm's operations. For competitive firms, the value of the firm is maximized when the cost of capital is minimized. This that means firms must determine the fractions of debt and equity capital that will minimize their overall capital cost. While competitive firms have a natural financial incentive to minimize capital costs, regulated utilities do not. This is because a

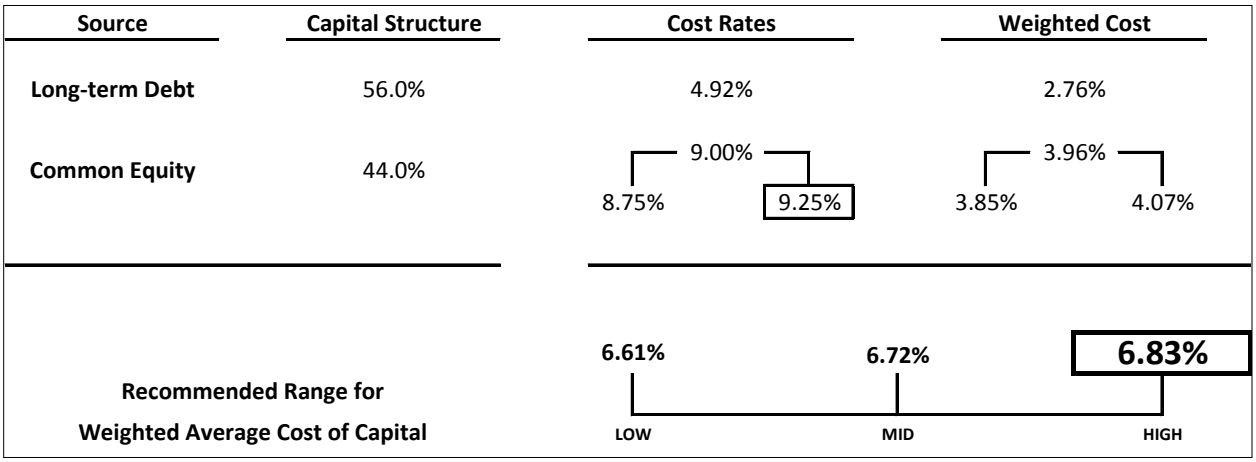
higher cost of capital increases a utility's revenue. The Commission has the authority to stand in the place of competition and impute a proper capital structure if necessary. I conducted an extensive, objective analysis to estimate the Company's optimal capital structure.

Q. Summarize PUD's recommendation to the Commission.

A. Considering an average of the three models used to estimate the cost of equity, as well as the expected return on the market portfolio, PSO's true cost of equity is very likely below 8.0 percent. PUD, however, is recommending a higher cost of equity of 9.25 percent, which is the highest point in a range of reasonableness of 8.75 to 9.25 percent. This recommendation is well above the true required rate of return of the Company's equity investors. While the rate of return awarded by this Commission should arguably equal the true required rate of return, PUD is recommending an awarded return above the true required return in the interest of gradualism and fairness to the Company. PUD is also recommending a cost of debt of 4.92 percent as proposed by PSO. With regard to capital structure, PUD is recommending PSO's test year capital structure, which consisted of 56 percent debt and 44 percent equity. PSO's optimal, competitive capital structure is one that consists of approximately 65 percent debt and 35 percent equity. PUD, however, is recommending the test year capital structure in the interest of gradualism and fairness to the Company, as imputing the optimal capital structure at this time would represent an abrupt adjustment rather than a gradual one. Based on these recommendations for the capital structure, cost of equity, and cost of debt, PUD is recommending an overall weighted average cost of capital of 6.83 percent, which is the highest point in a range of

reasonableness of 6.61 to 6.83 percent. I have illustrated PUD's recommendations in the figure below.[2]

Figure 1:
Recommended Weighted Average Cost of Capital



Finally, PUD is recommending an adjustment to reduce incentive compensation in the amount of $8,152,488. PUD's recommendations were developed through extensive, objective analysis, and are fair, just, and reasonable for both ratepayers and the Company.

LEGAL STANDARD

Q. Discuss the legal standard governing the allowed rate of return on capital investments for regulated utilities.

A. In *Wilcox v. Consolidated Gas Co. of New York*, the U.S. Supreme Court first addressed the meaning of a fair rate of return for public utilities.[3] The Court found that "the amount of risk in the business is a most important factor" in determining the appropriate allowed rate of return.[4] Later in two landmark cases, the U.S. Supreme Court set forth the standards

[2] Exhibit DG-C-2.

[3] *Wilcox v. Consolidated Gas Co. of New York*, 212 U.S. 19 (1909).

[4] *Id*. at 48.

by which public utilities are allowed to earn a return on capital investments. In *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia,* the Court held:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public. . . 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.[5]

In *Federal Power Commission v. Hope Natural Gas Company*, the Court expanded on the guidelines set forth in *Bluefield* and stated:

> 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.[6]

In summation, the *Hope* and *Bluefield* decisions set fort the following primary standards to be considered when determining a fair rate of return for public utilities:

1. Corresponding Risk – risk is the most important factor when assessing the required return on equity. A utility's return should be less than the return of riskier enterprises.

[5] *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679, 692-93 (1923).

[6] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944).

2. Financial Soundness – a utility is entitled to a return sufficient to maintain its credit, attract capital, and remain financially sound under efficient and economical management.

The cost of capital models I have employed in this case are in accord with these standards, and have been widely accepted by regulatory commissions around the country for many years.

Q. The allowed rate of return should equal the return required by the Company's investors.

A. Yes. The Supreme Court standards indicate that the allowed return set by the Commission in this case should equal the true required rate of return of the Company's equity investors. Scholars agree:

> Since by definition the cost of capital of a regulated firm represents precisely the expected return that investors could anticipate from other investments while bearing no more or less risk, and since investors will not provide capital unless the investment is expected to yield its opportunity cost of capital, the correspondence of the definition of the cost of capital with the court's definition of legally required earnings appears clear.[7]

The models I have employed in this case indicate the true required rate of return for the Company. If the Commission sets the allowed return equal to the true required return, it will allow the company to maintain its financial integrity and satisfy the claims of its investors. On the other hand, if the Commission sets the allowed rate of return higher than the true required return, it arguably results in an inappropriate transfer of wealth from ratepayers to shareholders. According to Dr. Morin:

[7] A. Lawrence Kolbe, James A. Read, Jr. & George R. Hall, *The Cost of Capital: Estimating the Rate of Return for Public Utilities* 21 (The MIT Press 1984).

> [I]f the allowed rate of return is greater than the cost of capital, capital investments are undertaken and investors' opportunity costs are more than achieved. Any excess earnings over and above those required to service debt capital accrue to the equity holders, and the stock price increases. In this case, the wealth transfer occurs from ratepayers to shareholders.[8]

While it is true that setting the allowed return above the true required return would result in an excess transfer of wealth from ratepayers to shareholders, the Supreme Court does not specifically dictate that the allowed return be set equal to the true required return. Instead, the law allows the Commission to establish a rate of return within a range of reasonableness – one that balances the interests of ratepayers and shareholders.[9] The best starting point for assessing a reasonable range for the allowed return, however, is assessing the true required return on equity, which is what the models I have employed in this case are designed to do.

GENERAL CONCEPTS AND METHODOLOGY

Q. Discuss the general concept of the cost of capital.

A. The cost of capital for a firm refers to the weighted average cost of all types of securities issued by the firm, including debt and equity. Determining the cost of debt is relatively straight-forward. Interest payments on bonds are contractual, "embedded costs" that are basically calculated by dividing total interest payments by the book value of outstanding debt. Determining the cost of equity, on the other hand, is more complex. Unlike the known, contractual cost for fixed debt securities, there is no explicit "cost" of common equity. The "return" on equity is *ex post* – it is not known until after the prior claims of

[8] Roger A. Morin, *New Regulatory Finance* 23-24 (Public Utilities Reports, Inc. 2006) (1994).

[9] *See* Kolbe *supra* n. 7, at 21.

bondholders have been satisfied. While the "return" on equity is *ex post*, the "cost" of equity, or the required return of stockholders, is *ex ante* – it must be estimated before a firm commences a capital project so it can be sure the project will generate enough cash flow to satisfy the required return of its investors.[10] To determine the appropriate cost of equity capital, firms estimate the return their equity investors will demand in exchange for giving up their opportunity to invest in other securities or postponing their own consumption, all while assuming some level of risk that they will realize a negative return on their investment. Once firms estimate the required return on equity, they can calculate their overall weighted average cost of capital ("WACC"), which includes the cost of debt. Competitive firms use their WACC as the discount rate to determine the value of capital projects. The basic WACC equation used in regulatory proceedings is presented below:[11]

Equation 1:
Weighted Average Cost of Capital

$$WACC = \left(\frac{D}{D+E}\right)C_D + \left(\frac{E}{D+E}\right)C_E$$

where: $WACC$ = *weighted average cost of capital*
D = *book value of debt*
C_D = *embedded cost of debt capital*
E = *book value of equity*
C_E = *market-based cost of equity capital*

[10] *See* David C. Parcell, *The Cost of Capital – A Practitioner's Guide* 9-10 (Society of Utility and Regulatory Financial Analysts 2010);

[11] *See* Morin *supra* n. 8, at 449-450. The traditional practice uses current market returns and market values of the company's outstanding securities to compute the WACC, but in the ratemaking context, analysts usually employ a hybrid computation consisting of embedded costs of debt from the utilities books, and a market-based cost of equity. Additionally, the traditional WACC equation usually accounts for the tax shield provided by debt, but taxes are accounted for separately in the ratemaking revenue requirement.

As discussed above, the cost of equity (C_E) is one of the primary contentious issue in rate cases, and will be the subject of most of my remaining testimony. In addition, the Commission must also determine the appropriate capital structure, which is comprised of the debt ratio (D/(D+E)), and the equity ratio (E/(D+E)). Throughout my testimony, the phrase "cost of capital" means the weighted average cost of capital, which includes both debt and equity.

Q. Discuss your general approach in estimating the cost of equity in this case.

A. While a competitive firm must estimate its own cost of capital to assess the profitability capital projects, regulators must estimate a utility's cost of capital to determine a fair rate of return. The legal standards set forth above do not include specific guidelines regarding the models that must be used to estimate the cost of equity. Over the years, however, regulatory commissions have consistently relied on several models. The models I have employed in this case have been widely used and accepted in regulatory proceedings for many years. These models include: 1) Discounted Cash Flow Model; 2) Capital Asset Pricing Model; and 3) Comparable Earnings Model. The specific inputs and calculations for these models are described in more detail in their respective sections of the testimony.

Q. Explain why you used multiple models to estimate the cost of equity.

A. The models used to estimate the cost of equity attempt to measure the required return of equity investors by estimating a number of different inputs. It is preferable to use multiple models because the results of any one model may contain a degree of inconsistency, especially depending on the reliability of the inputs used at the time of conducting the model. By using multiple models, the analyst can compare the results of the models and

look for outlying results and inconsistencies. Likewise, if multiple models produce a similar result, it may indicate a more narrow range for the allowed rate of return.[12]

THE PROXY GROUP

Q. Explain the benefits of choosing a proxy group of companies in conducting cost of capital analyses.

A. The cost of equity models in this case can be used to estimate the cost of capital of any individual, publicly-traded company. There are advantages, however, to conducting cost of capital analysis on a "proxy group" of companies that are comparable to the target company. First, it is better to assess the financial soundness of a utility by comparing it a group of other financially sound utilities. Second, using a proxy group provides more reliability and confidence in the overall results because there is a larger sample size. Finally, the use of a proxy group is often a pure necessity when the target company is a subsidiary that is not publicly traded, as is the case with PSO. This is because the financial models used in this case require information from publicly-traded firms, such as stock prices and dividends.

Q. Describe your criteria for the proxy group selection

A. For the proxy group, I chose 22 publicly traded companies identified by Value Line Investment Survey as electric utilities. Additional criteria for the proxy group are as follows:

[12] *See* Morin *supra* n. 8, at 28.

1. At least 70 percent of revenues from electric sales;
2. An investment grade long-term bond rating by Moody's;[13]
3. A Value Line safety rank of "3" or better;[14]
4. A Value Line financial strength grade of "B" or better.[15]

The Value Line safety ranks and financial strength grades, along with the Moody's bond rating, provide good indications of a company's financial strength. If the target utility is financially healthy as is the case here, it is important to compare it to a group of other financially healthy utilities.

RISK AND RETURN CONCEPTS

Q. Discuss the general relationship between risk and return.

A. According to the Supreme Court, risk is among the most important factors for the Commission to consider when determining the allowed return. In order to comply with this standard, it is necessary to understand the relationship between risk and return. There is a direct relationship between risk and return: the more (less) risk an investor assumes, the larger (smaller) return the investor will demand. There are two primary types of risk

[13] A minimum long-term rating of Baa3 is considered "investment grade" by Moody's. *See Rating Symbols & Definitions* 6 (Moody's Investor Service, August 2015), available at https://www.moodys.com/sites/products/AboutMoodysRatingsAttachments/MoodysRatingsSymbolsand%20Definitions.pdf (accessed 10-2-15).

[14] The Value Line Safety Rank is a measurement of relative potential risk associated with individual common stocks. The safety rank is computed by averaging two other value line indexes the price stability index and the financial strength rating. Safety ranks range from 1 (highest) to 5 (lowest). See Value Line Glossary at http://www.valueline.com/Glossary/Glossary.aspx (accessed August 31, 2015).

[15] Value Line Investment Survey's Financial Strength grade is a measure of a company's financial condition, and is reported on a scale of A++ (highest) to C (lowest). The largest companies with the strongest balance sheets get the highest scores. See "How to Read a Value Line Report, p. 4, http://www3.valueline.com/pdf/The_In-Depth_Guide_to_Reading_a_Value_Line_Research_Report.pdf (accessed August 31, 2015).

that affect equity investors: firm-specific risk and market risk. Firm-specific risk affects individual firms, while market risk affects all companies in the market to varying degrees.

Q. Discuss the differences between firm-specific risk and market risk.

A. Firm-specific risk affects individual companies, rather than the entire market. For example, a competitive firm might overestimate customer demand for a new product, resulting in reduced sales revenue. This is an example of project risk.[16] There are several other types of firm-specific risks, including: 1) financial risk – the risk that equity investors of leveraged firms face as residual claimants on earnings; 2) default risk – the risk that a firm will default on its debt securities; and 3) business risk – which encompasses all other operating and managerial factors that may result in investors realizing less than their expected return in that particular company. While firm-specific risk affects individual companies, market risk affects all companies in the market to varying degrees. Examples of market risk include interest rate risk, inflation risk, and the risk of major socio-economic events. When there are changes in these risk factors, it affects all firms in the market.[17]

Q. Firm-specific risk is diversifiable.

A. Yes. One of the fundamental concepts in finance is that firm-specific risk can be eliminated through diversification.[18] If someone irrationally invested their entire funds in one firm, they would be exposed to all of the firm-specific risk and the market risk inherent in that single firm. Rational investors, however, are risk-averse and seek to eliminate risk they

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[16] Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 62-63 (3rd ed., John Wiley & Sons, Inc. 2012).

[17] *See* Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 149 (9th ed., McGraw-Hill/Irwin 2013).

[18] *See* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 179-80 (3rd ed., South Western Cengage Learning 2010).

can control. Investors can eliminate firm-specific risk by simply adding more stocks to their portfolio through a process called "diversification." There are two reasons why diversification eliminates firm-specific risk. First, each stock in a diversified portfolio represents a much smaller percentage of the overall portfolio than it would in a portfolio of just one or a few stocks. Thus, any firm-specific action that changes the stock price of one stock in the diversified portfolio will have only a small impact on the entire portfolio.[19] For example, an investor who had their entire portfolio invested in Enron stock at the beginning of 2001 would have lost their entire investment by the end of the year. That investor would have irrationally exposed themselves to the entire, firm-specific risk of Enron's imprudent management. On the other hand, a rational, diversified investor who owned every stock in the S&P 500 would have actually earned a positive return over the same period of time. The second reason why diversification eliminates firm-specific risk is that the effects of firm-specific actions on stock prices can be either positive or negative for each stock. Thus, in large portfolios, the net effect of these positive and negative firm-specific risk factors will be essentially zero and will not affect the value of the overall portfolio.[20] Firm-specific risk is also called "diversifiable risk" due to the fact that it can be easily eliminated through diversification.

Q. Because firm-specific risk can be easily eliminated through diversification, it is not rewarded by the market through higher returns.

A. Yes. Because investors eliminate firm-specific risk through diversification, they know they cannot expect a higher return for assuming the firm-specific risk in any one company.

[19] *See* Damodaran *supra* n. 15, at 64.

[20] *Id*.

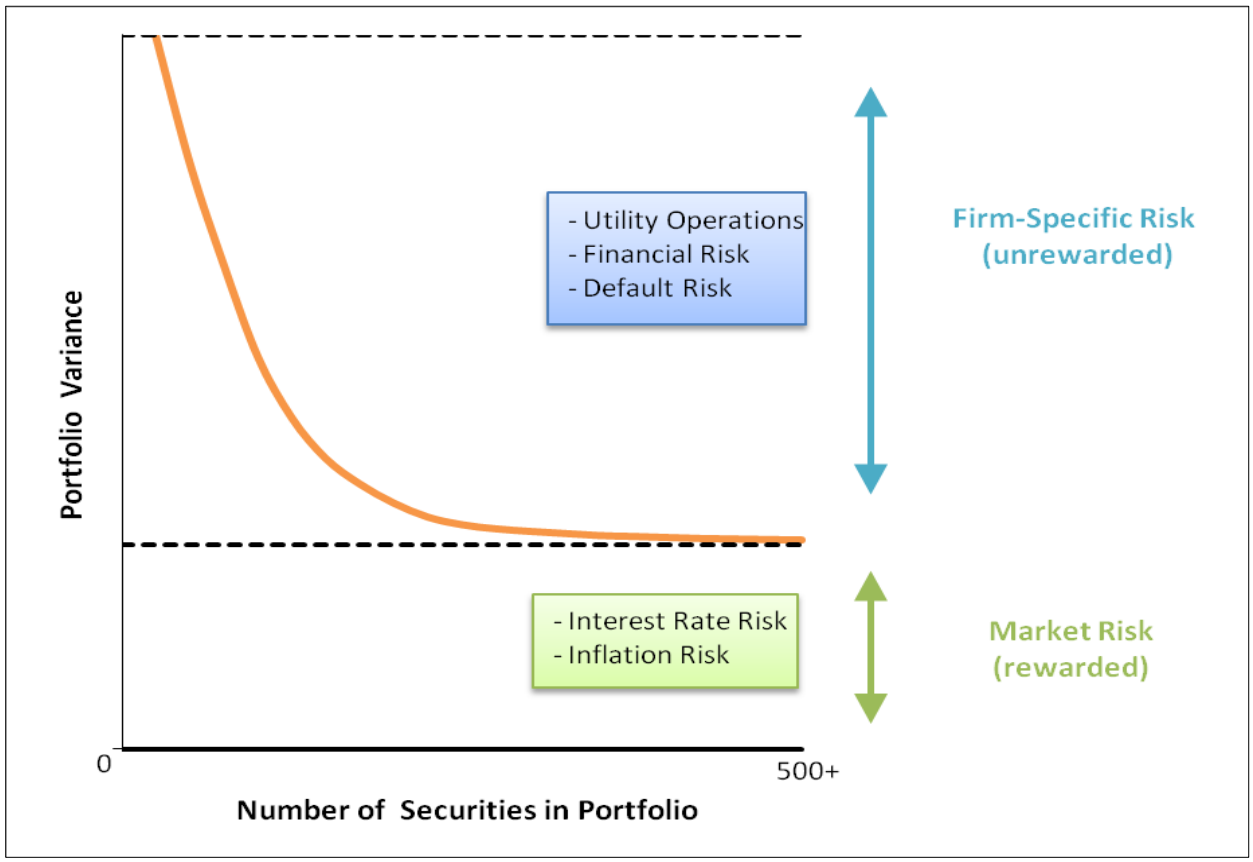
Thus, the risks associated with an individual firm's operations, as well as managerial risk and default risk are not rewarded by the market. In fact, firm-specific risk is also called "unrewarded" risk for this reason. Market risk, on the other hand, cannot be eliminated through diversification. Market risks, such as interest rate risk and inflation risk, affect all stocks in the market to different degrees. Because market risk cannot be eliminated through diversification, investors who assume higher levels of market risk also expect higher returns. Market risk is also called "systematic risk." Scholars agree:

> If investors can cheaply eliminate some risks through diversification, then we should not expect a security to earn higher returns for risks that can be eliminated through diversification. Investors can expect compensation only for bearing systematic risk (i.e., risk that cannot be diversified away).[21]

These important concepts are illustrated in the figure below.

[21] *See* Graham, Smart & Megginson *supra* n. 17, at 180 (emphasis added).

Figure 2:
Effects of Portfolio Diversification



This figure shows that as stocks are added to a portfolio, the amount of firm-specific risk is reduced until it is essentially eliminated. No matter how many stocks are added, however, there remains a certain level of fixed market risk. The level of market risk will vary from firm to firm. Market risk is the only type of risk that is rewarded by the market, and is thus the primary type of risk the Commission should consider when determining the allowed return.

Q. Since only market risk is considered when estimating the cost of equity, describe how market risk is measured.

A. Investors who want to eliminate firm-specific risk must hold a fully diversified portfolio. To determine the amount of risk that a single stock adds to the overall market portfolio,

investors measure the covariance between a single stock and the market portfolio. The result of this calculation is called "beta."[22] Beta represents the sensitivity of a given security to the market as a whole. The market portfolio of all stocks has a beta equal to one. Stocks with betas greater than one are relatively more sensitive to market risk than the average stock. For example, if the market increases (decreases) by 1.0 percent, a stock with a beta of 1.5 will, on average, increase (decrease) by 1.5 percent. In contrast, stocks with betas of less than one are less sensitive to market risk. For example, if the market increases (decreases) by 1.0 percent, a stock with a beta of 0.5 will, on average, only increase (decrease) by 0.5 percent. Thus, stocks with low betas are relatively insulated from market conditions. The beta term is used in the Capital Asset Pricing Model to estimate the required return on equity, which is discussed in more detail later.

Q. Public utilities are defensive firms that have low betas, low market risk, and are relatively insulated from overall market conditions.

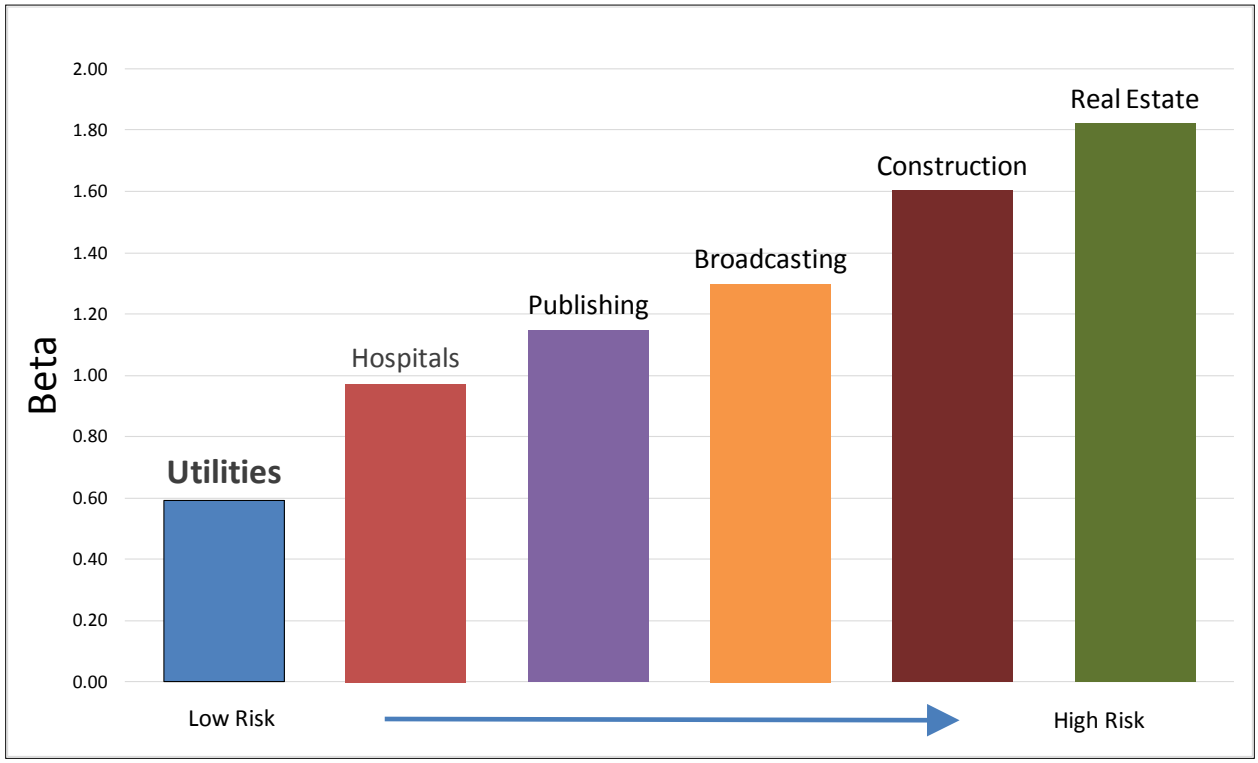
A. Yes. Recall that although market risk affects all firms in the market, it affects firms to varying degrees. Firms with high betas are affected more than firms with low betas, which is why firms with high betas are more risky. Stocks with betas greater than one are generally known as "cyclical stocks." Firms in cyclical industries are sensitive to recurring patterns of recession and recovery known as the "business cycle."[23] Thus, cyclical firms are exposed to a greater level of market risk. Securities with betas less than one, other the other hand, are known as "defensive stocks." Companies in defensive industries, such as public utility companies, "will have low betas and performance that is comparatively

[22] *Id*. at 180-81.

[23] *See* Bodie, Kane & Marcus *supra* n. 16, at 382.

unaffected by overall market conditions."[24] The figure below compares the betas of several industries and illustrates that the utility industry is one of the least risky industries in the U.S. market.[25]

Figure 3:
Beta by Industry



The fact that utilities are defensive firms that are exposed to little market risk is beneficial to society. When the business cycle enters a recession, consumers can be assured that their utility companies will be able to maintain normal business operations, and utility investors can be confident that utility stock prices will not widely fluctuate. So while it is preferable that utilities are defensive firms that experience little market risk and are relatively

[24] *Id*. at 383.

[25] *See* Betas by Sector (US) at http://pages.stern.nyu.edu/~adamodar/. The exact beta calculations are not as important as illustrating the well-known fact that utilities are very low-risk companies.

insulated from market conditions, this fact should also be appropriately reflected in the Commission's allowed return.

Q. Investors in firms with low betas require a smaller return than the average required return on the market.

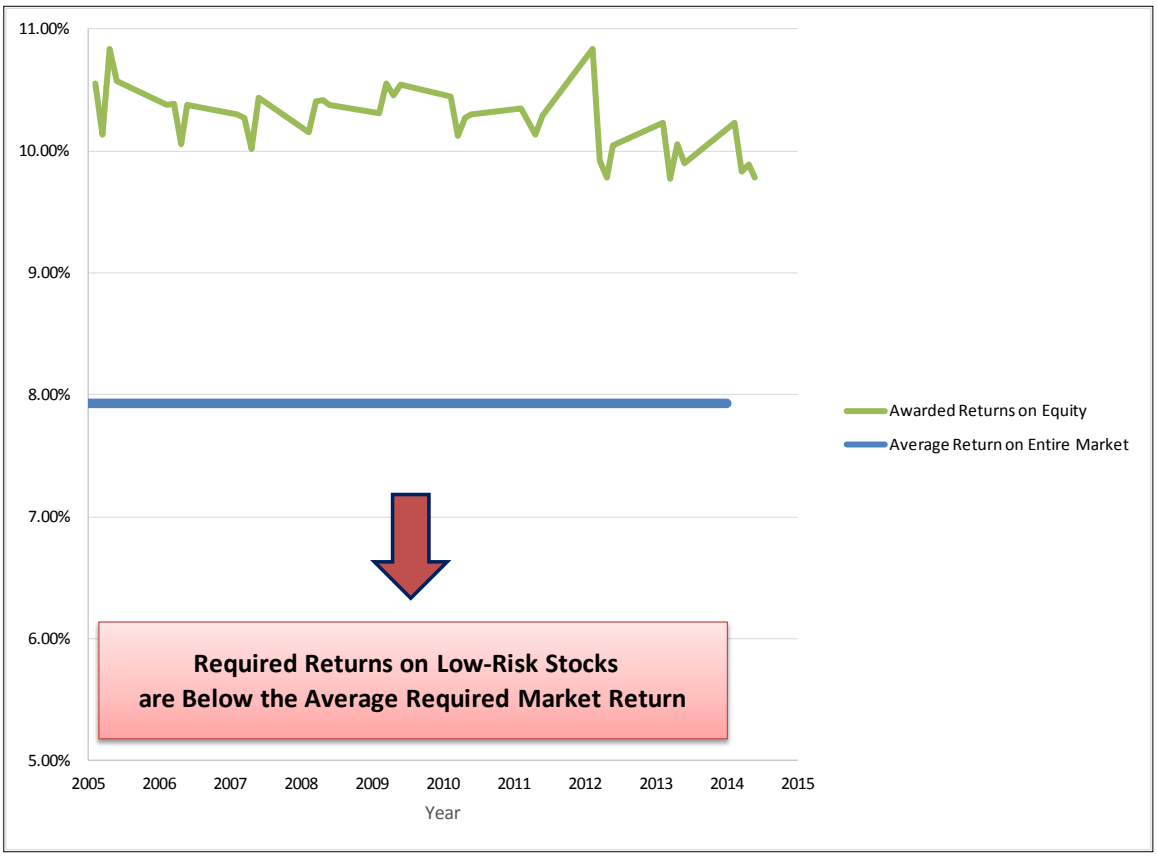
A. Yes. This is the basic concept of the risk and return doctrine: The more (less) risk an investor assumes, the larger (smaller) return the investor will demand. So, if a particular stock is less risky than the market average, then an investor in that stock will require a smaller return than the average return on the market. Since utilities are low-risk companies with low betas, the required return for utilities is lower than the required return on the overall market.

Q. Commission-awarded returns on equity have exceeded the average return on the market over the last ten years.

A. Yes. Although it is indisputable that the true required return on utility stocks must generally be less than the required return on the overall market, the commission-awarded returns on equity have actually exceeded the overall market return over the past ten years. The following figure illustrates these results.[26]

[26] *See* Exhibit DG-C-16.

Figure 4:
Awarded Returns on Equity vs. Average Market Return (2005 – 2014)



As shown in this figure, the average return on the entire market, which includes very high-risk stocks, has been only eight percent over the past ten years. Although the required return on low risk stocks such as utility stocks has been generally less than eight percent over the same time period, commission-awarded returns on equity have been around 10 percent – much higher than utilities' true required return. There are several potential explanations why awarded returns have exceeded true required returns over the past ten years. First, many "awarded" returns arise from settlements. Settled returns are generally higher than true required returns because utilities are likely to make other concessions in exchange for reporting a higher return to their shareholders. Second, utilities' expert witnesses have apparently done an effective job advocating for their clients. While this

Commission has the opportunity to hear from several other highly qualified witnesses in this proceeding, this may not be the case in every proceeding. Third, many years ago utilities' required returns may have actually been close to ten percent. In 2000, the Treasury bond rate was more than twice the rate it is today.[27] As interest rates have declined over the years, perhaps regulators have been slow to adapt to the economic realities that result in lower required returns. Finally, it is possible that regulators tend to take a conservative approach when determining the allowed rate of return and rely too heavily on the recent returns awarded by other commissions around the country. Simply taking an average of awarded returns around the country is not an appropriate way to assess a fair rate of return for a regulated utility as it arguably does not comply with the Supreme Court's standards and generally prevents awarded returns from changing to reflect current economic and financial conditions. Regardless of the reason, however, it is abundantly clear that awarded returns have exceeded required returns. When awarded returns exceed required returns, it arguably results in an inappropriate transfer of wealth from ratepayers to shareholders. Moving the allowed return closer to the required return in this case will comply with the Supreme Court's standards, allow the Company to remain financially healthy, and reduce the inappropriate transfer of excess wealth to shareholders.

[27] U.S. Department of Treasury Resource Center. http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield.

DISCOUNTED CASH FLOW ANALYSIS

Q. Generally describe the Discounted Cash Flow model.

A. The Discounted Cash Flow ("DCF") Model is based on a fundamental financial model called the "dividend discount model," which maintains that the value of a security is equal to the present value of the future cash flows it generates.[28] Cash flows from common stock are paid to investors in the form of dividends. There are several variations of the DCF Model. In its most general form, the DCF Model is expressed as follows:[29]

Equation 2:
General Discounted Cash Flow

$$P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \cdots + \frac{D_n}{(1+k)^n}$$

where: P_0 = *current stock price*
$D_1 \ldots D_n$ = *expected future dividends*
k = *discount rate / required return*

The General DCF Model would require an estimation of an infinite stream of dividends. Since this would be impractical, analysts use more feasible variations of the General DCF Model, which are discussed further below.

Q. All DCF Models rely on several underlying assumptions.

A. Yes. The DCF Models rely on the following four assumptions:[30]

[28] *See* Parcell *supra* n. 10, at 134.

[29] *See* Bodie, Kane & Marcus *supra* n. 16, at 410.

[30] *See* Morin *supra* n. 8, at 252.

1. Investors evaluate common stocks in the classical valuation framework; that is, they trade securities rationally at prices reflecting their perceptions of value;

2. Investors discount the expected cash flows at the same rate (K) in every future period;

3. The K obtained from the DCF equation corresponds to that specific stream of future cash flows alone; and

4. Dividends, rather than earnings, constitute the source of value.

Q. Describe the Constant Growth DCF Model.

A. The General DCF can be rearranged to make it more practical for estimating the cost of equity. Regulators typically rely on some variation of the Constant Growth DCF Model, which is expressed as follows:[31]

Equation 3:
Constant Growth Discounted Cash Flow

$$K = \frac{D_1}{P_0} + g$$

where: K = *discount rate / required return on equity*
D_1 = *expected dividend per share one year from now*
P_0 = *current stock price*
g = *expected growth rate of future dividends*

Unlike the General DCF Model, the Constant Growth DCF Model solves directly for the required return (K). In addition, by assuming that dividends grow at a constant rate, the dividend stream from the General DCF Model may be essentially substituted with a term representing the expected constant growth rate of future dividends (g). The Constant Growth DCF Model may be considered in two parts. The first part is the dividend yield

[31] *See* Parcell *supra* n. 10, at 124-26.

(D_1/P_0), and the second part is the growth rate (g). In other words, the required return in the DCF Model is equivalent to the dividend yield plus the growth rate.

Q. Utilization of the Constant Growth DCF Model requires additional assumptions.

A. Yes. In addition to the four assumptions listed above, the Constant Growth DCF Model relies on five additional assumptions as follows:[32]

1. The discount rate (K) must exceed the growth rate (g);
2. The dividend growth rate (g) is constant in every year to infinity;
3. Investors require the same return (K) in every year; and
4. There is no external financing; that is, growth is provided only by the retention of earnings.

Since the growth rate is assumed to be constant, it is important not to use growth rates that are unreasonably high.

Q. Describe the Quarterly Approximation DCF Model.

A. The basic form of the Constant Growth DCF Model described above is sometimes referred to as the "Annual" DCF Model. This is because the model assumes an annual dividend payment to be paid at the end of every year, as well as an increase in dividends once each year. In reality, however, most utilities pay dividends on a quarterly basis. The Constant Growth DCF equation may be modified to reflect the assumption that investors receive successive quarterly dividends and reinvest them throughout the year at the discount rate. This variation is called the Quarterly Approximation DCF Model.[33]

[32] *See* Morin *supra* n. 8, at 254-56.

[33] *See* Morin *supra* n. 8, at 348.

Equation 4:
Quarterly Approximation Discounted Cash Flow

$$K = \left[\frac{d_0(1+g)^{1/4}}{P_0} + (1+g)^{1/4}\right]^4 - 1$$

where: K = *discount rate / required return*
d_0 = *current quarterly dividend per share*
P_0 = *stock price*
g = *expected growth rate of future dividends*

The Quarterly Approximation DCF Model assumes that dividends are paid quarterly and that each dividend is constant for four consecutive quarters. All else held constant, this model actually results in the highest cost of equity estimate for the utility in comparison to other DCF Models because it accounts for the quarterly compounding of dividends. There are several other variations of the Constant Growth (or Annual) DCF Model, including a Semi-Annual DCF Model which is used by the Federal Energy Regulatory Commission ("FERC"). These models, along with the Quarterly Approximation DCF Model, have been accepted in regulatory proceedings as useful tools for estimating the cost of equity. For this case, I have chosen to use the Quarterly Approximation DCF Model described above.

Q. Describe the inputs of the DCF Model.

A. There are three primary inputs in the DCF Model: stock price (P_0), current dividend (d_0), and the growth rate (g). The stock prices and dividends are known inputs based on recorded data, while the growth rate projection must be estimated. I will discuss each of these inputs in turn.

Stock Price

$$\left(K = \frac{D_1}{P_0} + g\right)$$

Q. Describe how you determined the stock price input of the DCF Model.

A. For the stock price (P_0), I used a one-month average of stock prices for each company in the proxy group.[34] Analysts sometimes rely on average stock prices for longer periods (e.g., 60, 90, or 180 days). According to the efficient market hypothesis, however, markets reflect all relevant information available at a particular time, and prices adjust instantaneously to the arrival of new information.[35] Past stock prices, in essence, reflect outdated information. The DCF Model used in utility rate cases is a derivation of the dividend discount model, which is used to determine the current value of an asset. Thus, according to the dividend discount model and the efficient market hypothesis, the value for the "P_0" term in the DCF Model should technically be the current stock price, rather than an average.

Q. Explain why you used a 30-day average for the current stock price input.

A. Using a short-term average of stock prices for the current stock price input adheres to market efficiency principles which avoiding any irregularities that may arise from using a single current stock price. In the context of a utility rate proceeding there is a significant length of time from when an application is filed and responsive testimony is due. Choosing

[34] *See* Exhibit DG-C-4.

[35] *See* Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, Vol. 25, No. 2 The Journal of Finance 383 (1970); *see also* Graham, Smart & Megginson *supra* n. 17, at 357. The efficient market hypothesis was formally presented by Eugene Fama in 1970, and is a cornerstone of modern financial theory and practice.

a current stock price for one particular day during that time could raise a separate issue concerning which day was chosen to be used in the analysis. In addition, a single stock price on a particular day may be unusually high or low. It is arguably ill-advised to use a single stock price in a model that is ultimately used to set rates for several years, especially if a stock is experiencing some volatility. Thus, it is preferable to use a short-term average of stock prices, which represents a good balance between adhering to well-established concepts of market efficiency, and avoiding any irregularities that may arise from using a single stock price on a given day. The stock prices I used in my DCF analysis are one-month averages of adjusted closing stock prices for each company in the proxy group.[36]

Current Dividend

$$\left(K = \frac{D_1}{P_0} + g\right)$$

Q. Describe how you determined the dividend input of the DCF Model.

A. The dividend term in the Quarterly Approximation DCF Model is the current quarterly dividend per share. I obtained the quarterly dividend paid in the second quarter of 2015 for each proxy company.[37] The Quarterly Approximation DCF Model assumes that the company increases its dividend payments each quarter. Thus, the model assumes that each quarterly dividend is greater than the previous one by $(1 + g)^{0.25}$. This expression could be

[36] Exhibit DG-C-4. Adjusted closing prices, rather than actual closing prices, are ideal for analyzing historical stock prices. The adjusted price provides an accurate representation of the firm's equity value beyond the mere market price because it accounts for stock splits and dividends.

[37] Nasdaq Dividend History, http://www.nasdaq.com/quotes/dividend-history.aspx (accessed July 9, 2015).

describe as the dividend quarterly growth rate, where the term "g" is the growth rate and the exponential term "0.25" signifies one quarter of the year.

Q. The Quarterly Approximation DCF Model results in the highest cost of equity relative to other DCF Models, all else held constant.

A. Yes. The DCF Model I employed in this case results in a higher DCF cost of equity estimate than the annual or semi-annual DCF Models due to the quarterly compounding of dividends inherent in the model. In fact, the final result of the DCF Model I used is over 300 basis points higher than the result produced by the annual DCF Model.[38]

Growth Rate

$$\left(K = \frac{D_1}{P_0} + g\right)$$

Q. Describe how you determined the growth rate input of the DCF Model.

A. While the stock price and dividend inputs of the DCF Model are known figures that can be obtained, the growth rate must be estimated. For this reason, the growth rate is usually the most contested term of the DCF Model. I used three reasonable methods to estimate the growth rate for each proxy company: 1) historical dividend growth; 2) projected earnings growth; and 3) fundamental growth. I will discuss each method in turn.

1. Historical Dividend Growth

Historical growth rates in dividends, earnings, and book value can be reasonable ways to estimate future growth, especially for utility companies. This is because utilities tend to have stable earnings and pay dividends in a consistent manner. One primary advantage of

[38] *See* Exhibit DG-C-7.

using historical data is that it is known; it essentially does not need to be estimated. In my DCF Model, I obtained historical dividend growth over the last five years for each proxy company. While it would not be unreasonable to use historic earnings or book value, the "DCF theory states clearly that it is expected future cash flows in the form of dividends that constitute investment value."[39] Thus, it makes sense to consider actual dividend growth when estimating the growth rate in the DCF Model.

2. Projected Earnings Growth

In addition to considering historic dividend growth, I also considered projected earnings growth. Since the ability to pay dividends stems from a company's ability to generate earnings, we should expect earnings growth to have an influence on dividend growth.[40] One potential drawback of using earnings growth is that earnings tend to be much more volatile than dividends. Thus, analysts should be cautious when using projected earnings growth to ensure that the inputs are reasonable. In my DCF Model, I considered the projected earnings for each proxy company.[41]

3. Fundamental Growth

Young, high-growth companies tend to retain a relatively larger portion of their earnings rather than paying it back to shareholders in the form of dividends. This is because the shareholders of these high-growth firms would rather the firm reinvest their earnings in projects that have the ability to earn high returns and generate capital gains. In contrast to these high-growth firms, utilities are older, low-growth firms. In fact, the average age of

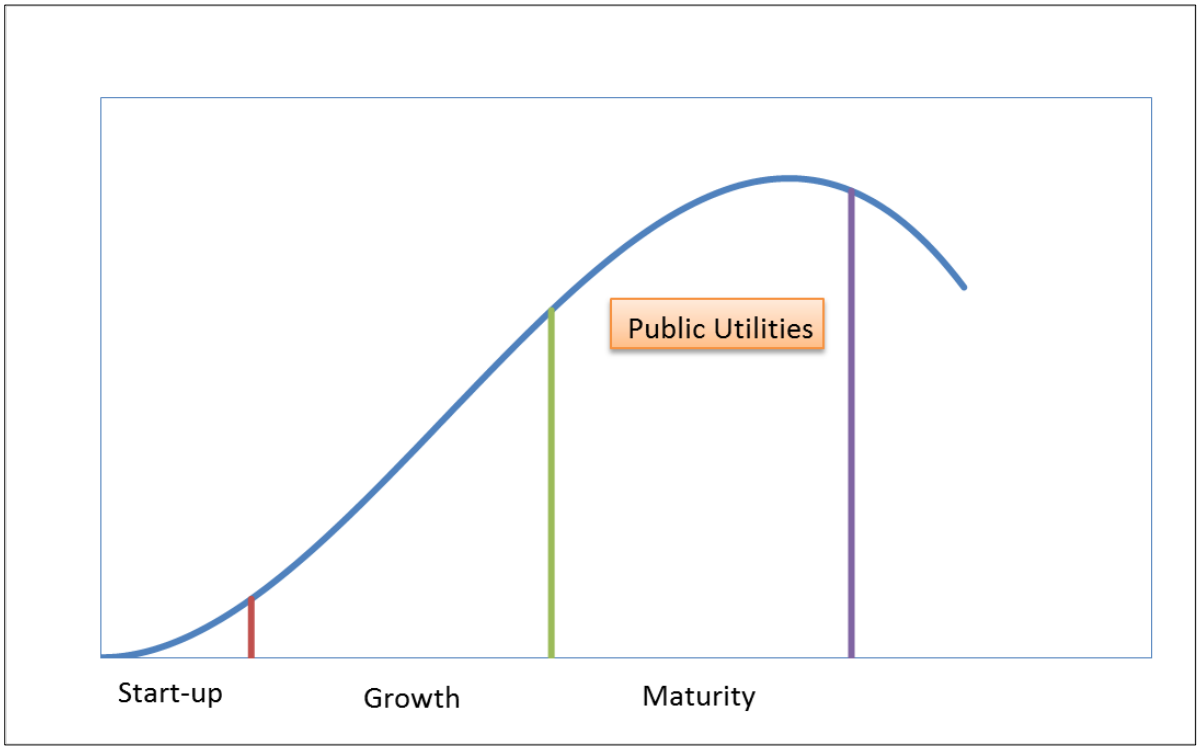
[39] Morin *supra* n. 8, at 284.

