ARKANSAS PUBLIC SERVICE COMMISSION

IN THE MATTER OF THE APPLICATION OF OKLAHOMA GAS AND ELECTRIC COMPANY FOR APPROVAL OF A GENERAL CHANGE IN RATES, CHARGES AND TARIFFS	DOCKET NO. 16-052-U

DIRECT TESTIMONY OF

DAVID J. GARRETT

PART I – COST OF CAPITAL

ON BEHALF OF

ARKANSAS RIVER VALLEY ENERGY CONSUMERS, WAL-MART STORES ARKANSAS, LLC, AND SAM'S WEST, INC.

JANUARY 31, 2017

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I. INTRODUCTION

Q. State your name and occupation.

A. My name is David J. Garrett. I am a consultant specializing in public utility regulation. I am the managing member of Resolve Utility Consulting, PLLC. I focus my practice on the primary capital recovery mechanisms for public utility companies: cost of capital and depreciation.

Q. Summarize your educational background and professional experience.

A. I received a B.B.A., with a major in Finance, an M.B.A., and a Juris Doctor from the University of Oklahoma. I worked in private legal practice for several years before accepting a position as assistant general counsel at the Oklahoma Corporation Commission in 2011. At the Oklahoma Commission, I worked in the Office of General Counsel in regulatory proceedings. In 2012, I began working for the Public Utility Division as a regulatory analyst providing testimony in regulatory proceedings. After leaving the commission I formed Resolve Utility Consulting, PLLC, where I have represented various consumer groups and state agencies in utility regulatory proceedings, primarily in the areas of cost of capital and depreciation. 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 on cost of capital, depreciation, and other issues. A more complete

description of my qualifications and regulatory experience is included in my curriculum vitae.[1]

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of Arkansas River Valley Energy Consumers as well as Wal-Mart Stores Arkansas, LLC and Sam's West, Inc. Throughout this testimony I will refer to these entities collectively as "ARVEC."

Q. Describe the scope and organization of your testimony.

A. In this case I am testifying on the two primary capital recovery mechanisms in the rate base rate of return model – cost of capital and depreciation – in response to the Application of Oklahoma Gas and Electric Company ("OG&E" or the "Company"). These issues are not directly related, and the testimonies are voluminous, so I have filed two separate Direct testimony documents. Part I of my Direct testimony (this document) covers the cost of capital and related issues. Part II of my Direct testimony covers depreciation rates and related issues.

II. OVERVIEW OF COST OF CAPITAL RECOMMENDATIONS

Q. What is the purpose of your Cost of Capital Testimony?

A. The purpose of my testimony is to present evidence and provide the Commission with recommendations regarding: (1) OG&E's awarded return on equity ("ROE"), and (2) the

[1] Direct Exhibit DG 1-1.

appropriate capital structure that the Commission should impute for ratemaking purposes to arrive at an appropriate cost of capital for OG&E.

Q. Explain the Weighted Average Cost of Capital, and how the Company's ROE and its capital structure affect this equation.

A. The term "cost of capital" refers to the weighted average cost of all types of securities within a company's capital structure, including debt and equity. Determining the cost of debt is relatively straight-forward. Interest payments on bonds are contractual, "embedded costs" that are generally 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 of debt, there is no explicit "cost" of equity; the cost of equity must be estimated through various financial models. Thus, the overall weighted average cost of capital ("WACC"), includes the cost of debt and the estimated cost of equity. It is a "weighted average," because it is based upon the Company's relative levels of debt and equity, or "capital structure." Companies in the competitive market often use their WACC as the discount rate to determine the value of capital projects, so it is important that this figure be closely estimated. The basic WACC equation used in regulatory proceedings is presented as follows:[2]

[2] *See* Roger A. Morin, *New Regulatory Finance* 449-450 (Public Utilities Reports, Inc. 2006) (1994). 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.

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*

Thus, the three components of the weighted average cost of capital are as follows:

1. Cost of Equity
2. Cost of Debt
3. Capital Structure

The term "cost of capital" is necessarily synonymous with the "weighted average cost of capital," and the terms are used interchangeably throughout this testimony.

Q. Describe the relationship between the cost of equity, required return on equity, earned return on equity, and awarded return on equity.

A. While "cost of equity," "earned return on equity," and "awarded return on equity" are interrelated factors and concepts, they are all technically different. The financial models presented in this case were created as tools for estimating the "cost" of equity, which is synonymous to the "required return" that investors expect in exchange for giving up their opportunity to invest in other securities, or postponing their own consumption, given the level of risk inherent in the equity investment. In other words, the *cost* of equity from the company's perspective equals the "required return" from the investor's perspective.

The "earned" ROE is a historical return that is measured from a company's accounting statements, and it is used to measure how much shareholders earned for

investing in a company. A company's earned ROE is not the same as the company's cost of equity or an investor's required return. For example, an investor who invests in a risky firm may *require* a return on investment of 10%. If the company has used the same estimates as the investor, then the company will estimate that its *cost* of equity is also 10%. If the company performs poorly and the investor *earns* a return only 3%, this does not mean that the investor required only 3%, or that the investor will not still require a 10% return the following period. Thus, the cost of equity is not the same as the earned ROE. If by chance the company in this example achieves a 10% return on equity, then it will have exactly satisfied the return required by its shareholders.

Finally, the "awarded" return on equity is unique to the regulatory environment; it is the return authorized by a regulatory commission pursuant to legal guidelines. As discussed later in this testimony, the awarded ROE should be based on the utility's cost of equity. The relationship between the terms and concepts discussed thus far may be summarized as follows: If the awarded ROE reflects a utility's cost of equity it should allow the utility to achieve an earned ROE that is sufficient to satisfy the required ROE of its equity investors; in addition, the regulator must consider the cost of debt and determine a prudent capital structure in order to ensure the utility's weighted average cost of capital is fair and reasonable.

Q. Describe OG&E's position regarding the cost of capital in this case.

A. In this Application, the Company has proposed a cost of equity of 10.25%, a cost of debt of 5.47%, and a debt ratio of 47%, which equate to an overall weighted average cost of

capital of 6.01%, when factored with other capital items.[3] The Company's cost of capital proposals are presented in the testimony of OG&E witness Robert B. Hevert. In the sections below, I discuss why the Company's proposed ROE is overstated, as well as the specific flaws and errors upon which the Company's requested cost of capital is based.

Q. Summarize your analyses and conclusions regarding OG&E's cost of equity.

A. In formulating my recommendation, I performed a thorough, independent analyses to calculate OG&E's cost of equity. To do this, I selected a proxy group of companies that represents a relevant sample with asset and risk profiles similar to those of OG&E. Based on this proxy group, I evaluated the results of two widely-accepted financial models for calculating cost of equity: (1) the Discounted Cash Flow ("DCF") model; and (2) the Capital Asset Pricing Model ("CAPM"). Applying reasonable inputs and assumptions to these models reveals that OG&E's estimated cost of equity is 7.5%.

Q. Summarize your analyses and conclusions regarding OG&E's capital structure.

A. The Company's requested capital structure includes 47% long-term debt and 53% common equity (exclusive of other capital items). In this testimony, I present evidence that OG&E's requested capital structure is not reflective of one that would exist in a competitive environment and is therefore inappropriate for ratemaking purposes. As discussed in my testimony, I recommend the Commission impute a capital structure for OG&E consisting of 52% debt and 48% equity. This proposal better aligns the Company's capital structure

[3] Company schedule D-1.3.

with one that we would see in a competitive environment, and it also reflects the capital structures of other regulated utilities.

Q. Summarize your awarded return recommendation.

A. Pursuant to the legal and technical standards guiding this issue, the awarded rate of return should be based on, or reflective of the weighted average cost of the utility's cost of equity and cost of debt. As discussed above, OG&E's actual cost of equity is approximately 7.5%. The legal standards governing this issue indicate that the awarded return should reflect the actual cost of equity. However, these legal standards also provide that the "end result" be fair and reasonable under the circumstances. Specifically, in *Federal Power Commission v. Hope Natural Gas Co.*, the Supreme Court found that although the awarded return should be based on a utility's cost of capital, it is also indicated that the "end result" should be just and reasonable.[4] If the Commission were to award a return on equity reflective of OG&E's actual cost of equity of 7.5% it would be technically correct under the rate base rate of return model, and it would not violate any legal standards. However, if the Commission were to set the awarded return at 7.5%, it would represent an abrupt change in OG&E's awarded return, which is currently 9.95%. One of the primary reasons OG&E's cost of equity is low is because it is a very low-risk asset. In general, utility stocks are low-risk investments because movements in their prices are not volatile. If the Commission were to make a significant, sudden change in the awarded ROE, however, it could have the effect

[4] *See Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591, 603 (1944). Here, the Court stats that it is not mandating the various permissible ways in which the rate of return may be determined, but instead indicates that the end result should be just and reasonable. This is sometimes called the "end result" doctrine.

of increasing the Company's market risk. Therefore, while it is legally and technically appropriate to set the awarded return at or near the Company's actual cost of equity, it would be arguably better not to move the awarded return over 200 basis points in one case for any utility, pursuant to the *Hope* Court's "end result" doctrine. For these reasons, I recommend an awarded return on equity that is higher than OG&E's actual cost of equity.

Specifically, I recommend that the Commission award a return on equity of 9.0%, which is the highest point in a reasonable range of 7.5% - 9.0%. Adopting an awarded ROE at the lower end of the range would represent a more strict adherence to the principles set forth by the Supreme Court – that the awarded return should reflect the utility's actual cost of capital, which in this case is approximately 7.5%. On the other hand, adopting an awarded ROE at the higher end of the range would be consistent with the *Hope* Court's "end result" doctrine by recognizing that it is reasonable under the circumstances to gradually move the awarded return closer to the true cost of equity in the interest of minimizing the Company's market risk. In addition, I am recommending an imputed debt ratio of 52% to reflect a more prudent capital structure for OG&E. My recommendations with regard to the awarded rate of return are illustrated in the following figure:[5]

[5] Note that ARVEC's final recommended weighted cost rates will be different when factored with the other capital items. Please see the Direct Testimony of ARVEC witness Mark E. Garrett for the overall weighted cost and awarded return recommendation and revenue requirement impact. This testimony recommends the cost of equity, cost of debt, and capital structure weightings of long term debt and common equity.

Figure 1:
ARVEC Awarded Return Recommendation

Source	Capital Structure	Cost Rates	Weighted Cost
Long-term Debt	52.0%	5.68%	2.95%
Common Equity	48.0%	9.00% (7.50% – 9.00%)	4.32% (3.60% – 4.32%)

Thus, in this case, if the Commission were to award a return on equity of 9.0%, it will allow OG&E's shareholders to earn a return that is much higher than the one they require for investing in a low-risk utility company. ARVEC's overall weighted average cost of capital recommendation is 7.48%.[6]

Q. Please provide an overview of the problems you have identified with the Company's cost of capital estimate.

A. As set forth above, Mr. Hevert proposes a return on equity of 10.25% and a debt ratio of only 47%. Mr. Hevert's recommendations are based on the CAPM, DCF Model, and a risk premium model, however, several of his key assumptions and inputs to these models violate fundamental, widely-accepted tenants in finance and valuation. In the sections below, I will discuss my concerns regarding the Company's requested cost of capital in further detail. However, the key areas of concern are summarized as follows:

[6] See testimony of ARVEC witness Mark E. Garrett, Direct Exhibit MG-2.

1. In his DCF Model, Mr. Hevert's long-term growth rate applied to OG&E exceeds the long-term growth rate for the entire U.S. economy. It is a fundamental concept in finance that, in the long run, a company cannot grow at a faster rate than the aggregate economy in which it operates; this is especially true for a regulated utility with a defined service territory. Moreover, Mr. Hevert's growth rate estimates exceed the limit on revenue growth imposed by Arkansas law regarding formula rate review. Thus, the results of Mr. Hevert's DCF Model are based on unrealistic assumptions and are not reflective of market conditions.[7]

2. Mr. Hevert's estimate for the equity risk premium ("ERP"), the single most important factor in estimating the cost of equity, is nearly twice as high as the estimate reported by thousands of experts across the country. This is because Mr. Hevert has assumed long-term growth rates in excess of 45% for some U.S. companies, which is over four times the estimated growth rate of the entire U.S. economy. Thus, the results of Mr. Hevert's CAPM are also based on unrealistic assumptions and are not reflective of market conditions.[8]

3. Mr. Hevert suggests that Company-specific risk factors have an increasing effect on its cost of equity. However, this assumption overlooks the fundamental concept that the market does not reward diversifiable, firm-specific risk; therefore, rational investors do not expect a return for such risk.[9]

4. Mr. Hevert proposes a debt ratio of 47% for OG&E. This debt ratio is not reflective of one that we would see in a competitive environment for this Company. Specifically, OG&E's proposed debt ratio is far too low, which further escalates the Company's proposed cost of capital. By choosing high-cost equity over low-cost debt, the Company has artificially inflated its capital cost at the unnecessary expense of its customers and for the sole benefit of its shareholders. Additionally, Mr. Hevert's recommended debt ratio is not reflective of the current debt ratios of many other similar utility companies.