[40] *See id.*

[41] Exhibit DG-C-6.

the proxy group of utilities in this case is over 100 years old.[42] Utility shareholders would rather receive relatively higher dividend compensation.[43] The figure below illustrates the well-known business / industry life-cycle pattern.

Figure 5:
Industry Life Cycle



In an industry's early stages, there are ample opportunities for growth and profitable reinvestment. In the maturity stage, growth opportunities diminish, and firms choose to pay out a larger portion of their earnings in the form of dividends. The portion of earnings that are paid out as dividends can be measured through the payout ratio.

[42] Exhibit DG-C-3.

[43] *See generally* Bodie, Kane & Marcus *supra* n. 16, at 416-17.

Equation 5:
Payout Ratio

$$Payout\ Ratio = \frac{Dividends\ per\ Share}{Earnings\ per\ Share}$$

The counterpart of the payout ratio is called the retention or "plowback" ratio. This ratio is used to measure the remaining portion of a firm's earnings that it retains.

Equation 6:
Retention Ratio

$$Retention\ Ratio = 1 - Payout\ Ratio$$

Analysts can use the retention ratio along with a firm's return on equity to get a good indication of its growth rate. In fact, the "simplest relationship determining growth is one based on the retention ratio and the return on equity on [the firm's] projects."[44] The equation for the fundamental growth rate is as follows:

Equation 7:
Fundamental Growth Rate

$$Fundamental\ Growth\ Rate = Return\ on\ Equity\ x\ Retention\ Ratio$$

It is well known that utilities have relatively low growth rates. In fact, when explaining the concept of growth, financial textbooks will sometimes use utilities as examples of low-growth firms and contrast them with high-growth firms of other industries.[45] I calculated the fundamental growth rate for each proxy company over the last five years, and averaged

[44] *See* Damodaran *supra* n. 15, at 285.

[45] *See id*. at 286 (Dr. Damodaran contrasts the low growth rate of Consolidated Edison with the higher growth rates of Proctor & Gamble and Intel; *see also* Bodie, Kane & Marcus *supra* n. 16, at 416-17 (The authors contrast a group of electric utilities with low growth rates and high payout ratios with a group of computer software firms with high growth rates and low payout ratios).

the results with the historical dividend growth and projected earnings growth discussed above.[46]

Q. Describe the final results of your DCF Model.

A. I used the Quarterly Approximation DCF Model to estimate the cost of capital for each proxy company. The inputs of the DCF Model for each proxy company included a 30-day average of stock prices for the current stock price, the dividends reported in the second quarter of 2015, and an average of three reasonable methods for determining the growth rate. The average DCF result of the proxy companies using the Quarterly Approximation DCF Model is 7.96 percent, which is the result I considered in my final cost of capital recommendation, along with the results of the other models.

CAPITAL ASSET PRICING MODEL ANALYSIS

Q. Describe the Capital Asset Pricing Model.

A. The Capital Asset Pricing Model ("CAPM") is a market-based model founded on the principle that investors demand higher returns for incurring additional risk.[47] The CAPM estimates this required return.

Q. Discuss the assumptions inherent in the CAPM.

A. The CAPM relies on the following assumptions:

1. Investors are rational, risk-adverse, and strive to maximize profit and terminal wealth;

[46] Exhibit DG-C-5.

[47] William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963); *see also* Graham, Smart & Megginson *supra* n. 17, at 208.

2. Investors make choices on the basis of risk and return. Return is measured by the mean returns expected from a portfolio of assets; risk is measured by the variance of these portfolio returns;

3. Investors have homogenous expectations of risk and return;

4. Investors have identical time horizons;

5. Information is freely and simultaneously available to investors.

6. There is a risk-free asset, and investors can borrow and lend unlimited amounts at the risk-free rate;

7. There are no taxes, transaction costs, restrictions on selling short, or other market imperfections; and,

8. Total asset quality is fixed, and all assets are marketable and divisible.[48]

While some of these assumptions may appear to be restrictive, they do not outweigh the inherent value of the model. The CAPM has been widely used by firms, analysts, and regulators for decades to estimate the cost of equity capital.

Q. The CAPM promotes the legal standards set forth by the U.S. Supreme Court.

A. Yes. The CAPM directly considers the amount of risk inherent in an individual company. According to the Supreme Court, "the amount of risk in the business is a most important factor" in determining the appropriate allowed rate of return.[49] The Court also held that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."[50] The CAPM is arguably the strongest of the three models presented in this case, because it is the only model that directly measures the most important component of a fair rate of return analysis: Risk.

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[48] *See id.*

[49] *Wilcox*, 212 U.S. at 48 (emphasis added).

[50] *Hope Natural Gas Co.*, 320 U.S. at 603 (emphasis added).

Q. Describe the CAPM equation.

A. The basic CAPM equation is expressed as follows:

Equation 8:
Capital Asset Pricing Model

$$K = R_F + \beta_i(R_M - R_F)$$

where: K = *required return*
R_F = *risk-free rate*
β = *beta coefficient of asset i*
R_M = *required return on the overall market*

There are essentially three terms within the CAPM equation that are required to calculate the required return (K): 1) the risk-free rate (R_F); 2) the beta coefficient (β); and 3) the market risk premium ($R_M - R_F$), which is the required return on the overall market less the risk-free rate. Each term is discussed in more detail below, along with the inputs I used for each term.

The Risk-Free Rate

$$\left(K = R_F + \beta_i(R_M - R_F)\right)$$

Q. Describe the risk-free rate.

A. The first term in the CAPM is the risk-free rate (R_F). The risk-free rate is simply the level of return investors can achieve without assuming any risk. The risk-free rate represents the bare minimum return that any investor would require on a risky asset. Even though no investment is technically void of risk, investors often use U.S. Treasury securities to represent the risk-free rate because they accept that those securities essentially contain no default risk. The Treasury issues securities with different maturities, including short-term Treasury Bills, intermediate-term Treasury Notes, and long-term Treasury Bonds.

Q. It is preferable to use the yield on long-term Treasury bonds for the risk-free rate in the CAPM.

A. Yes. In valuing an asset, investors estimate cash flows over long periods of time. Common stock is viewed as a long-term investment, and the cash flows from dividends are assumed to last indefinitely. Thus, short-term Treasury bill yields are rarely used in the CAPM to represent the risk-free rate. Short-term rates are subject to greater volatility and can thus lead to unreliable estimates. Instead, long-term Treasury bonds are usually used to represent the risk-free rate in the CAPM.[51] I considered a 30-day average of daily Treasury yield curve rates on 30-year Treasury bonds in my risk-free rate estimate, which resulted in a risk-free rate of 3.09 percent.[52]

The Beta Coefficient

$$\left(K = R_F + \beta_i(R_M - R_F)\right)$$

Q. Describe the beta coefficient.

A. As discussed above, beta represents the sensitivity of a given security to movements in the overall market (or the "market portfolio"). The CAPM states that in efficient capital markets, the expected risk premium on each investment is proportional to its beta. Recall that a security with a beta greater (less) than one is more (less) risky than the market portfolio. A stock's beta equals the covariance of the asset's returns with the returns on a market portfolio, divided by the portfolio's variance, as expressed in the following formula:[53]

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[51] *See* Morin *supra* n. 8, at 150.

[52] Exhibit DG-C-8.

[53] Graham, Smart & Megginson *supra* n. 17, at 180-81.

Equation 9:
Beta

$$\beta_i = \frac{\sigma_{im}}{\sigma_m^2}$$

where: β_i = *beta of asset i*
σ_{im} = *covariance of asset i returns with market portfolio returns*
σ^2_m = *variance of market portfolio*

Typically, an index such as the S&P 500 Index is used as proxy for the market portfolio. The historical betas for publicly traded firms are published by several commercial sources.[54] Beta may also be calculated through a linear regression analysis, which provides additional statistical information about the relationship between a single stock and the market portfolio.

Q. Describe how you calculated the raw betas for the proxy companies and the results of your analysis.

A. To calculate the betas for each proxy company, I obtained weekly returns over a five year period for each proxy company as well as weekly returns for the S&P 500 over the same time period.[55] I then conducted a regression analysis for each proxy company using the individual stock returns as the dependent variable and the S&P 500 returns as the independent variable. Commercial analysts calculate raw betas in a similar fashion. Value Line, for example, calculates beta from a regression analysis using weekly returns for the NYSE Composite Index over a five year period.[56] The slope of the linear regression lines

[54] E.g., Value Line, Bloomberg, and Merrill Lynch.

[55] Exhibit DG-C-9.

[56] Value Line, Using Beta, http://www.valueline.com/Tools/Educational_Articles/Stocks/Using_Beta.aspx (accessed June 17, 2015).

produced by my regression analysis are the betas for each proxy company.[57] The betas for each proxy company were positive, and less than one. This indicates that when the stock market moved up or down, the stock prices for each proxy utility also moved in the same direction, but to a lesser extent. This makes sense because public utilities are defensive firms that are relatively insulated from aggregate changes in market conditions.

Q. Describe the adjustments you made to the betas obtained through your regression analyses.

A. The betas obtained through my regression analyses are considered "raw" betas. There is considerable empirical evidence that raw betas should be adjusted to account for beta's natural tendency to revert to an underlying mean.[58] Some analysts use an adjustment method proposed by Blume, which adjusts raw betas toward the market mean of one.[59] While the Blume adjustment method is popular due to its simplicity, it is arguably arbitrary, and some would say not useful at all. According to Dr. Damodaran: "While we agree with the notion that betas move toward 1.0 over time, the [Blume adjustment] strikes us as arbitrary and not particularly useful."[60] The Blume adjustment method is especially arbitrary when applied to industries with consistently low betas, such as the utility industry. For industries with consistently low betas, it is better to employ an adjustment method that adjusts raw betas toward an industry average, rather than the market average. Vasicek proposed such a method, which is preferable to the Blume adjustment method because it

[57] Exhibit DG-C-10.

[58] *See* Michael J. Gombola and Douglas R. Kahl, *Time-Series Processes of Utility Betas: Implications for Forecasting Systematic Risk* 84-92 (Financial Management Autumn 1990).

[59] See Marshall Blume, *On the Assessment of Risk*, Vol. 26, No. 1 The Journal of Finance 1 (1971).

[60] Damodaran *supra* n. 15, at 187.

allows raw betas to be adjusted toward an industry average, and also accounts for the statistical accuracy of the raw beta calculation. In other words, "[t]he Vasicek adjustment seeks to overcome one weakness of the Blume model by not applying the same adjustment to every security; rather, a security-specific adjustment is made depending on the statistical quality of the regression."[61] The Vasicek beta adjustment equation expressed is as follows:

Equation 10:
Vasicek Beta Adjustment

$$\beta_{i1} = \frac{\sigma^2_{\beta i0}}{\sigma^2_{\beta 0} + \sigma^2_{\beta_{i0}}}\beta_0 + \frac{\sigma^2_{\beta 0}}{\sigma^2_{\beta 0} + \sigma^2_{\beta_{i0}}}\beta_{i0}$$

where: β_{i1} = *Vasicek adjusted beta for security i*
β_{i0} = *historical beta for security i*
β_0 = *beta of industry or proxy group*
$\sigma^2_{\beta 0}$ = *variance of betas in the industry or proxy group*
$\sigma^2_{\beta i0}$ = *square of standard error of the historical beta for security i*

The Vasicek beta adjustment is an improvement on the Blume model because the Vasicek model does not apply the same adjustment to every security. A higher standard error produced by the regression analysis indicates a lower statistical significance of the beta estimate. Thus, a beta with a high standard error should receive a greater adjustment than a beta with a low standard error. As stated in Ibbotson:

[61] 2012 Ibbotson Stocks, Bonds, Bills, and Inflation Valuation Yearbook 77-78 (Morningstar 2012).

> While the Vasicek formula looks intimidating, it is really quite simple. The adjusted beta for a company is a weighted average of the company's historical beta and the beta of the market, industry, or peer group. How much weight is given to the company and historical beta depends on the statistical significance of the company beta statistic. If a company beta has a low standard error, then it will have a higher weighting in the Vasicek formula. If a company beta has a high standard error, then it will have lower weighting in the Vasicek formula. An advantage of this adjustment methodology is that it does not force an adjustment to the market as a whole. Instead, the adjustment can be toward an industry or some other peer group. This is most useful in looking at companies in industries that on average have high or low betas.[62]

Thus, the Vasicek adjustment method is statistically more accurate, and is the preferred method to use when analyzing companies in an industry that has inherently low betas, such as the utility industry. The Vasicek method was also confirmed by Gombola, who conducted a study specifically related to utility companies. Gombola concluded that "[t]he strong evidence of auto-regressive tendencies in utility betas lends support to the application of adjustment procedures such as the . . . adjustment procedure presented by Vasicek."[63] Gombola concluded that adjusting raw betas toward the market mean of one is too high, and that "[i]nstead, they should be adjusted toward a value that is less than one."[64] Thus, the Vasicek adjustment method is ideal for adjusting raw utility betas. Although I used the Vasicek method to adjust the raw betas I calculated for each proxy company, I also considered the arbitrarily high betas published by Value Line in my final CAPM result.[65]

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[62] *Id*. at 78 (emphasis added).

[63] Gombola *supra* n. 57, at 92 (emphasis added).

[64] *Id*. at 91-92.

[65] *See* Exhibit DG-C-14.

The Equity Risk Premium

$$\left(K = R_F + \beta_i(R_M - R_F)\right)$$

Q. Describe the equity risk premium.

A. The final term of the CAPM is the equity risk premium ("ERP"), which is the required return on the market portfolio less the risk-free rate ($R_M - R_F$). In other words, the ERP is the level of return investors expect above the risk-free rate in exchange for investing in risky securities. Many experts would agree that "the single most important variable for making investment decisions is the equity risk premium."[66] Not only is the ERP the most important and influential factor in the CAPM equation, it is arguably one of the most important factors in estimating the cost of capital in this proceeding. There are three well-known, reasonable, and widely-recognized ways to estimate the ERP: 1) calculating a historical average; 2) taking a survey of experts; and 3) calculating the implied equity risk premium. I incorporated each one of these methods in determining the ERP used in my CAPM analysis. I will discuss each method in turn.

1. HISTORICAL AVERAGE

Q. Describe the historical equity risk premium.

A. The historical ERP may be calculated by simply taking the difference between returns on stocks and returns on government bonds over a certain period of time. Ibbotson, the most widely cited source for the ERP in the U.S.,[67] reports both the geometric mean and

[66] Elroy Dimson, Paul Marsh & Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns* 4 (Princeton University Press 2002).

[67] *Id*. at 173.

arithmetic mean for the returns of stocks and government bonds in its annual yearbooks.[68] Many practitioners rely on the historical ERP as an estimate for the forward-looking ERP because it is easy to obtain. There are three important factors to consider when estimating the historic ERP: 1) the period of time; 2) the choice of the risk-free rate; and 3) whether to use geometric or arithmetic averages. I will discuss each of these factors in turn.

Q. It is preferable to use longer time periods when calculating the historic ERP.

A. Yes. Calculating returns over longer time periods is preferable because the results produce a smaller standard error, and are thus more reliable.[69] Using at least 50 years of data is ideal. I have considered returns from 1926 – 2014 in my historic ERP estimate.[70]

Q. The rate on long-term Treasury bonds should be used as the risk-free rate.

A. Yes. In corporate finance and valuation, the rate on long-term Treasury bonds is typically used as the risk-free rate,[71] and as discussed above, short-term Treasury bill yields are rarely used in the CAPM to represent the risk-free rate because they are subject to greater volatility and can lead to unreliable estimates. I have considered the difference between returns on stocks and returns on long-term government bonds in my historic ERP estimate.[72]

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[68] 2015 Ibbotson Stocks, Bonds, Bills, and Inflation Classic Yearbook 91 (Morningstar 2015).

[69] Damodaran *supra* n. 15, at 162.

[70] Exhibit DG-C-13.

[71] Damodaran *supra* n. 15, at 162.

[72] Exhibit DG-C-13.

Q. It is better to use the geometric average rather than the arithmetic average when looking at historical returns over time.

A. Yes. While some scholars argue for the use of arithmetic averages,[73] it is better to use the geometric average for estimating historical returns.[74] Evidence suggests that stocks are negatively correlated (i.e., good years are more likely to be followed by poor years, and vice versa), and thus the arithmetic average tends to overstate the true ERP.[75] When returns are volatile, the arithmetic average can produce dubious results. This concept is demonstrated in the following simple example. Suppose an investor made a $100 investment and had a positive return of 100 percent in the first year. Now the investor has $200 in her portfolio. During the second year, however, the investor experienced a negative 50 percent return. Now the investor has $100 in her portfolio. After two years the investor is back where she began with $100 in her portfolio – an overall return of zero percent. The arithmetic average, however, would indicate the investor experience a positive annual return of 25 percent:

$$r_A = \frac{1}{2}(100\% - 50\%) = 25\%$$

A 25 percent return, however, is clearly not an accurate representation of what actually happened. The geometric average, on the other hand, would indicate that the investor experienced a zero percent annual return:

$$r_G = \left[\frac{\$100}{\$100}\right]^{\frac{1}{2}} - 1 = 0.0\%$$

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[73] *See e.g.*, Morin *supra* n. 8, at 116-17.

[74] *See* Damodaran *supra* n. 15, at 163.

[75] *Id.*

Since the investor experienced no gain or loss by the end of the second year, the geometric mean is a more accurate representation of the investor's actual return. Indeed, the arithmetic average may be more appropriate in other circumstances. The geometric average, however, is more appropriate when measuring returns over a long time horizon, which is what is done when calculating the historic ERP. Although the geometric average is arguably more appropriate when looking at the historic ERP, I have also considered both the higher arithmetic average in my historic ERP calculation.[76]

Q. Describe the actual results of the historic ERP analysis.

A. According to Ibbotson, the historic ERP using the geometric average is 4.4 percent, while the historic ERP using the arithmetic average is 6.0 percent.[77] The average of these two numbers is 5.2 percent, which is the figure I used in my historic ERP estimate.[78]

Q. Describe the limitations of relying solely on a historical average to estimate the forward-looking ERP.

A. Many investors use the historic ERP because it is convenient and easy to calculate. What matters in the CAPM model, however, is not the actual risk premium from the past, but rather the expected risk premium looking forward.[79] Some investors may think that a historic ERP provides some indication of what the prospective risk premium is, but there is empirical evidence to suggest the prospective, forward-looking ERP is actually lower than the historical ERP. In a landmark publication on risk premiums around the world,

[76] Exhibit DG-C-13.

[77] Ibbotson *supra* n. 67, at 91.

[78] Exhibit DG-C-13.

[79] Graham, Smart & Megginson *supra* n. 17, at 330.

Triumph of the Optimists, the authors suggest through extensive empirical research that the prospective ERP is lower than the historical ERP.[80] This is due in large part to what is known as "survivorship bias" or "success bias" – a tendency for failed companies to be excluded from historical indices.[81] From their extensive analysis, the authors make the following conclusion regarding the prospective ERP:

> The result is a forward-looking, geometric mean risk premium for the United States . . . of around 2½ to 4 percent and an arithmetic mean risk premium . . . that falls within a range from a little below 4 to a little above 5 percent.[82]

Indeed, these results are lower than the historical returns reported in Ibbotson. Dr. Damodaran agrees:

> The historical risk premium obtained by looking at U.S. data is biased upwards because of survivor bias . . . . The true premium, it is argued, is much lower. This view is backed up by a study of large equity markets over the twentieth century (*Triumph of the Optimists*), which concluded that the historical risk premium is closer to 4%.[83]

Regardless of the variations in historic ERP estimates, many scholars and practitioners agree that simply relying on a historic ERP to estimate the risk premium going forward is not ideal. Fortunately, "a naïve reliance on long-run historical averages is not the only approach for estimating the expected risk premium."[84]

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[80] Dimson, Marsh & Staunton *supra* n. 65.

[81] *Id*. at 34.

[82] *Id*. at 194.

[83] Aswath Damodaran, *Equity Risk Premiums: Determinants, Estimation and Implications – The 2015 Edition* 17 (New York University 2015).

[84] Graham, Smart & Megginson *supra* n. 17, at 330.

2. EXPERT SURVEYS

Q. Describe the expert survey approach to estimating the ERP.

A. As its name implies, the expert survey approach to estimating the ERP involves conducting a survey of experts ranging from professors, analysts, chief financial officers (CFO) and other executives around the country and asking them what they think the expected ERP is. Graham and Harvey have performed such a survey every quarter since 1996. In their survey during the first quarter of 2015, they found that experts around the country believe that the current risk premium is only 4.51 percent.[85] The IESE Business School conducts a similar expert survey. Their expert survey reported an average ERP of only 5.5 percent.[86] Averaging the ERP results from both surveys provides a very reasonable ERP of 5.0 percent.[87]

3. IMPLIED EQUITY RISK PREMIUM

Q. Describe the implied equity risk premium.

A. The third method of estimating the ERP is arguably the best. The implied ERP relies on the stable growth model proposed by Gordon, often called the "Gordon Growth Model," which is a basic stock valuation model widely used in finance for many years:[88]

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[85] John R. Graham and Campbell R. Harvey, *The Equity Risk Premium in 2014*, at 3 (Fuqua School of Business, Duke University 2014), copy available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2611793.

[86] Pablo Fernandez, Pablo Linares & Isabel F. Acin, *Market Risk Premium used in 88 Countries in 2014: A Survey with 8,228 Answers*, at 3 (IESE Business School 2015), copy available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2598104

[87] Exhibit DG-C-13.

[88] Myron J. Gordon and Eli Shapiro, *Capital Equipment Analysis: The Required Rate of Profit* 102-10 (Management Science Vol. 3, No. 1 Oct. 1956).

Equation 11:
Gordon Growth Model

$$P_0 = \frac{D_1}{K - g}$$

where: P_0 = *current value of stock*
D_1 = *value of next year's dividend*
K = *cost of equity capital / discount rate*
g = *constant growth rate in perpetuity for dividends*

This model is similar to the Constant Growth DCF Model presented in Equation 3 above ($K=D_1/P_0+g$). In fact, the underlying concept in both models is the same: The current value of an asset is equal to the present value of its future cash flows. Instead of using this model to determine the discount rate of one company, we can use it to determine the discount rate for the entire market by substituting the inputs of the model. Specifically, instead of using the current stock price (P_0), we will use the current value of the S&P 500 (V_{500}). Instead of using the dividends of a single firm, we will consider the dividends paid by the entire market. Additionally, we should consider potential dividends. In other words, stock buybacks should be considered in addition to paid dividends, as stock buybacks represent another way for the firm to transfer free cash flow to shareholders. Focusing on dividends alone without considering stock buybacks could understate the cash flow component of the model, and ultimately understate the implied ERP. The market dividend yield plus the market buyback yield gives us the gross cash yield to use as our cash flow in the numerator of the discount model. This gross cash yield is increased each year over the next five years by the growth rate. These cash flows must be discounted to determine their present value. The discount rate in the denominators are the risk-free rate (R_F) plus the discount rate (K).

The following formula shows how the implied return is calculated. Since the current value of the S&P is known, we can solve for K: The implied market return.[89]

Equation 12:
Implied Market Return

$$V_{500} = \frac{CY_1(1+g)^1}{(1+R_F+K)^1} + \frac{CY_2(1+g)^2}{(1+R_F+K)^2} + \cdots + \frac{CY_5(1+g)^5 + TV}{(1+R_F+K)^5}$$

where: V_{500} = *current value of index (S&P 500)*
$CY_{1\text{-}5}$ = *average cash yield over last five years (includes dividends and buybacks)*
g = *compound growth rate in earnings over last five years*
R_F = *risk-free rate*
K = *implied market return (this is what we are solving for)*
TV = *terminal value* $= CY_5 (1+R_F) / K$

The discount rate is called the "implied" return here because it is based on the current value of the index as well as the value of free cash flow to investors projected over the next five years. Thus, based on these inputs, the market is "implying" the expected return. After solving for the implied market return (K), we simply subtract the risk-free rate from it to arrive at the implied ERP.

Equation 13:
Implied Equity Risk Premium

$$Implied\ Expected\ Market\ Return - R_F = Implied\ ERP$$

Q. Discuss the results of your implied ERP calculation.

A. After collecting data for the index value, operating earnings, dividends, and buybacks for the S&P 500 over the past five years, I calculated the dividend yield, buyback yield, and gross cash yield for each year.[90] I also calculated the compound annual growth rate (g)

[89] *See* Exhibit DG-C-12 for detailed calculation.

[90] *Id*.

from operating earnings. I used these inputs, along with the risk-free rate and current value of the index to calculate a current expected return on the entire market of 8.91 percent. I subtracted the risk-free rate of 3.09 percent to arrive at the implied equity risk premium of 5.82 percent. Dr. Damodaran, one of the world's leading experts on the ERP, also uses the implied ERP method discussed above. He calculates an implied ERP every year and publishes his findings. According to Dr. Damodaran, the implied ERP for 2014 was 5.78 percent.[91] Thus, my equity risk premium estimate is slightly higher than Dr. Damodaran's estimate.

Q. Discuss the results of your final ERP estimate.

A. PUD's ERP estimate is higher than Ibbotson's historical average, higher than the average results from both expert surveys, and higher than the implied ERP estimated by Dr. Damodaran. In determining the final ERP to use for the CAPM model, I took a weighted average of each of the three sources of the equity risk premium: historical, survey, and implied. I applied weights to each method in accordance with my judgment on the value of each method as follows:[92]

[91] Damodaran *supra* n. 82, at 120.

[92] Exhibit DG-C-13.

Figure 6:
Recommended Equity Risk Premium

Source	ERP	Weight Factor	Weighted Result
Average Historic ERP	5.20%	0.1	0.52%
Average Survey ERP	5.01%	0.3	1.50%
Average Implied ERP	5.80%	0.6	3.48%
Total		1.0	**5.50%**

While it would not be unreasonable to use any of these methods by themselves to estimate the ERP, it is more prudent to consider each method, and as a matter of principle, the methods are not equal in value. As shown in this figure, I gave the greatest weighting to the implied ERP method (0.6), because it is the most fundamentally sound. Incidentally, it is also the highest of the three methods. The final ERP I used in my CAPM calculation is 5.5 percent.[93]

Q. Describe the final results of your CAPM analysis.

A. Using the inputs for the risk-free rate, beta coefficient, and equity risk premium discussed above, I calculated the CAPM cost of equity for each proxy company. The average CAPM cost of equity is 6.54 percent.[94] This is the rate I considered in my final cost of equity analysis.[95] The CAPM may be displayed graphically through what is known as the Security Market Line ("SML"). The following figure shows the expected return (cost of equity) on the y-axis, and the average beta for the proxy group on the x-axis. The SML

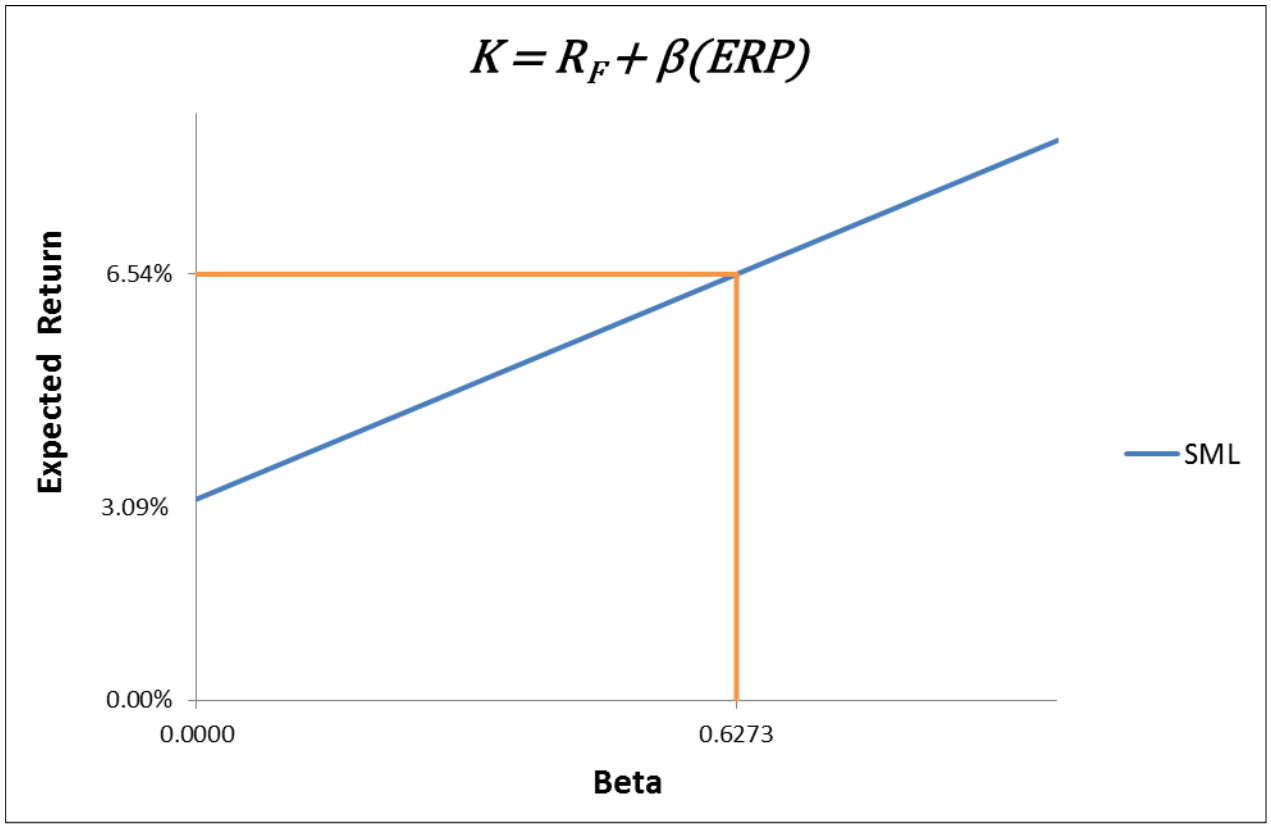
[93] Exhibit DG-C-13.

[94] Exhibit DG-C-14.

[95] Exhibit DG-C-19.

intercepts the y-axis at the level of the risk-free rate. The slope of the SML is the equity risk premium.

Figure 7:
CAPM Graph



The SML provides the required rate of return that will compensate investors for the beta risk of that investment. Thus, at a beta of 0.627, the required return for PSO is 6.54 percent.

COMPARABLE EARNINGS ANALYSIS

Q. Describe the Comparable Earnings Model.

A. In contrast to the DCF and CAPM models, which are "market-based" models, the Comparable Earnings Model ("CEM") is an "accounting-based" model. That is, the CEM relies on available accounting data, particularly the return earned on book equity. The CEM involves simply averaging the earned returns on equity of other utility companies.

Q. It is more appropriate to conduct the Comparable Earnings Model on a group of competitive firms, rather than a group of regulated utilities.

A. Yes. In utility rate cases, analysts often perform the CEM on the same proxy group of regulated utilities used in the CAPM and DCF analyses. Technically, however, it would be much better to conduct this analysis on a group of unregulated, competitive firms with similar risk profiles and business operations. The reason analysts do not conduct the CEM on such a group of comparable competitive firms is that they arguably do not exist. In other words, there is no group of firms in the country with business operations and risk profiles comparable to public utilities.[96]

Q. Discuss the rationale behind choosing competitive firms for the CEM analysis.

A. The rationale behind choosing competitive firms for the CEM analysis is that the returns on equity of regulated utilities are based on past information, and were not earned under the restraints of competition. As aptly stated by Dr. Morin:

> The historical book return on equity for regulated firms is not determined by competitive forces but instead reflects the past actions of regulatory commissions. It would be circular to set a fair return based on the past actions of other regulators, much like observing a series of duplicate images in multiple mirrors. The rates of return earned by other regulated utilities may very well have been reasonable under historical conditions, but they are still subject to tests of reasonableness under current and prospective conditions.[97]

In other words, when regulators simply look at the earned returns of other regulated utilities, they are solely considering past information, and are also looking at returns that were not earned under the constraints of competition. Regulators have a duty to stand in

[96] *See* Figure 3 above showing utility betas are among the lowest in the country.

[97] Morin *supra* n. 8, at 383.

the place of competition, and that duty cannot be adequately accomplished by simply awarding returns on equity based on the earned returns of other utilities. Thus, the results of any Comparable Earnings Model that compares the past returns of other utilities, including the one I have conducted in this case, should be considered with caution. Clearly, the CEM is the weakest of the three models presented in this case, as it does not account for any prospective, forward-looking factors (such as the growth rate in the DCF or the implied ERP in the CAPM), and it does not have any measure for risk (such as the beta term in the CAPM). I have presented the CEM here only because regulators have become familiar with seeing this model in rate cases. In textbooks and treatises on financial theory, corporate finance, and valuation, there are many models presented for valuing firms and estimating the required return on equity (including the DCF and CAPM), however, there is no mention of a "comparable earnings" method. Of course, firms are aware of their competitors' earnings, but firms do not use their competitors' earnings as a basis for calculating their own cost of equity. This is because there are far superior models available. Thus, the CEM is apparently unique to the regulatory environment, and when it is used to compare the earned returns of regulated utilities as it is here, it should be considered with caution.

Q. Describe the results of your Comparable Earnings Model.

A. In conducting my CEM analysis, I simply averaged the annual earned returns on equity for each of the proxy companies from 2005–2014. The composite average and final result of the CEM is 9.17 percent.[98]

[98] Exhibit DG-C-17.

Q. Describe some of the recent returns on equity of other competitive industries.

A. While it is infeasible to conduct the CEM on a comparable group of competitive firms because such firms are much more risky than utilities, it might nonetheless be instructive to look at some of the recent earned returns of riskier competitive firms. As discussed throughout my testimony, utilities are firms with very low levels of market risk. Therefore, the returns on equity for utility industry should generally be less than the earned returns in other industries. Currently, however, there are over 2,000 riskier firms around the country with average returns on equity that are less than utility returns.[99] The figure below illustrates a small sample of these industries:

Figure 8:
Competitive Earnings

Industry	Number of Firms	ROE
Air Transport	22	2.8%
Coal & Related Energy	42	-6.4%
Education	42	3.8%
Engineering/Construction	56	5.3%
Green & Renewable Energy	26	0.3%
Hotel/Gaming	80	5.8%
Metals & Mining	124	2.1%
Oil/Gas Production	392	6.3%
Real Estate (Development)	18	0.5%
Steel	40	-14.0%
Telecom (Wireless)	21	-4.7%

[99] Exhibit DG-C-18

While the average return on equity for the proxy utility group is 9.17 percent, the average return on equity of over 2,000 riskier firms is less than one percent.[100]

COST OF EQUITY SUMMARY

Q. Summarize the results of the three cost of equity models presented above.

A. The following table shows the cost of equity results from each of the three models I employed in this case.

Figure 9:
Cost of Equity Summary

Model	Cost of Equity
Discounted Cash Flow Model	7.96%
Capital Asset Pricing Model	6.54%
Comparable Earnings Model	9.17%
Average	**7.89%**

The average cost of equity of these models is 7.89 percent. Although taking a simple average of these three models gives far too much credit to the Comparable Earnings Model, a simple average would indicate that the required return on equity for PSO is about 7.89 percent.[101]

[100] Exhibit DG-C-18.

[101] Exhibit DG-C-19.

Q. The required return on equity for a utility must be lower than the required return on the overall market.

A. Yes. Regulators and other stakeholders who are familiar with cost of capital testimony in utility rate cases may have developed the impression that the true required return for utilities is around 10 percent. Indeed, a long time ago this may have actually been the case. Over the last decade, however, it is clear that commissions around the country have awarded returns on equity that are generally above utilities' true required return, as discussed above and illustrated in Figure 4. It should be reiterated that a regulated utility's required return on equity must generally be <u>below</u> the required return on the market portfolio. This is because utilities are far less risky than the average firm in the market, as discussed throughout my testimony. Not only do regulated utilities have betas of less than one, but they have the lowest betas of nearly every industry in the county, as illustrated in Figure 3 above. Realizing that the required return on utility stocks must be less than the required return on the overall market is useful information because it allows us to test the results of the cost of equity models presented in this case to determine their reasonableness. Before we can assess the reasonableness of the models, however, we must estimate the required return on the market portfolio.

Q. Describe the required return on the overall market portfolio.

A. I used three methods to estimate the required return on the market portfolio: 1) calculating a historical average; 2) consulting a survey of experts; and 3) calculating the implied return on the market portfolio. These methods should look familiar since they are essentially the same methods used to calculate the equity risk premium ("ERP") discussed above. Recall that the ERP is simply the required return on the market less the risk-free rate ($R_M - R_F$).

So in order to calculate the ERP, both of these factors must be estimated. The results of my estimate of the required market return are presented in the figure below.

Figure 10:
Required Market Return

Historic (last 10 years)	8.49%
IESE Survey	7.90%
Duke CFO Survey	6.63%
PUD Estimate	8.91%
Average	**7.98%**

For the historical calculation, I obtained the actual returns on the S&P 500 over the last 10 years and calculated the geometric average.[102] The IESE Survey and the Duke CFO Survey are the same two surveys I consulted for the equity risk premium.[103] According to thousands of analysts, professors, CFOs, and other experts around the country, the current required return on the market is only around 7.0 percent. Finally, I estimated the required return on the market portfolio using Equation 12 above.[104] My calculations resulted in a required market return of 8.91 percent, which is noticeably higher than the expert survey results. The average of all these methods indicate that the required return on the overall market portfolio is only 7.98 percent.

[102] Exhibit DG-C-16.

[103] *See* Fernandez *supra* n. 86, at p. 5; *see also* Graham *supra* n. 85, at p. 3.

[104] Exhibit DG-C-12 at data point [19].

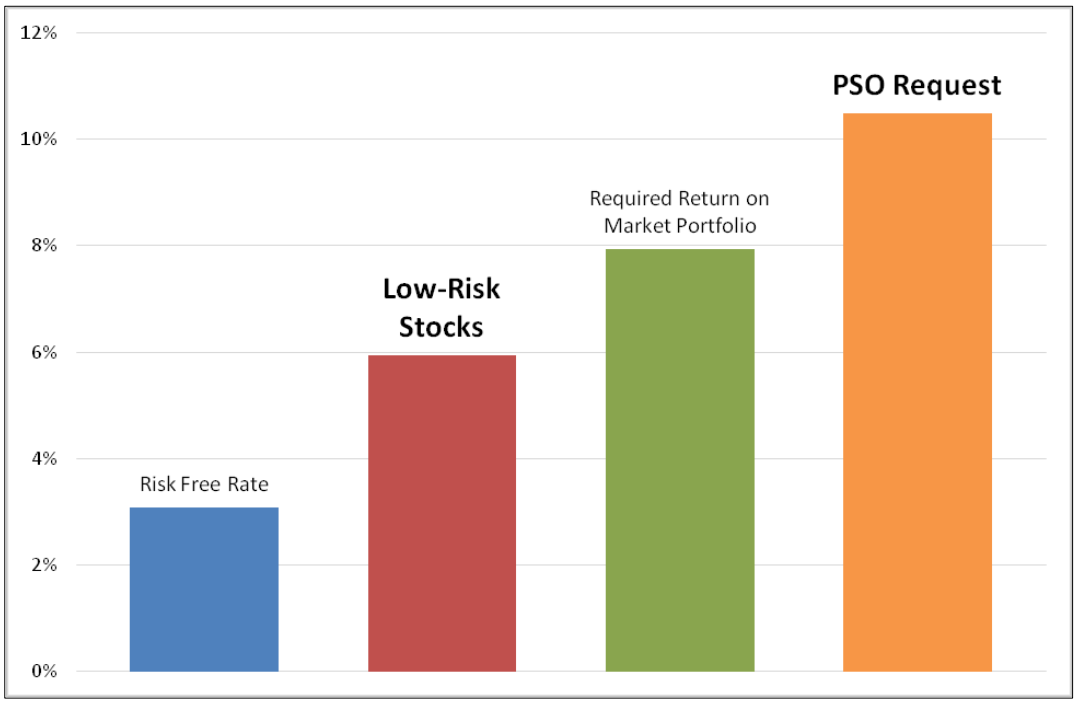
Q. The results of the average cost of equity produced by the models in this case make some sense given the expected return on the market portfolio.

A. Yes. Again, the true required return on equity for the Company must be below the required return on the market. The required return on the market is about 7.98 percent, while the average results of the three cost of equity models is 7.89 percent – only 0.04 percent lower. Although the required return on utility stocks is likely much less than only 0.04 percent below the required market return, at the very least this exercise demonstrates that the models have value, particularly the DCF and CAPM. It also provides even further indication that the results of the Comparable Earnings Model should be considered with caution. The Comparable Earnings Model produced a result of 9.17 percent, which is above the required return on the market portfolio.

Q. Compare, contrast and illustrate the required return on the market, the required return on low-risk stocks, and the required return on the market portfolio.

A. The concepts I have discussed above regarding the required return on the market and the required return on low-risk stocks such as utility stocks are illustrated in the chart below.

Figure 11:
Required Return Comparison



As shown in this chart, the required return on low-risk stocks (i.e., defensive firms with betas of less than one such as utilities) must be greater than the risk-free rate, but less than the required return on the market portfolio. The required return on the market portfolio, as discussed above, is around 8.0 percent. Therefore, the required return on low-risk stocks must be generally less than 8.0 percent. PSO's requested return on equity, however, is 10.5 percent.

Q. You considered the effects of regulatory lag in your cost of equity analysis.

A. Yes. Regulatory lag refers to the time between rate cases when fixed base rates cannot be adjusted to account for changes in costs, including the cost of capital. Regulatory lag often benefits utility companies. As discussed above, required returns on equity have been declining for many years, yet regulators have been generally slow to adapt to this economic reality. During this period of declining required returns, utilities have generally benefited

from regulatory lag with regard to commission-awarded returns. When costs increase during the period between rate cases, however, regulatory lag could potentially represent a type of firm-specific business risk for utilities. Recall that firm-specific risks are unrewarded by the market and thus do not have a material impact on a utility's cost of equity. Even if regulatory lag was a type of market risk that could be rewarded, then its effects on risk would already be accounted for in the CAPM analysis. Either way, it would be inappropriate to make an additional adjustment to the cost of equity estimation to account for the effects of regulatory lag.

COST OF DEBT

Q. Describe PSO's position regarding long-term debt financing.

A. PSO had $1,202,673,762 of long-term debt capital during the test year at a cost of 4.92 percent. The Company's cost of debt calculation is based on the yield to maturity.[105]

Q. Discuss PUD's recommendation regarding PSO's proposed cost of debt.

A. As discussed above, unlike the cost of equity, the cost of debt is based on contractual interest rates. The Company's proposed cost of debt of 4.92 percent appears to be reasonable. An efficient way to confirm the reasonableness of this cost of debt is to refer to the Bond Ratings Spreads table presented above in Figure 13. PSO's interest coverage ratio in 2014 was 3.46,[106] and according to the spread table, its "synthetic" bond rating is A3. (In fact, Moody's issued a credit opinion in February of 2015 for PSO and gave the Company a rating of A3, which further confirms the accuracy of the Bond Ratings Spreads

[105] WP F-3 Pro Forma.

[106] Exhibit DG-C-21.

table used to determine the optimal capital structure). According to the same table, PSO's synthetic interest rate is 4.29 percent. So while PSO's proposed cost of debt rate is slightly higher than the rate suggested by the Bond Ratings Spread table, it does not appear to be unreasonable, and appears to be properly calculated using the bonds' yield to maturity. PUD recommends a pre-tax cost of debt rate of 4.92 percent as proposed by the Company.

CAPITAL STRUCTURE

Q. Generally describe the concept of capital structure.

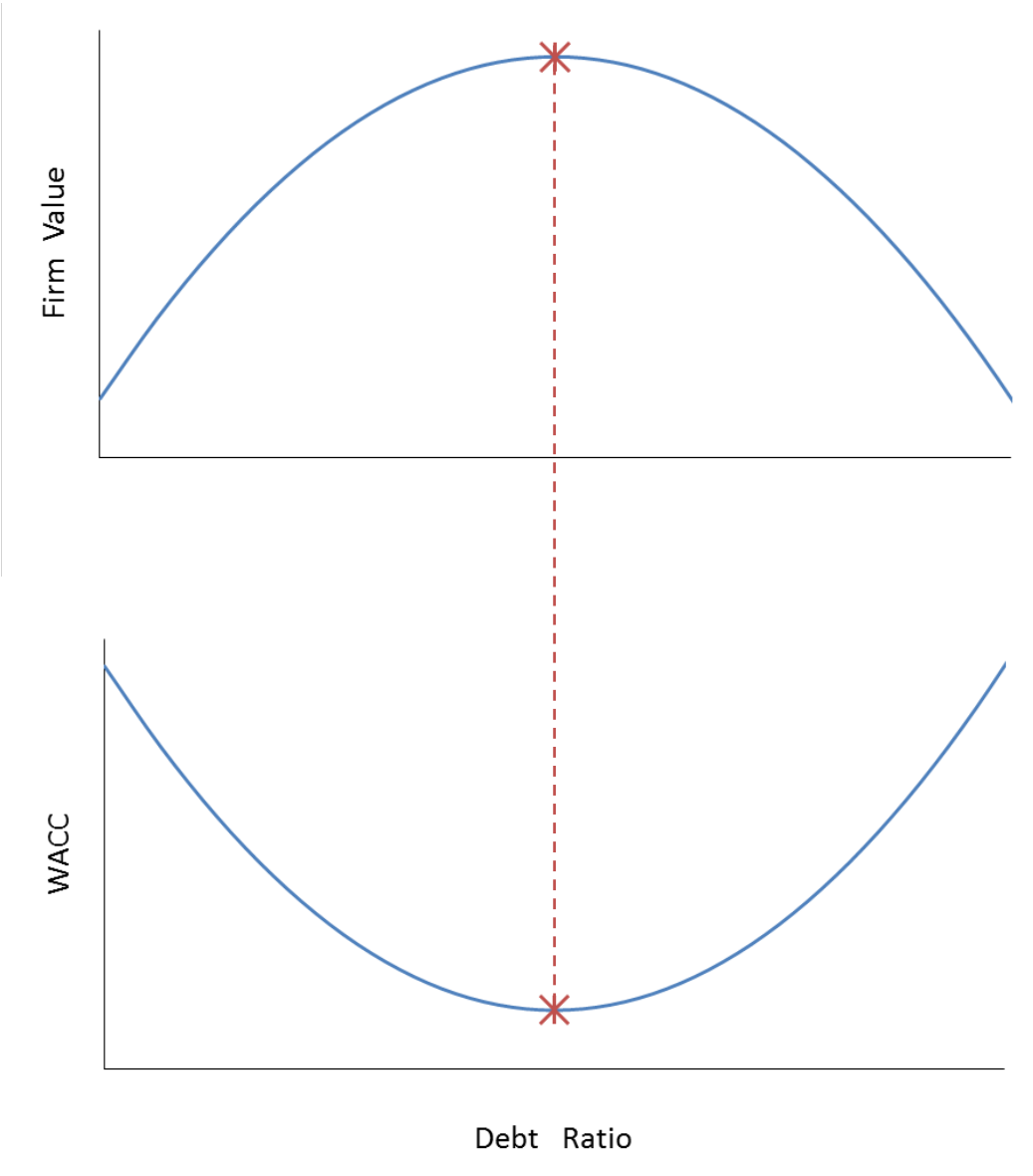
A. "Capital structure" refers to the way a firm finances its overall operations through external financing. The primary sources of long-term, external financing are debt capital and equity capital. Debt capital usually comes in the form of contractual bond issues that require the firm make payments, while equity capital represents an ownership interest in the form of stock. Because a firm cannot pay dividends on common stock until it satisfies its debt obligations to bondholders, stockholders are referred to as "residual claimants." The fact that stockholders have a lower priority to claims on company assets increases their risk and required return relative to bondholders. Thus, equity capital has a higher cost than debt capital. Firms can reduce their weighted average cost of capital ("WACC") by recapitalizing and increasing their debt financing. In addition, because interest expense is deductible, increasing debt also adds value to the firm by reducing the firm's tax obligation.

Q. By increasing debt, competitive firms can add value and reduce their WACC.

A. Yes. A competitive firm can add value by increasing debt. After a certain point, however, the marginal cost of additional debt outweighs its marginal benefit. This is because the more debt the firm uses, the higher interest expense it must pay, and the likelihood of loss

increases. This increases the risk of recovery for both bondholders and shareholders, causing both groups of investors to demand a greater return on their investment. Thus, if debt financing is too high, the firm's WACC will increase instead of decrease. The following charts illustrate these concepts.

Figure 12:
Optimal Debt Ratio



As shown in this figure, a competitive firm's value is maximized when the WACC is minimized. In both of these graphs, the debt ratio [D/(D+E)] is shown on the x-axis. By increasing its debt ratio, a competitive firm can minimize its WACC and maximize its value. At a certain point, however, the benefits of increasing debt do not outweigh the costs of the additional risks to both bondholders and shareholders, as each type of investor will demand a higher return for the additional risk they have assumed.[107]

Q. The rate base rate of return model does not incentivize utilities to operate at the optimal capital structure.

A. Yes. While it is true that competitive firms can maximize their value by minimizing their WACC, this is not the case for regulated utilities. Under the rate base rate of return model, a higher WACC results in a higher rates, all else held constant. The basic revenue requirement equation is as follows:

Equation 14:
Revenue Requirement for Regulated Utilities

$$RR = O + d + T + \boldsymbol{r}(A - D)$$

where: RR = *revenue requirement*
O = *operating expenses*
d = *depreciation expense*
T = *corporate tax*
$\boldsymbol{r}$ = ***weighted average cost of capital (WACC)***
A = *plant investments*
D = *accumulated depreciation*

As shown in this equation, utilities can increase their revenue requirement by increasing their WACC, not by minimizing it.

[107] *See* Graham, Smart & Megginson *supra* n. 17, at 440-41.

Q. Generally, utilities can afford to have higher debt levels than other industries.

A. Yes. Because regulated utilities have large amounts of fixed assets, stable earnings, and low risk relative to other industries, they can afford to have higher debt ratios (or "leverage"). As aptly stated by Dr. Damodaran:

> Since financial leverage multiplies the underlying business risk, it stands to reason that firms that have high business risk should be reluctant to take on financial leverage. It also stands to reason that firms that operate in stable businesses should be much more willing to take on financial leverage. Utilities, for instance, have historically had high debt ratios but have not had high betas, mostly because their underlying businesses have been stable and fairly predictable.[108]

Notice how Dr. Damodaran contrasts utilities with firms that have high underlying business risk. Because utilities have low levels risk and operate a stable business, they should generally operate with relatively high levels of debt to achieve their optimal capital structure. There are objective, technical methods available to estimate the optimal capital structure, which are discussed further below.

Q. Discuss the capital structure of the proxy companies.

A. I examined the capital structure for each proxy company and averaged their debt and equity ratios.[109] The average debt ratio of the proxy group is only 49 percent. Regulators will sometimes simply look at the average debt ratio of the proxy group as a measure to determine the appropriate debt ratio of the target company. This type of analysis is oversimplified and insufficient for three important reasons:

[108] Damodaran *supra* n. 15, at 196 (emphasis added).

[109] Exhibit DG-C-20.

1. Utilities do not have a financial incentive to operate at the optimal capital structure.

Under the rate base rate of return model, utilities do not have a natural financial incentive to minimize their cost of capital. Competitive firms, in contrast, can maximize their value by minimizing their cost of capital. Simply comparing the debt ratios of other regulated utilities will not indicate an appropriate capital structure. Rather, it will indicate debt ratios that are too low. It is the Commission's duty to stand in the place of competition and ensure that the Company's capital structure is similar to one that the Company would have in a competitive environment. This duty cannot be accomplished by simply looking at the current debt ratios of the proxy group or target company.

2. The optimal capital structure is unique to each firm.

As discussed further below, the optimal capital structure for a firm is dependant on several unique financial metrics for that firm. The other companies in the proxy group have different financial metrics than the target company, and thus have different optimal capital structures. An objective analysis should be performed using the financial metrics of the target utility in order to estimate its unique optimal capital structure.

3. The capital structures of the proxy group may not have been approved by their regulatory commissions.

The actual capital structure of any utility falls within the realm of managerial discretion. Regulatory commissions, however, have a duty to impute a proper capital structure if the company's actual capital structure is inappropriate. Thus, the actual capital structures of other utilities may have been deemed inappropriate by their own commission. For all of the foregoing reasons, simply comparing the capital structures of other regulated utilities has no place in a proper capital structure analysis. Instead, PUD conducted a thorough, objective, and reasonable capital structure analysis which is discussed further below.

Q. Describe an objective approach to estimating a firm's optimal capital structure.

A. My analysis of the optimal capital structure includes objective methods to measure the effects of increasing debt on both the cost of debt and cost of equity. I will discuss the affects of increasing the debt ratio on each type of security separately.

Cost of Debt

As discussed above, increasing the debt ratio will increase the cost of debt. To objectively measure how much the cost of debt increases, I considered the spreads above the risk-free rate for various levels of bond ratings and interest coverage ratios. The following table shows increasing interest rates for debt based on different bond rating levels.

Figure 13:
Bond Rating Spreads

Coverage Ratio	Bond Rating	Spread	Interest Rate
> 8.5	Aaa/AAA	0.40%	3.49%
6.5 - 8.5	Aa2/AA	0.70%	3.79%
5.5 - 6.5	A1/A+	0.90%	3.99%
4.3 - 5.5	A2/A	1.00%	4.09%
3.0 - 4.3	A3/A-	1.20%	4.29%
2.5 - 3.0	Baa2/BBB	1.75%	4.84%
2.3 - 2.5	Ba1/BB+	2.75%	5.84%
2.0 - 2.3	Ba2/BB	3.25%	6.34%
1.8 - 2.0	B1/B+	4.00%	7.09%
1.5 - 1.8	B2/B	5.00%	8.09%
1.3 - 1.5	B3/B-	6.00%	9.09%
0.8 - 1.3	Caa/CCC	7.00%	10.09%

As shown in this table, the spreads over the risk-free rate gradually increase as bond ratings fall.[110] The spread is added to the risk-free rate to obtain the interest rates shown in the far

[110] The link between interest coverage ratios and ratings was developed by looking at all rated companies in the U.S. The default spreads are obtained from traded bonds. The spreads are added to the risk-free rate to obtain the interest rates in the table. http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm (last accessed 10-13-15). Data uses is as of January 2015.

right column. This concept is somewhat comparable to the interest rate a mortgage lender would charge a borrower. The mortgage lender's advertised rate is usually the lowest rate, or "prime" rate, which is available to borrowers with stellar credit scores. As credit scores decrease, however, the offered interest rate will increase. The bond ratings in this figure are based on various levels of interest coverage ratios shown in the far left column. The interest coverage ratio, as its name implies, is a metric used by financial analysts to gauge a firm's ability to pay its interest expense from its available earnings before interest and taxes ("EBIT"). (Likewise, the mortgage lender would consider the borrower's personal income-debt ratio). The formula for the interest coverage ratio is simply:

Equation 15:
Interest Coverage Ratio

$$\frac{Earnings\ before\ Interest\ and\ Taxes}{Interest\ Expense}$$

As the debt ratio rises, the interest coverage ratio falls, the bond ratings increase, and the cost of debt increases. Now that we have an objective way of measuring how increasing the debt ratio affects the cost of debt, we need to measure how increasing the debt ratio affects the cost of equity.

Cost of Equity

As with the cost of debt, increasing the debt ratio also increases the cost of equity. To objectively measure how much the cost of equity increases, I first calculated the Company's unlevered beta. The unlevered beta is determined by the assets owned by the firm, and removes the effects of financial leverage. As leverage increases, equity investors bear increasing amounts of risk, leading to higher betas. Before the effects of financial

leverage can be accounted for, however, the effects of leverage must first be removed, which is accomplished through the unlevered beta equation:[111]

Equation 16:
Unlevered Beta

$$\beta_U = \frac{\beta_L}{\left[1 + (1 - T_c)\left(\frac{D}{E}\right)\right]}$$

where: β_U = *unlevered beta (or "asset" beta)*
β_L = *average levered beta of proxy group*
T_C = *corporate tax rate*
D = *book value of debt*
E = *book value of equity*

Using this equation, the beta for the firm can be unlevered, and then "re-levered" based on various debt ratios (by rearranging this equation to solve for β_L). So, by using the Bond Rating Spreads table and the unlevered beta equation, the costs of both debt and equity can be increased in correspondence with increasing the debt ratio, until the ideal capital structure is found: where the weighted average cost of capital is minimized.

Q. Describe PSO's optimal capital structure.

A. I analyzed the Company's optimal capital structure based on the approach discussed above. The following table presents different levels of PSO's weighted average cost of capital ("WACC") based on increasing debt ratios.

[111] Damodaran *supra* n. 15, at 197. This formula was originally developed by Hamada in 1972.

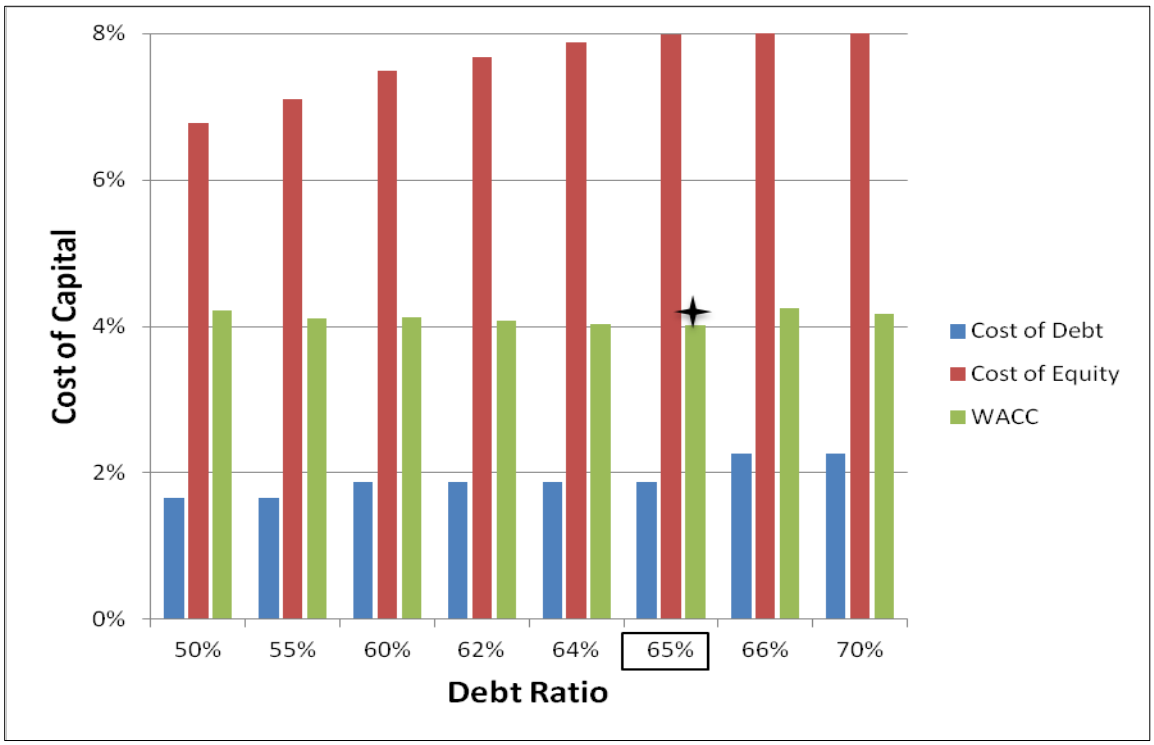
Figure 14:
PSO's WACC at Various Debt Ratios

Debt Ratio	D/E Ratio	Levered Beta	Cost of Equity	Debt Level	Interest Expense	Coverage Ratio	Pre-tax Debt Cost	After-tax Debt Cost	WACC
0%	0%	0.417	5.38%	0	0	∞	3.49%	1.35%	5.38%
50%	100%	0.672	6.79%	1,155,675	56,861	3.3	4.29%	1.66%	4.22%
55%	122%	0.729	7.10%	1,271,242	62,547	3.0	4.29%	1.66%	4.11%
60%	150%	0.800	7.49%	1,386,810	68,233	2.8	4.84%	1.87%	4.12%
62%	163%	0.834	7.67%	1,433,037	70,508	2.7	4.84%	1.87%	4.08%
64%	178%	0.871	7.88%	1,479,264	72,782	2.6	4.84%	1.87%	4.03%
65%	186%	0.891	7.99%	1,502,377	73,919	2.6	4.84%	1.87%	**4.01%**
66%	194%	0.913	8.11%	1,525,491	75,057	2.5	5.84%	2.26%	4.25%
70%	233%	1.013	8.66%	1,617,945	79,605	2.4	5.84%	2.26%	4.18%
90%	900%	2.717	18.04%	2,080,215	102,350	1.8	7.09%	2.74%	4.27%

As shown in this table, PSO's WACC decreases as debt is added until the debt ratio reaches 65 percent, after which the WACC generally increases with additional leverage. This analysis indicates that PSO's optimal capital structure consists of about 65 percent debt and 35 percent equity.[112] The following chart illustrates these findings:

[112] Exhibit DG-C-21.

Figure 15:
PSO's Optimal Capital Structure



These results further confirm the well-known concept that firms with stable earnings and low risk can minimize their cost of capital by utilizing higher amounts of debt relative to other firms. In fact, many other competitive firms in a variety of industries utilize debt ratios from 60 to 70 percent in order to maximize value for their shareholders, as shown in the following figure:[113]

[113] *See* Exhibit DG-C-22.

Figure 16:
Industries With High Debt Ratios

Industry	Number of Firms	Debt Ratio
Paper/Forest Products	22	60.2%
Telecom (Wireless)	21	61.8%
Packaging & Container	26	62.0%
Broadcasting	28	62.3%
Hotel/Gaming	80	63.4%
R.E.I.T	213	63.9%
Telecom Services	77	64.2%
Hospitals	56	65.6%
Rubber & Tires	4	66.0%
Advertising	52	66.1%
Office Equipment	25	66.4%
Auto & Truck	22	69.1%
Retail (Automotive)	30	69.2%
Cable TV	18	71.1%
Trucking	30	72.4%
Total / Average	**704**	**65.6%**

As shown in this figure, there are currently over 700 companies in the U.S. operating with debt ratios around 65 percent.[114] The industries shown here, like public utilities, are generally well-established industries with large amounts of capital assets. This, along with my technical analysis of the optimal capital structure presented above, further confirms that a debt ratio for PSO of approximately 65 percent is reasonable and well-supported.

Q. Discuss PUD's recommended capital structure for PSO.

A. PSO's actual debt ratio during the test year was about 56 percent.[115] PSO has proposed a debt ratio of 52 percent in this case, which is clearly too low given the analysis presented

[114] Exhibit DG-C-22.

[115] *See* Schedule F-01

above.[116] Because it is the Commission's duty to stand in the place of competition, the Commission should approve a capital structure coincident with one that would exist in a competitive environment. The objective analysis I presented above indicates that the Company's optimal capital structure in a competitive environment would be about 65 percent. Notwithstanding this analysis, PUD is recommending a debt ratio of only 56 percent because it represents a balance between PSO's requested debt ratio of 52 percent and the optimal debt ratio of about 65 percent. Thus, PUD recommends a capital structure for PSO consisting of 56 percent debt and 44 percent equity.

SPECIFIC RESPONSES TO PSO'S COST OF CAPITAL TESTIMONY

Q. Describe PSO's position regarding the cost of capital and capital structure.

A. Mr. Hevert recommended a return on equity in the range of 10.25 percent to 10.75 percent, with a cost of debt of 4.92 percent and a capital structure consisting of 52 percent debt and 48 percent equity.[117]

Q. Discuss your specific responses to Mr. Hevert's testimony concerning the return on equity.

A. I have organized my specific responses to Mr. Hevert's testimony by topic, including DCF Analysis, CAPM Analysis, Bond Yield Plus Risk Premium Analysis, flotation costs, and capital structure.

[116] *Id.*

[117] Direct Testimony of Robert B. Hevert p. 65.

Discounted Cash Flow Analysis

Q. Describe Mr. Hevert's position regarding the DCF Model.

A. Mr. Hevert used two forms of the DCF Model in his analysis, including the Constant Growth DCF Model and the Multi-Stage DCF Model.

Q. The results of Mr. Hevert's Constant Growth DCF Model are unreasonably high due to his high growth rate estimates.

A. Yes. The growth rate is the most important factor of the DCF Model. While I incorporated three types of growth rates in my DCF Model (historic dividend growth, projected earnings growth, and fundamental growth), Mr. Hevert used only one type of growth rate estimate – projected growth in earnings. I reiterate that the DCF Model is based on the Dividend Discount Model. One of the inherent assumptions in the Dividend Discount Model (and the DCF Model) is that dividends grow at a constant rate. Thus, it is reasonable to consider dividend growth as part of an overall growth rate estimate. By only looking projected earnings growth, Mr. Hevert not only ignored dividends in his analysis, but also ignored historical data. As Dr. Morin notes, historical growth rates are widely used by analysts and expert witnesses in rate cases because investors are influenced by historical growth rates.[118] In addition, historical growth rates in dividends can be good indicators of future growth for utilities, especially because utilities pay dividends on a consistent basis. In contrast to Mr. Hevert's approach, PUD's growth rate estimates include both historical and projected analysis, as well as a consideration of the fundamental growth rate for each proxy company, which incorporates dividends, earnings, and return on equity.

[118] *See* Morin *supra* n. 8, at 283.

Q. Mr. Hevert has proposed extremely high growth rate estimates in the past.

A. Yes. One aspect of growth rate projections is that they may be tested for accuracy in the future. In OG&E's 2011 rate case, Mr. Hevert used projected growth rate estimates in his DCF analysis and equity risk premium analysis. A review of Mr. Hevert's prior growth rate estimates reveals some alarming figures. The table below shows a sample of Mr. Hevert's projected growth rate estimates in OG&E's 2011 rate case, and contrasts them to the actual growth rates observed over the same time period.[119]

Figure 17:
Illustration of Earnings Growth Volatility

Company	Ticker	Hevert's Prior Growth Rate Estimate	Actual Growth in Earnings	Amount Overestimated
Amazon	AMZN	29%	-40%	69%
Consol Energy	CNX	47%	-6%	53%
EOG Resources Inc.	EOG	44%	10%	34%
Netflix Inc.	NFLX	30%	8%	23%
NRG Energy	NRG	25%	-32%	57%
Range Resources	RRC	29%	-3%	32%
Southwestern Energy	SWN	23%	9%	14%
Starwood Hotels & Resorts	HOT	25%	10%	15%
Textron Inc.	TXT	45%	-12%	57%
Wynn Resorts LTD	WYNN	50%	28%	23%
Average		35%	-3%	37%

[119] Exhibit DG-C-23.

I will reiterate the basic Constant Growth DCF Model, which is essentially the model that both Mr. Hevert and I used in this case:[120]

$$K = \frac{D_1}{P_0} + g$$

Again, the growth rates used in any form of the DCF Model are supposed to represent long-term future growth of dividends. Recall two of basic assumptions of the DCF Model: 1) the discount rate (K) must exceed the growth rate (g); and 2) the growth rate is constant every year to infinity. In other words (using the table above as an example), in 2011 Mr. Hevert projected that Wynn Resorts' dividends would grow at a rate of 50 percent, per year, every year, forever. He is also saying that the required return of Wynn Resorts' equity investors exceeds 50 percent. This is, quite literally, an impossible scenario. It is impossible for any company to sustain a 50 percent growth rate, especially for a long period of time, and there is no way that Wynn Resort's cost of equity is even close to 50 percent. In fact, a quick CAPM analysis reveals that Wynn Resort's current cost of equity is only about 11.0 percent.[121] Not surprisingly, over the past five years Wynn Resort's actual growth rate was about 28 percent – about half the rate Mr. Hevert projected. Still, even a 28 percent growth rate is unreasonable to use in the DCF Model because it is irrational to assume that a company will grow by 28 percent each year forever, and that its cost of equity capital exceeds 28 percent. We see another striking example of Mr. Hevert's overestimated growth rate projections in Amazon. Mr. Hevert projected that Amazon's dividends would

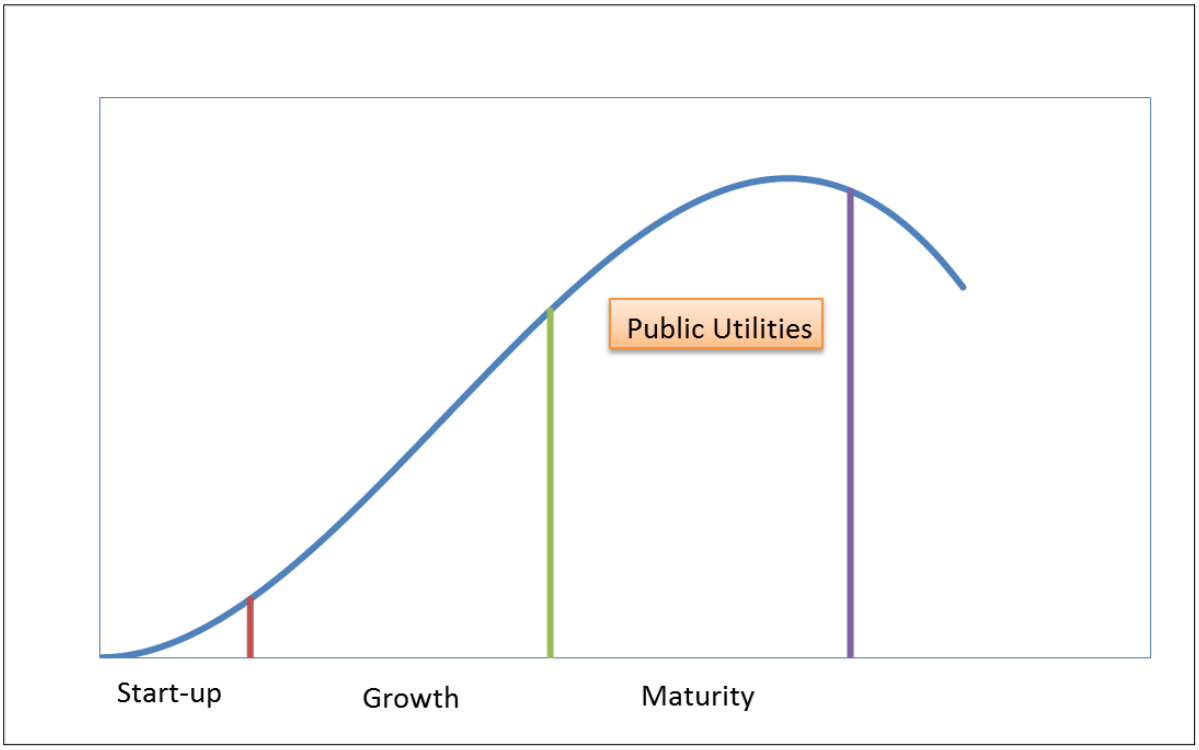
[120] Mr. Hevert and I both used slight variations of this model, but the underlying concepts and assumptions are the same.

[121] The CAPM equation is: cost of equity = risk-free rate + beta x equity risk premium. For Wynn Resorts, I used the beta published by Value Line of 1.3, as well as the risk-free rate of 3.09% and the equity risk premium of 5.5%. The final result is 3.09% + 1.3 x 5.5% = 11.05%.

grow at 29 percent, per year, every year, forever. Instead, Amazon experience a negative earnings growth of 40 percent, which means that Mr. Hevert overestimated the growth rate by nearly 70 percent. This Commission should not adopt any financial model based on inputs that are so extremely inaccurate.

Q. It is not necessary to use a multistage DCF growth model for public utilities.

A. Yes. In addition to employing a constant growth DCF Model, Mr. Hevert also employed a Multi-Stage DCF Model. Multi-Stage DCF Models are generally used for young firms with high growth opportunities. These firms are typically in the earlier stages of the business cycle. In contrast, utilities are mature, well-established firms with low growth rates. Recall the industry life cycle figure displayed above.



In an industry's early stages, there are ample opportunities for growth and profitable reinvestment in the company. Thus, the shareholders of these young, high-growth companies generally prefer that the company reinvest its earnings into projects with high

potential returns to increase the shareholders' capital gains. In contrast, the shareholders of utilities and other mature, low-growth firms prefer to receive compensation in the form of dividends. In fact, when explaining this concept, financial textbooks will sometimes use utilities as the example of mature, low-growth firms and contrast them with high-growth firms for which the Multi-Stage DCF Model is applicable.[122] In one prominent financial text, the authors contrast a group of electric utilities with a group of computer software companies.[123] After contrasting the payout ratios and growth rates of these two groups of firms, the authors correctly conclude with this well-known concept: "electric utilities are more representative of mature firms. Their median return on capital is lower . . . ; dividend payout is higher. . . ; and average growth is lower. . . . We conclude that the higher payouts of the electric utilities reflect their more limited opportunities to reinvest earnings . . . ."[124] The authors contrasted the group of low-growth utilities with the group of high-growth software companies to make the following point: multi-stage DCF Models are more appropriate for younger firms with high-growth in their early years, not for low-growth firms such as public utilities.

Q. The results of Mr. Hevert's Multi-Stage DCF Model are unreasonably high.

A. Yes. Although it is unnecessary to use Multi-Stage DCF Model to estimate the cost of capital for public utilities, the results of Mr. Hevert's Multi-Stage DCF Model are unreasonably high. The results of Mr. Hevert's Multi-Stage DCF Model range from 9.17 to 9.74 percent. A utility's required rate of return on equity capital must be below the

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[122] *See* Bodie, Kane & Marcus *supra* n. 16, at 416-17.

[123] *Id*.

[124] *Id*. at 417.

required return on the market portfolio. As stated above, a reasonable estimate of the current required return on the market portfolio is, at most, 8.91 percent.[125] That means the lowest result of Mr. Hevert's Multi-Stage DCF Model is still above the highest estimate for the required return on the market portfolio. In fact, the required return for PSO should be well below the required return on the market portfolio.

Capital Asset Pricing Model

Q. Mr. Hevert's estimate for the equity risk premium is inappropriate.

A. Yes. In his direct testimony, Mr. Hevert testified to this Commission that the equity risk premium ("ERP") is 10.51 percent.[126] Recall that the ERP is one of three inputs in the CAPM equation [$R_F + \beta(ERP)$]. The ERP is one of the most single important factors for estimating the cost of equity in this case. As discussed above, PUD conducted a thorough, robust analysis of the ERP using three reasonable, widely-accepted methods, including: 1) calculating the historical average; 2) consulting expert surveys; and 3) calculating the implied ERP based on aggregate market data. Mr. Hevert used none of these methods. Instead, Mr. Hevert essentially conducted a DCF analysis on every single company in the S&P 500. This approach is inferior to any of the methods PUD employed. This is because Mr. Hevert had to make 1,500 separate inputs for his model: 500 separate inputs for the current stock price, 500 separate inputs for the current dividend, and most importantly, 500 separate estimates for the growth rate. This means that Mr. Hevert's approach requires

[125] *See* Exhibit DG-C-15.

[126] *See* Exhibit RBH-3. Mr. Hevert described the equity risk premium as the "market risk premium." These terms are synonymous.

much more subjectivity and has a much greater potential for error, as indicated by his unreasonably high result. In fact, as shown in Figure 17 above, we have seen that Mr. Hevert's growth rate projections are susceptible to extreme inaccuracy:

Company	Ticker	Hevert's Prior Growth Rate Estimate	Actual Growth in Earnings	Amount Overestimated
Amazon	AMZN	29%	-40%	69%
Consol Energy	CNX	47%	-6%	53%
EOG Resources Inc.	EOG	44%	10%	34%
Netflix Inc.	NFLX	30%	8%	23%
NRG Energy	NRG	25%	-32%	57%
Range Resources	RRC	29%	-3%	32%
Southwestern Energy	SWN	23%	9%	14%
Starwood Hotels & Resorts	HOT	25%	10%	15%
Textron Inc.	TXT	45%	-12%	57%
Wynn Resorts LTD	WYNN	50%	28%	23%
Average		35%	-3%	37%

If a growth rate estimate misses the mark, it should only be by a few percentage points at most, not by 69 percent (as with Amazon). Furthermore, as discussed above, long-term growth rates this high are literally impossible to achieve. No company can grow at 50 percent, per year, every year, forever (as Mr. Hevert projected with Wynn Resorts). In his estimation of the ERP in this case, Mr. Hevert has once again made 500 growth rate estimates – one for every single firm in the S&P 500. Indeed, some of his projected growth rates in this case may turn out to be lower than estimated, but such a concession misses the broader point: It is not necessary to project 500 different growth rates to arrive at a reasonable estimate of the equity risk premium. In stark contrast to Mr. Hevert's approach to estimating the ERP, PUD relied on three reasonable, widely-accepted and recognized methods. I provided detailed discussion on each of these methods above in the ERP section

of my testimony. I will briefly reiterate these methods, and discuss why each is more reasonable than Mr. Hevert's method.

1. Historical Risk Premium

There is one particular aspect to the historical risk premium that is attractive from an analytical perspective: it relies on reliable, recorded data and does not require projections of the future. While the ERP does not change much over time, there is ample evidence that the forward-looking, *ex ante*, ERP is actually lower than the historical ERP, as discussed in detail in the ERP section above. Mr. Hevert's forward-looking ERP, however, is more than twice as high as the historical ERP.

2. Expert Survey Risk Premium

The ERP is not firm-specific. Thus, there is essentially only one ERP that applies to all firms. This aspect of the ERP allows this Commission to consider the opinions of thousands of experts across the country with regard to this specific issue. Fortunately, there are several prominent expert surveys available. The average result of the surveys PUD used in this case indicate an ERP of about five percent.[127] Again, Mr. Hevert's ERP estimate is more than twice as high as what thousands of other experts across the country think.

3. Implied Risk Premium

The implied ERP approach considers the gross cash yields from the S&P 500 and a reasonable growth rate in aggregate earnings. Unlike Mr. Hevert's approach, which considers 500 separate stock prices, 500 separate dividends, and 500 separate potentially

[127] Exhibit DG-C-13.

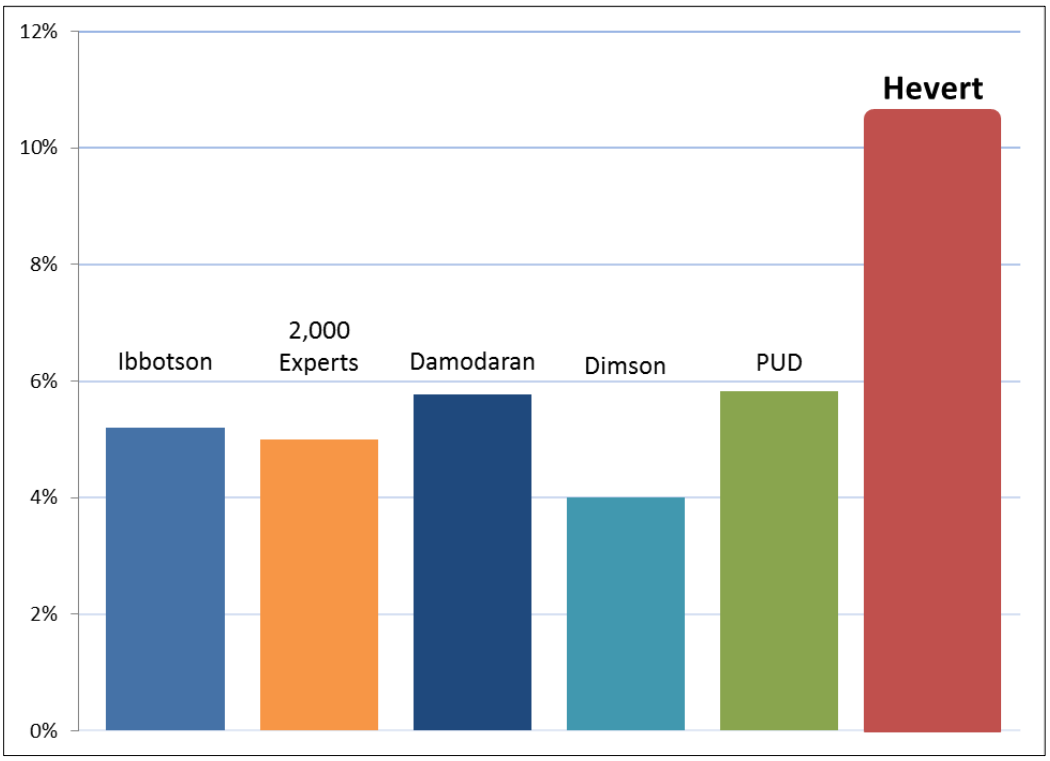
volatile and overestimated growth rates, PUD's implied ERP considers the actual, aggregate information reported by the S&P 500. In other words, it is not necessary to make 1,500 individual estimates when the S&P simply provides the requisite data in consolidated form.[128] To determine the growth rate, PUD considered the operating earnings reported by the S&P over the past five years. Whereas we've seen that Mr. Hevert's past growth rate projections have been wrong by as much as 69 percent, the reported earnings PUD used to determine the growth rate are accurate, reliable, and reasonable. The result of PUD's implied ERP calculation is 5.82 percent, which is slightly higher than the estimated ERP of thousands of experts across the country. Regardless, Mr. Hevert's proposed ERP is nearly twice as high as PUD's estimate.

Q. Contrast and illustrate Mr. Hevert's ERP estimate with the results from these other sources.

A. Mr. Hevert's ERP estimate is about twice as high as the other, reasonable estimates that I presented in this case. The following chart illustrates how unreasonable Mr. Hevert's ERP estimate actually is:

[128] *See* Exhibit DG-C-12.

Figure 18:
Equity Risk Premium Comparison



The weight of authority and analysis contrasting Mr. Hevert's result cannot be overstated:

IBBOTSON

Ibbotson is the most widely-used and respected source for annual reporting on the historical ERP in the U.S. It is consistently relied upon and cited by analysts in utility rate cases.

EXPERT SURVEYS

The surveys cited in this case are two respected surveys of experts around the U.S., including analysts, academics, CFOs, and other executives.

DAMODARAN

Dr. Aswath Damodaran is one of the leading experts in the country on corporate finance, valuation, and especially the ERP. Many other academics, analysts, and firms rely on his ERP estimate, which is published in his annual ERP report.

DIMSON

Triumph of the Optimists, by Dimson, Marsh, and Staunton, is the single most influential study of equity risk premiums around the world, and is cited in many financial texts. One of the ultimate conclusions in *Triumph* is that the forward-looking ERP is lower than the historical ERP.

PUD

In this cause, PUD conducted a thorough, robust calculation of the implied ERP. While PUD's estimate is likely high given the results of the expert surveys, it is also the most current.

Q. The Commission should disregard Mr. Hevert's CAPM results due to his inappropriately high estimate for the equity risk premium.

A. Yes. In cost of capital testimony, experts often speak of a "range of reasonableness." This concept applies not only to the final result, but also to each model and input presented in the case. The equity risk premium is one of the single most important factors in estimating the cost of equity, and the most influential factor of the CAPM. Given the overwhelming evidence presented in PUD's testimony, it is clear that Mr. Hevert's proposed equity risk premium is far outside the range of reasonableness. For these reasons, the Commission should disregard Mr. Hevert's CAPM result.

Bond Yield Plus Risk Premium Analysis

Q. Mr. Hevert's Bond Yield Plus Risk Premium analysis is entirely inappropriate.

A. Yes. Mr. Hevert testified that an alternative approach to estimating the ERP is to consider commission-awarded returns to utilities. This is not a valid method for estimating the ERP because commission-awarded returns do not affect the ERP. I will reiterate what the ERP actually is: it is level of return investors expect above the risk-free rate in exchange for investing in risky securities. Specifically, the ERP is the expected return on the market less the risk-free rate [$ERP=R_M–R_F$]. In other words, the ERP is a function of market-

driven forces. It cannot be influenced by the decisions of a utility commission. For that matter, it cannot be materially influenced by the decisions of any single company. Thus, the ERP has no material connection with the returns awarded to public utility companies in rate cases. This point is furthered by the expert surveys. Recall that the expert surveys ask thousands of experts across the country about the current ERP. When these experts are asked about the sources they relied on in giving their ERP estimate, it is not surprising that they make no mention of commission-awarded returns.[129] Moreover, many awarded returns arise out of settlements, which means that in complete contrast to the ERP, they are not reflective of market-driven forces. For all of these reasons, it is completely inappropriate to consider commission-awarded returns in any ERP analysis. Thus, the Commission should disregard Mr. Hevert's Bond Yield Plus Risk Premium analysis.