In short, the assumptions employed by Mr. Hevert skew the results of his financial models such that they do not reflect the economic realities of the market upon which cost of equity recommendation should be based. In the testimony below, I demonstrate how correcting the various erroneous assumptions in the DCF and CAPM financial models results in

[7] Direct Exhibit RBH-1.

[8] Direct Exhibit RBH-3.

[9] *See generally* Direct Testimony of Robert B. Hevert pp. 41-53.

appropriate ROE recommendations which better align with current market conditions and OG&E's risk profile.

Q. Describe the harmful impact to the state's economy if the Commission were to adopt OG&E's inflated ROE recommendation.

A. When the awarded return is set significantly above the true cost of equity, it results in an inappropriate and excess transfer of wealth from ratepayers to shareholders beyond that which is required by law. Specifically, if the Commission adopts OG&E's inflated ROE recommendation of 10.25%, and the Company's low proposed debt ratio of 47%, it would result in about $11 million per year of excess wealth being transferred from Arkansas ratepayers to the Company's shareholders and the Internal Revenue Service ("IRS"). This outflow of funds from Arkansas's economy would not benefit its businesses or citizens. Instead, Arkansas businesses would be less competitive with businesses in surrounding states, and individual ratepayers will receive inflated costs for basic goods and services, along with higher utility bills.

III. LEGAL STANDARDS AND THE AWARDED RETURN

Q. Discuss the legal standards governing the awarded 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.[10] The Court found that "the amount of risk in the business is a most important factor" in determining the appropriate allowed

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

rate of return.[11] Later in two landmark cases, the Court set forth the standards 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.[12]

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.[13]

The cost of capital models I have employed in this case are in accord with all of the foregoing legal standards.

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[11] *Id.* at 48.

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

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

Q. Is it important that the awarded rate of return be based on the Company's actual cost of capital?

A. Yes. The Supreme Court in *Hope* makes it clear that the allowed return should be based on the actual cost of capital. Under the rate base rate of return model, a utility should be allowed to recover all of its reasonable expenses, its capital investments through depreciation, and a return on its capital investments sufficient to satisfy the required return of its investors. The "required return" from the investors' perspective is synonymous with the "cost of capital" from the utility's perspective. Scholars agree that the allowed rate of return should be based on the actual cost of capital:

> 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.[14]

The models I have employed in this case closely estimate the Company's true cost of equity. If the Commission sets the awarded return based on my lower, and more reasonable rate of return, it will comply with the Supreme Court's standards, 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 much *higher* than the true cost of capital, it arguably results in an inappropriate transfer of wealth from ratepayers to shareholders.

[14] 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.[15]

Thus, it is important to understand that the *awarded* return and the *cost* of capital are different but related concepts. The two concepts are related in that the legal and technical standards encompassing this issue require that the awarded return reflect the true cost of capital. On the other hand, the two concepts are different in that the legal standards do not mandate that awarded returns exactly match the cost of capital. Awarded returns are set through the regulatory process and may be influenced by a number of factors other than objective market drivers. The cost of capital, on the other hand, should be evaluated objectively and be closely tied to economic realities. In other words, the cost of capital is driven by stock prices, dividends, growth rates, and most importantly – it is driven by risk. The cost of capital can be estimated through the use of financial models used by firms, investors, and academics around the world for decades. The problem is, with respect to regulated utilities, there has been a trend in which awarded returns fail to closely track with actual market-based cost of capital as further discussed below. To the extent this occurs, the results are detrimental to ratepayers and the state's economy.

Q. Describe the economic impact that occurs when the awarded return strays too far from the Supreme Court's cost of equity standard.

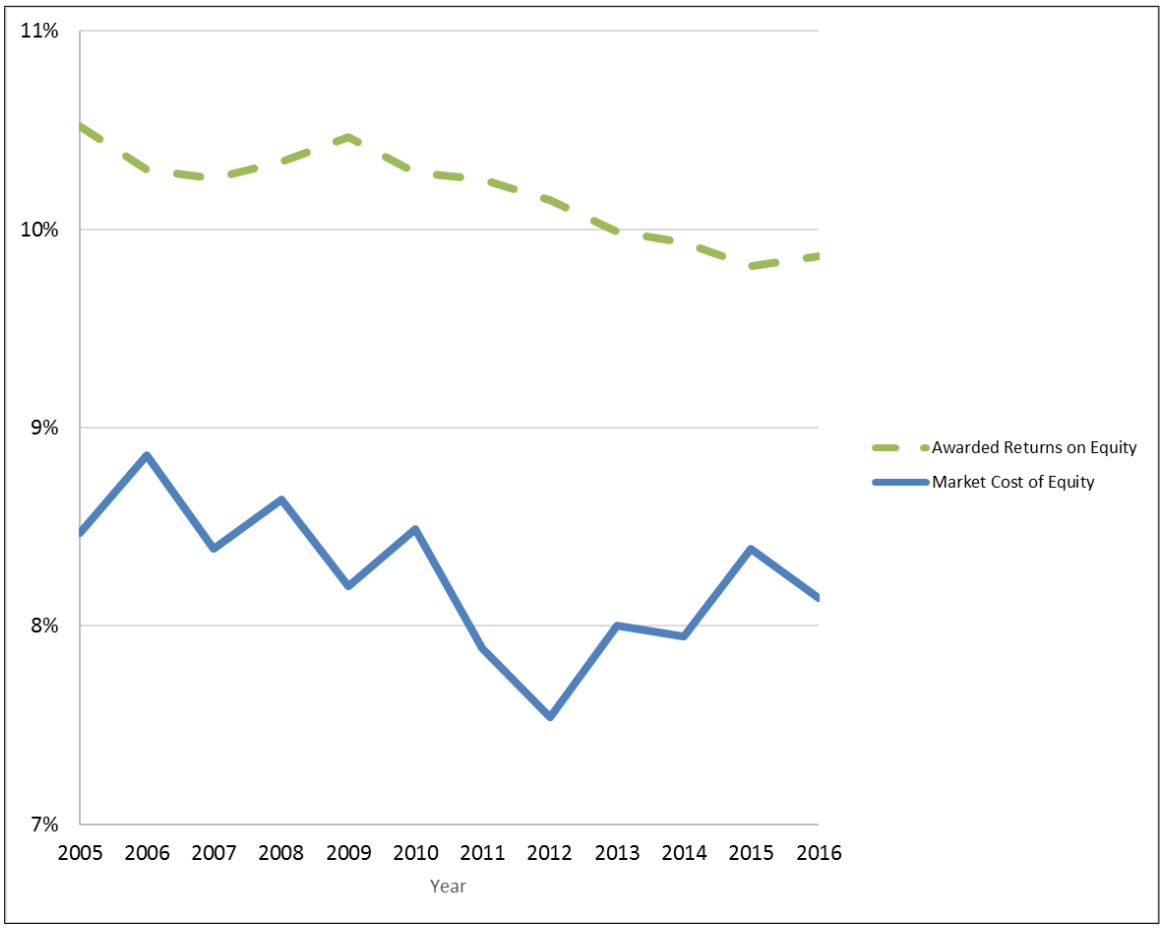
A. As discussed further in the sections below, Mr. Hevert's recommended awarded ROE is much higher than OG&E's true cost of capital based on objective market data. When the

[15] Morin *supra* n. 2, at 23-24.

awarded ROE is set far above true cost of equity, it runs the risk of violating the Supreme Court's standards directing that the awarded return should be *based on the cost of capital*. Specifically, if the Commission were to adopt the Company's position in this case, it would be permitting an excess transfer of wealth from Arkansas customers to Company shareholders and the IRS of about $11 million per year. The detrimental impact to ratepayers and the state's economy is clear. Moreover, establishing an awarded return that far exceeds true cost of capital effectively prevents the awarded returns from changing along with economic conditions. This is especially true given the fact that regulators tend to be influenced by the awarded returns in other jurisdictions, regardless of the various unknown factors influencing those awarded returns. This is yet another reason why it is crucial for regulators to focus on the target utility's actual *cost* of equity, rather than awarded returns from other jurisdictions. Awarded returns may be influenced by settlements and other political factors not based on true market conditions. In contrast, the true cost of equity as estimated through objective models is not influenced by these factors, but is instead driven by market-based factors. If regulators rely too heavily on the awarded returns from other jurisdictions, it can create a cycle over time that bears little relation to the market-based cost of equity. In fact, this is exactly what we have observed over the past 10 years, at least. As shown in the figure below, awarded returns for public utilities have been well above the average required market return for at least ten years. Due to the fact that utility stocks are consistently far less risky than the average stock in the marketplace, the cost of equity for utility companies are *less* than the required return on the market.

The graph below shows two lines. The top line is the average annual awarded returns over the past 10 years. The bottom line is the required market return over the same period. As discussed in more detail later in the testimony, the required market return is essentially the return that investors would require if they invested in the entire market. In other words, the required market return is essentially the cost of equity of the entire market. Since it is undisputed (even by utility witnesses) that utility stocks are less risky than the average stock in the market, then the utilities' cost of equity must be less than the market cost of equity. Thus, awarded returns should be much closer to, if not below the market cost of equity, on average, since awarded returns are supposed to be based on actual cost of equity.

Figure 2:
Awarded Returns on Equity vs. Market Cost of Equity (2005 – 2016)



The gap between awarded returns and utility cost of equity has resulted in an excess of ratepayer wealth being transferred to utility shareholders and the IRS for at least 10 years. This is likely due, in part, to the fact that many years ago (in the 1990s) interest rates were much higher, with average required market return around 12%. In that environment, the cost of equity for low-risk utility stocks may have been about 9%. Since that time, however, interest rates have dramatically declined among other economic changes, and it is clear that awarded returns have failed to reflect decreasing equity costs.

It is not hard to see why this trend of inflating awarded returns has occurred in the past. Because awarded returns have at times been based in part on a comparison with other awarded returns, the average awarded returns effectively fail to adapt to true market conditions. Once utility companies and regulatory commissions become accustomed to awarding rates of return higher than market conditions actually require, this trend becomes difficult to reverse. The fact is, utility stocks are *less risky* than the average stock in the market. As such, the required returns (cost of equity) on utility stocks should be less than the average required returns on the market. However, that is often not the case. What we have seen instead is a disconnect from the market-based cost of equity. For these reasons, the Commission should strive to move the awarded return to a level more closely aligned with the Company's actual, market-derived cost of capital while keeping in mind the following legal principles:

1. Risk is the most important factor when determining the awarded return. The awarded return should be commensurate with those on investments of corresponding risk.

The legal standards articulated in *Hope* and *Bluefield* demonstrate that the Court understands one of the most basic, fundamental concepts in financial theory: the more (less) risk an investor assumes, the more (less) return the investor requires. Since utility stocks are very low risk, the return required by equity investors should be relatively low. I have used financial models in this case to closely estimate the Company's cost of equity, and these financial models account for risk. The public utility industry is one of the least risky industries in the entire country. The cost of equity models confirm this fact in that they produce relatively low cost of equity results. In turn, the awarded ROE in this case should reflect the fact that OG&E is a low-risk firm.

2. The awarded return should be sufficient to assure financial soundness under efficient management.

Because awarded returns in the regulatory environment have not closely tracked market-based trends and commensurate risk, utility companies have been able to remain more than financially sound, perhaps in spite of management efficiencies. In fact, the transfer of wealth from ratepayers to shareholders has been so far removed from actual cost-based drivers, that even under relatively inefficient management a utility could remain financially sound. Therefore, regulatory commissions should strive to set the awarded return to a regulated utility at a level based on accurate market conditions to promote prudent and efficient management and minimize economic waste.

Q. Describe how Arkansas's Act 725 affects the cost of equity analysis and awarded return recommendation.

A. Act 725 mandates certain standards for public utility regulation.[16] Among other things, Act 725 authorizes a formula rate review for OG&E. As discussed in this testimony, regulated utilities like OG&E are among the least risky companies in the country, even without formula rate mechanisms. While I did not propose lowering OG&E's cost of equity based on the impact of Act 725, the existence of this law should apply downward pressure on the Company's cost of equity because it further insulates the Company from risk. Specifically, under a formula rate review, the Company will see a substantial reduction in risk related to regulatory lag.

[16] Arkansas 90th General Assembly, Regular Session, 2015, amended Arkansas Code § 23-4-410 *et seq*., to add additional subsections concerning the authority of the Arkansas Public Service Commission to reform rate making for public utilities.