Business Risks

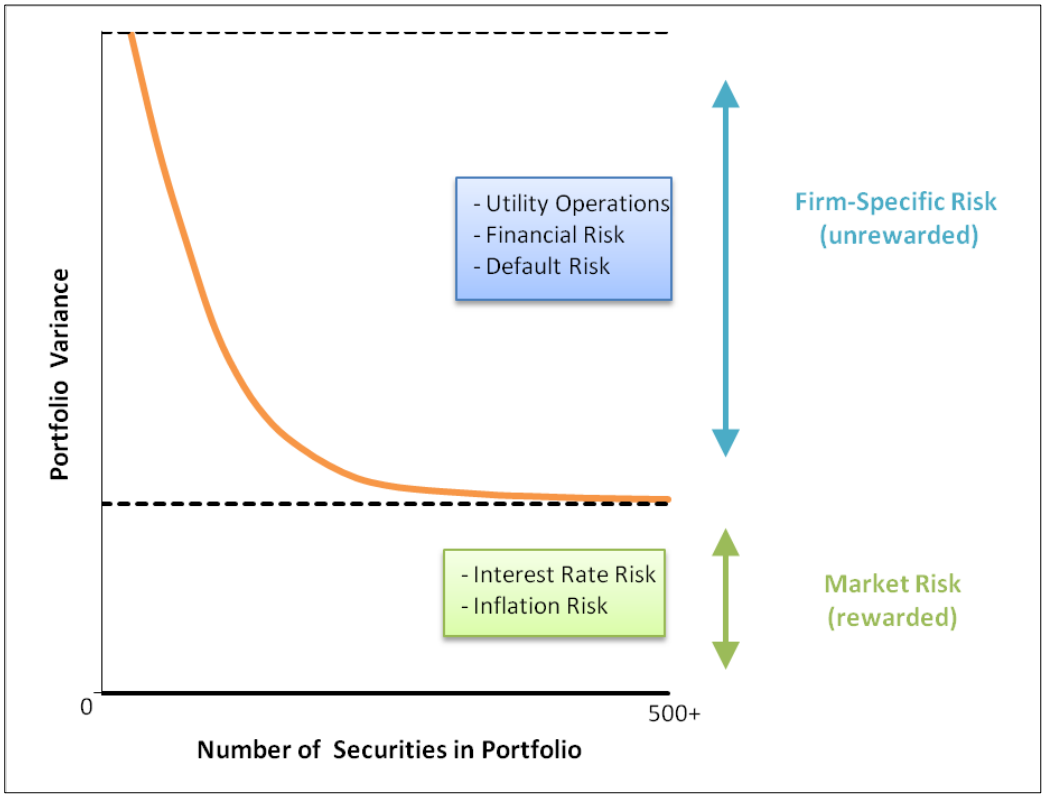
Q. In addition to having low levels of market risk, PSO also has low levels of firm-specific business risk.

A. Yes. Recall that there are two primary types of risk: market risk, which affects all firms to varying degrees, and firm-specific risk, which affects individual firms. Mr. Hevert suggested that certain firm-specific factors should have an increasing effect on the cost of equity, including environmental regulations, capital expenditures, and other rate mechanisms.[130] As discussed above, it is a well-known concept in corporate finance that

[129] In fact, in the IESE Business School's 2014 survey, some of the respondents indicated which books, papers, and other sources they used as a reference to justify the equity risk premium that they used. The most cited references were Dr. Damodaran, Ibbotson, Duff & Phelps, Graham-Harvey, Bloomberg, Grabowski, Siegel, and other sources. Of course, there was no mention of commission-awarded returns.

[130] *See generally* Direct Testimony of Robert B. Hevert p. 37.

firm-specific risks are unrewarded by the market. This is because investors can easily eliminate firm-specific risks through portfolio diversification. Thus, investors do not expect a return for assuming firm-specific risk. This concept was also illustrated in Figure 2 above.



Therefore, any discussion of the Company's firm-specific business risks in the cause, while perhaps relevant to other issues in the rate case, should have no meaningful effect on the cost of equity estimate. Rather, it is market risk that is rewarded by the market. I have thoroughly considered market risk in my CAPM analysis discussed above.

Q. PSO does not possess a great amount of firm-specific risk.

A. Yes. Even though firm-specific risk is unrewarded by the market and has no material impact on the cost of capital estimation, PSO nonetheless does not possess a great amount of firm-specific business risk. Mr. Hevert's testimony regarding business risks primarily

centers around the fact that PSO is retiring some of its generating assets before the end of their useful life and replacing them with new plant. Yet Mr. Hevert failed to explain how this adds risk to the Company. Rather, by making significant additions to its rate base, PSO is adding to its overall revenue requirement. Under the rate base rate of return model, the Company will be allowed to recover all of its useful plant investments through depreciation, and in addition, the company will recover a return on those investments. In contrast to this arrangement, there are many examples of actual firm-specific risk, such as operational risk. For example, RIM, the maker of BlackBerry, was on top of the smartphone industry in 2008 with a stock price of $138 and a 19.5 percent share of the global smartphone market.[131] As competitors like Apple and Samsung entered and gained ground in the market, RIM failed to adjust. By 2012, RIM's stock price fell to about $10 per share, and by 2014, RIM's market share had dropped to less than one percent.[132] There are numerous examples of firms who were dominant at one time and were eventually overcome by competitive forces and other business risks (see Compaq, Arthur Andersen, Montgomery Ward, Lehman Brothers, RCA, PaineWebber, TWA, Enron, etc.). Likewise, there are numerous examples of companies who lost massive amounts of shareholder wealth due to failed products (see Crystal Pepsi, Sony Betamax, Colgate Kitchen Entrees, Coors Rocky Mountain Spring Water, Bic Underwear, Harley Davidson Perfume, Life Savers Soda, the DeLorean car, etc.). Unlike public utilities, competitive firms must constantly endure the crushing weight of competition, which increases their risk. Among

[131] Brad Moon, *A Brief History of Research in Motion* (InvestorPlace 2013).

[132] Global smartphone OS market share held by RIM (BlackBerry) from 2007 to 2015, by quarter, available at http://www.statista.com/statistics/263439/global-market-share-held-by-rim-smartphones/.

these competitive forces are the threat of new entrants to the market and the threat of substitute products.[133] Public utilities, however, are not threatened by these competitive forces due to their monopoly status, captive customer base, and the fact that there are minimal substitutes for their services. While society benefits from the fact that utilities are very low-risk firms, this fact should be appropriately reflected in the awarded rate of return.

Q. PSO's riders further contribute to its low levels of firm-specific business risk.

A. Yes. During the test year, PSO collected about $1.3 billion of revenue. Of that amount, about $730 million was collected through riders.[134] In other words, nearly 60 percent of PSO's revenue is essentially guaranteed. In his direct testimony, Mr. Hevert said that regulatory recovery mechanisms such as riders do not reduce the Company's cost of equity. I would generally agree with this statement, but perhaps for different reasons than Mr. Hevert suggested. Mr. Hevert suggested the effect of riders on the cost of equity is dependent upon the amount of riders among the proxy group. This suggestion could be true in part if there were a drastic difference between the level of riders in the proxy companies and the target company. Riders, however, primarily affect firm-specific risk. Again, firm-specific risk is unrewarded by the market. Investors only expect a return for assuming market risk, which I have considered in this case through the CAPM. It is conceivable that if a utility had a sudden and significant increase in its level of riders it could not only reduce its business risk but perhaps its market risk as well. Utilities are already defensive firms that are relatively insulated from market conditions. This fact is

[133] *See* Bodie, Kane & Marcus *supra* n. 16, at 395 (discussing Michael Porter's five determinants of competition).

[134] See Responsive Testimony of Kathy Champion, p. 9 (Table 1).

directly observed in utilities' very low betas. To the extent that a significant increase in riders further insulated a utility from aggregate market conditions, it could arguably have some effect on the cost of equity. For all intents and purposes, however, it is fair to say that PSO's riders do not have a material affect on the cost of equity from a technical standpoint, particularly if there has not been a recent, significant change in the level of riders. Thus, in determining the cost of equity, it is more important for this Commission to focus on market risks rather than firm-specific risks, such as riders. In other words, the models PUD has presented in this case give a very good estimate of the Company's true required return without considering and attempting to quantify the effect of riders.

Flotation Costs

Q. The Commission should not allow recovery of equity flotation costs.

A. Yes. When companies issue equity securities, they typically hire at least one investment bank as an underwriter for the securities. "Flotation costs" generally refer to the underwriter's compensation for the services it provides in connection with the securities offering. Mr. Hevert argued the Company should receive a flotation cost adjustment through the DCF Model.[135] The effect of Mr. Hevert's proposed flotation cost adjustment increased his DCF Model by about 0.13 percent (or 13 basis points).[136] The Commission should not allow recovery of flotation costs in this case for the following three reasons:

[135] *See generally* Direct Testimony of Robert B. Hevert p. 48.

[136] *See* Exhibit RBH-8.

1. Flotation costs are not actual "out-of-pocket" costs.

Mr. Hevert stated that flotation costs "include out-of-pocket expenditures for preparation, filing, underwriting and other issuance costs of common stock."[137] This statement is misleading. Describing a cost as "out-of-pocket" suggests that the Company actually expended funds to pay for it. Underwriters, however, are not compensated in this fashion. Instead, underwriters are compensated through an "underwriting spread." An underwriting spread is the difference between the price at which the underwriter purchases the shares from the firm, and the price at which the underwriter sells the shares to investors.[138] Another reason it is misleading for Mr. Hevert to suggest that PSO experienced out-of-pocket flotation costs is that PSO is a wholly-owned subsidiary of AEP, which means it does not issue securities to the public and would thus would have no need to retain an underwriter. Thus, PSO has not experienced any out-of-pocket flotation costs, and if it has, those costs should be included in the Company's expense schedules.

2. The market already accounts for flotation costs.

When an underwriter markets a firm's securities to investors, the investors are well aware of the underwriter's fees. In other words, the investors know that a portion of the price they are paying for the shares does not go directly to the company, but instead goes to compensate the underwriter for its services. In fact, federal law requires that the underwriter's compensation be disclosed on the front page of the prospectus.[139] Thus,

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[137] Direct Testimony of Robert B. Hevert p. 48.

[138] *See* Graham, Smart & Megginson *supra* n. 17, at 509.

[139] *See* Regulation S-K, 17 C.F.R. § 229.501(b)(3) (requiring that the underwriter's discounts and commissions be disclosed on the outside cover page of the prospectus). A prospectus is a legal document that provides details about an investment offering.

investors have already considered and accounted for flotation costs when making their decision to purchase shares at the quoted price. There is no need for the Company's shareholders to receive additional compensation to account for costs they have already considered and agreed to. We see similar compensation structures in other kinds of business transactions. For example, a homeowner may hire a realtor and sell a home for $100,000. After the realtor takes a six percent commission, the seller nets $94,000. The buyer and seller agreed to the transaction notwithstanding the realtor's commission. Obviously, it would be unreasonable for the buyer or seller to demand additional funds from anyone after the deal is done to reimburse them for the realtor's fees. Likewise, investors of competitive firms do not expect additional compensation for flotation costs. Thus, it would not be appropriate for a commission standing in the place of competition to award a utility's investors with this additional compensation.

3. <u>It is inappropriate to add any additional basis points to a cost of equity proposal that is already far above the true required return</u>.

For the reasons discussed above, flotation costs should be disallowed from a technical standpoint; they should also be disallowed from a practical standpoint. PSO is asking this Commission to award it a cost of equity that is well over 200 basis points above its true cost of equity. Under these circumstances, it is especially inappropriate to demand any additional basis points for a non-out-of-pocket cost that has already been accounted for by the market.

Capital Structure

Q. PSO's proposed capital structure is not optimal.

A. Yes. As discussed in detail above, a firm's optimal capital structure is one in which the weighted average cost of capital is minimized. In this case, PUD conducted an extensive, technical, and objective analysis to determine that PSO's optimal capital structure consists of about 65 percent debt. PSO has provided no such analysis, but instead has simply noted the capital structures of other regulated utilities around the country.[140]

Q. A capital structure recommendation simply based on the capital structures of other utilities is not appropriate.

A. Yes. In the Capital Structure section of my testimony above, I discussed in detail three important reasons why it is not appropriate to rely on the capital structures of other utilities when conducting a proper capital structure analysis. Each reason is summarized as follows:

1. Utilities do not have a financial incentive to operate at the optimal capital structure, and thus the observed capital structures of other utilities are not reflective of competitive conditions;

2. The optimal capital structure is unique to each firm;

3. The capital structure of other utilities may not have been approved by their regulatory commissions.

For these reasons, the Commission should rely on PUD's objective analysis rather than simply looking at the capital structures of the proxy group, as Mr. Hevert did.

[140] *See* Direct Testimony of Robert B. Hevert p. 63.

INCENTIVE COMPENSATION

Q. Describe the Company's position regarding incentive compensation.

A. PSO's pro forma expense levels include $8,739,895 of annual, or short-term, incentive compensation and $3,782,540 of long-term incentive compensation.[141] According to Mr. Carlin, 75 percent of short-term incentive compensation in 2014 was based on AEP's earnings per share.[142]

Q. In general, ratepayers should not pay for incentive compensation that is tied to financial performance.

A. Yes. There are several good arguments for disallowing incentives tied to financial performance, including the fact that many things impacting financial performance are either outside the control of the company, or have no benefit to ratepayers.[143] Incentive compensation plans based on financial performance inherently presume that the company's financial performance is under the control of the employees who receive the incentives, and that their actions directly drive organizational performance. Utility employees, however, have little or no control over several important factors that affect financial performance. For example, a utility's earnings may increase due to a relatively hot summer. Until utility employees can control the weather, the increase in earnings that results from hotter weather has nothing to do with incentivizing company employees to

[141] *See* PSO's response to Data Request AG 2-22, attachment 1, showing the PSO amounts included in pro forma expense; *see* PSO's response to Data Request AG 2-22, attachment 2, showing AEP's amounts billed to PSO and included in pro forma expense; *see also* Exhibit DG-C-24.

[142] *See* Direct Testimony of Andrew R. Carlin, p. 17:16-18

[143] *See* Responsive Testimony of Mark E. Garrett pp. 23-25, filed 4-23-14 in Cause No. PUD 201300217.

perform better. Even scholars who are not involved with utility ratemaking recognize this basic concept:

> [A] senior executive from Florida Power and Light . . . told us, while attending a Stanford executive program, that his compensation was based on the profitability of the utility. The utility's profitability, since in the short run most of its costs and rates were fixed, depended mostly on the amount of electricity sold, and the amount of electricity sold depended mostly on the temperature. The hotter the summer in Florida, the more power was sold, and the more profitable was the utility. That summer was a particularly hot one in Florida, so the executive got a big boost in pay during the month that he spent at the Stanford Executive Program in California. This executive noted that this incentive system made no sense – unless you believe he could control the weather in Florida.[144]

If financial-based incentives were allowed, customers would not only be burdened with higher utility bills during the hot summer months, but would also have to pay additional compensation to company employees for something over which they had no control. Likewise, a higher commission-awarded return on equity would increase earnings but would not benefit customers, and would not be materially influenced by employee performance. If customers were forced to pay for financial-based incentives, they would be awarding additional compensation to company employees for things they have no control over while receiving nothing in return, except higher utility bills.

Q. The Commission should disallow 50 percent of short term incentive compensation and 100 percent of long term incentive compensation as it has done in the past.

A. For the reasons discussed above, the Commission should generally disallow incentive compensation based on financial performance. This Commission has consistently disallowed 50 percent of short term incentive compensation and 100 percent of long term

[144] Jeffery Pfeffer and Robert I. Sutton, *Hard Facts, Dangerous Half-Truths, and Total Nonsense: Profiting from Evidence-Based Management* 112 (Harvard Business School Press 2006).

incentive compensation.[145] The rationale behind the Commission's complete disallowance of long-term incentives is that the "performance measures that result in the payment of long term incentive compensation are financial goals that benefit shareholders, rather than ratepayers."[146] The same rationale essentially applies to the disallowance of 50 percent of short term incentive compensation; that is, the portion of short term incentives tied to financial goals that benefit shareholders should be disallowed. In this case, 100 percent of long term incentive compensation is based on financial performance.[147] In addition, 75 percent of short term financial incentive compensation is based on financial performance.[148] Thus, it would be reasonable for the Commission to disallow 75 percent of short term incentive compensation. PUD, however, is recommending that the Commission disallow only 50 percent of short-term incentive compensation. This recommendation gives considerable weight to the Company's claims that its short term incentive compensation plans provide significant benefits to ratepayers.[149] For these reasons, PUD is recommending that the Commission disallow only 50 percent of short term compensation and 100 percent of long term compensation, for a total adjustment of $8,152,488 to reduce pro forma incentive compensation expense. PUD's recommendation is presented in the following table:[150]

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[145] *See e.g*. Cause No. PUD 200800144, Order No. 564437 p. 21, filed 1-14-09.

[146] *Id*.

[147] *See* Direct Testimony of Andrew R. Carlin, pp. 25-27.

[148] *Id*. at p. 17:16-18.

[149] *See generally id*. at 16-25.

[150] *See also* Exhibit DG-C-24.

Incentive Type	Pro Forma Amount	Percent Disallowed	Adjusted Amount
AEP Short Term	4,381,117		
PSO Short Term	4,358,778		
Total	8,739,895	50%	(4,369,948)
AEP Long Term	2,860,109		
PSO Long Term	922,431		
Total	3,782,540	100%	(3,782,540)
Total Adjustment			**$ (8,152,488)**

CONCLUSION AND RECOMMENDATION

Q. Summarize the key points of your testimony.

A. According to the Supreme Court, risk is one of the most important factors to consider when estimating the cost of equity. PSO, like any utility, is a firm with very low levels of risk – far below the market average. Thus, PSO's true required return on equity must be lower than the required return on the overall market. PUD used three widely-accepted methods for estimating PSO's required return on equity: 1) Discounted Cash Flow; 2) Capital Asset Pricing Model; and 3) Comparable Earnings. According to these models, as well as the required return on the overall market, PSO's true required return on equity is likely less than eight percent. Although setting the allowed return equal to the required return would allow PSO to remain financially healthy and attract capital under efficient and economical management, PUD is recommending a return on equity well above PSO's true required return in the interest of promoting a gradual, rather than abrupt move toward the true required return in fairness to the Company. In addition, PUD analyzed the Company's optimal capital structure. Although PSO's test year capital structure contains less than

optimal amounts of debt, PUD is recommending the test year capital structure because imputing the optimal capital structure would result in an abrupt change rather than a gradual one.

Q. The inputs you used in your models and other factors you considered in making your recommendations are very fair and reasonable to PSO.

A. Yes. Each of the models discussed in this case uses various inputs and estimates. I had to make many decisions using reasonable, professional judgment with regard to these inputs. There were many decisions made in conducting these models that went in the Company's favor. In other words, all else held constant, each of the following decisions would result in a higher revenue requirement for the Company:

1. I used the Quarterly Approximation DCF Model, which produces the highest result of all other variations of the DCF Model.

Many other analysts use the Annual DCF Model or Semi-Annual DCF Model, but the Quarterly Approximation DCF Model (all else held constant) produces the highest cost of equity result. In fact, my DCF Model produced a result which is over 300 basis points higher than the result of the Annual DCF Model.[151]

2. I used a 30-day average of stock prices for the DCF Model, instead of a longer period, which resulted in a higher DCF result.

Many analysts will conduct the DCF analysis using a long-term average of stock prices for each of the proxy companies. In contrast, I used a 30-day average, which is more technically sound given the well-established principles of market efficiency discussed above. Using a 30-day average instead of a one-year average, for example, resulted in

[151] Exhibit DG-C-7. My DCF Model produced a cost of equity of 7.96% while the Annual DCF Model produced a cost of equity of 4.80%. The Semi-Annual DCF Model would have produced a cost of equity somewhere in between. I only considered the Quarterly Approximation DCF result into the final analysis.

lower overall stock prices for the proxy group. In the DCF equation, lower stock prices result in higher cost of equity estimates.[152]

3. I did not include any negative growth rates in my DCF estimate.

In calculating my overall growth rates for the DCF Model, I averaged historic dividend growth, projected earnings growth, and a fundamental growth rate. In obtaining the requisite data for this analysis, I came across several negative growth rates. Instead of averaging these negative numbers in with the other growth rates, I adjusted all of these negative figures up to zero.[153] This resulted in higher growth rates and thus a higher DCF cost of equity estimate.

4. The implied equity risk premium that I calculated was higher than the historical average and expert survey results.

To determine the overall equity risk premium ("ERP"), I took a weighted average of the three different sources for the ERP, including the historical results, the expert survey results, and the implied ERP calculation. The ERP I calculated was the highest. Moreover, I took a weighted average of the three sources for the ERP and gave the implied ERP the greatest weight.[154] This means that the highest ERP received the greatest weighting (60 percent) of the three ERP estimates. This resulted in a higher CAPM cost of equity for the Company.

[152] *See* Exhibit DG-C-9. Taking a 30-day average of the weekly returns for each proxy company results in a lower average than a one-year average of weekly returns overall.

[153] *See* Exhibit DG-C-6.

[154] *See* Exhibit DG-C-13.

5. I incorporated an historical, arithmetic average equity risk premium in my overall equity risk premium estimate.

The historical, arithmetic average ERP is arguably not as accurate as the historical, geometric average ERP. Moreover, there is evidence that the current and prospective ERP is smaller than the historical, arithmetic average ERP, as also discussed above. This is further confirmed by the fact that the survey results and the implied ERP calculation are both lower than the historical, arithmetic ERP. Despite all of these facts, I incorporated the higher historical, arithmetic ERP in my overall ERP estimate.

6. In my CAPM analysis, I incorporated published betas that have been arbitrarily adjusted too high.

As discussed above, it is more accurate to adjust raw betas using the Vasicek method. Betas published by Value Line are adjusted toward the market mean of one rather than the utility industry average, which means they are too high. The adjustment method I used is more appropriate when analyzing an industry with betas that are consistently low, such as the utility industry. Despite the fact that the higher Value Line betas are not as accurate, I incorporated them into my CAPM model, resulting in a higher cost of equity estimate.

7. PUD is recommending a capital structure that contains less debt than the optimal capital structure.

PUD's technical analysis revealed that PSO's optimal capital structure consists of about 65 percent debt. This is not surprising considering that there are hundreds of firms around the country that operate with similar debt levels.[155] Utilities typically have capital structures with insufficient amounts of debt because they have no natural financial incentive to minimize their overall cost of capital by issuing more debt. Although it would be proper

[155] Exhibit DG-C-22.

for the Commission, who stands in the place of competition, to impute the optimal capital structure, PUD is recommending that the Commission approve PSO's test year capital structure, which consists of only 56 percent debt.

8. PUD's overall recommendation for the awarded return on equity is well above the Company's true required return on equity.

As discussed above, the legal standards governing the allowed rate of return arguably require that the allowed rate of return be set equal to the true required rate of return. In addition, however, the legal standards also allow for the overall end result to be fair under the circumstances, even if it means the allowed return is set above the required return. As discussed above, PSO's true required return must be well below the required return on the overall market, which means that PSO's true required rate of return is very likely below eight percent. This estimate is further confirmed by the average results of the three models used in this case: 7.89 percent.[156] PUD, however, is recommending an awarded return on equity that is well above the true required return on equity. In the interest of fairness and reasonableness to the Company, PUD's recommendation represents a gradual move toward the true required return, rather than an abrupt adjustment.

9. PUD is recommending the Commission disallow only 50 percent of short-term incentives.

As discussed above, the Commission has consistently disallowed incentives tied to financial performance. In this case, 75 percent of short-term incentives are tied to financial performance.[157] Thus, it would be appropriate to disallow as much as 75 percent of short-

[156] Exhibit DG-C-19.

[157] *See* Direct Testimony of Andrew R. Carlin, p. 17:16-18.

term incentives. PUD, however, is recommending that the Commission disallow only 50 percent of short-term incentive compensation.

Q. State PUD's recommendation to the Commission.

A. PUD respectfully requests the Commission adopt the following recommendations:

1. A cost of equity of 9.25 percent, which is the highest point in a range of reasonableness of 8.75 to 9.25 percent;
2. A cost of debt of 4.92 percent, as proposed by the Company;
3. A capital structure consisting of 56 percent debt and 44 percent equity;
4. An overall weighted average cost of capital of 6.83 percent, which is the highest point in a range of reasonableness of 6.61 to 6.83 percent; and
5. An adjustment of $8,152,488 to reduce pro forma incentive compensation expense.

These recommendations are fair, just, and reasonable to both ratepayers and the Company.

I state under penalty of perjury under the laws of Oklahoma that the foregoing is true and correct to the best of my knowledge.

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EDUCATION

University of Oklahoma — Norman, OK
Master of Business Administration — 2014
Areas of Concentration: Finance, Energy

University of Oklahoma College of Law — Norman, OK
Juris Doctor — 2007
Member, American Indian Law Review

University of Oklahoma — Norman, OK
Bachelor of Business Administration — 2003
Major: Finance

PROFESSIONAL DESIGNATIONS

Society of Depreciation Professionals
Certified Depreciation Professional (CDP)

Society of Utility and Regulatory Financial Analysts
Certified Rate of Return Analyst (CRRA)

The Mediation Institute
Certified Civil / Commercial & Employment Mediator

WORK EXPERIENCE

Oklahoma Corporation Commission — Oklahoma City, OK
Public Utility Regulatory Analyst — 02/2012 – Present
Assistant General Counsel — 02/2011 – 01/2012

Perebus Counsel, PLLC — Oklahoma City, OK
Managing Member — 09/2009 – 01/2011
Represented clients in the areas of family law, estate planning, debt negotiations, business organization, and utility regulation.

Moricoli & Schovanec, P.C. — Oklahoma City, OK
Associate Attorney — 08/2007 – 08/2009
Represented clients in the areas of contracts, oil and gas, business structures and estate administration.

TEACHING EXPERIENCE

University of Oklahoma — Norman, OK
Adjunct Instructor – "Conflict Resolution" — 2014
Adjunct Instructor – "Ethics in Leadership"

Rose State College — Midwest City, OK
Adjunct Instructor – "Legal Research" — 2013 – 2014
Adjunct Instructor – "Oil & Gas Law"

PUBLICATIONS

American Indian Law Review — Norman, OK
"Vine of the Dead: Reviving Equal Protection Rites for Religious Drug Use" — 2006
(31 Am. Indian L. Rev. 143)

VOLUNTEER EXPERIENCE

Calm Waters — Oklahoma City, OK
Board Member — 2015 – Present
Participate in management of operations, attend meetings, review performance, compensation, and financial records. Assist in fundraising events.

Group Facilitator & Fundraiser — 2014 – Present
Facilitate group meetings designed to help children and families cope with divorce and tragic events. Assist in fundraising events.

St. Jude Children's Research Hospital — Oklahoma City, OK
Oklahoma Fundraising Committee — 2008 – 2010
Raised money for charity by organizing local fundraising events.

PROFESSIONAL ASSOCIATIONS

Oklahoma Bar Association — 2007 – Present

Society of Depreciation Professionals — 2014 – Present
Board Member – Vice President — 2015 – 2016
Participate in management of operations, attend meetings, review performance, organize presentation agenda.

Society of Utility Regulatory Financial Analysts — 2014 – Present

CONTINUING PROFESSIONAL EDUCATION

Society of Depreciation Professionals — New Orleans, LA
"Introduction to Depreciation" and "Extended Training" — 2014
Week-long training seminar with extensive instruction on utility depreciation, including average lives and net salvage.

Society of Utility and Regulatory Financial Analysts — Indianapolis, IN
46th Financial Forum. "The Regulatory Compact: Is it Still Relevant?" — 2014
Forum discussions on current issues.

Energy Management Institute — Houston, TX
"Fundamentals of Power Trading" — 2013
Instruction and practical examples on the power market complex, as well as comprehensive training on power trading.

New Mexico State University, Center for Public Utilities — Santa Fe, NM
Current Issues 2012, "The Santa Fe Conference" — 2012
Forum discussions on various current issues in utility regulation.

Energy Management Institute — Houston, TX
"Introduction to Energy Trading and Hedging" — 2012
Instruction in energy trading and hedging, including examination of various trading instruments and techniques.

Michigan State University, Institute of Public Utilities — Clearwater, FL
"39th Eastern NARUC Utility Rate School" — 2011
One-week, hands-on training emphasizing the fundamentals of the utility ratemaking process.

New Mexico State University, Center for Public Utilities — Albuquerque, NM
"The Basics: Practical Regulatory Training for the Changing Electric Industries" — 2010
One-week, hands-on training designed to provide a solid foundation in core areas of utility ratemaking.

The Mediation Institute — Oklahoma City, OK
"Civil / Commercial & Employment Mediation Training" — 2009
Extensive instruction and mock mediations designed to build foundations in conducting mediations in civil matters.

EXPERIENCE IN REGULATORY PROCEEDINGS

1. **Oak Hills Water System, Inc.** (Cause No. PUD 15-123) – Testified on cost of capital, capital structure, and depreciation.

2. **CenterPoint Energy Oklahoma Gas, 2014** (Cause No. PUD 14-227) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

3. **Public Service Company of Oklahoma, 2014** (Cause No. PUD 14-233) – Testified on PSO's application for a certificate of authority to issue new debt securities.

4. **Empire District Electric Company, 2014** (Cause No. PUD 14-226) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

5. **Fort Cobb Fuel Authority, 2014** (Cause No. PUD 14-219) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

6. **Fort Cobb Fuel Authority, 2014** (Cause No. PUD 14-140) – Testified in FCFA's application for a rate increase on outside services, legislative advocacy, miscellaneous taxes, payroll expense and taxes, employee insurance expense, and insurance expense.

7. **Public Service Company of Oklahoma, 2013** (Cause No. PUD 13-217) – Lead auditor of PSO's application for a rate increase. Provided additional research support for cost of capital issue. Assisted in coordination of PUD staff analysts and issues.

8. **Public Service Company of Oklahoma, 2013** (Cause No. PUD 13-201) – Testified in PSO's application for authorization of a standby and supplemental service tariff.

9. **Fort Cobb Fuel Authority, 2013** (Cause No. PUD 13-134) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

10. **Empire District Electric Company, 2013** (Cause No. PUD 13-131) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

11. **CenterPoint Energy Oklahoma Gas, 2013** (Cause No. PUD 13-127) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

12. **Oklahoma Gas & Electric Company, 2012** (Cause No. PUD 12-185) – Testified in OG&E's application for extension of a gas transportation contract.

13. **Empire District Electric Company, 2012** (Cause No. PUD 12-170) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

14. **Oklahoma Gas & Electric Company, 2012** (Cause No. PUD 12-169) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

Weighted Average Cost of Capital
(PUD Recommendation)

	[1]	[2]	[3]
Source	**Capital Structure**	**Cost Rates**	**Weighted Cost**
Long-term Debt	56.0%	4.92%	2.76%
Common Equity	44.0%	9.00% (8.75% – 9.25%)	3.96% (3.85% – 4.07%)
Recommended Range for Weighted Average Cost of Capital	[4]	**6.61%** (LOW) – **6.72%** (MID) – **6.83%** (HIGH)	

[1] PUD's recommended capital structure

[2] Debt cost rate proposed by PSO. Cost of common equity recommended by PUD + / - 0.25% for zone of reasonableness.

[3] = [1] x [2]

[4] = Weighted long-term debt plus weighted common equity

Proxy Company Summary Sheet

Company	Ticker	[1] Market Cap. ($ millions)	[2] Market Category	[3] Electric Revenue %	[4] Common Equity Ratio	[5] S&P Bond Rating	[6] Moody's Bond Rating	[7] Value Line Safety Rank	[8] Financial Strength	[9] Value Line Region	[10] Year Founded
ALLETE, Inc.	ALE	2,400	Mid Cap	86%	55.8%	A-	A3	2	A	Central	1906
Alliant Energy Corporation	LNT	6,500	Mid Cap	82%	47.5%	A-	A2/A3	2	A	Central	1917
Ameren Corporation	AEE	9,200	Mid Cap	82%	51.7%	BBB+/BBB	Baa1	2	A	Central	1881
Consolidated Edison Co.	ED	18,000	Large Cap	71%	52.0%	A-/BBB+	A3	1	A+	East	1884
Duke Energy Corporation	DUK	54,000	Large Cap	89%	52.3%	BBB+	A3	2	A	East	1900
Edison International	EIX	20,000	Large Cap	100%	47.2%	BBB+	A2/A3	2	A	West	1886
Empire District Electric Company	EDE	975	Small Cap	91%	49.4%	A-	Baa1	2	B++	Central	1909
Entergy Corp.	ETR	13,000	Large Cap	79%	43.8%	BBB+/BBB	Baa2/Baa3	3	B++	Central	1913
Eversource Energy	ES	15,000	Large Cap	86%	53.2%	A-	A3/Baa1	1	A	East	1927
Great Plains Energy Inc.	GXP	3,800	Mid Cap	100%	50.4%	BBB	Baa2	3	B+	Central	1919
IDACORP, Inc.	IDA	3,100	Mid Cap	100%	54.7%	A-	A3	2	B++	West	1915
NorthWestern Corporation	NWE	2,500	Mid Cap	70%	46.6%	NR	A3	2	B+	West	1923
OGE Energy Corp.	OGE	5,800	Mid Cap	100%	54.1%	BBB+	A3	1	A+	Central	1902
Pepco Holdings	POM	6,400	Mid Cap	91%	48.8%	A-/BBB+	Baa2	3	B+	East	1896
PG&E Corp.	PCG	25,000	Large Cap	80%	50.7%	BBB/BBB-	A3/Baa1	3	B+	West	1905
Pinnacle West Capital Corporation	PNW	6,900	Mid Cap	100%	59.0%	BBB	A3/Baa1	1	A+	West	1920
PNM Resources, Inc.	PNM	2,200	Mid Cap	100%	51.2%	BBB	Baa2	3	B	West	1917
Portland General Electric Company	POR	2,900	Mid Cap	100%	47.3%	A-	A3	2	B++	West	1930
Southern Company	SO	40,000	Large Cap	95%	47.3%	A	A3/Baa1	2	A	East	1945
TECO Energy, Inc.	TE	4,300	Mid Cap	72%	43.4%	BBB+/BBB	A3	2	B++	East	1899
Westar Energy, Inc.	WR	4,500	Mid Cap	100%	50.0%	A-	A3/Baa1	2	B++	Central	1924
Xcel Energy Inc.	XEL	17,000	Large Cap	82%	47.0%	A-	A3	1	A	West	1909

[1], [4], [7], [8], [9] Value Line Investment Survey (all 2014 data)

[2] Large Cap > $10 billion market capitalization. Mid Cap > $2 billion market capitalization.

[3], [5], [6] AUS Monthly Utility Report, July 2015

[10] Yahoo! Finance company profile pages. Some companies are technically newer but only due to mergers and name changes.

Stock and Index Prices

Exhibit DG-C-4

Ticker	^GSPC	ALE	LNT	AEE	ED	DUK	EIX	EDE	ETR	ES	GXP	IDA	NWE	OGE	POM	PCG	PNW	PNM	POR	SO	TE	WR	XEL
30-day Average	2096	48.50	58.99	38.42	59.10	73.12	57.68	22.54	72.30	46.84	25.01	57.38	50.24	29.35	26.83	50.62	58.17	25.40	33.73	42.76	18.13	35.10	32.68
Standard Deviation	20.7	1.16	1.28	0.79	1.47	1.71	1.43	0.51	2.09	1.15	0.54	1.22	0.97	0.86	0.11	1.23	1.53	0.60	0.58	0.72	0.39	0.73	0.64
07/08/15	2047	48.30	60.41	39.28	61.23	74.79	58.25	22.56	73.30	47.13	25.38	58.94	51.22	28.99	26.99	51.43	60.28	25.69	34.48	44.20	18.57	36.31	33.71
07/07/15	2081	48.10	60.78	39.60	61.08	75.27	58.83	22.71	73.61	47.38	25.61	59.21	51.58	29.35	26.98	51.40	60.34	25.91	34.77	44.26	18.62	36.31	33.89
07/06/15	2069	47.30	59.10	38.56	59.60	72.85	57.60	22.37	72.47	46.31	25.01	57.83	50.47	28.87	27.04	50.03	58.49	25.41	34.06	43.12	18.15	35.46	32.94
07/02/15	2077	47.20	59.01	38.50	59.14	72.53	57.55	22.19	71.88	46.51	24.78	57.34	50.06	29.00	27.04	49.79	58.32	25.22	33.79	42.89	18.10	35.32	32.82
07/01/15	2077	46.47	58.13	37.98	58.28	71.08	56.40	21.99	71.45	45.57	24.51	56.59	48.98	28.44	27.00	49.38	57.58	24.74	33.41	42.18	17.79	34.70	32.50
06/30/15	2063	46.39	57.72	37.68	57.88	70.62	55.58	21.80	70.50	45.41	24.16	56.14	48.75	28.33	26.94	49.10	56.89	24.60	33.16	41.90	17.66	34.22	32.18
06/29/15	2058	46.81	57.54	37.54	58.13	70.85	55.68	21.83	69.95	45.50	24.39	56.41	49.03	28.45	26.71	49.33	56.58	24.67	33.17	41.96	17.73	34.25	32.17
06/26/15	2102	47.18	57.84	37.73	58.10	71.00	56.23	21.71	70.51	45.99	24.59	56.78	49.59	28.71	26.75	49.70	56.89	25.00	33.32	41.89	17.85	34.38	32.24
06/25/15	2102	46.93	57.37	37.51	57.50	70.68	55.58	21.72	69.47	45.51	24.27	56.26	49.47	28.41	26.76	49.14	56.31	24.74	33.18	41.61	17.72	34.11	31.92
06/24/15	2109	47.98	57.68	37.78	57.84	70.93	55.65	21.98	70.51	45.57	24.42	56.53	49.63	28.83	26.76	49.39	56.52	25.17	33.35	41.70	17.83	34.43	31.99
06/23/15	2124	48.41	58.12	37.76	58.07	71.78	57.20	22.25	70.78	45.85	24.72	56.68	49.87	28.99	26.76	49.98	57.24	25.23	33.58	42.05	17.97	34.77	32.23
06/22/15	2123	49.13	59.05	38.31	58.72	73.07	57.94	22.46	71.50	46.56	25.09	57.33	50.32	29.20	26.75	50.68	58.06	25.41	33.99	42.51	18.22	35.35	32.70
06/19/15	2110	49.34	59.14	38.26	58.99	73.20	58.17	22.86	71.57	46.74	25.16	57.45	50.62	29.03	26.78	50.61	58.14	25.44	33.94	42.73	18.29	35.49	32.77
06/18/15	2121	49.62	59.43	38.54	59.20	74.54	58.42	23.18	72.04	47.29	25.20	58.00	50.94	29.25	26.93	51.22	58.06	25.67	33.85	43.32	18.27	35.47	33.05
06/17/15	2100	48.87	58.59	38.09	58.24	73.08	57.56	22.69	71.19	46.95	24.81	56.82	50.32	29.05	26.84	50.33	57.30	25.20	33.21	42.69	17.97	34.89	32.57
06/16/15	2096	48.09	58.28	37.81	57.54	72.57	57.15	22.61	70.83	46.68	24.68	56.51	49.62	28.86	26.74	49.65	56.96	25.08	33.07	42.48	17.83	34.70	32.38
06/15/15	2084	47.81	57.87	37.73	57.21	72.50	56.93	22.52	70.95	46.02	24.60	56.06	49.51	28.72	26.66	49.35	56.65	24.81	32.98	42.09	17.79	34.62	32.18
06/12/15	2094	47.89	58.12	37.77	57.54	72.53	56.77	22.37	70.71	46.10	24.60	56.04	49.89	28.90	26.72	49.78	57.00	24.82	33.11	42.30	17.80	34.77	32.38
06/11/15	2109	48.69	58.79	38.30	58.04	72.86	57.44	22.44	71.42	46.66	24.97	56.94	51.00	29.20	26.76	50.16	57.82	25.09	33.46	42.59	17.97	35.16	32.49
06/10/15	2105	48.37	58.04	37.81	57.75	72.05	56.99	22.28	70.71	46.18	24.77	56.41	51.08	29.00	26.72	49.97	57.09	24.94	33.21	42.34	17.87	34.61	32.04
06/09/15	2080	48.24	57.81	37.87	58.44	72.13	56.83	22.28	70.90	46.33	24.67	55.77	48.95	28.90	26.76	49.87	56.90	24.88	32.99	42.44	17.79	34.29	32.04
06/08/15	2079	49.29	58.04	37.93	58.53	72.45	57.09	22.40	71.98	46.33	24.81	56.55	49.13	29.52	26.67	50.32	57.18	25.22	33.44	42.60	17.80	34.37	32.01
06/05/15	2093	49.01	58.29	37.96	58.61	72.85	57.25	22.48	72.12	46.69	24.81	56.51	49.12	29.79	26.77	50.89	57.63	25.32	33.51	42.66	17.87	34.42	32.03
06/04/15	2096	49.43	59.06	38.67	59.69	74.21	58.40	22.80	73.76	47.44	25.24	57.39	49.99	29.71	26.83	51.37	58.47	25.74	34.10	43.18	18.22	34.83	32.45
06/03/15	2114	49.76	59.61	38.89	59.77	74.20	58.18	22.98	73.83	47.68	25.32	57.89	50.09	30.05	26.78	51.49	58.69	25.62	34.00	43.12	18.25	35.09	32.52
06/02/15	2110	49.78	60.52	39.20	61.09	75.05	59.10	23.09	75.11	48.49	25.53	58.48	50.65	30.29	26.78	52.41	59.65	25.89	34.05	43.28	18.56	35.69	33.07
06/01/15	2112	50.44	61.39	39.79	61.71	76.00	60.33	23.43	76.58	49.19	25.92	59.33	51.55	31.04	26.88	53.17	60.91	26.46	34.63	43.67	18.82	36.18	33.73
05/29/15	2107	50.35	61.30	39.80	61.84	75.73	60.36	23.34	76.47	49.25	26.07	59.47	51.54	31.23	26.98	52.98	60.92	26.59	34.65	43.69	18.85	36.29	33.71
05/28/15	2121	50.13	61.46	40.01	61.81	75.95	60.59	23.52	76.55	49.25	26.13	59.85	52.07	31.26	26.86	52.87	61.18	26.75	34.69	43.51	18.90	36.36	33.79
05/27/15	2123	49.64	61.26	39.96	61.34	76.21	60.33	23.32	76.41	48.77	25.95	59.76	52.18	31.18	26.84	52.77	61.15	26.57	34.66	43.73	18.93	36.17	33.76

All prices are adjusted closing prices reported by Yahoo! Finance, http://finance.yahoo.com (accessed 7-9-15 for all securities)

Fundamental Growth Rates

Exhibit DG-C-5

Company	Ticker	[1] ROE	[2] DPS	[3] EPS	[4] FGR	[1] ROE	[2] DPS	[3] EPS	[4] FGR	[1] ROE	[2] DPS	[3] EPS	[4] FGR	[1] ROE	[2] DPS	[3] EPS	[4] FGR	[1] ROE	[2] DPS	[3] EPS	[4] FGR	[5] Fundamental Growth Rate
		2010				2011				2012				2013				2014				
ALLETE, Inc.	ALE	0.08	1.76	2.19	0.02	0.09	1.78	2.65	0.03	0.08	1.84	2.58	0.02	0.08	1.90	2.63	0.02	0.08	1.96	2.90	0.03	2.28%
Alliant Energy Corporation	LNT	0.10	1.58	2.75	0.04	0.10	1.70	2.75	0.04	0.10	1.80	3.05	0.04	0.11	1.88	3.29	0.05	0.11	2.04	3.48	0.05	4.28%
Ameren Corporation	AEE	0.09	1.54	2.77	0.04	0.08	1.56	2.47	0.03	0.09	1.60	2.41	0.03	0.08	1.60	2.10	0.02	0.09	1.61	2.40	0.03	2.85%
Consolidated Edison Co.	ED	0.09	2.38	3.47	0.03	0.09	2.40	3.57	0.03	0.10	2.42	3.86	0.04	0.09	2.46	3.93	0.04	0.09	2.52	3.62	0.03	3.10%
Duke Energy Corporation	DUK	0.08	2.91	4.02	0.02	0.08	2.97	4.14	0.02	0.05	3.03	3.71	0.01	0.07	3.09	3.98	0.02	0.07	3.15	4.13	0.02	1.73%
Edison International	EIX	0.10	1.27	3.35	0.06	0.11	1.29	3.23	0.06	0.16	1.31	4.55	0.11	0.13	1.37	3.78	0.08	0.13	1.48	4.33	0.09	8.12%
Empire District Electric Company	EDE	0.07	1.28	1.17	-0.01	0.08	0.64	1.31	0.04	0.08	1.00	1.32	0.02	0.09	1.01	1.48	0.03	0.09	1.03	1.55	0.03	2.17%
Entergy Corp.	ETR	0.15	3.24	6.66	0.08	0.15	3.32	7.55	0.08	0.12	3.32	6.02	0.05	0.09	3.32	4.96	0.03	0.10	3.32	5.77	0.04	5.72%
Eversource Energy	ES	0.10	1.03	2.10	0.05	0.10	1.10	2.22	0.05	0.06	1.32	1.89	0.02	0.08	1.47	2.49	0.03	0.08	1.57	2.58	0.03	3.65%
Great Plains Energy Inc.	GXP	0.07	0.83	1.53	0.03	0.06	0.84	1.25	0.02	0.06	0.86	1.35	0.02	0.07	0.88	1.62	0.03	0.07	0.94	1.57	0.03	2.67%
IDACORP, Inc.	IDA	0.09	1.20	2.95	0.06	0.10	1.20	3.36	0.06	0.10	1.37	3.37	0.06	0.10	1.57	3.64	0.06	0.10	1.76	3.85	0.05	5.74%
NorthWestern Corporation	NWE	0.09	1.36	2.14	0.03	0.11	1.44	2.53	0.05	0.09	1.48	2.26	0.03	0.09	1.52	2.46	0.03	0.08	1.60	2.99	0.04	3.69%
OGE Energy Corp.	OGE	0.13	0.73	1.50	0.07	0.13	0.76	1.73	0.08	0.13	0.80	1.79	0.07	0.13	0.85	1.94	0.07	0.12	0.95	1.98	0.06	6.95%
Pepco Holdings	POM	0.07	1.08	1.24	0.01	0.06	1.08	1.14	0.00	0.06	1.08	1.24	0.01	0.07	1.08	1.14	0.00	0.06	1.08	0.96	-0.01	0.32%
PG&E Corp.	PCG	0.10	1.82	2.82	0.03	0.09	1.82	2.78	0.03	0.07	1.82	2.07	0.01	0.06	1.82	1.83	0.00	0.09	1.82	3.06	0.04	2.23%
Pinnacle West Capital Corporation	PNW	0.09	2.10	3.08	0.03	0.09	2.10	2.99	0.03	0.10	2.67	3.50	0.02	0.10	2.23	3.66	0.04	0.09	2.33	3.58	0.03	2.94%
PNM Resources, Inc.	PNM	0.05	0.50	0.87	0.02	0.06	0.50	1.08	0.03	0.07	0.58	1.31	0.04	0.07	0.68	1.41	0.04	0.07	0.74	1.49	0.03	3.23%
Portland General Electric Company	POR	0.08	1.04	1.66	0.03	0.09	1.06	1.95	0.04	0.08	1.08	1.87	0.03	0.08	1.10	1.77	0.03	0.09	1.12	2.18	0.04	3.55%
Southern Company	SO	0.12	1.80	2.36	0.03	0.13	1.87	2.55	0.03	0.13	1.94	2.67	0.03	0.13	2.01	2.70	0.03	0.13	2.08	2.77	0.03	3.21%
TECO Energy, Inc.	TE	0.11	0.82	1.13	0.03	0.12	0.85	1.27	0.04	0.11	0.88	1.14	0.02	0.09	0.88	0.92	0.00	0.08	0.88	0.95	0.01	2.09%
Westar Energy, Inc.	WR	0.09	1.24	1.80	0.03	0.08	1.28	1.79	0.02	0.09	1.32	2.15	0.04	0.10	1.36	2.27	0.04	0.10	1.40	2.35	0.04	3.23%
Xcel Energy Inc.	XEL	0.09	1.00	1.56	0.03	0.10	1.03	1.72	0.04	0.10	1.07	1.85	0.04	0.10	1.11	1.91	0.04	0.10	1.20	2.03	0.04	3.94%

[1], [2], [3] Value Line Investment Survey. 2014 data

[4] = [1] * (1 - [2] / [3]) = Fundamental Growth Rate for that year

[5] = Average of [4] for each year

DCF Growth Rate Results

Company	Ticker	[1] Historic Growth	[2] Projected Growth	[3] Fundamental Growth	[4] Mean Growth
ALLETE, Inc.	ALE	2.0%	6.00%	2.28%	3.43%
Alliant Energy Corporation	LNT	6.5%	5.45%	4.28%	5.41%
Ameren Corporation	AEE	-6.0%	5.85%	2.85%	2.90%
Consolidated Edison Co.	ED	1.0%	2.38%	3.10%	2.16%
Duke Energy Corporation	DUK	2.5%	4.49%	1.73%	2.91%
Edison International	EIX	2.5%	0.70%	8.12%	3.77%
Empire District Electric Company	EDE	-4.5%	5.00%	2.17%	2.39%
Entergy Corp.	ETR	3.0%	-0.48%	5.72%	2.91%
Eversource Energy	ES	11.5%	6.60%	3.65%	7.25%
Great Plains Energy Inc.	GXP	-8.5%	6.37%	2.67%	3.01%
IDACORP, Inc.	IDA	5.5%	4.00%	5.74%	5.08%
NorthWestern Corporation	NWE	3.0%	5.00%	3.69%	3.90%
OGE Energy Corp.	OGE	4.5%	4.00%	6.95%	5.15%
Pepco Holdings	POM	0.5%	7.80%	0.32%	2.87%
PG&E Corp.	PCG	3.0%	4.71%	2.23%	3.31%
Pinnacle West Capital Corporation	PNW	3.0%	5.30%	2.94%	3.75%
PNM Resources, Inc.	PNM	-6.0%	8.56%	3.23%	3.93%
Portland General Electric Company	POR	2.5%	4.70%	3.55%	3.58%
Southern Company	SO	4.0%	3.32%	3.21%	3.51%
TECO Energy, Inc.	TE	2.0%	9.20%	2.09%	4.43%
Westar Energy, Inc.	WR	3.5%	3.40%	3.23%	3.38%
Xcel Energy Inc.	XEL	3.5%	4.58%	3.94%	4.01%
Average		1.8%	4.9%	3.5%	3.8%

[1] Value Line Invstment Survey. Dividend growth rate over past five years

[2] Yahoo! Finance projected earnings growth over next five years

[3] Fundamental growth rates from Exhibit DG-C-5

[4] = Average ([1],[2],[3]). Negative numbers were counted as zero

DCF Results

		[1]	[2]	[3]	[4]	[5]
Company	Ticker	Dividend (d_0)	Stock Price (P_0)	Growth (g)	Annual DCF Results	Quarterly DCF Results
ALLETE, Inc.	ALE	0.505	48.50	3.43%	4.50%	7.80%
Alliant Energy Corporation	LNT	0.550	58.99	5.41%	6.39%	9.40%
Ameren Corporation	AEE	0.410	38.42	2.90%	4.00%	7.36%
Consolidated Edison Co.	ED	0.650	59.10	2.16%	3.28%	6.73%
Duke Energy Corporation	DUK	0.795	73.12	2.91%	4.02%	7.45%
Edison International	EIX	0.418	57.68	3.77%	4.53%	6.81%
Empire District Electric Company	EDE	0.260	22.54	2.39%	3.57%	7.20%
Entergy Corp.	ETR	0.830	72.30	2.91%	4.09%	7.71%
Eversource Energy	ES	0.418	46.84	7.25%	8.20%	11.12%
Great Plains Energy Inc.	GXP	0.245	25.01	3.01%	4.02%	7.11%
IDACORP, Inc.	IDA	0.470	57.38	5.08%	5.94%	8.57%
NorthWestern Corporation	NWE	0.480	50.24	3.90%	4.89%	7.93%
OGE Energy Corp.	OGE	0.250	29.35	5.15%	6.05%	8.78%
Pepco Holdings	POM	0.270	26.83	2.87%	3.91%	7.08%
PG&E Corp.	PCG	0.455	50.62	3.31%	4.24%	7.08%
Pinnacle West Capital Corporation	PNW	0.595	58.17	3.75%	4.81%	8.06%
PNM Resources, Inc.	PNM	0.200	25.40	3.93%	4.75%	7.24%
Portland General Electric Company	POR	0.300	33.73	3.58%	4.50%	7.32%
Southern Company	SO	0.543	42.76	3.51%	4.82%	8.86%
TECO Energy, Inc.	TE	0.225	18.13	4.43%	5.73%	9.71%
Westar Energy, Inc.	WR	0.360	35.10	3.38%	4.44%	7.68%
Xcel Energy Inc.	XEL	0.320	32.68	4.01%	5.03%	8.14%
Average					4.81%	**7.96%**

[1] Second quarter 2015 reported dividends per share. Nasdaq.com

[2] Thirty-day average stock price from DG-C-4

[3] Growth rate from DG-C-6

[4] Annual DCF = $d_0(1 + g) / P_0 + g$ (not considered in final recommendation)

[5] Quarterly DCF Approximation = $[d_0(1 + g)^{0.25}/P_0 + (1 + g)^{0.25}]^4 - 1$

Risk-Free Rate
(Daily Curve Yield on 30-Year Treasury Bonds)

Date	Rate
05/27/15	2.88
05/28/15	2.89
05/29/15	2.88
06/01/15	2.94
06/02/15	3.02
06/03/15	3.11
06/04/15	3.03
06/05/15	3.11
06/08/15	3.11
06/09/15	3.15
06/10/15	3.22
06/11/15	3.11
06/12/15	3.10
06/15/15	3.09
06/16/15	3.06
06/17/15	3.09
06/18/15	3.14
06/19/15	3.05
06/22/15	3.16
06/23/15	3.20
06/24/15	3.16
06/25/15	3.16
06/26/15	3.25
06/29/15	3.09
06/30/15	3.11
07/01/15	3.20
07/02/15	3.19
07/06/15	3.08
07/07/15	3.04
07/08/15	2.99
Average	**3.09%**

*Daily Treasury Yield Curve Rates on 30-year T-bonds, http://www.treasury.gov/resources-center/data-chart-center/interest-rates/. Accessed 7-10-15

Index and Proxy Group Returns

Date	S&P 500 Price	S&P 500 Return	ALE Price	ALE Return	LNT Price	LNT Return	AEE Price	AEE Return	ED Price	ED Return	DUK Price	DUK Return	EIX Price	EIX Return	EDE Price	EDE Return	ETR Price	ETR Return	ES Price	ES Return	GXP Price	GXP Return
07/06/15	2,047	-0.014	48.30	0.023	60.41	0.024	39.28	0.020	61.23	0.035	74.79	0.031	58.25	0.012	22.56	0.017	73.30	0.020	47.13	0.013	25.38	0.024
06/29/15	2,077	-0.012	47.20	0.000	59.01	0.020	38.50	0.020	59.14	0.018	72.53	0.022	57.55	0.023	22.19	0.022	71.88	0.019	46.51	0.011	24.78	0.008
06/22/15	2,102	-0.004	47.18	-0.044	57.84	-0.022	37.73	-0.014	58.10	-0.015	71.00	-0.030	56.23	-0.033	21.71	-0.050	70.51	-0.015	45.99	-0.016	24.59	-0.023
06/15/15	2,110	0.008	49.34	0.030	59.14	0.018	38.26	0.013	58.99	0.025	73.20	0.009	58.17	0.025	22.86	0.022	71.57	0.012	46.74	0.014	25.16	0.023
06/08/15	2,094	0.001	47.89	-0.023	58.12	-0.003	37.77	-0.005	57.54	-0.018	72.53	-0.004	56.77	-0.008	22.37	-0.005	70.71	-0.020	46.10	-0.013	24.60	-0.008
06/01/15	2,093	-0.007	49.01	-0.027	58.29	-0.049	37.96	-0.046	58.61	-0.052	72.85	-0.038	57.25	-0.051	22.48	-0.037	72.12	-0.057	46.69	-0.052	24.81	-0.048
05/26/15	2,107	-0.009	50.35	0.015	61.30	0.001	39.80	-0.010	61.84	0.011	75.73	-0.004	60.36	0.001	23.34	0.001	76.47	0.006	49.25	0.008	26.07	0.002
05/18/15	2,126	0.002	49.59	0.024	61.21	0.003	40.22	0.003	61.14	0.005	76.05	-0.001	60.29	0.005	23.31	-0.004	76.04	0.014	48.87	0.002	26.02	0.015
05/11/15	2,123	0.003	48.43	0.001	61.00	0.012	40.11	0.004	60.82	0.006	76.15	-0.002	59.99	-0.004	23.40	0.010	74.98	-0.008	48.75	0.015	25.65	0.001
05/04/15	2,116	0.004	48.36	-0.021	60.26	-0.012	39.96	-0.020	60.43	-0.009	76.31	-0.010	60.22	-0.014	23.16	-0.004	75.57	-0.010	48.05	-0.009	25.62	-0.008
04/27/15	2,108	-0.004	49.42	-0.031	61.01	-0.028	40.76	-0.026	61.01	-0.013	77.09	-0.019	61.08	-0.001	23.26	-0.040	76.35	-0.025	48.47	-0.028	25.82	-0.030
04/20/15	2,118	0.018	51.01	0.012	62.77	0.019	41.87	0.029	61.84	0.026	78.58	0.027	61.12	0.008	24.24	0.000	78.28	0.024	49.86	0.005	26.62	0.007
04/13/15	2,081	-0.010	50.41	-0.017	61.60	-0.016	40.69	-0.024	60.30	0.001	76.50	-0.007	60.61	-0.043	24.23	-0.008	76.45	-0.010	49.62	-0.009	26.43	-0.013
04/06/15	2,102	0.017	51.29	-0.010	62.58	0.004	41.67	-0.004	60.22	-0.001	77.03	0.011	63.31	0.012	24.43	-0.021	77.24	0.005	50.07	-0.003	26.76	0.003
03/30/15	2,067	0.003	51.82	-0.001	62.35	0.021	41.84	0.022	60.31	0.019	76.17	0.026	62.57	0.014	24.94	0.019	76.82	0.013	50.21	0.010	26.70	0.031
03/23/15	2,061	-0.022	51.86	-0.020	61.10	-0.031	40.95	-0.030	59.17	-0.027	74.22	-0.022	61.72	-0.024	24.47	-0.031	75.84	-0.030	49.69	-0.017	25.88	-0.030
03/16/15	2,108	0.027	52.92	0.017	63.02	0.051	42.20	0.037	60.82	0.010	75.87	0.028	63.26	0.021	25.26	0.065	78.19	0.059	50.57	0.038	26.69	0.044
03/09/15	2,053	-0.009	52.05	0.018	59.99	0.004	40.69	0.015	60.20	0.014	73.83	-0.005	61.94	0.025	23.73	0.006	73.84	0.000	48.71	0.008	25.57	0.000
03/02/15	2,071	-0.016	51.11	-0.058	59.72	-0.053	40.11	-0.034	59.35	-0.050	74.18	-0.046	60.45	-0.046	23.58	-0.060	73.86	-0.061	48.34	-0.058	25.56	-0.030
02/23/15	2,105	-0.003	54.27	-0.007	63.04	-0.016	41.54	-0.013	62.47	-0.010	77.73	-0.002	63.34	0.002	25.07	0.005	78.64	0.002	51.31	-0.007	26.36	-0.019
02/17/15	2,110	0.006	54.67	0.030	64.04	0.016	42.09	0.034	63.08	-0.003	77.89	-0.014	63.19	0.019	24.95	0.027	78.45	0.003	51.68	0.030	26.88	0.023
02/09/15	2,097	0.020	53.10	-0.022	63.01	-0.034	40.68	-0.031	63.24	-0.033	79.01	-0.030	62.02	-0.023	24.30	-0.106	78.26	-0.030	50.18	-0.050	26.28	-0.045
02/02/15	2,055	0.030	54.28	-0.023	65.20	-0.041	42.01	-0.053	65.41	-0.036	81.47	-0.046	63.46	-0.055	27.17	-0.089	80.68	-0.058	52.83	-0.034	27.52	-0.052
01/26/15	1,995	-0.028	55.55	-0.027	68.00	-0.015	44.35	-0.023	67.87	-0.015	85.42	-0.018	67.19	-0.004	29.83	-0.025	85.67	-0.023	54.67	-0.005	29.03	-0.010
01/20/15	2,052	0.016	57.10	0.014	69.03	0.009	45.38	-0.005	68.94	0.018	86.97	0.016	67.42	0.006	30.60	0.017	87.72	0.010	54.92	0.005	29.33	0.018
01/12/15	2,019	-0.012	56.30	0.032	68.44	0.044	45.58	0.034	67.69	0.029	85.62	0.028	67.04	0.009	30.10	0.042	86.81	0.010	54.64	0.039	28.80	0.030
01/05/15	2,045	-0.007	54.53	0.003	65.54	0.002	44.07	-0.022	65.76	0.012	83.25	0.010	66.43	0.029	28.89	-0.013	85.95	0.001	52.60	-0.005	27.95	0.018
12/29/14	2,058	-0.015	54.35	-0.019	65.40	-0.024	45.04	-0.032	64.99	-0.021	82.39	-0.021	64.59	-0.024	29.27	-0.017	85.87	-0.030	52.86	-0.035	27.45	-0.017
12/22/14	2,089	0.009	55.41	0.028	67.02	0.041	46.52	0.053	66.38	0.032	84.11	0.036	66.18	0.042	29.79	0.050	88.52	0.016	54.76	0.056	27.93	0.041
12/15/14	2,071	0.034	53.89	0.054	64.38	0.033	44.19	0.051	64.35	0.025	81.21	0.002	63.49	0.013	28.36	0.028	87.16	0.030	51.84	0.031	26.84	0.030
12/08/14	2,002	-0.035	51.11	-0.002	62.35	-0.005	42.04	0.001	62.80	0.013	81.06	0.024	62.71	0.006	27.60	0.008	84.59	0.045	50.30	0.004	26.07	0.009
12/01/14	2,075	0.004	51.19	0.024	62.69	0.014	42.00	0.004	61.97	0.002	79.13	-0.002	62.34	0.001	27.38	0.009	80.98	-0.014	50.10	0.014	25.84	0.006
11/24/14	2,068	0.002	49.98	0.013	61.83	0.011	41.82	0.007	61.86	0.013	79.30	0.014	62.28	0.018	27.13	0.006	82.14	0.018	49.43	0.006	25.69	-0.007
11/17/14	2,064	0.012	49.34	0.010	61.18	0.007	41.55	0.015	61.10	0.005	78.19	0.008	61.19	0.011	26.96	-0.001	80.67	0.012	49.16	0.032	25.87	0.008
11/10/14	2,040	0.004	48.86	-0.037	60.74	-0.016	40.95	-0.025	60.77	-0.024	77.55	-0.027	60.51	-0.010	26.99	-0.031	79.74	-0.005	47.63	-0.037	25.66	-0.023
11/03/14	2,032	0.007	50.76	0.000	61.71	0.014	42.02	0.023	62.27	0.013	79.68	-0.001	61.12	-0.003	27.85	0.010	80.13	-0.016	49.49	0.027	26.26	0.003
10/27/14	2,018	0.027	50.75	0.041	60.88	0.034	41.08	0.027	61.45	0.014	79.75	0.023	61.32	0.032	27.58	0.056	81.43	0.023	48.17	0.016	26.19	0.027
10/20/14	1,965	0.041	48.75	0.036	58.86	0.039	40.01	0.040	60.62	0.030	77.96	0.024	59.42	0.032	26.11	0.043	79.61	0.035	47.43	0.030	25.49	0.038
10/13/14	1,887	-0.010	47.06	0.024	56.63	0.020	38.49	0.003	58.87	0.027	76.14	0.021	57.57	0.018	25.02	0.040	76.88	0.019	46.05	0.015	24.55	0.033
10/06/14	1,906	-0.031	45.94	0.011	55.50	0.008	38.39	0.017	57.35	0.037	74.59	0.022	56.55	0.020	24.06	0.016	75.43	0.000	45.35	0.020	23.77	-0.007
09/29/14	1,968	-0.008	45.44	0.041	55.05	0.020	37.73	0.024	55.31	0.012	72.98	0.015	55.46	0.015	23.68	0.010	75.42	0.022	44.46	0.026	23.93	0.014
09/22/14	1,983	-0.014	43.66	-0.024	53.95	-0.035	36.85	-0.017	54.65	-0.014	71.92	-0.004	54.66	-0.030	23.45	-0.022	73.79	-0.009	43.34	-0.023	23.59	-0.030
09/15/14	2,010	0.013	44.75	-0.020	55.92	0.004	37.49	0.010	55.41	0.012	72.21	0.018	56.38	0.018	23.98	-0.007	74.45	0.018	44.36	0.020	24.31	0.003
09/08/14	1,986	-0.011	45.66	-0.028	55.67	-0.036	37.10	-0.041	54.73	-0.029	70.93	-0.025	55.38	-0.044	24.15	-0.035	73.15	-0.025	43.51	-0.035	24.25	-0.027
09/02/14	2,008	0.002	46.98	-0.006	57.74	0.012	38.69	0.007	56.37	0.004	72.71	0.012	57.91	0.006	25.01	-0.002	75.02	0.000	45.06	0.015	24.93	-0.002
08/25/14	2,003	0.008	47.28	0.008	57.04	0.016	38.41	0.012	56.15	0.012	71.83	0.015	57.58	0.011	25.07	0.015	75.02	0.038	44.41	0.016	24.97	0.009
08/18/14	1,988	0.017	46.92	0.016	56.14	0.012	37.95	0.026	55.46	0.004	70.74	0.011	56.95	0.020	24.69	0.022	72.27	0.024	43.70	0.022	24.73	0.019
08/11/14	1,955	0.012	46.16	0.002	55.48	0.018	36.98	0.010	55.24	0.012	69.99	0.016	55.84	0.008	24.16	0.010	70.57	0.014	42.74	0.016	24.27	0.010
08/04/14	1,932	0.003	46.09	0.001	54.51	-0.017	36.62	-0.013	54.57	0.014	68.88	-0.016	55.42	0.018	23.91	0.007	69.63	-0.004	42.07	-0.007	24.04	0.007
07/28/14	1,925	-0.027	46.02	-0.001	55.44	-0.025	37.09	-0.029	53.80	-0.016	70.02	-0.004	54.46	-0.012	23.75	-0.024	69.93	-0.033	42.37	-0.034	23.87	-0.027
07/21/14	1,978	0.000	46.08	-0.019	56.84	-0.003	38.20	-0.007	54.65	0.001	70.28	0.001	55.12	-0.009	24.33	0.004	72.32	-0.023	43.87	-0.004	24.53	-0.025
07/14/14	1,978	0.005	46.97	-0.011	56.99	-0.003	38.46	0.004	54.59	0.013	70.19	0.013	55.60	0.009	24.25	0.008	73.98	-0.010	44.07	-0.004	25.16	-0.012
07/07/14	1,968	-0.009	47.48	-0.018	57.17	0.009	38.31	0.016	53.87	0.003	69.27	0.011	55.12	0.014	24.05	-0.002	74.75	0.014	44.25	0.001	25.46	0.006
06/30/14	1,985	0.012	48.36	-0.013	56.64	-0.025	37.73	-0.033	53.71	-0.027	68.53	-0.031	54.35	-0.027	24.09	-0.014	73.74	-0.052	44.20	-0.025	25.29	-0.025
06/23/14	1,961	-0.001	49.00	0.032	58.09	0.011	39.01	0.021	55.20	0.014	70.75	0.019	55.85	0.002	24.43	0.009	77.78	0.004	45.35	0.009	25.93	0.031
06/16/14	1,963	0.014	47.47	0.031	57.44	0.030	38.19	0.035	54.42	0.028	69.43	0.021	55.73	0.049	24.22	0.046	77.44	0.034	44.95	0.024	25.14	0.037
06/09/14	1,936	-0.007	46.05	-0.040	55.75	-0.018	36.88	-0.015	52.96	0.000	68.00	-0.007	53.11	-0.021	23.15	-0.003	74.92	-0.003	43.89	-0.003	24.25	-0.015
06/02/14	1,949	0.013	47.95	0.004	56.74	0.007	37.43	0.001	52.97	0.004	68.49	0.004	54.24	0.017	23.22	0.007	75.12	0.040	44.01	0.002	24.62	0.004
05/27/14	1,924	0.012	47.75	0.002	56.37	0.021	37.41	0.018	52.76	0.016	68.24	0.011	53.35	0.021	23.06	0.018	72.26	0.018	43.93	0.013	24.53	0.019
05/19/14	1,901	0.012	47.64	0.004	55.20	-0.008	36.74	-0.015	51.92	-0.019	67.47	-0.015	52.27	-0.023	22.65	0.005	70.96	-0.006	43.39	-0.016	24.08	-0.018
05/12/14	1,878	0.000	47.46	-0.006	55.63	0.001	37.29	-0.002	52.92	-0.018	68.50	0.002	53.49	0.000	22.55	-0.001	71.40	0.010	44.11	0.005	24.53	-0.019
05/05/14	1,878	-0.001	47.75	-0.005	55.59	-0.004	37.37	-0.022	53.90	-0.011	68.35	-0.012	53.50	-0.001	22.57	0.000	70.68	0.033	43.91	-0.005	25.01	-0.017
04/28/14	1,881	0.010	47.98	-0.021	55.80	-0.009	38.22	-0.032	54.50	-0.016	69.18	-0.015	53.55	-0.028	22.56	-0.036	68.44	0.006	44.11	-0.021	25.44	-0.020
04/21/14	1,863	-0.001	49.02	0.002	56.31	0.018	39.47	0.013	55.38	0.022	70.27	0.020	55.09	0.010	23.40	0.014	68.06	0.008	45.06	0.023	25.95	0.020
04/14/14	1,865	0.027	48.91	0.006	55.33	0.017	38.97	0.012	54.19	0.016	68.91	0.010	54.55	0.001	23.08	0.009	67.51	0.013	44.06	0.011	25.44	0.006
04/07/14	1,816	-0.026	48.61	-0.014	54.39	0.005	38.51	0.002	53.33	0.023	68.22	0.019	54.50	0.007	22.88	0.011	66.65	0.019	43.59	0.008	25.30	-0.007
03/31/14	1,865	0.004	49.30	0.000	54.10	0.009	38.41	-0.010	52.14	0.022	66.93	0.001	54.12	0.012	22.63	-0.012	65.44	0.036	43.25	0.003	25.49	0.005
03/24/14	1,858	-0.005	49.28	0.000	53.59	0.029	38.79	0.008	51.00	0.014	66.89	0.020	53.50	0.033	22.90	-0.001	63.14	0.009	43.12	0.012	25.38	-0.004
03/17/14	1,867	0.014	49.30	0.019	52.10	-0.006	38.49	-0.016	50.32	-0.040	65.60	-0.023	51.78	0.035	22.92	0.003	62.56	0.022	42.61	-0.010	25.49	0.006
03/10/14	1,841	-0.020	48.35	0.012	52.43	0.018	39.11	0.042	52.43	-0.014	67.13	0.009	50.04	0.012	22.84	0.022	61.18	0.032	43.06	0.026	25.35	0.024
03/03/14	1,878	0.010	47.78	-0.006	51.50	-0.009	37.54	-0.013	53.17	-0.011	66.53	-0.012	49.43	-0.018	22.35	-0.009	59.27	-0.020	41.97	-0.016	24.77	-0.013
02/24/14	1,859	0.013	48.09	-0.016	51.99	0.009	38.03	-0.011	53.76	0.014	67.30	-0.009	50.34	0.020	22.56	0.005	60.46	-0.010	42.64	0.004	25.09	0.014
02/18/14	1,836	-0.001	48.89	0.032	51.52	0.001	38.48	0.058	53.03	0.002	67.88	0.001	49.37	0.016	22.46	0.025	61.06	-0.001	42.45	-0.007	24.75	0.020
02/10/14	1,839	0.023	47.38	0.038	51.44	0.046	36.36	0.032	52.91	0.033	67.85	0.032	48.58	0.038	21.91	0.018	61.10	0.028	42.75	0.039	24.26	0.046
02/03/14	1,797	0.008	45.63	-0.031	49.16	-0.013	35.24	-0.011	51.21	-0.007	65.73	-0.009	46.82	0.011	21.52	-0.002	59.43	0.008	41.17	-0.011	23.19	-0.007
01/27/14	1,783	-0.004	47.11	0.015	49.80	0.034	35.62	0.054	51.58	0.014	66.32	0.035	46.29	0.026	21.57	0.000	58.93	0.029	41.64	0.032	23.36	0.026
01/21/14	1,790	-0.026	46.39	0.001	48.16	-0.011	33.80	-0.007	50.86	-0.006	64.11	0.010	45.10	0.000	21.56	0.012	57.30	-0.005	40.34	-0.004	22.78	-0.017
01/13/14	1,839	-0.002	46.33	-0.015	48.67	-0.011	34.02	-0.010	51.15	-0.007	63.46	-0.015	45.08	0.031	21.31	-0.001	57.61	0.009	40.49	-0.001	23.17	-0.013
01/06/14	1,842	0.006	47.02	0.015	49.22	0.023	34.37	0.032	51.50	0.016	64.42	0.010	43.75	0.002	21.33	0.022	57.09	0.000	40.55	0.027	23.49	0.039
12/30/13	1,831	-0.005	46.33	-0.020	48.10	-0.018	33.32	-0.017	50.67	-0.029	63.79	-0.015	43.68	-0.012	20.88	-0.025	57.06	-0.029	39.47	-0.016	22.62	-0.012
12/23/13	1,841	0.013	47.29	-0.004	48.98	-0.003	33.88	-0.004	52.18	0.005	64.76	-0.008	44.19	-0.005	21.40	-0.004	58.75	0.005	40.12	0.002	22.90	-0.010
12/16/13	1,818	0.024	47.49	0.039	49.12	0.015	34.02	0.032	51.92	0.008	65.27	0.019	44.43	0.020	21.50	0.018	58.43	0.021	40.04	0.013	23.13	0.019
12/09/13	1,775	-0.016	45.71	-0.009	48.40	-0.029	32.96	-0.028	51.50	-0.027	64.04	-0.028	43.57	-0.005	21.11	-0.012	57.22	-0.029	39.54	0.009	22.70	-0.010
12/02/13	1,805	0.000	46.15	-0.006	49.86	0.020	33.92	0.016	52.94	0.012	65.92	0.003	43.77	-0.007	21.37	0.002	58.92	0.018	39.18	0.012	22.94	0.021
11/25/13	1,806	0.001	46.45	-0.008	48.87	-0.021	33.37	-0.022	52.34	-0.013	65.70	-0.016	44.08	0.005	21.34	-0.003	57.87	-0.010	38.71	-0.026	22.47	-0.025
11/18/13	1,805	0.004	46.82	0.002	49.93	-0.018	34.14	-0.008	53.01	-0.037	66.80	-0.009	43.88	-0.064	21.41	0.000	58.47	-0.018	39.74	-0.017	23.05	0.002
11/11/13	1,798	0.016	46.74	-0.007	50.85	0.014	34.40	0.015	55.05	0.014	67.43	0.002	46.90	0.002	21.41	0.019	59.53	-0.012	40.45	0.016	23.00	0.034
11/04/13	1,771	0.005	47.07	0.008	50.17	0.006	33.89	-0.002	54.29	-0.009	67.28	-0.001	46.79	-0.008	21.02	0.007	60.23	0.002	39.83	-0.005	22.25	0.008
10/28/13	1,762	0.001	46.69	-0.029	49.86	0.005	33.96	0.000	54.79	-0.003	67.36	0.002	47.19	0.001	20.88	-0.012	60.13	-0.046	40.04	-0.021	22.07	-0.006
10/21/13	1,760	0.009	48.07	0.026	49.62	0.031	33.96	0.017	54.96	0.030	67.23	0.033	47.13	0.021	21.13	0.017	63.02	0.029	40.90	0.025	22.21	0.023
10/14/13	1,745	0.024	46.85	0.018	48.14	0.006	33.40	0.010	53.33	0.011	65.10	0.018	46.15	0.015	20.76	0.013	61.25	0.016	39.89	0.004	21.71	0.016
10/07/13	1,703	0.008	46.01	0.029	47.85	0.032	33.08	0.029	52.77	0.032	63.96	0.036	45.48	0.029	20.50	0.030	60.28	0.029	39.72	0.028	21.37	0.037