With regard to the awarded ROE, Act 725 lists several types of evidence that may be presented to the Commission, including recent awarded returns from surrounding jurisdictions among other items. Although Act 725 requires the Commission to discuss such evidence and demonstrate in its order that it considered the evidence, it does not state the amount of weight the Commission must give to any such evidence, nor does it dictate any particular outcome from the Commission's consideration. This is particularly important because, as discussed above, commission-awarded returns have exceeded market-based cost of equity for utility companies for many years. To give undue weight to awarded returns from other jurisdictions would likely contribute to this trend. Moreover, when the awarded ROE is set far above true cost of equity, it runs the risk of violating the Supreme Court's standards directing that the awarded return should be *based on the cost of capital*.

In this case, the Company has testified about awarded returns from surrounding jurisdictions.[17] Utilities often present this evidence because it purportedly provides a basis for awarded returns far above the results of objective cost of equity models (with reasonable inputs). Thus, although the Commission will "discuss" and demonstrate that it "considered" such evidence, it is not required to give undue weight to evidence that would otherwise skew or overstate the Company's cost of equity. After hearing all of the evidence in this case, the Commission should ensure that the awarded return does not depart so significantly from the Company's actual cost of capital, that it might violate the Supreme Court's standards.

[17] Direct Testimony of Robert B. Hevert, p. 62-64.

Regardless, many of the awarded returns relied on by the Company are outdated. Mr. Hevert uses historical awarded returns from other jurisdictions to suggest an "average" return of 9.96%.[18] However, Mr. Hevert relies on data as old as six years, which contradicts Mr. Hevert's testimony that the cost of equity is "forward-looking."[19] Mr. Hevert's own data actually reveals that recent awarded ROEs from surrounding jurisdictions have been around 9.5%.[20] Of course, this further highlights the importance of not relying on historical awarded returns. This is because if the Commission awarded OG&E with a 9.5% return based on this average, it would be awarding a return that is likely over 200 basis points above OG&E's actual cost of equity. Under that scenario, Arkansas ratepayers would be paying more than what is necessary to provide the Company's investors with a fair return.

Q. Does Arkansas law mandate that consumers shall not pay more than necessary to produce a fair return for the Company?

A. Yes. With regard to the awarded return, the Arkansas Supreme Court set forth two distinct duties of the Commission:

[18] Direct Exhibit RBH-11.

[19] Direct Testimony of Robert B. Hevert, p. 60:10.

[20] See Direct Exhibit RBH-11 – taking an average of awarded returns at 2015-2016.

> As we see it, the Commission has two distinct duties: One is to the Company to see that it may charge such a rate as will give it a fair return on invested capital; The other is to see that the consumer shall not pay more than necessary to produce such fair return.[21]

An awarded return that equals the utility's actual cost of capital should be considered a "fair return" on its face; namely, such a return allows the utility to cover the capital costs of the business as set forth in *Hope*. In this case, however, I am recommending an awarded ROE that is higher than OG&E's actual cost of equity. For the reasons set forth above, my recommendation also equates to a fair return under the totality of the circumstances. However, if the Commission awards a return on equity to the Company that grossly exceeds the Company's cost of equity, it would be requiring ratepayers to pay more than necessary to produce a fair return.

IV. GENERAL CONCEPTS AND METHODOLOGY

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 of competing capital projects, regulators determine a utility's cost of capital to establish 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 the Discounted Cash Flow Model ("DCF") and the

[21] *El Dorado v. Arkansas Public Service Com.*, 235 Ark. 812, 816, 362 S.W.2d 680, 683-84 (1962) (emphasis added).

Capital Asset Pricing Model ("CAPM"). The specific inputs and calculations for these models are described in more detail below.

Q. Please 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 narrower range for the cost of equity estimate.[22]

V. THE PROXY GROUP

Q. Please 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 to 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

[22] *See* Morin *supra* n. 2, at 28.

subsidiary that is not publicly traded. This is because the financial models used to estimate the cost of equity require information from publicly-traded firms, such as stock prices and dividends.

Q. Describe the proxy group you selected.

A. In this case, I selected a comparable group of publicly-traded, integrated electric utilities, while maintaining a large enough sample size for statistical reliability. I also ensured that each company in the proxy group has an investment grade credit rating and is not in financial distress. This is because the legal standards governing this issue require the awarded return be sufficient to maintain financial soundness. Thus, when estimating the cost of equity through a proxy group, it is important that the group consist of financially sound companies. There could be reasonable arguments made for the inclusion or exclusion of a particular company in a proxy group, however, the cost of equity results are influenced far more by the underlying assumptions and inputs to the various financial models than the composition of the proxy groups.[23]

Q. Did you also estimate the cost of equity using the proxy group selected by Mr. Hevert?

A. Yes. To show that the exact composition of the proxy group is not a significant factor in this case, I also conducted the CAPM and DCF Model using Mr. Hevert's proxy group while using most of Mr. Hevert's inputs to the models. The results of my calculations of Mr. Hevert's models (as corrected) closely resemble the results of the models using my selected proxy group. These results will be further discussed below.

[23] *See* Direct Exhibit DG 1-3.

VI. RISK AND RETURN CONCEPTS

Q. Discuss the general relationship between risk and return.

A. 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 (or less) risk an investor assumes, the larger (or smaller) return the investor will demand. There are two primary types of risk: firm-specific risk and market risk. Firm-specific risk affects individual companies, 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 a firm-specific risk called "project risk."[24] 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

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

risk of major socio-economic events. When there are changes in these risk factors, they affect all firms in the market to some extent.[25]

Analysis of the U.S. market in 2001 provides a good example for contrasting firm-specific risk and market risk. During that year, Enron Corp.'s stock fell from $80 per share and the company filed bankruptcy at the end of the year. If an investor's portfolio had held only Enron stock at the beginning of 2001, this irrational investor would have lost the entire investment by the end of the year due to assuming the full exposure of Enron's firm-specific risk – in that case, imprudent management. On the other hand, a rational, diversified investor who invested the same amount of capital in a portfolio holding every stock in the S&P 500 would have had a much different result that year. The rational investor would have been relatively unaffected by the fall of Enron, because his portfolio included 499 other stocks. Each of those stocks, however, would have been affected by various *market* risk factors that occurred that year, including the terrorist attacks on September 11th. Thus, the rational investor would have incurred a relatively minor loss due to market risk factors, while the irrational investor would have lost everything due to firm-specific risk factors.

Q. Can investors easily eliminate firm-specific risk?

A. Yes. A fundamental concept in finance is that firm-specific risk can be eliminated through diversification.[26] If someone irrationally invested all of their funds in one firm, they would

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

[26] *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).