Date	IDA Price	IDA Return	NWE Price	NWE Return	OGE Price	OGE Return	POM Price	POM Return	PCG Price	PCG Return	PNW Price	PNW Return	PNM Price	PNM Return	POR Price	POR Return	SO Price	SO Return	TE Price	TE Return	WR Price	WR Return	XEL Price	XEL Return
07/06/15	58.94	0.028	51.22	0.023	28.99	0.000	26.99	-0.002	51.43	0.033	60.28	0.034	25.69	0.019	34.48	0.020	44.20	0.031	18.57	0.026	36.31	0.028	33.71	0.027
06/29/15	57.34	0.010	50.06	0.009	29.00	0.010	27.04	0.011	49.79	0.002	58.32	0.025	25.22	0.009	33.79	0.014	42.89	0.024	18.10	0.014	35.32	0.027	32.82	0.018
06/22/15	56.78	-0.012	49.59	-0.020	28.71	-0.011	26.75	-0.001	49.70	-0.018	56.89	-0.021	25.00	-0.017	33.32	-0.018	41.89	-0.020	17.85	-0.024	34.38	-0.031	32.24	-0.016
06/15/15	57.45	0.025	50.62	0.015	29.03	0.004	26.78	0.002	50.61	0.017	58.14	0.020	25.44	0.025	33.94	0.025	42.73	0.010	18.29	0.028	35.49	0.021	32.77	0.012
06/08/15	56.04	-0.008	49.89	0.016	28.90	-0.030	26.72	-0.002	49.78	-0.022	57.00	-0.011	24.82	-0.020	33.11	-0.012	42.30	-0.008	17.80	-0.004	34.77	0.010	32.38	0.011
06/01/15	56.51	-0.050	49.12	-0.047	29.79	-0.046	26.77	-0.008	50.89	-0.039	57.63	-0.054	25.32	-0.048	33.51	-0.033	42.66	-0.024	17.87	-0.052	34.42	-0.052	32.03	-0.050
05/26/15	59.47	-0.002	51.54	-0.010	31.23	-0.003	26.98	0.010	52.98	0.014	60.92	-0.001	26.59	-0.008	34.65	-0.008	43.69	0.011	18.85	-0.013	36.29	0.002	33.71	-0.012
05/18/15	59.59	0.005	52.04	0.009	31.33	-0.012	26.71	-0.001	52.23	0.013	60.98	0.017	26.81	0.022	34.92	0.012	43.23	-0.011	19.10	0.018	36.21	0.012	34.12	0.021
05/11/15	59.31	0.003	51.57	0.013	31.72	0.001	26.73	0.059	51.53	-0.007	59.96	0.002	26.23	-0.023	34.52	-0.003	43.72	0.003	18.77	0.017	35.77	0.004	33.42	0.004
05/04/15	59.12	-0.012	50.91	-0.007	31.69	-0.013	25.24	-0.023	51.92	-0.020	59.86	-0.010	26.84	-0.030	34.63	-0.008	43.60	-0.015	18.47	-0.017	35.63	-0.046	33.29	-0.010
04/27/15	59.86	-0.038	51.28	-0.026	32.10	-0.002	25.82	-0.009	53.00	0.014	60.48	-0.042	27.68	-0.031	34.90	-0.051	44.26	-0.001	18.78	-0.033	37.33	-0.026	33.63	-0.026
04/20/15	62.20	0.013	52.63	0.015	32.18	-0.007	26.07	-0.009	52.26	0.007	63.15	0.018	28.57	0.034	36.80	0.015	44.31	0.017	19.42	0.017	38.34	0.027	34.53	0.015
04/13/15	61.41	-0.014	51.87	-0.016	32.39	0.019	26.30	-0.007	51.88	-0.013	62.06	-0.018	27.63	-0.034	36.26	0.000	43.56	-0.011	19.10	-0.015	37.34	-0.025	34.03	-0.009
04/06/15	62.31	-0.006	52.70	-0.013	31.80	0.010	26.48	-0.004	52.55	-0.010	63.18	0.002	28.59	-0.020	36.27	-0.016	44.06	0.000	19.38	-0.001	38.31	-0.006	34.33	-0.003
03/30/15	62.67	0.031	53.39	0.018	31.49	0.016	26.59	0.001	53.10	0.030	63.06	0.010	29.17	0.047	36.85	0.024	44.08	0.014	19.40	0.022	38.54	0.021	34.42	0.011
03/23/15	60.79	-0.025	52.43	-0.030	31.01	-0.029	26.57	-0.006	51.53	-0.028	62.45	-0.026	27.86	-0.024	35.98	-0.015	43.46	-0.021	18.99	-0.035	37.76	-0.022	34.05	-0.011
03/16/15	62.37	0.045	54.06	0.051	31.92	0.039	26.72	0.007	53.00	0.042	64.12	0.043	28.53	0.039	36.54	0.048	44.41	0.023	19.67	0.059	38.62	0.043	34.44	0.031
03/09/15	59.68	0.003	51.46	0.014	30.73	-0.013	26.54	-0.005	50.88	-0.008	61.49	0.002	27.45	0.011	34.87	0.000	43.40	-0.003	18.57	0.000	37.04	0.011	33.41	0.012
03/02/15	59.49	-0.042	50.75	-0.046	31.15	-0.026	26.68	0.003	51.27	-0.028	61.38	-0.033	27.15	-0.042	34.87	-0.050	43.54	-0.037	18.57	-0.042	36.62	-0.039	33.01	-0.046
02/23/15	62.13	-0.015	53.19	-0.002	31.98	-0.045	26.60	-0.004	52.77	-0.023	63.47	-0.026	28.35	0.005	36.69	0.009	45.22	-0.008	19.39	-0.018	38.09	-0.029	34.61	-0.018
02/17/15	63.06	0.033	53.28	0.012	33.50	0.021	26.70	0.007	54.00	0.017	65.15	0.010	28.22	0.009	36.35	0.008	45.56	0.006	19.75	0.020	39.22	0.015	35.24	0.026
02/09/15	61.07	-0.048	52.62	-0.034	32.80	-0.009	26.52	-0.005	53.10	-0.036	64.51	-0.025	27.97	-0.036	36.07	-0.024	45.31	-0.037	19.35	-0.060	38.64	-0.042	34.33	-0.020
02/02/15	64.14	-0.042	54.49	-0.039	33.09	-0.044	26.65	-0.009	55.06	-0.047	66.16	-0.048	29.02	-0.042	36.94	-0.054	47.05	-0.050	20.59	-0.012	40.32	-0.037	35.03	-0.048
01/26/15	66.92	-0.024	56.69	-0.023	34.61	-0.015	26.91	0.002	57.76	-0.001	69.52	-0.021	30.29	0.002	39.06	-0.025	49.54	-0.029	20.85	-0.015	41.88	-0.018	36.82	-0.006
01/20/15	68.53	0.021	58.01	0.026	35.12	0.019	26.85	0.003	57.82	0.012	70.98	0.012	30.22	0.003	40.05	0.019	51.01	0.017	21.16	0.024	42.64	0.030	37.04	0.020
01/12/15	67.12	0.034	56.56	0.021	34.46	0.017	26.76	0.006	57.13	0.042	70.15	0.034	30.12	0.029	39.29	0.042	50.15	0.033	20.66	0.038	41.38	0.025	36.32	0.023
01/05/15	64.90	-0.007	55.39	-0.009	33.87	-0.027	26.60	0.000	54.84	0.047	67.86	0.007	29.28	0.000	37.70	0.000	48.54	0.007	19.91	-0.011	40.36	0.000	35.49	0.002
12/29/14	65.34	-0.020	55.89	-0.003	34.80	-0.007	26.60	0.005	52.39	-0.020	67.42	-0.020	29.29	-0.031	37.70	-0.024	48.22	-0.022	20.13	-0.010	40.36	-0.017	35.43	-0.013
12/22/14	66.64	0.030	56.03	0.047	35.04	0.031	26.47	0.007	53.44	0.034	68.77	0.039	30.22	0.049	38.64	0.030	49.29	0.030	20.34	0.053	41.05	0.030	35.88	0.042
12/15/14	64.71	0.052	53.52	0.024	34.00	0.014	26.27	0.005	51.68	0.019	66.19	0.029	28.81	0.022	37.51	0.022	47.88	0.023	19.32	0.028	39.84	0.034	34.43	0.022
12/08/14	61.54	-0.004	52.27	0.003	33.52	-0.034	26.13	-0.018	50.72	0.022	64.34	-0.006	28.20	-0.027	36.69	0.005	46.80	0.008	18.80	-0.021	38.52	0.011	33.68	0.003
12/01/14	61.78	0.009	52.11	0.005	34.70	-0.004	26.62	-0.003	49.63	0.009	64.73	0.042	28.97	0.014	36.52	0.014	46.43	0.002	19.21	-0.009	38.09	0.003	33.59	0.017
11/24/14	61.20	0.005	51.86	0.013	34.86	-0.034	26.69	0.005	49.19	0.009	62.11	0.008	28.57	0.011	36.01	0.016	46.32	0.004	19.38	0.011	37.98	-0.001	33.01	0.008
11/17/14	60.88	0.015	51.19	0.011	36.07	0.016	26.54	0.003	48.77	0.008	61.59	0.031	28.26	0.008	35.45	0.017	46.15	0.013	19.16	0.019	38.03	0.020	32.76	0.019
11/10/14	59.97	-0.027	50.66	-0.040	35.50	-0.036	26.48	-0.007	48.36	-0.014	59.71	-0.027	28.04	-0.027	34.86	-0.028	45.55	-0.010	18.81	-0.017	37.30	-0.018	32.14	-0.017
11/03/14	61.63	-0.003	52.79	0.026	36.84	0.012	26.65	0.004	49.04	0.001	61.39	0.017	28.83	0.013	35.87	0.009	46.03	0.017	19.13	0.010	37.98	0.034	32.68	0.004
10/27/14	61.84	0.055	51.48	0.034	36.42	0.013	26.54	0.009	49.02	0.067	60.38	0.049	28.46	0.038	35.56	0.024	45.28	-0.011	18.95	0.018	36.74	0.028	32.56	0.017
10/20/14	58.61	0.051	49.80	0.031	35.96	0.034	26.30	0.017	45.95	0.055	57.54	0.025	27.42	0.048	34.71	0.055	45.78	0.026	18.62	0.054	35.75	0.024	32.00	0.032
10/13/14	55.77	0.032	48.31	0.038	34.77	-0.006	25.88	-0.004	43.54	-0.010	56.13	0.021	26.15	0.033	32.91	0.008	44.63	0.025	17.68	0.019	34.91	0.029	31.02	0.010
10/06/14	54.05	0.021	46.56	0.021	34.99	-0.029	25.99	0.000	44.00	-0.007	55.00	0.019	25.33	0.014	32.66	0.028	43.56	0.022	17.35	0.011	33.93	0.022	30.72	0.032
09/29/14	52.92	0.004	45.60	0.024	36.02	0.005	26.00	-0.004	44.32	0.027	54.00	0.010	24.99	0.009	31.77	0.015	42.62	0.016	17.15	0.029	33.21	0.000	29.77	0.007
09/22/14	52.72	-0.023	44.52	-0.027	35.85	0.019	26.10	-0.015	43.17	-0.023	53.48	-0.027	24.77	-0.025	31.31	-0.023	41.96	-0.005	16.67	-0.015	33.21	-0.028	29.56	-0.026
09/15/14	53.95	0.001	45.75	-0.006	35.18	0.001	26.50	0.007	44.20	-0.012	54.96	-0.002	25.42	-0.006	32.04	0.001	42.19	0.008	16.92	0.005	34.17	0.002	30.34	0.007
09/08/14	53.92	-0.029	46.01	-0.035	35.14	-0.039	26.30	-0.004	44.72	-0.035	55.05	-0.003	25.56	-0.025	32.00	-0.043	41.87	-0.032	16.84	-0.039	34.11	-0.039	30.13	-0.037
09/02/14	55.53	0.001	47.67	0.022	36.56	0.005	26.42	-0.003	46.35	0.034	55.24	-0.003	26.23	0.021	33.45	0.002	43.25	0.009	17.53	0.002	35.50	-0.001	31.29	0.013
08/25/14	55.47	0.020	46.64	0.005	36.40	0.022	26.49	0.007	44.81	0.018	55.38	0.021	25.69	0.012	33.38	0.014	42.87	0.016	17.49	0.016	35.54	0.010	30.88	0.021
08/18/14	54.40	0.018	46.43	0.014	35.62	0.018	26.31	0.010	44.00	0.010	54.23	0.023	25.38	0.013	32.93	0.024	42.18	0.006	17.21	0.011	35.20	-0.002	30.24	0.012
08/11/14	53.43	0.023	45.79	0.016	35.00	0.022	26.05	0.004	43.58	0.024	53.02	0.016	25.05	0.010	32.15	0.028	41.93	-0.003	17.02	0.020	35.27	0.015	29.88	0.015
08/04/14	52.24	-0.006	45.07	0.009	34.24	-0.021	25.94	-0.001	42.54	-0.017	52.17	-0.006	24.81	0.007	31.29	0.006	42.03	0.005	16.69	0.001	34.75	-0.003	29.44	-0.014
07/28/14	52.57	-0.007	44.67	-0.037	34.99	-0.024	25.96	-0.014	43.29	-0.047	52.48	-0.031	24.63	-0.066	31.11	-0.021	41.83	-0.020	16.68	-0.020	34.87	-0.017	29.85	-0.017
07/21/14	52.95	-0.012	46.40	-0.037	35.86	-0.020	26.33	0.000	45.41	-0.004	54.19	-0.009	26.38	-0.036	31.78	-0.010	42.69	-0.003	17.01	-0.014	35.46	0.001	30.38	-0.009
07/14/14	53.61	-0.006	48.19	-0.005	36.60	0.008	26.32	-0.015	45.58	0.003	54.70	0.001	27.37	-0.027	32.10	-0.010	42.83	0.008	17.26	0.009	35.44	-0.007	30.65	0.007
07/07/14	53.93	-0.012	48.41	-0.015	36.30	-0.011	26.72	0.004	45.43	0.024	54.66	0.006	28.12	-0.004	32.43	0.001	42.49	0.012	17.10	0.003	35.70	0.004	30.43	0.002
06/30/14	54.56	-0.013	49.16	-0.017	36.70	-0.016	26.61	0.011	44.38	-0.032	54.33	-0.001	28.25	0.004	32.41	-0.025	41.99	-0.023	17.04	-0.026	35.54	-0.026	30.38	-0.011
06/23/14	55.30	-0.007	50.02	0.015	37.29	0.033	26.33	-0.002	45.83	-0.004	54.37	0.006	28.13	0.004	33.25	0.021	43.00	0.018	17.50	0.021	36.48	0.018	30.70	0.009
06/16/14	55.72	0.052	49.26	0.051	36.09	0.031	26.38	0.003	46.02	0.035	54.06	0.036	28.02	0.014	32.55	0.036	42.22	0.017	17.15	0.033	35.82	0.038	30.43	0.039
06/09/14	52.95	-0.019	46.89	0.005	35.02	-0.017	26.29	-0.004	44.45	-0.003	52.20	-0.013	27.62	-0.017	31.42	-0.029	41.54	-0.008	16.59	-0.006	34.51	-0.005	29.28	-0.015
06/02/14	53.95	0.014	46.65	0.014	35.61	0.005	26.39	0.001	44.58	0.018	52.91	-0.008	28.09	0.014	32.35	0.019	41.88	0.003	16.69	0.013	34.68	0.009	29.74	0.013
05/27/14	53.19	0.015	45.99	0.025	35.42	0.024	26.36	0.000	43.80	0.026	53.35	0.011	27.70	0.025	31.76	0.010	41.77	0.016	16.48	0.012	34.36	0.016	29.35	0.017
05/19/14	52.39	-0.009	44.86	0.010	34.59	0.006	26.36	0.004	42.70	0.025	52.77	-0.007	27.02	-0.018	31.45	-0.009	41.11	-0.010	16.28	-0.010	33.81	-0.004	28.85	-0.009
05/12/14	52.86	-0.007	44.42	0.001	34.37	-0.014	26.27	0.001	41.67	0.001	53.12	-0.002	27.52	-0.009	31.73	0.012	41.52	-0.004	16.44	-0.006	33.96	0.007	29.10	-0.008
05/05/14	53.25	0.009	44.38	-0.013	34.86	-0.004	26.24	0.022	41.62	-0.021	53.21	0.023	27.77	0.065	31.34	-0.005	41.67	-0.012	16.55	-0.014	33.72	0.006	29.34	-0.014
04/28/14	52.78	-0.020	44.98	-0.031	35.01	-0.022	25.68	0.235	42.52	-0.021	52.00	-0.042	26.08	-0.044	31.52	-0.005	42.16	-0.034	16.78	-0.032	33.53	-0.025	29.76	-0.024
04/21/14	53.83	0.010	46.40	0.015	35.80	0.018	20.79	0.024	43.45	0.014	54.29	0.018	27.29	0.030	31.68	0.022	43.64	0.025	17.32	0.027	34.39	0.013	30.48	0.020
04/14/14	53.32	0.017	45.70	0.017	35.15	0.004	20.31	0.028	42.85	0.005	53.31	0.021	26.50	0.012	31.00	0.002	42.56	0.012	16.87	0.039	33.95	0.024	29.89	0.024
04/07/14	52.44	-0.006	44.92	-0.015	35.03	0.007	19.75	0.011	42.64	0.004	52.20	-0.003	26.17	0.009	30.92	-0.008	42.04	0.020	16.23	0.005	33.16	-0.008	29.18	-0.002
03/31/14	52.75	-0.002	45.62	0.015	34.76	-0.003	19.54	0.014	42.47	0.062	52.33	0.016	25.94	0.001	31.16	0.016	41.22	0.008	16.15	0.010	33.44	0.008	29.25	0.019
03/24/14	52.87	0.004	44.96	0.010	34.87	0.011	19.26	0.014	40.00	-0.046	51.49	0.002	25.90	0.000	30.67	-0.012	40.91	0.010	15.99	0.017	33.17	0.003	28.70	0.013
03/17/14	52.66	-0.013	44.50	0.008	34.48	-0.009	19.01	-0.013	41.93	0.000	51.40	-0.020	25.90	-0.004	31.05	0.014	40.49	-0.013	15.73	-0.014	33.05	0.007	28.33	-0.018
03/10/14	53.34	-0.002	44.15	0.024	34.77	0.023	19.26	0.021	41.92	0.037	52.45	0.019	26.02	0.036	30.61	0.019	41.02	0.033	15.96	0.036	32.84	0.020	28.83	0.021
03/03/14	53.43	-0.012	43.11	-0.012	34.00	-0.014	18.87	-0.014	40.40	-0.030	51.50	-0.029	25.11	-0.007	30.05	-0.008	39.71	-0.006	15.40	-0.026	32.18	-0.003	28.24	-0.013
02/24/14	54.10	0.009	43.63	-0.011	34.50	-0.010	19.15	-0.014	41.64	0.003	53.03	0.017	25.28	0.019	30.28	-0.010	39.95	0.000	15.81	0.005	32.29	-0.023	28.62	0.008
02/18/14	53.60	0.027	44.09	0.002	34.85	0.019	19.41	0.004	41.53	0.000	52.15	0.006	24.82	0.013	30.58	0.017	39.95	-0.004	15.74	0.003	33.05	0.016	28.39	0.013
02/10/14	52.21	0.064	44.01	0.043	34.20	0.043	19.32	0.059	41.53	0.050	51.83	0.031	24.49	0.041	30.06	0.082	40.11	0.035	15.69	0.035	32.52	0.042	28.01	0.036
02/03/14	49.05	-0.026	42.21	-0.017	32.79	0.004	18.25	0.001	39.53	-0.008	50.28	0.002	23.52	-0.013	27.79	-0.033	38.77	-0.003	15.17	-0.004	31.21	-0.003	27.05	-0.010
01/27/14	50.35	0.011	42.94	0.022	32.65	0.013	18.24	0.040	39.84	0.033	50.15	0.023	23.83	0.014	28.73	0.011	38.90	0.013	15.23	-0.019	31.29	0.021	27.31	0.030
01/21/14	49.83	0.002	42.01	0.005	32.23	-0.014	17.54	0.001	38.58	0.004	49.02	-0.007	23.50	-0.004	28.43	0.013	38.40	0.001	15.52	-0.013	30.66	-0.002	26.51	-0.005
01/13/14	49.74	-0.017	41.79	0.007	32.69	0.000	17.52	-0.019	38.44	0.003	49.38	-0.017	23.60	0.000	28.07	-0.020	38.34	-0.006	15.72	-0.013	30.72	-0.023	26.64	-0.002
01/06/14	50.59	0.038	41.49	0.019	32.69	0.029	17.87	0.019	38.31	0.023	50.21	0.023	23.59	0.036	28.63	0.022	38.56	0.023	15.94	0.011	31.43	0.044	26.69	0.027
12/30/13	48.72	-0.021	40.72	-0.017	31.75	-0.013	17.54	-0.013	37.43	-0.017	49.07	-0.022	22.77	-0.020	28.01	-0.023	37.70	-0.010	15.77	-0.011	30.10	-0.006	25.98	-0.013
12/23/13	49.78	-0.011	41.42	0.004	32.18	0.001	17.77	0.001	38.07	0.004	50.19	0.003	23.24	0.016	28.68	0.006	38.06	-0.005	15.94	0.006	30.28	0.009	26.32	-0.002
12/16/13	50.33	0.024	41.25	0.017	32.15	0.008	17.76	0.018	37.90	0.003	50.03	0.005	22.87	0.020	28.52	0.022	38.25	0.023	15.85	0.014	29.99	0.008	26.39	0.017
12/09/13	49.16	-0.027	40.58	-0.007	31.90	-0.020	17.45	-0.026	37.77	-0.017	49.76	-0.020	22.43	-0.012	27.90	-0.006	37.37	-0.032	15.63	-0.031	29.77	-0.015	25.95	-0.025
12/02/13	50.51	0.024	40.87	-0.013	32.53	-0.007	17.92	0.014	38.42	0.018	50.76	0.009	22.70	0.016	28.08	-0.002	38.60	0.020	16.12	0.018	30.21	0.032	26.61	0.015
11/25/13	49.35	0.007	41.39	-0.018	32.76	-0.098	17.66	-0.006	37.73	-0.006	50.29	-0.018	22.33	-0.003	28.12	0.002	37.85	-0.015	15.85	-0.007	29.27	-0.023	26.21	-0.012
11/18/13	49.03	0.009	42.17	-0.008	36.31	-0.005	17.77	-0.009	37.97	-0.013	51.19	-0.023	22.39	0.007	28.07	0.010	38.41	-0.028	15.96	-0.015	29.97	-0.005	26.52	-0.009
11/11/13	48.59	0.007	42.49	-0.004	36.50	0.015	17.94	0.010	38.46	-0.015	52.40	-0.002	22.23	-0.005	27.79	0.000	39.52	0.029	16.20	0.021	30.11	0.020	26.75	0.003
11/04/13	48.26	-0.013	42.65	-0.014	35.97	0.012	17.76	-0.008	39.03	-0.013	52.52	-0.009	22.34	-0.022	27.79	-0.002	38.39	0.005	15.87	-0.003	29.52	-0.006	26.68	-0.014
10/28/13	48.88	-0.015	43.28	-0.013	35.54	0.007	17.90	-0.008	39.55	0.005	53.00	-0.028	22.85	-0.009	27.84	-0.002	38.21	-0.022	15.92	-0.015	29.69	-0.006	27.05	-0.006
10/21/13	49.65	0.021	43.86	0.004	35.30	0.020	18.05	0.027	39.36	0.022	54.53	0.026	23.05	0.016	27.89	0.018	39.08	0.012	16.17	0.026	29.86	0.020	27.22	0.017
10/14/13	48.65	0.025	43.68	0.025	34.62	0.017	17.57	0.013	38.52	-0.003	53.13	0.016	22.69	0.014	27.40	0.001	38.60	0.006	15.77	0.011	29.26	0.006	26.75	0.012
10/07/13	47.46	0.041	42.64	0.015	34.03	0.001	17.35	0.025	38.64	0.027	52.29	0.030	22.39	0.053	27.36	0.030	38.37	0.025	15.60	0.030	29.08	0.034	26.44	0.036

Index and Proxy Group Returns

Date	S&P 500 Price	S&P 500 Return	ALE Price	ALE Return	LNT Price	LNT Return	AEE Price	AEE Return	ED Price	ED Return	DUK Price	DUK Return	EIX Price	EIX Return	EDE Price	EDE Return	ETR Price	ETR Return	ES Price	ES Return	GXP Price	GXP Return	IDA Price	IDA Return	NWE Price	NWE Return	OGE Price	OGE Return	POM Price	POM Return	PCG Price	PCG Return	PNW Price	PNW Return	PNM Price	PNM Return	POR Price	POR Return	SO Price	SO Return	TE Price	TE Return	WR Price	WR Return	XEL Price	XEL Return
09/30/13	1,691	-0.001	44.73	-0.010	46.38	-0.008	32.15	-0.013	51.13	-0.012	61.71	-0.007	44.21	0.012	19.91	-0.006	58.60	0.003	38.65	-0.010	20.61	-0.013	45.59	-0.005	41.99	-0.007	34.01	-0.001	16.92	-0.009	37.62	-0.013	50.78	-0.009	21.25	-0.001	26.57	-0.003	37.42	-0.014	15.15	-0.001	28.11	-0.017	25.53	-0.014
09/23/13	1,692	-0.011	45.18	0.004	46.75	0.007	32.59	0.012	51.73	-0.015	62.15	-0.007	43.70	0.003	20.02	-0.007	58.45	-0.005	39.05	0.006	20.89	0.002	45.81	0.009	42.30	0.035	34.05	-0.004	17.08	-0.003	38.11	-0.006	51.26	-0.005	21.28	-0.001	26.65	-0.005	37.94	-0.013	15.16	-0.012	28.59	0.002	25.90	-0.002
09/16/13	1,710	0.013	45.00	0.032	46.42	0.010	32.21	0.053	52.50	0.020	62.57	0.028	43.58	0.024	20.17	0.020	58.74	0.009	38.81	0.022	20.84	0.026	45.40	0.025	40.88	0.033	34.17	0.032	17.14	0.019	38.32	0.003	51.49	0.025	21.31	0.035	26.78	0.037	38.45	0.020	15.34	0.022	28.53	0.013	25.96	0.014
09/09/13	1,688	0.020	43.60	0.011	45.95	0.011	30.59	0.003	51.48	-0.013	60.89	0.002	42.55	-0.002	19.78	0.005	58.24	0.003	37.96	0.010	20.32	0.006	44.31	0.017	39.56	0.051	33.11	0.004	16.82	0.002	38.20	0.011	50.25	0.026	20.59	0.017	25.82	-0.014	37.70	-0.004	15.01	-0.014	28.15	0.007	25.59	0.010
09/03/13	1,655	0.014	43.14	-0.021	45.46	-0.026	30.49	-0.020	52.14	-0.011	60.80	-0.002	42.65	-0.019	19.68	0.000	58.08	-0.005	37.58	-0.018	20.20	-0.017	43.57	-0.039	37.64	0.005	32.99	-0.010	16.78	-0.029	37.79	-0.012	48.98	-0.033	20.25	-0.030	26.18	-0.027	37.84	-0.012	15.23	0.004	27.97	-0.026	25.34	-0.020
08/26/13	1,633	-0.018	44.06	-0.013	46.66	-0.019	31.09	-0.001	52.74	-0.006	60.94	-0.011	43.45	-0.013	19.68	-0.025	58.37	-0.011	38.25	-0.018	20.55	-0.021	45.33	-0.015	37.46	-0.019	33.32	-0.028	17.28	-0.010	38.23	-0.004	50.64	-0.009	20.88	-0.041	26.92	-0.002	38.30	-0.014	15.18	-0.016	28.72	-0.013	25.85	0.000
08/19/13	1,664	0.005	44.62	-0.016	47.58	-0.004	31.14	0.007	53.08	-0.001	61.64	-0.010	44.01	-0.011	20.19	-0.003	59.02	-0.010	38.94	0.010	20.99	-0.007	46.03	-0.022	38.19	0.003	34.26	0.004	17.45	-0.005	38.37	-0.027	51.11	-0.006	21.78	0.014	26.97	-0.002	38.86	-0.004	15.43	0.005	29.09	-0.010	25.85	-0.001
08/12/13	1,656	-0.021	45.34	-0.051	47.77	-0.040	30.93	-0.050	53.13	-0.051	62.29	-0.042	44.49	-0.043	20.25	-0.037	59.62	-0.035	38.56	-0.056	21.13	-0.049	47.07	-0.053	38.08	-0.028	34.11	-0.052	17.53	-0.056	39.41	-0.053	51.44	-0.045	21.48	-0.046	27.02	-0.047	39.01	-0.034	15.34	-0.055	29.37	-0.045	25.88	-0.051
08/05/13	1,691	-0.011	47.78	-0.028	49.77	-0.012	32.56	-0.034	55.98	-0.001	65.02	-0.014	46.48	-0.006	21.04	-0.015	61.75	-0.007	40.87	-0.021	22.22	-0.027	49.71	-0.006	39.16	-0.021	35.99	-0.008	18.58	-0.012	41.61	-0.025	53.88	-0.022	22.52	-0.027	28.36	-0.043	40.37	-0.011	16.24	0.007	30.75	-0.024	27.26	-0.030
07/29/13	1,710	0.011	49.17	0.001	50.35	0.007	33.72	0.020	56.05	0.007	65.92	0.014	46.75	0.006	21.35	-0.020	62.17	-0.028	41.73	0.010	22.84	0.021	50.00	0.013	40.02	0.020	36.30	0.021	18.80	0.009	42.69	-0.003	55.10	-0.001	23.15	0.034	29.63	-0.002	40.81	-0.011	16.12	0.007	31.50	0.013	28.11	0.021
07/22/13	1,692	0.000	49.12	-0.011	50.00	-0.006	33.06	-0.004	55.64	-0.009	65.04	-0.001	46.48	-0.012	21.79	-0.012	63.94	-0.025	41.30	-0.013	22.38	-0.016	49.38	-0.001	39.21	-0.028	35.56	0.030	18.63	0.002	42.82	0.029	55.17	-0.005	22.39	-0.013	29.67	-0.014	41.25	-0.005	16.02	-0.010	31.09	-0.001	27.54	-0.011
07/15/13	1,692	0.007	49.64	0.030	50.28	0.032	33.20	0.017	56.15	0.022	65.12	0.010	47.07	0.026	22.06	0.031	65.56	0.014	41.86	0.036	22.75	0.028	49.42	0.032	40.33	0.034	34.54	0.026	18.59	0.007	41.60	-0.012	55.45	0.037	22.68	0.041	30.09	0.010	41.45	0.013	16.17	0.015	31.11	0.032	27.86	0.027
07/08/13	1,680	0.030	48.18	0.046	48.75	0.047	32.64	0.054	54.96	0.036	64.45	0.043	45.90	0.052	21.40	0.037	64.63	0.042	40.41	0.052	22.13	0.050	47.89	0.054	38.99	0.049	33.66	0.042	18.46	0.044	42.09	0.020	53.49	0.055	21.79	0.044	29.81	0.050	40.94	0.043	15.93	0.051	30.16	0.047	27.13	0.043
07/01/13	1,632	0.016	46.07	-0.001	46.55	-0.010	30.96	-0.023	53.07	-0.020	61.80	-0.003	43.62	-0.044	20.64	0.007	62.05	-0.023	38.40	-0.021	21.08	0.007	45.43	0.012	37.18	-0.001	32.31	0.007	17.68	-0.039	41.28	-0.023	50.71	-0.011	20.88	-0.006	28.39	-0.007	39.25	-0.022	15.15	-0.028	28.81	-0.023	26.01	-0.008
06/24/13	1,606	0.009	46.11	0.036	47.00	0.053	31.67	0.038	54.14	0.034	62.01	0.029	45.60	0.053	20.49	0.027	63.53	0.023	39.23	0.041	20.93	0.013	44.90	0.017	37.21	0.025	32.07	0.030	18.39	0.014	42.27	0.042	51.29	0.051	21.00	0.034	28.58	0.027	40.15	0.024	15.59	0.026	29.50	0.041	26.24	0.012
06/17/13	1,592	-0.021	44.50	-0.008	44.62	-0.036	30.50	-0.027	52.35	-0.025	60.25	-0.030	43.30	-0.023	19.96	-0.010	62.12	-0.005	37.69	-0.042	20.67	-0.031	44.13	-0.025	36.29	-0.038	31.15	-0.029	18.13	-0.020	40.57	-0.019	48.78	-0.083	20.32	-0.033	27.82	-0.023	39.22	-0.031	15.20	-0.033	28.35	-0.029	25.93	-0.039
06/10/13	1,627	-0.010	44.84	0.005	46.30	0.004	31.36	-0.012	53.68	0.007	62.14	-0.001	44.32	-0.010	20.15	-0.001	62.43	0.004	39.34	-0.006	21.33	0.006	45.28	-0.007	37.73	-0.013	32.06	0.004	18.50	-0.016	41.33	-0.003	53.21	0.016	21.02	-0.007	28.48	-0.013	40.48	0.001	15.72	-0.010	29.20	0.006	26.98	0.009
06/03/13	1,643	0.008	44.60	0.019	46.10	0.004	31.74	0.026	53.32	0.006	62.19	0.011	44.76	0.036	20.17	0.011	62.17	-0.010	39.57	0.017	21.21	0.012	45.62	0.027	38.22	0.005	31.93	0.000	18.81	0.006	41.45	0.009	52.40	0.003	21.16	-0.003	28.87	0.025	40.44	0.012	15.87	-0.006	29.02	0.002	26.73	0.015
05/28/13	1,631	-0.011	43.77	-0.029	45.92	-0.030	30.95	-0.014	52.98	-0.027	61.49	-0.028	43.19	-0.037	19.96	-0.014	62.80	-0.001	38.91	-0.019	20.96	-0.019	44.40	-0.026	38.03	0.004	31.92	-0.021	18.70	-0.022	41.10	-0.027	52.22	-0.021	21.22	-0.004	28.18	-0.020	39.94	-0.029	15.97	-0.037	28.96	-0.020	26.34	-0.029
05/20/13	1,650	-0.011	45.08	-0.048	47.33	-0.039	31.39	-0.048	54.46	-0.035	63.28	-0.038	44.85	-0.022	20.24	-0.028	62.85	-0.031	39.65	-0.037	21.37	-0.045	45.57	-0.024	37.87	-0.029	32.59	-0.035	19.11	-0.037	42.22	-0.023	53.32	-0.048	21.31	-0.030	28.76	-0.039	41.13	-0.030	16.59	-0.036	29.56	-0.032	27.11	-0.028
05/13/13	1,667	0.021	47.35	0.006	49.23	0.014	32.98	0.021	56.44	-0.003	65.80	0.003	45.87	-0.024	20.83	0.020	64.86	0.054	41.16	0.016	22.38	0.019	46.68	0.034	39.01	0.008	33.76	0.014	19.85	0.011	43.22	0.014	56.01	0.021	21.97	0.015	29.93	0.017	42.40	0.011	17.21	0.019	30.54	-0.005	27.89	0.006
05/06/13	1,634	0.012	47.08	0.002	48.57	-0.021	32.29	-0.028	56.59	-0.033	65.61	-0.031	47.01	-0.043	20.42	-0.020	61.53	-0.039	40.52	-0.031	21.97	-0.003	45.14	-0.006	38.70	-0.022	33.28	-0.022	19.63	-0.031	42.64	-0.014	54.86	-0.035	21.63	-0.041	29.43	-0.028	41.95	-0.025	16.90	-0.005	30.69	-0.018	27.74	-0.030
04/29/13	1,614	0.020	46.97	0.019	49.62	0.024	33.23	0.015	58.51	0.013	67.69	-0.005	49.11	-0.021	20.85	0.009	64.05	0.029	41.80	0.007	22.03	0.009	45.41	0.012	39.56	0.020	34.01	0.017	20.26	0.015	43.24	-0.015	56.85	0.022	22.56	0.013	30.29	0.037	43.00	-0.004	16.98	0.006	31.24	-0.005	28.60	-0.001
04/22/13	1,582	0.017	46.08	0.007	48.45	0.010	32.73	0.005	57.76	0.006	68.05	0.007	50.15	0.017	20.67	0.000	62.25	-0.009	41.52	-0.002	21.84	0.009	44.86	0.001	38.78	0.004	33.46	0.002	19.97	0.012	43.88	0.004	55.62	0.022	22.27	0.002	29.20	0.011	43.17	-0.012	16.88	0.019	31.41	0.016	28.63	0.005
04/15/13	1,555	-0.021	45.76	0.004	47.96	0.006	32.56	0.009	57.43	0.009	67.57	0.019	49.32	0.010	20.68	0.008	62.79	0.000	41.60	0.006	21.64	-0.005	44.80	-0.010	38.62	0.001	33.38	0.010	19.73	-0.006	43.71	0.011	54.44	-0.001	22.22	-0.002	28.88	0.010	43.67	0.013	16.56	0.001	30.92	0.002	28.50	0.005
04/08/13	1,589	0.023	45.59	0.011	47.68	0.019	32.26	0.020	56.90	0.010	66.33	0.013	48.84	0.021	20.52	0.013	62.78	0.036	41.34	0.022	21.76	0.020	45.24	0.012	38.59	0.036	33.06	0.004	19.85	0.020	43.22	0.016	54.51	0.024	22.27	0.026	28.59	0.012	43.10	0.015	16.54	0.016	30.86	0.015	28.35	0.025
04/01/13	1,553	-0.010	45.09	0.004	46.78	0.009	31.63	-0.007	56.35	0.005	65.49	-0.007	47.83	0.011	20.25	-0.004	60.60	0.064	40.47	0.006	21.33	0.000	44.69	-0.007	37.26	0.012	32.91	0.006	19.45	0.010	42.54	0.044	53.26	0.004	21.72	-0.008	28.26	0.007	42.48	0.006	16.28	0.019	30.40	0.003	27.67	0.016
03/25/13	1,569	0.008	44.92	0.012	46.36	0.021	31.84	0.022	56.10	0.033	65.98	0.028	47.30	0.005	20.34	0.024	56.97	0.014	40.23	0.019	21.33	0.020	45.02	0.018	36.83	0.017	32.71	0.022	19.26	0.036	40.75	0.027	53.05	0.020	21.89	0.011	28.07	0.022	42.24	0.028	15.97	0.027	30.30	0.027	27.23	0.036
03/18/13	1,557	-0.002	44.40	0.000	45.42	0.008	31.16	-0.003	54.31	-0.001	64.18	0.009	47.07	-0.010	19.87	0.003	56.19	-0.044	39.48	0.000	20.91	-0.005	44.21	-0.008	36.21	-0.004	32.00	0.012	18.59	-0.010	39.66	0.006	51.99	-0.004	21.64	0.001	27.46	-0.005	41.11	0.003	15.55	-0.005	29.51	0.003	26.29	-0.007
03/11/13	1,561	0.006	44.38	0.011	45.06	0.011	31.26	0.027	54.39	0.004	63.58	0.004	47.57	0.004	19.81	0.010	58.76	0.028	39.49	0.011	21.02	0.010	44.54	0.001	36.34	0.007	31.62	0.127	18.78	0.020	39.44	0.018	52.21	-0.001	21.61	-0.002	27.61	0.000	40.98	0.004	15.63	0.007	29.41	0.016	26.47	0.006
03/04/13	1,551	0.022	43.90	0.018	44.57	0.011	30.45	0.000	54.18	-0.001	63.30	0.006	47.36	0.046	19.61	0.007	57.14	0.021	39.07	0.010	20.82	0.029	44.51	0.021	36.09	0.006	28.05	0.038	18.41	0.009	38.74	-0.002	52.28	0.018	21.65	0.016	27.60	0.009	40.80	0.011	15.53	-0.002	28.95	0.016	26.32	0.009
02/25/13	1,518	0.002	43.14	0.000	44.08	-0.006	30.45	0.009	54.25	0.009	62.95	-0.003	45.27	0.035	19.48	-0.005	55.96	0.001	38.69	0.018	20.23	0.003	43.59	0.000	35.87	0.015	27.03	-0.033	18.24	0.013	38.80	0.021	51.35	0.012	21.30	0.026	27.35	0.023	40.36	0.002	15.55	0.013	28.49	0.014	26.08	0.017
02/19/13	1,516	-0.003	43.12	0.014	44.33	0.022	30.17	0.014	53.75	0.034	63.14	0.021	43.76	0.004	19.58	0.017	55.89	0.010	38.01	0.012	20.17	0.008	43.60	0.000	35.34	0.005	27.96	0.007	18.00	0.020	38.01	-0.017	50.76	0.020	20.77	0.044	26.75	0.006	40.28	0.014	15.35	0.013	28.10	0.002	25.64	0.004
02/11/13	1,520	0.001	42.54	0.001	43.37	0.012	29.76	0.016	52.01	0.001	61.86	-0.003	43.59	-0.024	19.25	0.002	55.35	-0.034	37.56	-0.004	20.01	0.014	43.58	0.002	35.17	0.018	27.77	0.000	17.64	0.015	38.68	-0.001	49.79	0.007	19.88	0.000	26.58	0.012	39.71	0.006	15.15	0.004	28.06	0.012	25.54	0.010
02/04/13	1,518	0.003	42.51	0.011	42.85	0.003	29.30	-0.002	51.96	0.002	62.03	0.002	44.67	-0.007	19.22	-0.001	57.33	-0.006	37.71	-0.002	19.74	0.007	43.50	0.006	34.55	0.005	27.76	0.009	17.39	0.006	38.73	0.004	49.44	0.010	19.87	-0.018	26.27	-0.009	39.48	-0.004	15.09	-0.041	27.73	0.011	25.29	-0.006
01/28/13	1,513	0.007	42.07	0.032	42.71	0.020	29.36	0.016	51.87	0.010	61.88	0.014	45.00	0.025	19.24	0.028	57.66	0.004	37.78	0.021	19.61	0.024	43.25	0.034	34.38	0.025	27.52	0.015	17.28	0.010	38.58	0.017	48.96	0.012	20.23	0.031	26.51	0.012	39.62	0.001	15.72	0.034	27.43	0.019	25.44	0.017
01/22/13	1,503	0.011	40.78	0.028	41.88	0.002	28.90	0.015	51.38	0.013	61.06	0.017	43.92	0.010	18.71	0.002	57.43	0.011	36.99	0.028	19.16	0.008	41.82	0.034	33.55	0.022	27.10	0.014	17.11	0.012	37.93	0.021	48.36	0.017	19.63	0.020	26.20	0.022	39.58	0.022	15.21	0.010	26.90	0.011	25.03	0.020
01/14/13	1,486	0.009	39.65	0.013	41.78	-0.001	28.48	0.008	50.72	-0.002	60.06	0.017	43.47	0.016	18.67	-0.003	56.79	0.013	35.97	0.001	19.01	0.007	40.45	0.004	32.82	0.003	26.73	-0.001	16.92	-0.002	37.14	0.001	47.56	0.010	19.25	0.016	25.64	0.008	38.72	0.008	15.06	-0.007	26.61	0.008	24.54	-0.006
01/07/13	1,472	0.004	39.13	0.003	41.83	0.007	28.26	0.009	50.84	-0.017	59.05	0.010	42.77	-0.026	18.73	-0.003	56.08	-0.021	35.95	-0.011	18.88	-0.003	40.29	-0.002	32.71	-0.001	26.77	-0.002	16.95	-0.066	37.08	-0.005	47.08	-0.009	18.94	-0.044	25.45	-0.012	38.43	-0.023	15.17	-0.002	26.41	-0.007	24.68	-0.008
12/31/12	1,466	0.046	39.00	0.068	41.53	0.043	28.02	0.029	51.74	0.036	58.49	0.033	43.89	0.050	18.79	0.040	57.29	0.030	36.37	0.031	18.94	0.038	40.35	0.029	32.75	0.046	26.82	0.040	18.15	0.058	37.28	0.037	47.53	0.037	19.81	0.047	25.75	0.040	39.32	0.043	15.20	0.037	26.60	0.045	24.89	0.044
12/24/12	1,402	-0.019	36.53	-0.024	39.83	-0.022	27.24	-0.024	49.95	-0.020	56.64	-0.023	41.81	-0.016	18.07	-0.037	55.65	-0.030	35.26	-0.020	18.24	-0.014	39.21	-0.042	31.31	-0.042	25.78	-0.011	17.16	-0.023	35.96	-0.032	45.82	-0.031	18.92	-0.035	24.77	-0.016	37.69	-0.023	14.65	-0.028	25.44	-0.033	23.85	-0.026
12/17/12	1,430	0.012	37.44	0.028	40.72	0.017	27.89	0.055	50.96	-0.001	57.99	0.011	42.46	0.023	18.76	0.043	57.37	0.018	35.99	0.014	18.50	0.017	40.92	0.028	32.69	0.037	26.08	0.016	17.56	0.015	37.15	0.024	47.29	0.027	19.61	0.029	25.17	0.021	38.57	0.009	15.07	0.026	26.31	0.034	24.47	0.010
12/10/12	1,414	-0.003	36.42	0.001	40.03	-0.017	26.43	0.003	51.03	0.002	57.36	-0.008	41.53	-0.004	17.99	0.010	56.38	-0.008	35.49	-0.015	18.20	-0.011	39.81	-0.001	31.54	-0.006	25.68	-0.023	17.29	-0.003	36.27	-0.006	46.03	-0.011	19.05	-0.031	24.65	-0.001	38.24	-0.018	14.69	-0.014	25.43	-0.009	24.23	-0.007
12/03/12	1,418	0.001	36.39	0.023	40.73	-0.006	26.36	-0.008	50.95	0.004	57.82	0.008	41.69	-0.011	17.81	-0.008	56.86	0.006	36.03	0.014	18.40	-0.002	39.83	0.008	31.71	0.010	26.30	-0.008	17.33	0.002	36.50	-0.004	46.57	-0.002	19.66	-0.003	24.69	0.006	38.93	0.004	14.90	0.002	25.66	0.001	24.39	0.003
11/26/12	1,416	0.005	35.57	0.029	40.98	0.025	26.56	0.050	50.73	0.031	57.37	0.056	42.15	0.046	17.95	0.020	56.50	0.024	35.54	0.036	18.45	0.021	39.51	0.038	31.41	0.029	26.51	0.016	17.30	0.033	36.66	0.019	46.67	0.044	19.71	0.036	24.55	0.062	38.77	0.036	14.88	0.037	25.63	0.032	24.33	0.040
11/19/12	1,409	0.036	34.55	-0.010	39.98	0.006	25.30	-0.028	49.19	-0.016	54.34	-0.007	40.30	-0.022	17.59	-0.021	55.17	-0.013	34.30	-0.015	18.08	-0.017	38.05	0.000	30.51	-0.002	26.09	0.001	16.75	-0.004	35.96	-0.007	44.70	-0.011	19.03	0.005	23.12	0.005	37.42	-0.015	14.34	-0.018	24.84	-0.003	23.40	-0.010
11/12/12	1,360	-0.014	34.92	-0.030	39.74	-0.005	26.02	-0.033	49.99	-0.014	54.75	-0.005	41.20	0.007	17.97	-0.012	55.90	-0.031	34.84	0.005	18.38	0.004	38.05	-0.032	30.57	-0.016	26.05	-0.001	16.81	0.007	36.21	-0.011	45.18	0.009	18.94	-0.013	23.01	-0.021	38.01	-0.008	14.61	-0.024	24.91	-0.017	23.63	-0.009
11/05/12	1,380	-0.024	35.99	-0.026	39.96	-0.008	26.91	-0.071	50.68	-0.048	55.01	-0.046	40.94	-0.054	18.19	-0.032	57.71	-0.078	34.68	-0.032	18.30	-0.081	39.32	-0.040	31.05	-0.024	26.08	-0.024	16.69	-0.030	36.61	-0.026	44.77	-0.054	19.18	-0.065	23.50	-0.045	38.31	-0.060	14.97	-0.038	25.34	-0.040	23.83	-0.050
10/31/12	1,414	0.002	36.94	-0.004	40.28	0.000	28.96	0.011	53.25	-0.013	57.66	-0.003	43.27	0.003	18.78	-0.014	62.56	-0.012	35.83	0.012	19.92	-0.007	40.96	0.004	31.81	-0.005	26.72	0.004	17.21	-0.006	37.60	0.000	47.32	-0.003	20.51	0.005	24.62	-0.008	40.75	-0.002	15.57	0.012	26.40	0.001	25.09	-0.003
10/22/12	1,412	-0.015	37.10	-0.007	40.27	-0.015	28.65	-0.019	53.94	-0.008	57.81	-0.006	43.16	-0.018	19.06	-0.006	63.33	0.012	35.42	-0.019	20.07	-0.017	40.81	-0.002	31.99	-0.022	26.61	0.005	17.32	-0.015	37.60	-0.018	47.45	-0.014	20.41	0.019	24.83	-0.014	40.82	-0.007	15.39	-0.016	26.37	-0.018	25.17	-0.002
10/15/12	1,433	0.003	37.36	0.010	40.88	0.024	29.21	0.011	54.39	0.011	58.16	0.021	43.93	0.017	19.17	0.010	62.56	0.018	36.10	0.027	20.42	0.014	40.87	0.019	32.70	0.019	26.48	0.007	17.58	0.037	38.30	0.007	48.14	0.017	20.03	-0.001	25.19	0.005	41.09	0.023	15.63	0.021	26.85	0.026	25.22	0.015
10/08/12	1,429	-0.022	36.98	-0.009	39.92	-0.001	28.89	-0.009	53.82	-0.006	56.97	-0.013	43.18	-0.014	18.98	-0.004	61.44	-0.008	35.17	-0.012	20.13	-0.009	40.13	-0.001	32.10	-0.013	26.31	0.013	16.95	-0.002	38.05	-0.004	47.32	-0.010	20.05	0.006	25.07	0.007	40.18	-0.008	15.31	-0.002	26.17	-0.017	24.84	-0.011
10/01/12	1,461	0.014	37.32	-0.003	39.96	0.018	29.14	0.006	54.17	0.006	57.69	0.003	43.79	0.034	19.06	-0.002	61.91	0.017	35.59	0.024	20.32	0.013	40.18	0.012	32.51	-0.009	25.97	0.016	16.97	0.025	38.20	0.000	47.80	0.009	19.93	0.022	24.91	0.014	40.50	-0.003	15.33	-0.011	26.63	0.005	25.13	0.008
09/24/12	1,441	-0.013	37.43	-0.002	39.27	0.005	28.96	0.001	53.87	0.013	57.53	0.011	42.34	0.014	19.10	0.002	60.87	0.012	34.76	0.021	20.06	0.005	39.69	0.000	32.80	-0.019	25.56	0.000	16.56	0.002	38.20	0.013	47.40	0.005	19.49	0.014	24.56	0.000	40.61	0.018	15.50	0.013	26.48	0.013	24.92	0.014
09/17/12	1,460	-0.004	37.49	0.016	39.07	-0.023	28.93	-0.001	53.16	-0.012	56.90	-0.002	41.77	0.005	19.06	-0.004	60.12	0.001	34.03	-0.008	19.97	-0.002	39.68	0.022	33.44	0.018	25.56	0.003	16.54	-0.006	37.73	-0.015	47.18	-0.018	19.22	0.003	24.57	-0.005	39.88	0.005	15.30	0.003	26.15	-0.001	24.57	-0.020
09/10/12	1,466	0.019	36.92	-0.011	40.00	-0.014	28.96	-0.002	53.80	-0.014	56.99	-0.008	41.56	0.019	19.13	0.008	60.04	0.002	34.32	-0.013	20.01	0.020	38.83	-0.013	32.86	0.005	25.48	0.014	16.64	-0.013	38.31	-0.005	48.07	0.022	19.17	-0.025	24.69	0.000	39.69	-0.019	15.26	-0.005	26.17	-0.003	25.06	0.001
09/04/12	1,438	0.022	37.31	0.001	40.55	0.016	29.00	0.012	54.54	0.000	57.46	-0.001	40.77	0.012	18.97	0.014	59.91	0.002	34.77	0.015	19.63	0.022	39.34	0.035	32.68	-0.004	25.12	0.008	16.86	0.010	38.51	0.001	47.05	0.020	19.65	0.031	24.69	0.023	40.45	0.013	15.33	0.010	26.25	0.021	25.03	0.008
08/27/12	1,407	-0.003	37.27	0.019	39.90	-0.012	28.65	-0.014	54.53	-0.013	57.52	-0.011	40.30	-0.002	18.71	0.006	59.80	-0.009	34.25	0.001	19.21	0.004	38.02	-0.009	32.80	0.014	24.91	-0.005	16.69	0.002	38.45	-0.015	46.11	-0.007	19.07	0.002	24.14	-0.006	39.94	-0.012	15.17	-0.014	25.71	-0.004	24.84	-0.001
08/20/12	1,411	-0.005	36.57	-0.020	40.39	-0.030	29.07	-0.011	55.25	-0.004	58.13	-0.015	40.37	-0.020	18.61	-0.012	60.37	-0.011	34.21	-0.015	19.13	-0.012	38.38	-0.017	32.35	-0.011	25.02	-0.005	16.66	-0.007	39.04	-0.011	46.43	-0.020	19.03	-0.006	24.27	-0.012	40.42	-0.004	15.39	-0.015	25.82	-0.011	24.88	-0.020
08/13/12	1,418	0.009	37.33	0.017	41.63	-0.002	29.40	-0.032	55.48	-0.025	59.03	-0.009	41.19	-0.005	18.83	0.000	61.03	-0.032	34.72	-0.027	19.37	-0.017	39.05	0.005	32.70	0.013	25.14	-0.007	16.77	-0.014	39.48	-0.015	47.40	-0.012	19.14	0.001	24.58	-0.005	40.60	-0.018	15.62	-0.003	26.10	-0.022	25.38	-0.013
08/06/12	1,406	0.011	36.69	-0.004	41.70	-0.019	30.38	0.010	56.91	-0.012	59.57	-0.011	41.39	-0.016	18.83	0.000	63.02	-0.002	35.67	0.001	19.71	-0.005	38.84	-0.007	32.27	-0.016	25.31	-0.004	17.01	-0.012	40.07	-0.027	47.95	-0.012	19.11	-0.009	24.72	-0.002	41.34	-0.009	15.68	0.010	26.67	-0.012	25.70	-0.016
07/30/12	1,391	0.004	36.85	0.001	42.49	0.000	30.07	-0.002	57.61	-0.004	60.23	0.017	42.04	-0.014	18.83	-0.003	63.13	0.002	35.65	-0.010	19.80	0.001	39.14	0.006	32.78	-0.010	25.41	0.029	17.22	0.001	41.19	0.008	48.55	0.005	19.28	-0.002	24.77	0.008	41.72	-0.012	15.52	-0.013	27.00	-0.011	26.11	-0.004
07/23/12	1,386	0.017	36.82	-0.011	42.49	-0.002	30.14	0.017	57.82	0.018	59.22	0.019	42.66	0.008	18.89	-0.004	63.03	0.018	36.00	-0.007	19.78	-0.011	38.89	-0.006	33.10	-0.018	24.69	-0.001	17.21	0.012	40.84	0.014	48.29	0.010	19.32	0.026	24.56	-0.001	42.22	0.014	15.73	-0.001	27.29	0.006	26.23	0.009
07/16/12	1,363	0.004	37.24	-0.009	42.58	0.018	29.62	0.005	56.82	0.006	58.14	-0.008	42.34	-0.009	18.97	0.004	61.91	0.025	36.27	0.010	20.00	0.000	39.14	-0.010	33.70	-0.005	24.72	0.029	17.01	0.013	40.29	0.002	47.79	0.013	18.82	0.014	24.58	0.001	41.66	0.003	15.74	-0.003	27.12	0.003	26.01	0.011
07/09/12	1,357	0.002	37.60	0.016	41.82	0.024	29.48	0.007	56.51	0.021	58.59	0.008	42.71	0.017	18.90	0.014	60.43	0.025	35.93	0.031	20.01	0.038	39.53	0.025	33.87	0.013	24.01	0.018	16.80	0.001	40.19	0.008	47.16	0.019	18.56	0.016	24.56	0.016	41.52	0.023	15.79	0.007	27.05	0.018	25.73	0.010
07/02/12	1,355	-0.005	37.00	-0.002	40.84	0.000	29.26	-0.004	55.37	-0.001	58.14	-0.043	42.01	-0.012	18.63	0.008	58.94	0.000	34.86	-0.003	19.27	0.009	38.55	0.007	33.42	0.016	23.59	-0.004	16.78	-0.008	39.87	-0.006	46.30	0.007	18.27	0.016	24.18	0.008	40.58	0.005	15.68	0.006	26.57	0.005	25.46	0.006
06/25/12	1,362	0.020	37.06	0.026	40.85	0.013	29.37	0.016	55.41	0.011	60.73	0.008	42.51	0.044	18.48	0.010	58.95	0.018	34.97	0.028	19.10	0.021	38.29	0.037	32.89	0.022	23.69	0.008	16.91	0.028	40.10	0.043	46.00	0.023	17.99	0.027	23.98	0.019	40.37	-0.005	15.59	0.013	26.44	0.017	25.30	0.019
06/18/12	1,335	-0.006	36.14	-0.016	40.32	-0.011	28.91	-0.018	54.80	-0.025	60.26	-0.016	40.74	-0.034	18.31	0.002	57.91	0.002	34.02	-0.019	18.70	0.000	36.93	-0.010	32.19	0.003	23.49	-0.048	16.45	-0.018	38.44	-0.032	44.95	-0.028	17.51	0.011	23.53	-0.006	40.59	-0.030	15.39	-0.017	25.99	-0.012	24.82	-0.026
06/11/12	1,343	0.013	36.74	0.023	40.79	0.013	29.43	0.023	56.22	0.014	61.26	0.005	42.15	0.002	18.27	-0.002	57.78	0.004	34.67	0.029	18.70	0.027	37.32	0.011	32.08	0.005	24.68	0.002	16.76	0.003	39.71	0.004	46.24	0.018	17.31	0.002	23.67	0.013	41.86	0.013	15.65	0.022	26.32	0.012	25.47	0.015
06/04/12	1,326	0.037	35.91	0.036	40.27	0.035	28.76	0.038	55.45	0.032	60.97	0.036	42.06	0.038	18.31	0.048	57.55	0.030	33.69	0.027	18.20	0.024	36.92	0.041	31.93	0.019	24.62	0.012	16.70	0.019	39.54	0.034	45.40	0.033	17.28	0.030	23.36	0.050	41.32	0.031	15.31	0.031	26.02	0.041	25.09	0.017
05/29/12	1,278	-0.030	34.68	0.008	38.91	-0.014	27.72	-0.001	53.72	0.011	58.86	0.018	40.54	-0.014	17.47	-0.015	55.87	-0.002	32.81	0.011	17.78	-0.002	35.49	-0.003	31.34	0.009	24.33	-0.005	16.40	0.018	38.24	-0.003	43.94	0.007	16.77	-0.013	22.24	-0.009	40.07	0.006	14.85	-0.009	25.00	0.011	24.67	0.006
05/21/12	1,318	0.017	34.40	0.007	39.48	0.013	27.73	0.004	53.11	0.016	57.84	0.023	41.11	0.027	17.74	0.016	56.01	0.023	32.45	0.041	17.82	0.017	35.61	0.022	31.06	0.007	24.45	0.014	16.11	0.019	38.36	0.007	43.66	0.027	16.99	0.028	22.43	0.029	39.84	0.005	14.98	0.007	24.74	0.034	24.53	0.020
05/14/12	1,295	-0.043	34.17	-0.031	38.97	-0.026	27.62	-0.018	52.27	-0.009	56.52	0.000	40.03	-0.013	17.46	-0.024	54.77	-0.025	31.19	-0.045	17.52	-0.019	34.83	-0.023	30.86	-0.012	24.12	-0.025	15.81	-0.025	38.09	-0.017	42.49	-0.016	16.53	-0.018	21.79	-0.020	39.66	-0.001	14.87	-0.033	23.93	-0.038	24.05	-0.009
05/07/12	1,353	-0.011	35.28	0.007	40.00	0.016	28.11	0.004	52.75	0.007	56.54	0.007	40.55	0.014	17.90	0.035	56.19	0.007	32.64	0.014	17.85	0.017	35.66	0.010	31.24	0.012	24.73	-0.016	16.21	0.007	38.74	-0.006	43.20	0.016	16.84	-0.007	22.23	0.004	39.71	0.004	15.37	0.010	24.86	0.011	24.27	0.019
04/30/12	1,369	-0.024	35.05	-0.032	39.35	-0.028	28.00	-0.012	52.37	0.001	56.13	0.006	39.98	-0.001	17.29	-0.029	55.81	-0.003	32.19	-0.021	17.56	-0.026	35.32	-0.042	30.86	-0.015	25.12	0.023	16.10	0.004	38.96	0.013	42.51	-0.008	16.95	-0.030	22.14	-0.036	39.55	-0.003	15.22	-0.005	24.60	-0.017	23.81	-0.003
04/23/12	1,403	0.018	36.20	0.017	40.49	0.033	28.34	0.034	52.31	0.012	55.79	0.020	40.03	0.021	17.80	0.018	55.97	-0.005	32.86	0.010	18.04	0.028	36.87	0.028	31.33	0.028	24.55	0.021	16.03	0.010	38.48	0.016	42.86	0.020	17.47	0.020	22.96	0.023	39.68	0.003	15.29	0.005	25.02	0.017	23.89	0.012
04/16/12	1,379	0.006	35.58	0.017	39.20	0.032	27.40	0.007	51.69	0.015	54.70	0.029	39.18	0.032	17.48	0.030	56.27	0.002	32.54	0.018	17.55	0.014	35.86	0.009	30.49	0.006	24.05	0.025	15.88	0.015	37.88	0.022	42.01	0.033	17.13	0.032	22.45	0.019	39.54	0.024	15.22	0.039	24.60	0.035	23.61	0.028
04/09/12	1,370	-0.020	34.99	-0.023	37.99	-0.004	27.22	-0.019	50.93	-0.007	53.13	-0.017	37.98	-0.029	16.97	-0.020	56.14	-0.013	31.95	-0.030	17.30	-0.018	35.53	-0.036	30.32	-0.032	23.46	-0.018	15.65	-0.014	37.06	-0.014	40.65	-0.019	16.60	-0.010	22.03	-0.001	38.60	-0.005	14.65	-0.006	23.78	-0.016	22.96	-0.017
04/02/12	1,398	-0.007	35.83	-0.015	38.14	-0.008	27.76	-0.015	51.31	-0.004	54.05	-0.012	39.09	0.007	17.32	-0.017	56.90	-0.012	32.93	-0.006	17.62	-0.015	36.87	-0.006	31.33	-0.004	23.90	-0.016	15.88	-0.014	37.60	-0.012	41.45	-0.016	16.77	-0.004	22.06	-0.008	38.80	0.001	14.74	-0.015	24.17	-0.009	23.37	0.000
03/26/12	1,408	0.008	36.37	0.015	38.44	0.024	28.18	0.025	51.52	0.023	54.70	0.011	38.84	0.004	17.61	0.009	57.60	0.006	33.13	0.010	17.89	0.015	37.11	0.018	31.45	0.017	24.29	0.020	16.10	0.001	38.07	0.011	42.12	0.014	16.84	0.002	22.24	0.015	38.76	0.018	14.96	0.001	24.38	0.015	23.36	0.011
03/19/12	1,397	-0.005	35.83	-0.015	37.53	-0.017	27.48	0.010	50.39	-0.009	54.12	-0.013	38.69	0.001	17.45	0.001	57.28	-0.015	32.79	0.009	17.63	-0.005	36.45	-0.010	30.93	0.006	23.82	-0.009	16.09	-0.013	37.65	0.002	41.54	0.005	16.80	0.010	21.92	-0.001	38.06	-0.005	14.94	-0.012	24.02	-0.005	23.10	0.002
03/12/12	1,404	0.024	36.37	-0.010	38.16	-0.009	27.21	-0.002	50.82	-0.013	54.85	-0.004	38.66	-0.004	17.43	-0.018	58.18	0.000	32.52	-0.011	17.71	0.009	36.81	-0.009	30.73	-0.013	24.04	0.006	16.30	-0.016	37.57	0.011	41.35	-0.009	16.64	-0.022	21.94	-0.007	38.25	-0.017	15.13	-0.002	24.15	-0.005	23.06	-0.011
03/05/12	1,371	0.001	36.74	0.015	38.51	0.021	27.27	-0.002	51.50	0.001	55.06	0.005	38.83	0.000	17.74	0.039	58.18	0.011	32.88	0.021	17.55	0.008	37.13	0.023	31.15	0.030	23.90	0.006	16.57	0.011	37.18	0.018	41.72	0.018	17.01	0.029	22.09	0.024	38.92	0.019	15.16	-0.009	24.28	0.018	23.32	0.014
02/27/12	1,370	0.003	36.21	-0.014	37.70	-0.019	27.31	-0.008	51.43	-0.009	54.77	-0.003	38.82	0.014	17.08	-0.039	57.54	0.000	32.20	0.014	17.41	-0.052	36.30	-0.020	30.25	-0.023	23.75	-0.021	16.39	-0.017	36.52	0.008	40.97	-0.019	16.54	0.001	21.58	-0.010	38.19	-0.006	15.29	-0.009	23.86	-0.012	22.99	-0.006
02/21/12	1,366	0.003	36.74	0.008	38.42	0.004	27.54	0.011	51.90	0.017	54.93	0.010	38.29	0.026	17.78	0.005	57.55	-0.009	31.74	-0.007	18.37	0.003	37.05	-0.019	30.96	-0.003	24.26	0.009	16.67	-0.015	36.23	-0.014	41.78	-0.007	16.53	-0.004	21.80	-0.016	38.43	0.004	15.44	0.001	24.16	0.000	23.13	0.005
02/13/12	1,361	0.014	36.46	0.011	38.28	0.001	27.25	0.019	51.04	-0.011	54.41	-0.016	37.32	0.002	17.70	0.006	58.10	0.000	31.96	0.026	18.32	0.012	37.77	0.006	31.04	0.017	24.04	0.002	16.93	0.016	36.74	0.027	42.08	0.008	16.60	0.012	22.14	0.001	38.29	-0.005	15.43	0.025	24.16	-0.011	23.03	-0.005
02/06/12	1,343	-0.002	36.06	-0.011	38.23	0.003	26.75	-0.014	51.62	0.005	55.27	0.004	37.26	0.000	17.59	-0.034	58.12	-0.006	31.16	-0.003	18.11	0.009	37.55	-0.012	30.52	-0.024	23.99	-0.007	16.66	-0.001	35.79	-0.004	41.76	0.000	16.41	-0.008	22.12	-0.007	38.49	0.007	15.05	-0.023	24.42	-0.010	23.15	-0.001
01/30/12	1,345	0.022	36.45	0.014	38.13	0.011	27.14	0.005	51.35	-0.001	55.06	0.010	37.25	0.000	18.22	0.017	58.46	-0.022	31.25	0.016	17.95	-0.024	38.01	0.004	31.26	0.013	24.16	-0.008	16.67	0.002	35.93	0.014	41.77	-0.004	16.55	0.024	22.27	0.006	38.22	-0.006	15.39	-0.004	24.68	-0.005	23.17	-0.017
01/23/12	1,316	0.001	35.95	0.003	37.73	-0.003	27.00	-0.001	51.41	0.002	54.50	-0.006	37.23	0.014	17.92	0.046	59.80	0.010	30.74	0.011	18.40	0.006	37.86	0.022	30.86	0.004	24.37	-0.033	16.65	-0.010	35.43	0.012	41.92	0.009	16.16	0.010	22.13	0.019	38.43	-0.006	15.46	0.003	24.81	0.020	23.57	0.014
01/17/12	1,315	0.020	35.83	0.009	37.83	0.005	27.03	-0.021	51.29	-0.007	54.81	0.000	36.71	-0.002	17.13	-0.018	59.22	-0.017	30.42	0.004	18.29	-0.024	37.06	-0.008	30.73	-0.006	25.19	0.002	16.81	0.005	35.02	-0.022	41.53	0.003	16.00	-0.004	21.73	-0.008	38.67	0.001	15.41	-0.016	24.31	-0.006	23.24	-0.006
01/09/12	1,289	0.009	35.52	0.023	37.65	-0.013	27.62	0.007	51.66	0.001	54.83	-0.009	36.79	0.004	17.44	-0.015	60.22	-0.005	30.30	-0.022	18.74	0.008	37.38	0.013	30.91	-0.005	25.13	0.000	16.72	-0.007	35.82	0.005	41.42	0.005	16.07	-0.011	21.90	0.022	38.65	0.018	15.66	-0.018	24.46	0.007	23.37	-0.017
01/03/12	1,278	0.016	34.73	-0.046	38.15	-0.015	27.41	-0.031	51.59	-0.047	55.35	-0.022	36.62	-0.024	17.70	-0.018	60.55	-0.021	30.98	-0.030	18.59	-0.023	36.89	-0.029	31.08	-0.011	25.13	-0.017	16.84	-0.013	35.63	-0.004	41.22	-0.016	16.24	-0.018	21.43	-0.038	37.97	-0.039	15.95	-0.010	24.29	-0.022	23.76	-0.016
12/27/11	1,258	-0.006	36.39	0.008	38.74	0.005	28.30	0.009	54.15	0.001	56.61	0.005	37.54	0.013	18.03	-0.004	61.86	-0.001	31.93	0.018	19.03	-0.004	37.98	0.004	31.41	-0.012	25.56	0.011	17.06	0.000	35.77	0.014	41.90	-0.004	16.53	0.005	22.27	0.005	39.52	0.008	16.12	0.003	24.82	0.008	24.15	0.016