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 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.[27]

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 diversified 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.[28] Firm-specific risk is also called "diversifiable risk" because it can be easily eliminated through diversification.

Q. Is it well-known and accepted that 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. Thus, the risks associated with an individual firm's operations are not rewarded by the market. In fact, firm-specific risk is also called "unrewarded" risk for this reason. Market

[27] *See* Damodaran *supra* n. 24, at 64.

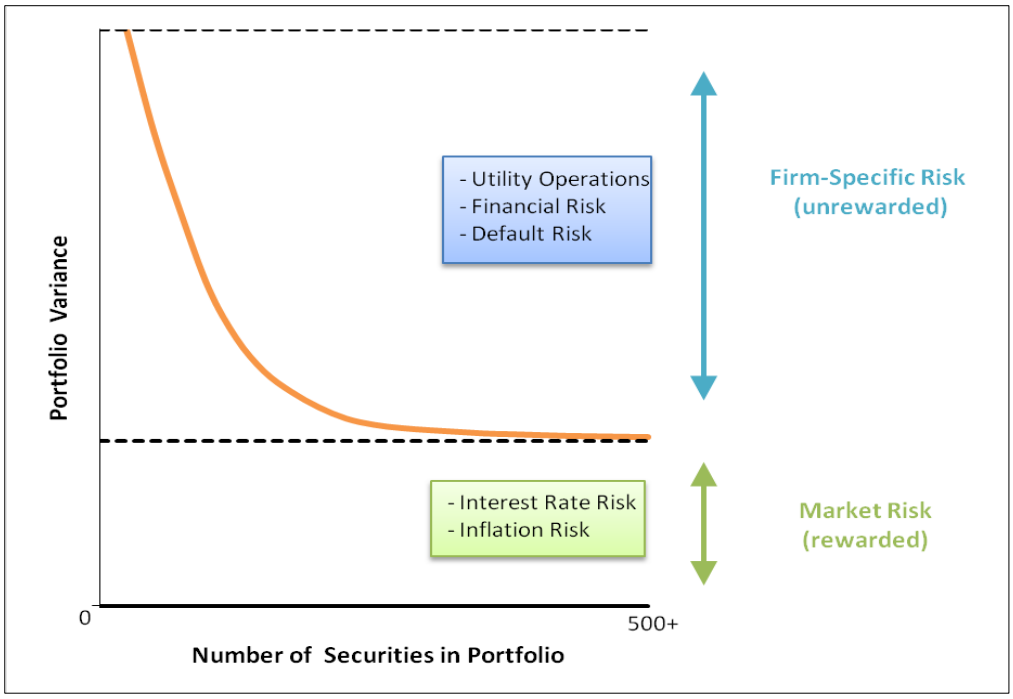
[28] *Id.*

risk, on the other hand, cannot be eliminated through diversification. Because market risk cannot be eliminated through diversification, investors expect a return for assuming this type of risk. Market risk is also called "systematic risk." Scholars recognize the fact that market risk, which is also called "systematic risk," is the only type of risk for which investors expect a return for bearing:

> 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).[29]

These important concepts are illustrated in the figure below. Some form of this figure is found in many financial textbooks.

Figure 3:
Effects of Portfolio Diversification



[29] *See* Graham, Smart & Megginson *supra* n. 26, at 180 (emphasis added).

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. 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."[30] 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%, a stock with a beta of 1.5 will, on average, increase (decrease) by 1.5%. In contrast, stocks with betas of less than one are less sensitive to market risk, such that if the market increases (decreases) by 1.0%, a stock with a beta of 0.5 will, on average, only increase (decrease) by 0.5%. 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 cost of equity, which is discussed in more detail later.

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

Q. Are public utilities characterized as defensive firms that have low betas, low market risk, and are relatively insulated from overall market conditions?

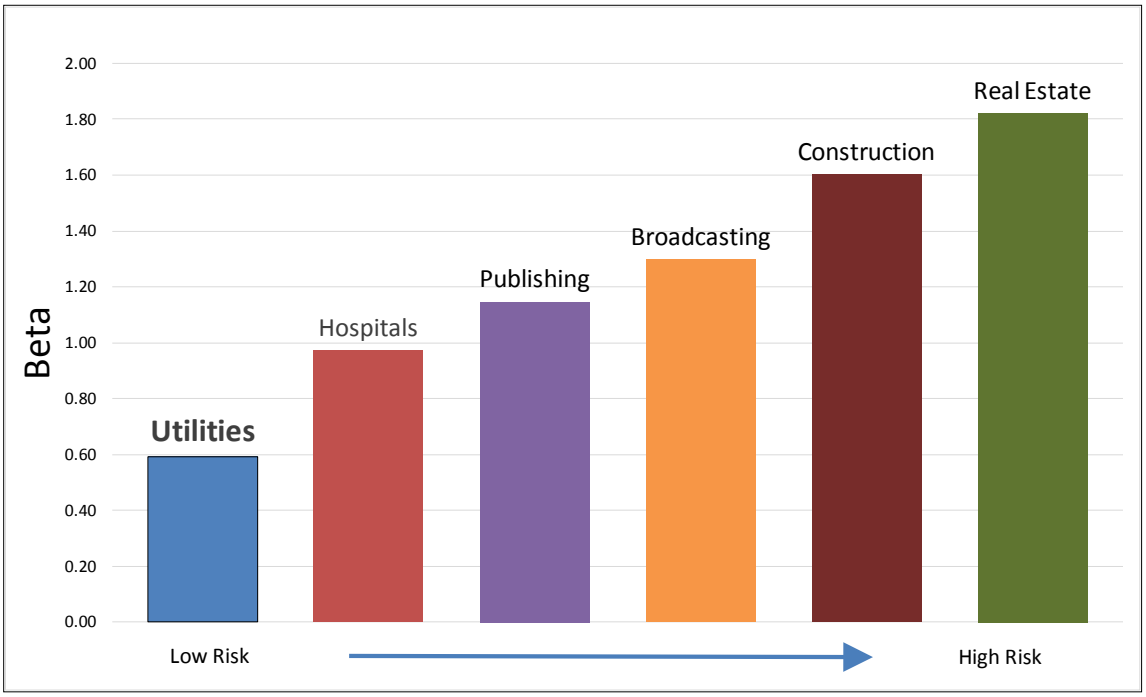
A. Yes. Although market risk affects all firms in the market, it affects different firms to varying degrees. Firms with high betas are affected more than firms with low betas, which is why firms with high betas are riskier. Stocks with betas greater than one are generally known as "cyclical stocks." Firms in cyclical industries are sensitive to recurring patterns of recession and recovery known as the "business cycle."[31] 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 unaffected by overall market conditions."[32] In fact, financial textbooks often use utility companies as prime examples of low-risk, defensive firms. 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.[33]

[31] *See* Bodie, Kane & Marcus *supra* n. 25, at 382.

[32] *Id*. at 383.

[33] *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. The fact that the utility industry is one of the lowest risk industries in the country should not change from year to year.

Figure 4:
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 provide safe and reliable service under prudent management. Likewise, 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 insulated from market conditions, this fact should also be appropriately reflected in the Commission's awarded return.

VII. DISCOUNTED CASH FLOW ANALYSIS

Q. Describe the Discounted Cash Flow ("DCF") 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. 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:[34]

Equation 2:
General Discounted Cash Flow Model

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

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. Please describe the assumptions underlying all DCF Models.

A. The DCF Models rely on the following four assumptions:[35]

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

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[34] *See* Bodie, Kane & Marcus *supra* n. 25, at 410.

[35] *See* Morin *supra* n. 2, at 252.

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:

Equation 3:
Constant Growth Discounted Cash Flow Model

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

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 (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. Does utilization of the Constant Growth DCF Model require additional assumptions?

A. Yes. In addition to the four assumptions listed above, the Constant Growth DCF Model relies on four additional assumptions as follows:[36]

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 in this model is assumed to be constant, it is important not to use growth rates that are unreasonably high. In fact, the constant growth rate estimate for a regulated utility with a defined service territory should not exceed the growth rate for the economy in which it operates.

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.[37]

[36] *See* Morin *supra* n. 2, at 254-56.

[37] *See* Morin *supra* n. 2, at 348.

Equation 4:
Quarterly Approximation Discounted Cash Flow Model

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

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 to the DCF Model.

A. There are three primary inputs in the DCF Model: (1) stock price (P_0); (2) dividend (d_0); and (3) 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.

A. Stock Price

$$\left[K = \frac{D_1}{\boldsymbol{P_0}} + g\right]$$

Q. How did you determine the stock price input of the DCF Model?

A. For the stock price (P_0), I used a 30-day average of stock prices for each company in the proxy group.[38] 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.[39] 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. Why did you use 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 while 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

[38] *See* Direct Exhibit DG 1-4.

[39] *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. 20, at 357. The efficient market hypothesis was formally presented by Eugene Fama in 1970, and is a cornerstone of modern financial theory and practice.

length of time from when an application is filed and testimony is due. Choosing 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 principles of market efficiency while avoiding any unnecessary contentions that may arise from using a single stock price on a given day. The stock prices I used in my DCF analysis are based on 30-day averages of adjusted closing stock prices for each company in the proxy group.[40]

B. Dividend

$$\left[K = \frac{\mathbf{D_1}}{P_0} + g\right]$$

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 fourth quarter of 2016 for each proxy company.[41] The Quarterly Approximation DCF Model assumes that the company increases its dividend payments each quarter. Thus, the model assumes that each

[40] Direct Exhibit DG 1-4. 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.

[41] Nasdaq Dividend History, http://www.nasdaq.com/quotes/dividend-history.aspx.

quarterly dividend is greater than the previous one by $(1 + g)^{0.25}$. This expression could be described 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. Does the Quarterly Approximation DCF Model result 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.

C. Growth Rate

$$\left[K = \frac{D_1}{P_0} + \boldsymbol{g}\right]$$

Q. Explain the importance of the growth rate input in the DCF Model.

A. The most critical input in the DCF Model is the growth rate. Unlike the stock price and dividend inputs, the growth rate must be estimated. As a result, the growth rate is often the most contentious DCF input in utility rate cases. The DCF model used in this case is based on the constant growth valuation model. As stated above, one of the inherent assumptions of this model is that dividends grow at a constant rate forever. Thus, the growth rate term in the constant growth DCF model is often called the "constant," "stable," or "terminal" growth rate. For young, high-growth firms, estimating the growth rate to be used in the model can be especially difficult. For mature, low-growth firms such as utilities, however, estimating the terminal growth rate is more transparent.

Q. Is it widely accepted that the terminal growth rate cannot exceed the growth rate of the economy, especially for a regulated utility company?

A. Yes. A fundamental concept in finance is that no firm can grow forever at a rate higher than the growth rate of the economy in which it operates.[42] Thus, the terminal growth rate used in the DCF Model should not exceed the aggregate economic growth rate. This is especially true when the DCF Model is conducted on public utilities because these firms have defined service territories. As stated by Dr. Damodaran:

> "If a firm is a purely domestic company, either because of internal constraints . . . or external constraints (such as those imposed by a government), the growth rate in the domestic economy will be the limiting value."[43]

In fact, it is reasonable to assume that a regulated utility would grow at a rate that is less than the U.S. economic growth rate. Unlike competitive firms, which might increase their growth by launching a new product line, franchising, or expanding into new and developing markets, public utilities cannot do any of these things to grow. Gross domestic product ("GDP") is one of the most widely-used measures of economic production, and is used to measure aggregate economic growth. According to the Congressional Budget Office's Budget Outlook, the long-term forecast for nominal U.S. GDP growth is 4.1%, which includes an inflation rate of 2%.[44] For mature companies in mature industries, such as utility companies, the terminal growth rate will likely fall between the expected rate of inflation and the expected rate of nominal GDP growth. Thus, OG&E's terminal growth rate is between 2% and 4.1%

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[42] Damodaran *supra* n. 24, at 306.

[43] *Id*.

[44] Congressional Budget Office Long-Term Budget Outlook, https://www.cbo.gov/publication/51580.

Q. Is it reasonable to assume that the terminal growth rate will not exceed the risk-free rate?

A. Yes. In the long term, the risk-free rate will converge on the growth rate of the economy. For this reason, financial analysts often use the risk-free rate for the terminal growth rate value in the DCF model.[45] I discuss the risk-free rate in further detail later in this testimony. My risk-free rate calculation is 2.79%.

Q. Why it is important when analyzing utility growth rates to consider the qualitative aspects of growth in addition to the quantitative aspects?