Index and Proxy Group Returns

Date	S&P 500		ALE		LNT		AEE		ED		DUK		EIX		EDE		ETR		ES		GXP		IDA		NWE		OGE		POM		PCG		PNW		PNM		POR		SO		TE		WR		XEL	
	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return	Price	Return
12/19/11	1,265	0.037	36.10	0.046	38.53	0.046	28.04	0.035	54.11	0.037	56.32	0.042	37.06	0.048	18.11	0.030	61.94	0.021	31.37	0.028	19.10	0.041	37.83	0.027	31.79	0.055	25.29	0.038	17.06	0.048	35.27	0.028	42.09	0.038	16.45	0.052	22.17	0.032	39.19	0.030	16.08	0.041	24.62	0.046	23.76	0.040
12/12/11	1,220	-0.028	34.51	-0.007	36.85	-0.002	27.09	-0.019	52.18	0.009	54.06	0.007	35.36	0.006	17.58	-0.001	60.67	0.005	30.52	0.013	18.34	-0.005	36.83	0.009	30.14	0.014	24.36	0.028	16.28	-0.007	34.31	0.046	40.56	0.008	15.64	-0.038	21.48	0.000	38.03	0.000	15.44	-0.007	23.54	0.005	22.85	0.017
12/05/11	1,255	0.009	34.75	0.020	36.94	0.011	27.62	0.008	51.71	0.011	53.67	0.012	35.13	0.015	17.60	-0.014	60.35	0.023	30.13	-0.001	18.42	0.011	36.52	0.003	29.72	-0.018	23.71	0.003	16.39	0.010	32.82	0.006	40.23	-0.005	16.27	-0.040	21.49	0.005	38.04	0.018	15.55	0.002	23.42	0.007	22.48	0.005
11/28/11	1,244	0.074	34.07	0.049	36.53	0.030	27.39	0.030	51.16	0.025	53.06	0.042	34.60	0.016	17.86	0.061	58.97	0.047	30.16	0.035	18.23	0.059	36.42	0.063	30.25	0.080	23.64	0.062	16.23	0.046	32.64	0.022	40.44	0.043	16.94	0.044	21.38	0.039	37.36	0.030	15.51	0.052	23.25	0.050	22.36	0.025
11/21/11	1,159	-0.047	32.46	-0.034	35.47	-0.030	26.58	-0.024	49.90	-0.017	50.92	-0.019	34.05	-0.044	16.83	-0.051	56.35	-0.032	29.15	-0.038	17.21	-0.044	34.27	-0.050	28.01	-0.053	22.25	-0.039	15.51	-0.037	31.94	-0.046	38.76	-0.038	16.22	-0.037	20.57	-0.030	36.26	-0.017	14.75	-0.042	22.15	-0.043	21.81	-0.028
11/14/11	1,216	-0.038	33.59	-0.004	36.59	-0.015	27.24	-0.021	50.75	-0.015	51.90	-0.028	35.63	-0.028	17.73	0.012	58.24	-0.017	30.30	-0.017	18.01	-0.027	36.08	-0.025	29.58	-0.025	23.15	-0.027	16.11	-0.016	33.47	-0.033	40.30	-0.012	16.84	0.002	21.21	-0.026	36.88	-0.017	15.39	-0.029	23.16	-0.013	22.43	-0.015
11/07/11	1,264	0.008	33.72	0.014	37.16	0.034	27.83	0.022	51.54	0.018	53.38	0.017	36.68	0.000	17.52	0.023	59.23	0.019	30.81	0.012	18.51	0.013	37.01	0.022	30.34	0.012	23.79	0.002	16.36	0.008	34.62	-0.013	40.77	0.014	16.80	-0.002	21.78	-0.006	37.51	0.017	15.85	0.001	23.48	0.010	22.77	0.010
10/31/11	1,253	-0.025	33.25	-0.029	35.94	-0.003	27.24	0.002	50.61	0.009	52.47	0.009	36.67	0.001	17.12	-0.011	58.12	0.007	30.45	0.002	18.27	0.001	36.20	-0.012	29.99	-0.006	23.74	0.008	16.23	-0.027	35.07	-0.048	40.23	-0.005	16.84	0.018	21.91	0.019	36.88	0.008	15.83	0.011	23.25	-0.006	22.55	0.006
10/24/11	1,285	0.038	34.23	0.027	36.06	0.002	27.18	0.014	50.16	-0.029	52.01	-0.004	36.63	0.029	17.32	0.025	57.74	0.008	30.38	0.024	18.24	0.016	36.66	0.015	30.18	0.003	23.55	0.005	16.69	0.017	36.86	-0.001	40.41	0.018	16.54	0.020	21.49	-0.003	36.57	-0.014	15.66	0.041	23.39	-0.004	22.42	0.008
10/17/11	1,238	0.011	33.33	0.009	35.99	0.021	26.80	0.035	51.64	0.038	52.24	0.032	35.59	0.034	16.90	0.010	57.30	0.027	29.65	0.014	17.96	0.022	36.11	0.016	30.08	0.031	23.43	0.042	16.41	0.026	36.91	0.012	39.70	0.034	16.22	0.037	21.55	0.023	37.10	0.030	15.05	0.012	23.48	0.030	22.24	0.033
10/10/11	1,225	0.060	33.02	0.050	35.24	0.041	25.90	0.050	49.73	0.026	50.64	0.007	34.41	0.014	16.74	0.049	55.80	0.020	29.26	0.039	17.58	0.044	35.55	0.035	29.19	0.033	22.49	0.035	16.00	0.035	36.48	-0.011	38.41	0.037	15.64	0.049	21.07	0.041	36.03	0.007	14.87	0.045	22.79	0.013	21.53	0.011
10/03/11	1,155	0.021	31.45	0.002	33.84	0.007	24.68	-0.017	48.49	-0.016	50.31	-0.010	33.95	-0.013	15.95	-0.037	54.70	-0.014	28.15	-0.048	16.84	0.009	34.35	0.023	28.25	0.018	21.72	0.016	15.46	-0.014	36.88	0.016	37.03	0.003	14.91	0.007	20.23	-0.020	35.78	0.000	14.23	-0.002	22.50	-0.001	21.30	-0.003
09/26/11	1,131	-0.004	31.39	-0.008	33.62	0.004	25.12	-0.015	49.27	0.005	50.81	0.010	34.41	0.040	16.57	-0.014	55.46	0.016	29.56	-0.011	16.68	-0.010	33.58	0.004	27.74	0.010	21.37	0.018	15.68	0.017	36.31	-0.007	36.93	-0.003	14.80	0.026	20.64	0.018	35.78	-0.001	14.26	0.005	22.52	0.003	21.37	0.000
09/19/11	1,136	-0.065	31.65	-0.050	33.49	-0.037	25.50	-0.006	49.03	-0.012	50.31	0.011	33.10	-0.017	16.81	-0.039	54.61	-0.005	29.87	-0.013	16.85	-0.017	33.44	-0.036	27.47	-0.049	20.99	-0.049	15.43	-0.030	36.55	0.012	37.02	-0.026	14.43	0.080	20.29	-0.043	35.82	-0.004	14.19	-0.078	22.46	0.004	21.37	-0.013
09/12/11	1,216	0.054	33.33	0.058	34.79	0.042	25.67	0.052	49.62	0.042	49.75	0.055	33.68	0.068	17.48	0.052	54.89	0.053	30.26	0.041	17.14	0.058	34.71	0.089	28.87	0.050	22.07	0.033	15.91	0.041	36.13	0.046	38.02	0.055	13.37	0.051	21.19	0.059	35.96	0.045	15.40	0.056	22.37	0.051	21.64	0.063
09/06/11	1,154	-0.017	31.51	-0.024	33.40	-0.021	24.41	-0.008	47.63	-0.017	47.15	-0.012	31.54	-0.023	16.61	-0.028	52.13	-0.021	29.08	-0.018	16.20	-0.010	31.88	-0.014	27.51	-0.026	21.37	-0.013	15.28	-0.022	34.52	-0.016	36.04	-0.030	12.72	-0.033	20.00	-0.010	34.40	-0.010	14.58	-0.011	21.28	-0.028	20.36	-0.018
08/29/11	1,174	-0.002	32.28	-0.009	34.13	-0.005	24.61	0.012	48.45	0.009	47.74	0.012	32.28	0.006	17.08	-0.021	53.23	0.019	29.62	-0.004	16.37	0.017	32.33	-0.010	28.25	0.004	21.65	-0.009	15.62	0.017	35.10	0.006	37.14	0.003	13.15	-0.003	20.21	-0.003	34.75	0.008	14.75	-0.002	21.90	0.019	20.73	0.008
08/22/11	1,177	0.047	32.58	0.045	34.30	0.041	24.31	0.028	48.04	0.023	47.18	0.018	32.09	0.003	17.44	0.064	52.23	0.009	29.72	0.059	16.09	0.033	32.67	0.026	28.13	0.062	21.85	0.070	15.36	0.015	34.89	-0.002	37.01	0.030	13.19	0.020	20.28	0.043	34.48	0.022	14.78	0.035	21.49	0.026	20.57	0.030
08/15/11	1,124	-0.047	31.17	-0.013	32.95	0.013	23.65	0.036	46.98	0.023	46.37	0.024	31.99	0.031	16.40	0.004	51.77	0.005	28.08	-0.007	15.57	0.017	31.84	-0.009	26.50	0.005	20.42	-0.010	15.13	0.020	34.97	0.033	35.92	0.018	12.92	0.018	19.43	-0.020	33.75	0.019	14.28	0.014	20.95	0.013	19.96	0.018
08/08/11	1,179	-0.017	31.57	-0.047	32.52	0.016	22.82	-0.008	45.91	0.009	45.30	-0.003	31.02	-0.008	16.34	-0.015	51.50	-0.007	28.27	0.006	15.31	-0.022	32.14	-0.014	26.37	-0.035	20.62	0.025	14.83	0.001	33.85	-0.050	35.29	0.025	12.69	-0.022	19.83	-0.009	33.11	-0.017	14.08	-0.003	20.67	0.018	19.60	-0.015
08/01/11	1,199	-0.072	33.12	-0.028	32.01	-0.065	23.00	-0.042	45.52	0.013	45.42	-0.026	31.26	-0.079	16.59	-0.049	51.84	-0.059	28.10	-0.052	15.66	-0.092	32.61	-0.057	27.32	-0.006	20.12	-0.101	14.82	-0.029	35.63	0.013	34.41	-0.055	12.97	-0.041	20.01	-0.063	33.67	0.008	14.12	-0.073	20.30	-0.065	19.89	-0.032
07/25/11	1,292	-0.039	34.07	-0.038	34.25	-0.028	24.00	-0.018	44.95	-0.018	46.62	-0.018	33.96	-0.030	17.45	-0.009	55.11	-0.022	29.63	-0.038	17.24	-0.030	34.58	-0.028	27.49	-0.046	22.38	-0.031	15.27	-0.039	35.18	-0.031	36.42	-0.034	13.53	-0.093	21.36	-0.033	33.39	-0.014	15.23	-0.037	21.73	-0.032	20.55	-0.022
07/18/11	1,345	0.022	35.40	0.013	35.24	0.004	24.44	0.019	45.78	0.006	47.50	0.005	34.99	0.017	17.61	0.058	56.36	0.014	30.80	0.011	17.77	-0.004	35.56	0.012	28.83	-0.003	23.10	0.027	15.89	0.002	36.31	0.014	37.71	0.011	14.91	-0.005	22.09	0.007	33.86	0.009	15.82	0.031	22.44	0.004	21.02	0.021
07/11/11	1,316	-0.021	34.96	-0.011	35.09	-0.024	23.99	-0.008	45.50	-0.006	47.25	-0.013	34.40	-0.012	16.64	-0.002	55.56	-0.009	30.47	-0.010	17.84	-0.015	35.13	-0.009	28.93	-0.001	22.50	-0.020	15.85	-0.028	35.82	-0.006	37.30	-0.020	14.98	-0.014	21.93	-0.013	33.56	-0.002	15.35	-0.026	22.35	-0.019	20.58	-0.019
07/05/11	1,344	0.003	35.35	0.006	35.94	0.009	24.18	-0.006	45.77	-0.009	47.85	0.001	34.83	0.005	16.68	0.006	56.05	-0.006	30.77	-0.011	18.11	0.005	35.46	0.003	28.95	0.004	22.97	0.013	16.30	0.004	36.03	-0.005	38.05	-0.007	15.19	0.003	22.23	0.005	33.64	-0.010	15.75	0.001	22.79	-0.005	20.97	-0.007
06/27/11	1,340	0.056	35.16	0.028	35.62	0.040	24.32	0.034	46.20	0.032	47.80	0.030	34.67	0.013	16.58	0.042	56.42	0.003	31.13	0.031	18.03	0.029	35.35	0.030	28.84	0.038	22.66	0.042	16.25	0.036	36.22	0.032	38.32	0.032	15.15	0.037	22.12	0.025	33.98	0.033	15.75	0.036	22.91	0.035	21.12	0.027
06/20/11	1,268	-0.002	34.21	0.039	34.24	0.002	23.53	-0.005	44.78	-0.007	46.39	-0.012	34.24	-0.014	15.91	-0.016	56.24	-0.017	30.19	-0.003	17.51	-0.017	34.32	0.006	27.79	0.007	21.74	0.009	15.67	-0.005	35.11	-0.009	37.14	-0.003	14.60	-0.012	21.58	-0.006	32.90	-0.010	15.20	-0.006	22.14	-0.009	20.57	-0.012
06/13/11	1,272	0.000	32.94	0.019	34.17	0.003	23.64	0.001	45.10	0.018	46.97	0.025	34.71	0.006	16.17	0.005	57.22	0.023	30.27	0.025	17.81	0.026	34.13	0.015	27.61	0.017	21.53	0.006	15.75	0.009	35.42	0.015	37.25	0.016	14.78	0.049	21.71	0.018	33.22	0.012	15.29	0.009	22.34	0.015	20.81	0.022
06/06/11	1,271	-0.022	32.34	-0.015	34.06	-0.015	23.62	-0.011	44.29	-0.009	45.82	-0.009	34.50	0.002	16.10	-0.023	55.91	0.017	29.52	-0.011	17.37	-0.015	33.62	-0.022	27.16	-0.001	21.40	-0.021	15.60	-0.008	34.89	-0.019	36.65	-0.012	14.09	-0.008	21.32	-0.010	32.82	-0.001	15.15	-0.006	22.02	0.000	20.36	-0.012
05/31/11	1,300	-0.023	32.84	-0.016	34.58	-0.007	23.89	-0.021	44.71	-0.008	46.24	-0.009	34.42	-0.010	16.47	0.029	54.96	-0.017	29.86	-0.022	17.63	-0.012	34.37	-0.001	27.18	-0.014	21.86	-0.028	15.73	-0.019	35.57	-0.017	37.10	-0.029	14.20	-0.030	21.54	-0.018	32.85	-0.011	15.25	-0.026	22.03	-0.015	20.61	-0.011
05/23/11	1,331	-0.002	33.39	-0.008	34.83	-0.001	24.40	-0.011	45.06	-0.022	46.67	-0.021	34.79	-0.010	16.00	-0.175	55.91	-0.018	30.52	-0.022	17.86	0.006	34.40	-0.006	27.56	-0.012	22.49	-0.012	16.03	-0.012	36.20	-0.038	38.22	-0.009	14.64	0.033	21.94	0.006	33.21	-0.017	15.66	-0.003	22.37	-0.024	20.83	-0.027
05/16/11	1,333	-0.003	33.67	-0.014	34.87	-0.005	24.67	0.011	46.07	0.007	47.65	0.002	35.14	0.004	19.39	0.002	56.96	0.001	31.21	0.005	17.74	-0.004	34.59	-0.012	27.88	0.001	22.75	0.004	16.23	0.005	37.61	-0.027	38.55	0.004	14.17	-0.005	21.80	-0.005	33.77	0.000	15.70	-0.002	22.91	-0.011	21.40	0.012
05/09/11	1,338	-0.002	34.14	0.019	35.04	0.013	24.40	0.021	45.73	0.019	47.57	0.027	34.99	0.002	19.35	0.021	56.92	0.007	31.07	0.018	17.81	0.015	35.01	0.013	27.86	0.015	22.67	0.013	16.15	0.025	38.65	0.006	38.41	0.024	14.25	0.046	21.91	0.032	33.79	0.025	15.74	0.005	23.16	0.028	21.14	0.027
05/02/11	1,340	-0.017	33.52	-0.011	34.60	0.017	23.90	-0.008	44.87	0.019	46.33	0.004	34.94	0.006	18.94	0.004	56.51	-0.006	30.52	-0.008	17.55	0.008	34.57	0.007	27.45	-0.007	22.38	-0.052	15.75	0.015	38.43	-0.007	37.51	0.018	13.62	-0.006	21.24	-0.002	32.96	0.012	15.66	0.000	22.54	-0.004	20.58	-0.002
04/25/11	1,364	0.020	33.90	0.015	34.00	0.034	24.08	0.019	44.04	0.028	46.16	0.011	34.74	0.017	18.86	0.032	56.83	0.024	30.78	0.036	17.41	0.031	34.31	0.026	27.63	0.049	23.60	0.012	15.53	0.046	38.70	0.020	36.86	0.030	13.70	0.039	21.29	0.025	32.58	0.025	15.66	0.025	22.63	0.037	20.62	0.012
04/18/11	1,337	0.013	33.41	0.018	32.87	-0.005	23.62	-0.003	42.83	-0.001	45.66	0.004	34.17	-0.003	18.27	0.000	55.48	0.023	29.72	0.012	16.90	-0.005	33.43	-0.010	26.35	0.013	23.33	0.022	14.85	-0.006	37.94	0.007	35.80	-0.007	13.19	-0.003	20.76	0.020	31.78	0.006	15.28	-0.003	21.83	0.005	20.38	-0.003
04/11/11	1,320	-0.006	32.83	-0.002	33.03	-0.020	23.69	0.013	42.85	-0.004	45.46	-0.002	34.25	0.039	18.27	0.001	54.22	0.003	29.36	-0.017	16.98	-0.022	33.78	-0.005	26.01	0.013	22.83	0.003	14.95	0.000	37.67	0.003	36.06	-0.001	13.24	-0.015	20.36	-0.008	31.60	-0.002	15.33	-0.006	21.71	-0.008	20.44	0.010
04/04/11	1,328	-0.003	32.90	0.001	33.69	0.009	23.39	0.011	43.01	-0.003	45.56	-0.001	32.97	0.006	18.25	-0.009	54.04	-0.020	29.86	-0.010	17.37	0.009	33.96	0.010	25.68	-0.023	22.76	0.011	14.95	-0.012	37.57	0.005	36.11	-0.006	13.44	0.016	20.53	-0.001	31.65	0.002	15.42	0.006	21.88	-0.016	20.24	-0.008
03/28/11	1,332	0.014	32.87	0.035	33.41	0.010	23.15	0.022	43.14	0.021	45.59	0.034	32.78	0.021	18.41	0.027	55.13	0.015	30.16	0.021	17.22	0.038	33.64	0.034	26.28	0.062	22.51	0.037	15.13	0.021	37.37	0.024	36.32	0.027	13.24	0.006	20.55	0.030	31.58	0.019	15.33	0.033	22.24	0.027	20.40	0.025
03/21/11	1,314	0.027	31.77	0.031	33.07	0.011	22.65	0.018	42.26	0.010	44.10	0.011	32.11	0.025	17.93	0.021	54.29	0.015	29.53	0.014	16.59	0.032	32.54	0.009	24.74	0.021	21.70	0.025	14.81	0.017	36.49	0.019	35.38	0.018	13.16	0.034	19.95	0.009	30.98	0.016	14.83	0.029	21.65	0.021	19.91	0.013
03/14/11	1,279	-0.019	30.80	-0.031	32.70	-0.034	22.26	-0.023	41.84	-0.015	43.63	-0.043	31.31	-0.054	17.56	-0.024	53.50	-0.109	29.11	-0.025	16.07	-0.026	32.25	-0.012	24.23	-0.028	21.16	-0.019	14.56	-0.028	35.81	-0.058	34.75	-0.049	12.73	-0.021	19.78	-0.006	30.50	-0.033	14.42	-0.022	21.21	-0.019	19.66	-0.035
03/07/11	1,304	-0.013	31.80	-0.023	33.84	0.006	22.78	0.008	42.48	0.011	45.61	0.025	33.11	0.008	17.99	0.007	60.07	0.020	29.87	0.021	16.49	0.014	32.62	-0.009	24.93	0.001	21.57	0.001	14.98	-0.001	38.02	0.006	36.56	0.005	13.00	0.001	19.89	0.002	31.55	0.008	14.74	0.004	21.61	0.020	20.38	0.018
02/28/11	1,321	0.001	32.55	0.035	33.63	0.024	22.60	0.013	42.01	0.006	44.50	0.006	32.84	0.040	17.88	-0.013	58.89	0.019	29.25	0.007	16.27	0.003	32.91	-0.003	24.91	0.013	21.53	0.020	14.99	0.024	37.80	-0.008	36.37	0.039	12.98	0.096	19.84	0.022	31.30	-0.002	14.69	0.008	21.20	-0.003	20.03	0.003
02/22/11	1,320	-0.017	31.45	0.004	32.84	-0.011	22.30	-0.047	41.75	0.008	44.23	-0.004	31.57	-0.018	18.11	0.003	57.82	-0.011	29.05	0.013	16.22	-0.017	33.00	-0.012	24.59	-0.013	21.11	-0.002	14.64	-0.025	38.10	0.010	35.01	-0.004	11.85	-0.010	19.41	0.011	31.37	0.005	14.56	0.007	21.26	-0.014	19.97	0.000
02/14/11	1,343	0.010	31.31	-0.006	33.21	0.003	23.41	0.005	41.42	-0.010	44.40	0.006	32.16	-0.009	18.05	0.005	58.45	-0.006	28.67	-0.004	16.51	-0.013	33.41	-0.004	24.93	0.037	21.15	0.028	15.01	-0.004	37.72	-0.025	35.15	-0.001	11.96	0.012	19.19	-0.005	31.22	-0.004	14.47	0.001	21.58	0.012	19.96	-0.005
02/07/11	1,329	0.014	31.50	0.023	33.10	0.036	23.29	0.018	41.83	0.010	44.15	0.004	32.46	0.007	17.96	0.008	58.78	-0.004	28.79	-0.005	16.73	0.015	33.56	0.014	24.05	0.026	20.57	0.007	15.07	0.027	38.67	0.006	35.20	0.022	11.82	-0.019	19.29	0.013	31.35	0.018	14.46	-0.014	21.33	0.009	20.06	0.012
01/31/11	1,311	0.027	30.78	0.005	31.95	0.017	22.88	-0.006	41.40	-0.010	43.97	0.003	32.22	0.012	17.81	0.000	59.04	0.016	28.93	0.030	16.48	-0.001	33.10	0.011	23.43	-0.011	20.42	0.015	14.67	-0.004	38.44	0.000	34.44	0.002	12.05	0.041	19.04	0.008	30.78	0.001	14.66	0.000	21.13	0.004	19.83	0.004
01/24/11	1,276	-0.005	30.63	-0.006	31.42	-0.002	23.01	-0.008	41.80	0.004	43.85	-0.011	31.84	-0.029	17.82	-0.001	58.09	-0.013	28.10	0.006	16.50	-0.003	32.73	-0.007	23.69	-0.001	20.12	0.016	14.74	0.001	38.43	-0.015	34.36	-0.004	11.57	-0.009	18.89	0.017	30.76	-0.013	14.66	0.006	21.06	-0.006	19.74	-0.015
01/18/11	1,283	-0.008	30.81	-0.010	31.47	0.000	23.20	0.016	41.64	0.001	44.34	0.013	32.78	-0.010	17.84	-0.003	58.87	-0.001	27.94	0.018	16.54	-0.001	32.96	0.002	23.73	-0.023	19.80	-0.002	14.72	0.015	39.01	-0.008	34.51	0.003	11.68	-0.023	18.57	0.000	31.15	-0.006	14.57	-0.003	21.19	0.006	20.04	0.019
01/10/11	1,293	0.017	31.14	0.005	31.48	0.002	22.84	-0.004	41.60	0.006	43.75	0.007	33.13	-0.025	17.89	-0.017	58.92	0.011	27.45	0.012	16.55	0.016	32.89	0.018	24.29	-0.007	19.83	-0.014	14.50	-0.002	39.34	0.007	34.41	-0.002	11.95	0.030	18.57	0.004	31.35	0.011	14.62	0.006	21.07	0.011	19.68	-0.010
01/03/11	1,272	0.011	30.99	0.005	31.41	0.016	22.92	0.004	41.36	-0.001	43.43	-0.001	33.97	0.004	18.20	-0.010	58.31	0.021	27.12	-0.008	16.28	0.003	32.31	0.006	24.45	0.011	20.11	0.010	14.52	0.002	39.08	-0.017	34.47	0.003	11.60	0.015	18.49	0.010	31.01	-0.004	14.53	0.016	20.84	0.009	19.88	0.007
12/27/10	1,258	0.001	30.83	-0.003	30.92	-0.008	22.84	-0.004	41.39	-0.001	43.48	0.002	33.85	0.006	18.38	0.001	57.09	-0.010	27.34	0.001	16.23	-0.007	32.10	-0.014	24.18	-0.018	19.90	-0.001	14.50	-0.011	39.76	-0.001	34.36	-0.009	11.43	-0.023	18.31	-0.017	31.13	-0.001	14.30	-0.006	20.66	-0.007	19.74	0.003
12/20/10	1,257	0.010	30.91	0.014	31.18	0.006	22.92	-0.004	41.41	0.005	43.38	0.002	33.66	0.001	18.36	0.008	57.67	0.015	27.32	-0.001	16.34	0.010	32.56	-0.002	24.63	0.011	19.93	-0.002	14.66	0.008	39.80	0.005	34.65	0.007	11.69	0.034	18.63	0.001	31.16	0.009	14.38	0.023	20.81	0.000	19.68	0.000
12/13/10	1,244	0.003	30.47	0.016	30.99	0.009	23.01	-0.004	41.19	0.009	43.31	0.012	33.64	0.013	18.21	0.016	56.83	0.002	27.34	0.007	16.17	0.003	32.63	0.002	24.36	0.017	19.97	0.018	14.55	0.006	39.60	0.023	34.41	0.016	11.31	0.035	18.61	0.019	30.86	0.002	14.05	0.030	20.82	0.017	19.68	0.013
12/06/10	1,240	0.013	29.99	0.015	30.72	-0.015	23.10	-0.012	40.81	-0.003	42.80	-0.015	33.20	0.003	17.92	0.001	56.71	-0.028	27.16	0.001	16.13	-0.003	32.56	0.004	23.96	-0.002	19.62	-0.004	14.46	-0.007	38.72	-0.023	33.87	-0.003	10.93	0.025	18.26	0.000	30.80	-0.008	13.64	-0.002	20.47	-0.003	19.42	-0.019
11/29/10	1,225	0.030	29.53	-0.002	31.18	0.021	23.37	0.011	40.93	0.017	43.43	0.015	33.11	0.027	17.89	-0.009	58.34	0.001	27.13	0.007	16.17	0.020	32.42	0.028	24.00	-0.002	19.70	-0.003	14.56	0.018	39.63	0.025	33.98	0.012	10.67	0.002	18.26	0.035	31.04	0.008	13.67	0.008	20.53	0.005	19.80	0.018
11/22/10	1,189	-0.009	29.60	0.018	30.55	0.001	23.12	-0.009	40.23	-0.009	42.77	-0.005	32.23	-0.021	18.06	0.016	58.29	-0.019	26.95	0.008	15.86	0.029	31.52	0.011	24.06	0.011	19.76	0.010	14.30	-0.021	38.65	-0.012	33.59	-0.009	10.65	-0.014	17.63	0.010	30.81	-0.006	13.56	-0.004	20.44	0.005	19.45	-0.005
11/15/10	1,200	0.000	29.08	-0.005	30.52	-0.004	23.33	-0.004	40.60	-0.010	42.99	-0.010	32.92	0.007	17.77	-0.015	59.43	0.020	26.73	0.004	15.41	-0.011	31.17	-0.012	23.79	0.001	19.57	-0.001	14.62	-0.006	39.11	0.001	33.89	0.000	10.80	-0.031	17.46	-0.014	31.00	-0.001	13.62	-0.001	20.33	0.013	19.54	-0.014
11/08/10	1,199	-0.022	29.22	-0.026	30.64	-0.032	23.42	-0.018	41.03	-0.025	43.43	-0.025	32.67	-0.017	18.04	0.004	58.24	-0.031	26.61	-0.014	15.58	-0.031	31.55	-0.025	23.75	-0.020	19.59	-0.020	14.70	-0.025	39.08	-0.023	33.91	-0.029	11.14	-0.022	17.71	-0.013	31.02	-0.010	13.63	-0.024	20.08	-0.031	19.81	-0.018
11/01/10	1,226	0.036	30.01	0.009	31.65	0.030	23.85	0.029	42.07	0.026	44.54	0.015	33.24	0.036	17.97	0.047	60.10	0.012	27.01	0.015	16.07	0.020	32.35	0.021	24.23	-0.018	19.99	0.036	15.09	0.001	40.00	0.016	34.93	0.024	11.39	0.100	17.95	0.030	31.33	0.016	13.97	0.000	20.73	0.010	20.18	0.020
10/25/10	1,183	0.000	29.74	-0.023	30.72	0.008	23.17	0.005	41.02	0.012	43.87	0.024	32.09	0.025	17.17	0.016	59.40	-0.001	26.61	0.014	15.76	0.015	31.69	0.003	24.67	0.020	19.30	0.024	15.08	-0.008	39.37	0.003	34.11	-0.012	10.35	0.007	17.43	0.007	30.84	0.000	13.97	-0.009	20.52	0.015	19.79	-0.001
10/18/10	1,183	0.006	30.42	-0.003	30.47	0.013	23.05	-0.002	40.52	0.011	42.83	0.011	31.30	0.010	16.89	0.001	59.45	-0.031	26.24	0.005	15.52	-0.012	31.58	0.014	24.19	-0.010	18.84	-0.004	15.19	-0.001	39.24	0.016	34.52	0.012	10.28	-0.005	17.30	0.002	30.83	0.017	14.09	0.013	20.22	0.007	19.81	0.014
10/11/10	1,176	0.009	30.53	0.001	30.08	0.000	23.09	-0.010	40.09	0.007	42.37	-0.003	30.98	0.012	16.87	0.005	61.35	0.011	26.11	0.013	15.70	0.001	31.14	-0.005	24.42	0.011	18.92	0.016	15.21	0.017	38.61	0.003	34.10	0.010	10.33	0.034	17.27	0.007	30.32	-0.001	13.92	-0.005	20.08	0.003	19.54	0.004
10/04/10	1,165	0.016	30.50	0.014	30.07	-0.014	23.33	0.014	39.82	-0.001	42.49	-0.011	30.61	0.016	16.79	0.016	60.67	-0.014	25.78	0.016	15.69	-0.001	31.30	-0.008	24.16	0.008	18.63	0.060	14.96	0.019	38.51	0.023	33.77	-0.009	9.99	0.000	17.15	0.009	30.34	0.015	13.99	0.007	20.01	0.007	19.47	0.010
09/27/10	1,146	-0.002	30.09	0.019	30.50	0.016	23.02	0.030	39.87	-0.009	42.95	-0.009	30.12	0.007	16.53	0.018	61.51	0.002	25.37	0.008	15.71	0.002	31.57	0.056	23.98	0.025	17.58	0.003	14.69	0.014	37.64	0.008	34.09	0.010	9.99	0.011	17.00	0.012	29.88	-0.009	13.89	0.001	19.88	0.017	19.27	0.013
09/20/10	1,149	0.021	29.54	0.017	30.01	0.004	22.36	0.020	40.25	0.018	43.34	0.027	29.89	0.025	16.24	0.009	61.41	0.005	25.18	0.016	15.68	0.006	29.89	-0.004	23.39	0.011	17.52	0.016	14.49	0.022	37.35	0.012	33.74	0.022	9.89	0.019	16.79	0.007	30.17	0.012	13.88	0.031	19.53	0.016	19.02	0.016
09/13/10	1,126	0.014	29.05	-0.007	29.88	0.001	21.93	-0.013	39.53	0.005	42.18	-0.001	29.17	-0.016	16.09	-0.005	61.12	-0.043	24.77	-0.010	15.59	-0.007	30.01	-0.023	23.13	0.009	17.25	0.018	14.18	-0.004	36.89	0.024	33.03	-0.005	9.70	-0.021	16.66	0.004	29.82	-0.001	13.47	-0.005	19.23	-0.019	18.72	0.004
09/07/10	1,110	0.005	29.26	-0.027	29.86	0.001	22.22	-0.017	39.34	-0.015	42.23	0.010	29.64	-0.014	16.17	-0.003	63.84	0.002	25.02	-0.002	15.70	-0.005	30.70	-0.012	22.93	-0.021	16.94	-0.011	14.24	-0.002	36.04	-0.073	33.19	-0.012	9.91	-0.026	16.60	-0.009	29.86	0.003	13.54	-0.023	19.59	0.002	18.65	-0.003
08/30/10	1,105	0.037	30.07	0.023	29.82	0.011	22.60	0.013	39.96	0.012	41.80	-0.001	30.06	0.026	16.22	-0.004	63.74	0.004	25.07	0.018	15.78	0.020	31.08	0.012	23.41	-0.002	17.12	-0.007	14.26	0.024	38.87	0.001	33.59	0.017	10.17	0.010	16.75	0.005	29.76	0.001	13.86	0.021	19.55	0.016	18.70	0.010
08/23/10	1,065	-0.007	29.40	0.019	29.48	-0.004	22.30	0.042	39.50	0.025	41.82	0.018	29.28	0.004	16.28	0.019	63.48	0.028	24.64	0.024	15.48	0.021	30.70	0.015	23.45	0.008	17.24	0.013	13.93	0.012	38.82	0.039	33.02	0.027	10.07	0.008	16.66	0.028	29.75	0.033	13.57	0.041	19.25	0.026	18.51	0.032
08/16/10	1,072	-0.007	28.86	-0.013	29.60	0.005	21.41	-0.016	38.52	-0.005	41.10	0.003	29.18	-0.002	15.98	0.005	61.74	-0.008	24.06	-0.007	15.17	0.012	30.26	-0.008	23.26	-0.003	17.02	-0.010	13.77	0.019	37.38	0.003	32.15	-0.006	9.99	0.003	16.21	0.000	28.79	-0.002	13.03	0.017	18.76	-0.018	17.94	-0.025
08/09/10	1,079	-0.038	29.25	-0.023	29.45	0.005	21.76	0.014	38.73	0.000	40.98	-0.010	29.25	-0.002	15.91	-0.004	62.26	-0.010	24.24	-0.008	14.99	-0.012	30.51	-0.017	23.33	-0.010	17.19	-0.012	13.51	0.011	37.26	0.002	32.33	0.004	9.96	-0.021	16.21	-0.010	28.84	-0.001	12.81	-0.049	19.10	-0.020	18.39	0.014
08/02/10	1,122	0.018	29.94	0.028	29.29	0.019	21.46	0.072	38.75	0.031	41.38	0.019	29.30	0.026	15.98	0.012	62.90	0.029	24.43	0.041	15.17	0.033	31.04	0.032	23.56	0.021	17.40	0.013	13.37	0.025	37.20	0.028	32.20	0.033	10.16	-0.011	16.38	0.041	28.87	0.016	13.47	0.051	19.49	0.019	18.15	0.006
07/26/10	1,102	-0.001	29.12	-0.002	28.75	0.000	20.01	0.003	37.57	-0.004	40.62	0.009	28.57	0.007	15.78	-0.005	61.14	-0.010	23.47	-0.004	14.69	0.007	30.07	-0.020	23.09	-0.012	17.17	0.005	13.04	-0.005	36.19	0.004	31.17	-0.011	10.28	-0.051	15.73	0.001	28.43	-0.003	12.82	-0.019	19.13	0.008	18.04	-0.012
07/19/10	1,103	0.035	29.17	0.033	28.77	0.041	19.95	0.028	37.72	0.028	40.24	0.004	28.36	0.011	15.86	0.023	61.75	0.031	23.57	0.036	14.59	0.036	30.69	0.035	23.38	0.068	17.09	0.040	13.11	0.051	36.05	0.039	31.53	0.032	10.83	0.097	15.72	0.030	28.52	0.032	13.07	0.035	18.97	0.037	18.25	0.037
07/12/10	1,065	-0.012	28.24	-0.004	27.62	0.001	19.41	-0.012	36.71	-0.005	40.08	0.005	28.05	-0.015	15.51	-0.009	59.91	-0.002	22.74	0.003	14.09	-0.028	29.65	-0.003	21.89	-0.032	16.43	-0.008	12.48	-0.030	34.69	-0.002	30.56	-0.008	9.88	-0.034	15.26	-0.028	27.64	0.002	12.62	-0.004	18.30	0.006	17.60	-0.010
07/08/10	1,078		28.36		27.59		19.64		36.88		39.89		28.49		15.65		60.03		22.66		14.49		29.75		22.61		16.57		12.87		34.75		30.81		10.22		15.69		27.58		12.67		18.19		17.78	

Prices obtained from Yahoo! Finance, http://finance.yahoo.com (accessed 7-10-15)
Returns are discrete returns of price

Beta Regression Analysis

ALLETE, Inc. **ALE**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.574128292
R Square	0.329623296
Adjusted R Square	0.327034969
Standard Error	0.017883172
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.040727511	0.040727511	127.3499408	2.75956E-24
Residual	259	0.082830233	0.000319808		
Total	260	0.123557744			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000560657	0.001117356	0.501771448	0.616254564	-0.001639602	0.002760917	-0.001639602	0.002760917
ALE	0.649556258	0.057559551	11.2849431	2.75956E-24	0.536211976	0.762900539	0.536211976	0.762900539

Alliant Energy Corporation **LNT**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.546793876
R Square	0.298983543
Adjusted R Square	0.296276915
Standard Error	0.017066637
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.032174719	0.032174719	110.4635086	9.44132E-22
Residual	259	0.07543896	0.00029127		
Total	260	0.107613679			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001686676	0.001066338	1.581745674	0.114928007	-0.000413121	0.003786473	-0.000413121	0.003786473
LNT	0.577338098	0.054931417	10.51016216	9.44132E-22	0.469169048	0.685507149	0.469169048	0.685507149

Ameren Corporation **AEE**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.435339883
R Square	0.189520813
Adjusted R Square	0.18639155
Standard Error	0.020416569
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.025245288	0.025245288	60.56403605	1.7032E-13
Residual	259	0.1079606	0.000416836		
Total	260	0.133205888			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001560506	0.001275645	1.223307735	0.222325312	-0.00095145	0.004072463	-0.00095145	0.004072463
AEE	0.511402686	0.065713651	7.782289898	1.7032E-13	0.38200163	0.640803741	0.38200163	0.640803741

Beta Regression Analysis

Consolidated Edison Co. **ED**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.298908794
R Square	0.089346467
Adjusted R Square	0.085830431
Standard Error	0.01741132
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.007703487	0.007703487	25.41112973	8.70968E-07
Residual	259	0.078516902	0.000303154		
Total	260	0.08622039			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001363166	0.001087874	1.253054229	0.211316044	-0.000779039	0.00350537	-0.000779039	0.00350537
ED	0.282498743	0.056040827	5.040945321	8.70968E-07	0.172145081	0.392852406	0.172145081	0.392852406

Duke Energy Corporation **DUK**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.341421515
R Square	0.116568651
Adjusted R Square	0.113157719
Standard Error	0.017096215
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.009988693	0.009988693	34.17501602	1.51059E-08
Residual	259	0.075700668	0.000292281		
Total	260	0.085689361			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001724936	0.001068186	1.614826454	0.107565815	-0.0003785	0.003828372	-0.0003785	0.003828372
DUK	0.321682305	0.055026616	5.845940131	1.51059E-08	0.213325791	0.43003882	0.213325791	0.43003882

Edison International **EIX**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.419341437
R Square	0.175847241
Adjusted R Square	0.172665184
Standard Error	0.020532438
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.023297463	0.023297463	55.26212817	1.54108E-12
Residual	259	0.109189476	0.000421581		
Total	260	0.132486939			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001699587	0.001282885	1.324816676	0.186399636	-0.000826625	0.004225799	-0.000826625	0.004225799
EIX	0.491277811	0.066086591	7.433850158	1.54108E-12	0.361142377	0.621413245	0.361142377	0.621413245

Beta Regression Analysis

Empire District Electric Company **EDE**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.399195849
R Square	0.159357326
Adjusted R Square	0.156111601
Standard Error	0.023433465
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.026960837	0.026960837	49.09761144	2.10131E-11
Residual	259	0.142223961	0.000549127		
Total	260	0.169184797			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000336921	0.001464143	0.230114866	0.818184156	-0.002546219	0.003220062	-0.002546219	0.003220062
EDE	0.528493343	0.075423961	7.006968777	2.10131E-11	0.37997108	0.677015606	0.37997108	0.677015606

Entergy Corp. **ETR**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.379284332
R Square	0.143856605
Adjusted R Square	0.140551032
Standard Error	0.021141177
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.019450975	0.019450975	43.51941605	2.35116E-10
Residual	259	0.115759882	0.000446949		
Total	260	0.135210856			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.00015993	0.001320919	-0.121074681	0.90372576	-0.002761038	0.002441179	-0.002761038	0.002441179
ETR	0.448893711	0.068045905	6.596924742	2.35116E-10	0.314900064	0.582887359	0.314900064	0.582887359

Eversource Energy **ES**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.472238103
R Square	0.223008826
Adjusted R Square	0.22000886
Standard Error	0.018586225
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.025679591	0.025679591	74.33711972	6.6677E-16
Residual	259	0.08947097	0.000345448		
Total	260	0.115150561			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001666339	0.001161284	1.434911189	0.152518821	-0.000620421	0.003953098	-0.000620421	0.003953098
ES	0.515782843	0.059822427	8.621897687	6.6677E-16	0.397982584	0.633583102	0.397982584	0.633583102

Beta Regression Analysis

Great Plains Energy Inc. **GXP**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.554064039
R Square	0.30698696
Adjusted R Square	0.304311234
Standard Error	0.018325948
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.038531079	0.038531079	114.7303412	2.1069E-22
Residual	259	0.086982653	0.00033584		
Total	260	0.125513731			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.00071976	0.001145021	0.62859945	0.530165273	-0.001534977	0.002974496	-0.001534977	0.002974496
GXP	0.631798254	0.058984687	10.71122501	2.1069E-22	0.515647643	0.747948864	0.515647643	0.747948864

IDACORP, Inc. **IDA**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.582804032
R Square	0.33966054
Adjusted R Square	0.337110966
Standard Error	0.018381257
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.04501197	0.04501197	133.2225091	3.85505E-25
Residual	259	0.087508487	0.000337871		
Total	260	0.132520458			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001069984	0.001148477	0.931654898	0.352382521	-0.001191557	0.003331525	-0.001191557	0.003331525
IDA	0.682868136	0.059162708	11.54220556	3.85505E-25	0.566366972	0.799369299	0.566366972	0.799369299

NorthWestern Corporation **NWE**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.52103789
R Square	0.271480483
Adjusted R Square	0.268667666
Standard Error	0.019137474
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.035348128	0.035348128	96.51552686	1.4447E-19
Residual	259	0.094856916	0.000366243		
Total	260	0.130205044			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001786474	0.001195726	1.494049659	0.136379915	-0.000568108	0.004141057	-0.000568108	0.004141057
NWE	0.60514026	0.061596701	9.824231617	1.4447E-19	0.483846161	0.726434359	0.483846161	0.726434359

Beta Regression Analysis

OGE Energy Corp. **OGE**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.53807098
R Square	0.289520379
Adjusted R Square	0.286777215
Standard Error	0.020090757
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.042601009	0.042601009	105.5424758	5.44471E-21
Residual	259	0.104542376	0.000403639		
Total	260	0.147143385			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000670795	0.001255288	0.534375332	0.593540279	-0.001801075	0.003142665	-0.001801075	0.003142665
OGE	0.664328336	0.064664979	10.27338677	5.44471E-21	0.536992291	0.791664381	0.536992291	0.791664381

Pepco Holdings **POM**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.406435171
R Square	0.165189548
Adjusted R Square	0.161966342
Standard Error	0.021328549
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.023314014	0.023314014	51.2500687	8.38437E-12
Residual	259	0.117820909	0.000454907		
Total	260	0.141134923			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001799241	0.001332626	1.350146759	0.178147584	-0.000824921	0.004423403	-0.000824921	0.004423403
POM	0.491452293	0.068648988	7.15891533	8.38437E-12	0.356271074	0.626633511	0.356271074	0.626633511

PG&E Corp. **PCG**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.314520224
R Square	0.098922972
Adjusted R Square	0.09544391
Standard Error	0.021031804
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.012577319	0.012577319	28.43380623	2.11283E-07
Residual	259	0.11456523	0.000442337		
Total	260	0.127142549			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.000792429	0.001314085	0.603027165	0.547018292	-0.001795223	0.003380081	-0.001795223	0.003380081
PCG	0.360966477	0.067693874	5.332335907	2.11283E-07	0.227666035	0.494266919	0.227666035	0.494266919

Beta Regression Analysis

Pinnacle West Capital Corporation **PNW**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.50931281
R Square	0.259399539
Adjusted R Square	0.256540078
Standard Error	0.0189611
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.032614598	0.032614598	90.71622832	1.24275E-18
Residual	259	0.093116535	0.000359523		
Total	260	0.125731133			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001279476	0.001184706	1.079994588	0.281149255	-0.001053406	0.003612358	-0.001053406	0.003612358
PNW	0.581271261	0.061029015	9.524506723	1.24275E-18	0.461095031	0.701447491	0.461095031	0.701447491

PNM Resources, Inc. **PNM**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.432258097
R Square	0.186847063
Adjusted R Square	0.183707476
Standard Error	0.02482049
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.036663548	0.036663548	59.5132687	2.62705E-13
Residual	259	0.159558686	0.000616057		
Total	260	0.196222234			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.002281009	0.001550806	1.470854214	0.142544405	-0.000772784	0.005334803	-0.000772784	0.005334803
PNM	0.616297041	0.0798883	7.714484345	2.62705E-13	0.458983756	0.773610325	0.458983756	0.773610325

Portland General Electric Company **POR**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.529586176
R Square	0.280461518
Adjusted R Square	0.277683377
Standard Error	0.018195938
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.033424732	0.033424732	100.9529509	2.85273E-20
Residual	259	0.085752872	0.000331092		
Total	260	0.119177604			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001692278	0.001136898	1.488504342	0.137834495	-0.000546463	0.003931018	-0.000546463	0.003931018
POR	0.588446253	0.058566233	10.04753457	2.85273E-20	0.473119647	0.703772859	0.473119647	0.703772859

Beta Regression Analysis

Southern Company **SO**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.305850626
R Square	0.093544606
Adjusted R Square	0.090044778
Standard Error	0.016439911
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.007223888	0.007223888	26.7283454	4.68673E-07
Residual	259	0.0700001	0.000270271		
Total	260	0.077223988			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001233097	0.00102718	1.200468603	0.231054214	-0.00078959	0.003255785	-0.00078959	0.003255785
SO	0.273563609	0.052914206	5.169946363	4.68673E-07	0.169366779	0.377760438	0.169366779	0.377760438

TECO Energy, Inc. **TE**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.5794119
R Square	0.335718149
Adjusted R Square	0.333153355
Standard Error	0.018378953
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.0442144	0.0442144	130.8947409	8.38079E-25
Residual	259	0.087486553	0.000337786		
Total	260	0.131700953			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-7.03681E-05	0.001148333	-0.061278437	0.951184723	-0.002331626	0.00219089	-0.002331626	0.00219089
TE	0.676791205	0.059155293	11.44092395	8.38079E-25	0.560304644	0.793277766	0.560304644	0.793277766

Westar Energy, Inc. **WR**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.482848577
R Square	0.233142748
Adjusted R Square	0.230181909
Standard Error	0.018045944
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.025642855	0.025642855	78.74212775	1.19201E-16
Residual	259	0.084344932	0.000325656		
Total	260	0.109987787			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001499938	0.001127526	1.33029071	0.18459266	-0.000720348	0.003720224	-0.000720348	0.003720224
WR	0.515413778	0.058083456	8.873676112	1.19201E-16	0.40103784	0.629789716	0.40103784	0.629789716

Beta Regression Analysis

Xcel Energy Inc. **XEL**

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.418885806
R Square	0.175465318
Adjusted R Square	0.172281787
Standard Error	0.01701804
Observations	261

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.015962512	0.015962512	55.11656268	1.63808E-12
Residual	259	0.075009948	0.000289614		
Total	260	0.090972459			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.001553759	0.001063302	1.461258306	0.145156693	-0.000540059	0.003647576	-0.000540059	0.003647576
XEL	0.406652502	0.054775	7.424052982	1.63808E-12	0.298791462	0.514513542	0.298791462	0.514513542

Beta Results

Company	Ticker	[1] Raw Beta	[2] Standard Error	[3] SE^2	[4] Adjusted Beta
ALLETE, Inc.	ALE	0.6496	0.0576	0.0033	0.6269
Alliant Energy Corporation	LNT	0.5773	0.0549	0.0030	0.5680
Ameren Corporation	AEE	0.5114	0.0657	0.0043	0.5131
Consolidated Edison Co.	ED	0.2825	0.0560	0.0031	0.3218
Duke Energy Corporation	DUK	0.3217	0.0550	0.0030	0.3535
Edison International	EIX	0.4913	0.0661	0.0044	0.4973
Empire District Electric Company	EDE	0.5285	0.0754	0.0057	0.5260
Entergy Corp.	ETR	0.4489	0.0680	0.0046	0.4649
Eversource Energy	ES	0.5158	0.0598	0.0036	0.5164
Great Plains Energy Inc.	GXP	0.6318	0.0590	0.0035	0.6114
IDACORP, Inc.	IDA	0.6829	0.0592	0.0035	0.6531
NorthWestern Corporation	NWE	0.6051	0.0616	0.0038	0.5885
OGE Energy Corp.	OGE	0.6643	0.0647	0.0042	0.6339
Pepco Holdings	POM	0.4915	0.0686	0.0047	0.4978
PG&E Corp.	PCG	0.3610	0.0677	0.0046	0.3966
Pinnacle West Capital Corporation	PNW	0.5813	0.0610	0.0037	0.5694
PNM Resources, Inc.	PNM	0.6163	0.0799	0.0064	0.5883
Portland General Electric Company	POR	0.5884	0.0586	0.0034	0.5761
Southern Company	SO	0.2736	0.0529	0.0028	0.3106
TECO Energy, Inc.	TE	0.6768	0.0592	0.0035	0.6482
Westar Energy, Inc.	WR	0.5154	0.0581	0.0034	0.5161
Xcel Energy Inc.	XEL	0.4067	0.0548	0.0030	0.4246
Average		0.5192	0.0620	0.0039	0.5183
Variance		0.0158	0.0000	0.0000	0.0106

[1] Raw beta calculated through linear regression from DG-C-10

[2] Standard error of the beta coefficient from DG-C-10

[3] = [2]^2

[4] Adjusted beta using Vasicek adjustment method (see testimony)

Implied Equity Risk Premium
(PUD Calculation)

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Index Value	Operating Earnings	Dividends	Buybacks	Earnings Yield	Dividend Yield	Buyback Yield	Gross Cash Yield
2010	11,430	758.71	205.82	298.82	6.64%	1.80%	2.61%	4.42%
2011	11,385	876.76	240.20	405.08	7.70%	2.11%	3.56%	5.67%
2012	12,742	870.19	280.69	398.91	6.83%	2.20%	3.13%	5.33%
2013	16,495	956.01	311.77	475.59	5.80%	1.89%	2.88%	4.77%
2014	18,245	1,004.22	350.43	553.28	5.50%	1.92%	3.03%	4.95%

Cash Yield	5.03%	[9]
Growth Rate	5.77%	[10]
Risk-free Rate	3.09%	[11]
Current Index Value	2,096	[12]

	[13]	[14]	[15]	[16]	[17]
Year	1	2	3	4	5
Expected Dividends	111.49	117.92	124.72	131.91	139.52
Expected Terminal Value					2471.03
Present Value	102.37	99.42	96.55	93.77	1703.89

Intrinsic Index Value	2096	[18]
Required Return on Market	8.91%	[19]
Implied Equity Risk Premium	**5.82%**	[20]

[1-4] S&P Quarterly Press Releases, data found at www.spdji.com/indices/equity/sp-500 (all dollar figures are in $ billions)
[1] Market value of S&P 500
[5] = [2] / [1]
[6] = [3] / [1]
[7] = [4] / [1]
[8] = [6] + [7]
[9] = Average of [8]
[10] = Compund annual growth rate of [2] = (end value / beginning value)$^{1/5}$-1
[11] Risk-free rate calculated in DG-C-8
[12] 30-day average of closing index prices from DG-C-4
[13-16] Expected dividends = [9]*[12]*(1+[10])^{n} ; Present value = expected dividend / (1+[11]+[19])^{n}
[17] Expected terminal value = expected dividend * (1+[11]) / [19] ; Present value = (expected dividend + expected terminal value) / (1+[11]+[19])^{5}
[18] = Sum([13-17]) present values.
[19] = [20] + [11]
[20] Internal rate of return calculation setting [18] equal to [12] and solving for the discount rate

Equity Risk Premium Results

Historic Premium		
Geometric Mean	4.40%	[1]
Arithmetic Mean	6.00%	[2]
Historic ERP Average	5.20%	[3]
Expert Survey Premium		
IESE Survey	5.50%	[4]
Duke CFO Survey	4.51%	[5]
Expert ERP Average	5.01%	[6]
Implied Premium		
Damodaran	5.78%	[7]
PUD	5.82%	[8]
Implied ERP Average	5.80%	[9]
Weighted Average ERP	**5.50%**	[10]

[1],[2] Geometric and arithmetic mean of total returns on large company stocks less total returns on long-term government bonds, 2015 Ibbotson Stocks, Bonds, Bills, and Iflation (SBBI) Classic Yearbook, p. 91 (data from 1926-2014).

[3] = Average ([1],[2])

[4] IESE Business School, "Discount Rate (risk-Free Rate and Market Risk Premium) used in 41 countries in 2015: a survey" p. 3.

[5] Graham and Harvey "The Equity Risk Premium in 2015" p. 3

[6] = Average([4],[5])

[7] Aswath Damodaran, "Equity Risk Premiums: Determinants, Estimation and Implications - The 2015 Edition, p. 120. 2014 ERP

[8] = PUD calculated ERP from DG-C-12

[9] = Average ([7],[8])

[10] = Weighted average. Historic = 10%, Survey = 30%, Implied = 60%

CAPM Final Results

Company	Ticker	[1] Risk-Free Rate	[2] Calculated Beta	[3] Value Line Beta	[4] Average Beta	[5] Risk Premium	[6] CAPM Results
ALLETE, Inc.	ALE	3.09%	0.627	0.800	0.713	5.50%	7.01%
Alliant Energy Corporation	LNT	3.09%	0.568	0.800	0.684	5.50%	6.85%
Ameren Corporation	AEE	3.09%	0.513	0.750	0.632	5.50%	6.56%
Consolidated Edison Co.	ED	3.09%	0.322	0.600	0.461	5.50%	5.62%
Duke Energy Corporation	DUK	3.09%	0.354	0.600	0.477	5.50%	5.71%
Edison International	EIX	3.09%	0.497	0.750	0.624	5.50%	6.52%
Empire District Electric Company	EDE	3.09%	0.526	0.700	0.613	5.50%	6.46%
Entergy Corp.	ETR	3.09%	0.465	0.700	0.582	5.50%	6.29%
Eversource Energy	ES	3.09%	0.516	0.750	0.633	5.50%	6.57%
Great Plains Energy Inc.	GXP	3.09%	0.611	0.850	0.731	5.50%	7.11%
IDACORP, Inc.	IDA	3.09%	0.653	0.800	0.727	5.50%	7.08%
NorthWestern Corporation	NWE	3.09%	0.588	0.700	0.644	5.50%	6.63%
OGE Energy Corp.	OGE	3.09%	0.634	0.900	0.767	5.50%	7.31%
Pepco Holdings	POM	3.09%	0.498	0.650	0.574	5.50%	6.24%
PG&E Corp.	PCG	3.09%	0.397	0.650	0.523	5.50%	5.97%
Pinnacle West Capital Corporation	PNW	3.09%	0.569	0.700	0.635	5.50%	6.58%
PNM Resources, Inc.	PNM	3.09%	0.588	0.850	0.719	5.50%	7.04%
Portland General Electric Company	POR	3.09%	0.576	0.800	0.688	5.50%	6.87%
Southern Company	SO	3.09%	0.311	0.600	0.455	5.50%	5.59%
TECO Energy, Inc.	TE	3.09%	0.648	0.850	0.749	5.50%	7.21%
Westar Energy, Inc.	WR	3.09%	0.516	0.750	0.633	5.50%	6.57%
Xcel Energy Inc.	XEL	3.09%	0.425	0.650	0.537	5.50%	6.04%
Average			0.518	0.736	0.627		**6.54%**

[1] One-month average of current 30-year Treasury bond yield from DG-C-8
[2] Calculated beta from DG-C-11
[3] Value Line Investment Survey
[4] = Average ([2],[3])
[5] Equity risk premium from DG-C-13
[6] = [1] + [4] * [5]

Required Return on the Market Portfolio

Historic (last 10 years)	8.49%	[1]
IESE Survey	7.90%	[2]
Duke CFO Survey	6.63%	[3]
PUD Estimate	8.91%	[4]
Average	**7.98%**	[5]
PSO Requested Return	**10.50%**	

[1] Average of geometric and arithmetic mean returns on S&P 500 from 2005 - 2014 from DG-C-16

[2] IESE Business School, "Discount Rate (risk-Free Rate and Market Risk Premium) used in 41 countries in 2015: a survey" p. 5.

[3] Graham and Harvey "The Equity Risk Premium in 2014" (survey of U.S. executives), p. 3.

[4] Calculated required return on market from DG-C-12

[5] = Average([1],[2],[3],[4])

Awarded Returns vs. Required Return on Market (2005 - 2013)

Quarter	[1] Cases Filed	[2] Average Awarded ROE
2005.1	4	10.55%
2005.2	12	10.13%
2005.3	8	10.84%
2005.4	10	10.57%
2006.1	11	10.38%
2006.2	18	10.39%
2006.3	7	10.06%
2006.4	12	10.38%
2007.1	11	10.30%
2007.2	16	10.27%
2007.3	8	10.02%
2007.4	11	10.44%
2008.1	7	10.15%
2008.2	8	10.41%
2008.3	21	10.42%
2008.4	6	10.38%
2009.1	13	10.31%
2009.2	22	10.55%
2009.3	17	10.46%
2009.4	14	10.54%
2010.1	16	10.45%
2010.2	19	10.12%
2010.3	12	10.27%
2010.4	8	10.30%
2011.1	8	10.35%
2011.2	15	10.24%
2011.3	17	10.13%
2011.4	10	10.29%
2012.1	17	10.84%
2012.2	16	9.92%
2012.3	8	9.78%
2012.4	12	10.05%
2013.1	19	10.23%
2013.2	16	9.77%
2013.3	4	10.06%
2013.4	7	9.90%
2014.1	9	10.23%
2014.2	25	9.83%
2014.3	8	9.89%
2014.4	16	9.78%

Year	[3] Annual Market Return	
2005	4.83%	
2006	15.61%	
2007	5.48%	
2008	-36.55%	
2009	25.94%	
2010	14.82%	
2011	2.10%	
2012	15.89%	
2013	32.15%	
2014	13.48%	
Average		
Arithmetic	9.38%	[4]
Geometric	7.60%	[5]
Average Return on All Stocks	**8.49%**	[6]
Average Utility Awarded ROE	**10.30%**	[7]

Expected returns on defesive stocks with low betas such as utility stocks should be less than 8.5% over the past 10 years.

[1] Edison Electric Institute Q4 2014 Financial Update. Number of cases filed in each quarter.

[2] Edison Electric Institute Q4 2014 Financial Update. Average awarded utility ROE each quarter.

[3] Historical stock returns. NYU Stern School of Business. http://pages.stern.nyu.edu/~adamodar/. Click link for "Historical Returns on Stocks, Bonds and Bills - United States

[4] = Average of [3]

[5] = Geometric mean of [3]

[6] = Average ([4],[5])

[7] = Average of [2]

Comparable Earnings Analysis

Company	Ticker	[1] 2010	[1] 2011	[1] 2012	[1] 2013	[1] 2014	[2] Average
ALLETE, Inc.	ALE	7.7%	8.7%	8.1%	7.8%	7.8%	8.0%
Alliant Energy Corporation	LNT	9.9%	9.5%	10.3%	11.3%	10.9%	10.4%
Ameren Corporation	AEE	8.6%	7.5%	8.8%	7.8%	8.7%	8.3%
Consolidated Edison Co.	ED	8.9%	9.2%	9.6%	9.4%	8.5%	9.1%
Duke Energy Corporation	DUK	7.8%	8.1%	5.2%	6.8%	7.2%	7.0%
Edison International	EIX	10.4%	10.5%	15.9%	12.5%	13.0%	12.5%
Empire District Electric Company	EDE	7.2%	7.9%	7.8%	8.5%	8.6%	8.0%
Entergy Corp.	ETR	14.7%	15.0%	11.6%	9.2%	10.4%	12.2%
Eversource Energy	ES	9.8%	9.8%	5.7%	8.2%	8.2%	8.3%
Great Plains Energy Inc.	GXP	7.3%	5.8%	5.9%	7.2%	6.7%	6.6%
IDACORP, Inc.	IDA	9.3%	10.1%	9.6%	9.9%	9.9%	9.8%
NorthWestern Corporation	NWE	9.4%	10.8%	9.0%	9.1%	8.2%	9.3%
OGE Energy Corp.	OGE	12.9%	13.4%	12.8%	12.8%	12.2%	12.8%
Pepco Holdings	POM	6.5%	5.9%	6.4%	6.5%	5.6%	6.2%
PG&E Corp.	PCG	9.7%	9.2%	6.7%	5.7%	9.1%	8.1%
Pinnacle West Capital Corporation	PNW	9.0%	8.6%	9.8%	9.7%	9.1%	9.2%
PNM Resources, Inc.	PNM	5.2%	6.1%	6.6%	6.8%	6.9%	6.3%
Portland General Electric Company	POR	7.9%	8.8%	8.2%	7.5%	9.2%	8.3%
Southern Company	SO	12.2%	12.5%	12.8%	12.5%	12.5%	12.5%
TECO Energy, Inc.	TE	11.2%	12.0%	10.7%	8.5%	8.3%	10.1%
Westar Energy, Inc.	WR	8.5%	7.7%	9.4%	9.6%	9.5%	8.9%
Xcel Energy Inc.	XEL	8.9%	9.9%	10.2%	9.9%	10.0%	9.8%
Average							**9.17%**

[1] Reported ROE, Value Line Investment Survey 2010 - 2014
[2] = Average (2010 - 2014)

Competitive Earnings

Industry	Number of Firms	ROE
Air Transport	22	2.8%
Bank (Money Center)	13	8.2%
Coal & Related Energy	42	-6.4%
Education	42	3.8%
Electronics (General)	189	8.7%
Engineering/Construction	56	5.3%
Environmental & Waste Services	103	5.7%
Financial Svcs. (Non-bank & Insurance)	288	-2.2%
Green & Renewable Energy	26	0.3%
Hotel/Gaming	80	5.8%
Insurance (General)	24	7.4%
Metals & Mining	124	2.1%
Oil/Gas (Production and Exploration)	392	6.3%
Oil/Gas Distribution	85	9.6%
Paper/Forest Products	22	9.9%
Power	82	9.5%
Precious Metals	147	-6.9%
R.E.I.T.	213	7.7%
Real Estate (Development)	18	0.5%
Semiconductor Equip	47	5.6%
Software (Entertainment)	20	7.1%
Steel	40	-14.0%
Telecom (Wireless)	21	-4.7%
Tobacco	20	-54.1%
Total / Average	**2116**	**0.7%**

http://people.stern.nyu.edu/adamodar/New_Home_Page/datafile/pbvdata.html

Cost of Equity Summary

Model	Cost of Equity	
Discounted Cash Flow Model	7.96%	[1]
Capital Asset Pricing Model	6.54%	[2]
Comparable Earnings Model	9.17%	[3]
Average	**7.89%**	

[1] From DG-C-7

[2] From DG-C-14

[3] From DG-C-17

Capital Structure Comparison

Exhibit DG-C-20

Company	Ticker	[1] Common Equity Ratio	[2] Long-Term Debt Ratio	[3] Debt-Equity Ratio
ALLETE, Inc.	ALE	55.8%	44.2%	79.2%
Alliant Energy Corporation	LNT	47.5%	49.7%	104.6%
Ameren Corporation	AEE	51.7%	47.2%	91.3%
Consolidated Edison Co.	ED	52.0%	48.0%	92.3%
Duke Energy Corporation	DUK	52.3%	47.7%	91.2%
Edison International	EIX	47.2%	44.1%	93.4%
Empire District Electric Company	EDE	49.4%	50.6%	102.4%
Entergy Corp.	ETR	43.8%	54.9%	125.3%
Eversource Energy	ES	53.2%	45.9%	86.3%
Great Plains Energy Inc.	GXP	50.4%	49.0%	97.2%
IDACORP, Inc.	IDA	54.7%	45.3%	82.8%
NorthWestern Corporation	NWE	46.6%	53.4%	114.6%
OGE Energy Corp.	OGE	54.1%	45.9%	84.8%
Pepco Holdings	POM	48.8%	51.2%	104.9%
PG&E Corp.	PCG	50.7%	48.5%	95.7%
Pinnacle West Capital Corporation	PNW	59.0%	41.0%	69.5%
PNM Resources, Inc.	PNM	51.2%	48.8%	95.3%
Portland General Electric Company	POR	47.3%	52.7%	111.4%
Southern Company	SO	47.3%	49.5%	104.7%
TECO Energy, Inc.	TE	43.4%	56.6%	130.4%
Westar Energy, Inc.	WR	50.0%	50.0%	100.0%
Xcel Energy Inc.	XEL	47.0%	53.0%	112.8%
Average		50.2%	49.0%	98.6%

[1-2] Value Line Investment Survey. 2014 data

[3] = [2] / [1]

Optimal Capital Structure

Inputs		
EBIT	188,832	[1]
Interest Expense	54,641	[2]
Book Debt	1,284,181	[3]
Book Equity	1,027,168	[4]
Debt / Capital	55.56%	[5]
Debt / Equity	125%	[6]
Debt Cost	4.92%	[7]
Tax Rate	39%	[8]
Unlevered Beta	0.417	[9]
Risk-free Rate	3.09%	[10]
Equity Risk Premium	5.50%	[11]
Coverage Ratio	3.46	[12]
Bond Rating	A3	[13]

Ratings Table

[14] Coverage Ratio	[15] Bond Rating	[16] Spread	[17] Interest Rate
> 8.5	Aaa/AAA	0.40%	3.49%
6.5 - 8.5	Aa2/AA	0.70%	3.79%
5.5 - 6.5	A1/A+	0.90%	3.99%
4.3 - 5.5	A2/A	1.00%	4.09%
3.0 - 4.3	A3/A-	1.20%	4.29%
2.5 - 3.0	Baa2/BBB	1.75%	4.84%
2.3 - 2.5	Ba1/BB+	2.75%	5.84%
2.0 - 2.3	Ba2/BB	3.25%	6.34%
1.8 - 2.0	B1/B+	4.00%	7.09%
1.5 - 1.8	B2/B	5.00%	8.09%
1.3 - 1.5	B3/B-	6.00%	9.09%
0.8 - 1.3	Caa/CCC	7.00%	10.09%

Optimal Capital Structure Calculation

[18] Debt Ratio	[19] D/E Ratio	[20] Levered Beta	[21] Cost of Equity	[22] Debt Level	[23] Interest Expense	[24] Coverage Ratio	[25] Pre-tax Debt Cost	[26] After-tax Debt Cost	[27] WACC
0%	0%	0.417	5.38%	0	0	∞	3.49%	1.35%	5.38%
50%	100%	0.672	6.79%	1,155,675	56,861	3.3	4.29%	1.66%	4.22%
55%	122%	0.729	7.10%	1,271,242	62,547	3.0	4.29%	1.66%	4.11%
60%	150%	0.800	7.49%	1,386,810	68,233	2.8	4.84%	1.87%	4.12%
62%	163%	0.834	7.67%	1,433,037	70,508	2.7	4.84%	1.87%	4.08%
64%	178%	0.871	7.88%	1,479,264	72,782	2.6	4.84%	1.87%	4.03%
65%	186%	0.891	7.99%	1,502,377	73,919	2.6	4.84%	1.87%	**4.01%**
66%	194%	0.913	8.11%	1,525,491	75,057	2.5	5.84%	2.26%	4.25%
70%	233%	1.013	8.66%	1,617,945	79,605	2.4	5.84%	2.26%	4.18%
90%	900%	2.717	18.04%	2,080,215	102,350	1.8	7.09%	2.74%	4.27%

[1] AEP 2014 10-K p. 222 (000's)
[2] AEP 2014 10-K p. 222 (000's)
[3] Schedule F-01 (000's)
[4] Schedule F-01 (000's)
[5] = [3] / ([3] + [4])
[6] = [3] / [4]
[7] Schedule F-01
[8] Schedule B
[9] Avg. VL beta from DG-C-11/(1+(1 - [8])*[6])
[10] From DG-C-8
[11] From DG-C-13
[12] = [1] / [2]
[13] Moody's rating for PSO
[14] Ranges of coverage ratios
[15] Moody's / S&P bond ratings
[16] NYU spread over risk-free rate
[17] = [16] + [10]
[18] = debt / total capital
[19] = [18] / (1 - [18])
[20] = [9] * (1 + (1 - [8]) * [6]
[21] = [10] + [20] * [11]
[22] = [18] * ([3] + [4]); (000's)
[23] = [22] * [7]; (000's)
[24] = [1] / [23]
[25] = Debt cost given coverage ratio per Ratings Table
[26] = [25] * [8]
[27] = ([18] * [26]) + ((1 - [18]) * [21])

Industries With High Debt Ratios

Industry	Number of Firms	Debt Ratio
Paper/Forest Products	22	60.2%
Telecom (Wireless)	21	61.8%
Packaging & Container	26	62.0%
Broadcasting	28	62.3%
Hotel/Gaming	80	63.4%
R.E.I.T	213	63.9%
Telecom Services	77	64.2%
Hospitals	56	65.6%
Rubber & Tires	4	66.0%
Advertising	52	66.1%
Office Equipment	25	66.4%
Auto & Truck	22	69.1%
Retail (Automotive)	30	69.2%
Cable TV	18	71.1%
Trucking	30	72.4%
Total / Average	**704**	**65.6%**

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/dbtfund.htm

Illustration of Earnings Growth Volatility

Exhibit DG-C-23

Company	Ticker	[1] Hevert's Prior Growth Rate Estimate	[2] Actual Growth in Earnings	[3] Amount Overestimated
Amazon	AMZN	29%	-40%	69%
Consol Energy	CNX	47%	-6%	53%
EOG Resources Inc.	EOG	44%	10%	34%
Netflix Inc.	NFLX	30%	8%	23%
NRG Energy	NRG	25%	-32%	57%
Range Resources	RRC	29%	-3%	32%
Southwestern Energy	SWN	23%	9%	14%
Starwood Hotels & Resorts	HOT	25%	10%	15%
Textron Inc.	TXT	45%	-12%	57%
Wynn Resorts LTD	WYNN	50%	28%	23%
Average		35%	-3%	37%

[1] See Direct Testimony of Robert B. Hevert, Exhibit RBH-4 in Cause No. PUD 2011-087, long-term growth estimates

[2] Value Line Investment Survey showing actual growth in earnings over the past five years.

[3] = [1] - [2]

Incentive Compensation Adjustment

Incentive Type		[3] Pro Forma Amount	[4] Percent Disallowed	[5] Adjusted Amount
AEP Short Term	[1]	4,381,117		
PSO Short Term	[2]	4,358,778		
Total		8,739,895	50%	(4,369,948)
AEP Long Term	[1]	2,860,109		
PSO Long Term	[2]	922,431		
Total		3,782,540	100%	(3,782,540)
Total Adjustment				**$ (8,152,488)**

[1] DR response AG 2-22, attach. 2

[2] DR response AG 2-22, attach. 1

[3] Incentive costs included in PSO's pro forma O&M

[4] Based on prior Commission treatment

[5] = [3] * [4]

CERTIFICATE OF ELECTRONIC SERVICE

This is to certify that on October 14, 2015, a true and correct copy of the above and foregoing, was sent via electronic mail and/or United States Postal Service, postage fully prepaid thereon to the following interested parties:

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