A. When analyzing growth rates for any firm, there are several quantitative methods and various growth determinants that can be used in the analysis. These can include both historical and projected analyses of revenue, operating income, net income, earnings, dividends, and other determinants.[46] While it may be important to consider one or more of these quantitative growth determinants, it may be even more important to consider "qualitative" aspects of growth when analyzing a regulated utility. This is because a utility's growth in dividends or earnings is going to be primarily driven by the return on equity awarded by the regulator. This creates a circular reference problem. In other words, if a regulator awards a higher ROE than the market anticipated, this could lead to higher growth rate estimates from analysts; if those same estimates are used in the DCF Model in the next rate case, it could lead to a higher awarded ROE; and the cycle continues. Therefore, it is important to begin the analysis with this simple qualitative question: How is this utility going to grow in the future? If this question were asked of a competitive firm,

[45] Damodaran *supra* n. 24, at 307.

[46] *See generally* Damodaran *supra* n. 24, at 271-302.

there could be a number of answers depending on the line of business, such as launching a new product line, engaging in mergers and acquisitions, franchising, rebranding to target a new demographic, expanding into a developing market, etc. Regulated utilities, however, cannot engage in these potential growth opportunities. This is why it is not surprising to see very low load growth and related projections in utilities' integrated resource plans. In fact, utility load growth estimates provide an objective way to measure growth, because such estimates are not as affected by awarded ROEs.

Q. Please describe the Company's load growth estimates.

A. In its 2015 Integrated Resource Plan, OG&E estimates that its total retail demand will grow at an average annual rate of only 0.94% over the next ten years.[47] The Company also notes that weather normalized sales grew only 1.33% annually over the past ten years.[48] These figures provide further indication that this Company will likely grow at a lesser rate than projected GDP (about 4%). This makes sense because GDP growth estimates consider all firms in the economy, including young, high growth firms and mature, low-growth firms. In fact, it would not be unreasonable to assume that OG&E's long term growth rate would be equal to projected inflation (about 2%).

Q. Does Arkansas also provide a statutory constraint on the Company's growth rate?

A. Yes. According to Act 725, the "total amount of revenue increase or decrease for each rate class shall not exceed four percent (4%) of each rate class' revenue for the twelve (12)

[47] 2015 Load Growth Forecast p. 3, from 2015 Integrated Resource Plan. http://www.occeweb.com/pu/ogeirp2015.pdf

[48] *Id*. at 15.

calendar months preceding the formula rate review test period."[49] Of course, OG&E's revenue could grow by less than 4%, but it cannot exceed it.

Q. With respect to the various growth rate determinants discussed above, please explain the growth rate used in your DCF Model.

A. For OG&E, there are several different growth forecasts that should be considered when determining the best growth rate estimate to use in the DCF Model. The figure below shows these various growth determinants.

Figure 5:
Terminal Growth Rate Determinants

Growth Determinants	Rate
Real GDP	2.10%
Nominal GDP	4.10%
Inflation	2.00%
AR Law Revenue Max	4.00%
Total Load	0.94%
Average	2.63%

For the long-term growth rate in my DCF model I selected the maximum revenue growth of 4% under Arkansas's formula rate review law. Indeed, using this as the long-term growth rate for OG&E is likely a high estimate given the other growth determinants in this

[49] Arkansas Code § 23-4-1207(d)(2) (emphasis added).

figure. As a result, the final results of my DCF Model are likely at the higher end of the reasonable range.

Q. Please describe the final results of your DCF Model.

A. I used the Quarterly Approximation DCF Model discussed above to estimate OG&E's cost of equity capital. I obtained an average of reported dividends and stock prices from the proxy group, and I used a reasonable terminal growth rate estimate for OG&E. My DCF cost of equity estimate for OG&E is 7.6%, as expressed in the following equation:[50]

Equation 5:
DCF Results

$$\mathbf{7.6}\% = \left[\frac{\$0.48(1+4\%)^{1/4}}{\$56} + (1+4\%)^{1/4}\right]^{4} - 1$$

As noted above, this estimate is likely at the higher end of the appropriate range due to the fact that my growth rate estimate exceeds the Company's own load growth and related forecasts.

Q. Mr. Hevert's DCF Model yielded much higher results. Did you find any errors in his analysis?

A. Yes. Mr. Hevert's DCF Model produced cost of equity results as high as 10.95%.[51] The results of Mr. Hevert's DCF Model are overstated because of a crucial mistake regarding his growth rate inputs. Specifically, Mr. Hevert used a growth rate of 5.5%, which far

[50] *See also* Direct Exhibit DG 1-7.

[51] Direct Exhibit RBH-2.

exceeds the statutory limit imposed by Arkansas law.[52] According to Act 725, OG&E's revenue growth will be capped at 4% over the next five years.[53] Moreover, Mr. Hevert's growth rate input exceeds realistic estimates of long-term GDP, which means his assumption violates the basic principle that no company can grow at a greater rate than the economy in which it operates over the long-term, especially a regulated utility company with a defined service territory. In other words, even if the Arkansas formula rate review law did not exist, Mr. Hevert's growth rate input would still be overstated and unrealistic.

Q. Have you corrected the errors in Mr. Hevert's DCF Model by limiting the growth rate in his model to the growth rate imposed by Arkansas law?

A. Yes. Since Arkansas statutes provide that OG&E's revenues cannot grow by more than 4% each year, and will likely grow at a lesser rate in the long-term, I corrected this error in Mr. Hevert's DCF Model. I recalculated Mr. Hevert's DCF Model using his proxy group, his dividends, and his stock prices, but with the maximum allowed growth rate of 4%, which coincidentally is about the same as projected long-term GDP growth. In other words, I used the highest growth rate available. The results of Mr. Hevert's corrected DCF Model indicate a much more reasonable cost of equity estimate of 7.2%. This cost of equity estimate is likely high given the fact that GDP growth is viewed as a limiting factor on long-term growth rates for domestic companies, especially regulated utilities. In fact, the

[52] Direct Exhibit RBH-1.

[53] Act 725, 23-4-1207(d)(2).

long-term growth rates of regulated utilities are likely less than projected GDP growth. The results of Mr. Hevert's revised DCF Model are presented in the following figure.[54]

Figure 6:
Mr. Hevert's DCF Inputs using Corrected Growth Rates

Hevert's Proxy Group	Ticker	Hevert's Dividend	Hevert's Stock Price	Maximum Growth Rate	DCF Results
ALLETE, Inc.	ALE	2.08	62.26	4.0%	7.4%
Alliant Energy Corporation	LNT	1.18	39.38	4.0%	7.1%
Ameren Corporation	AEE	1.70	51.80	4.0%	7.3%
American Electric Power Company, Inc.	AEP	2.24	68.11	4.0%	7.4%
Avista Corporation	AVA	1.37	43.03	4.0%	7.2%
CMS Energy Corporation	CMS	1.24	44.28	4.0%	6.9%
DTE Energy Company	DTE	3.08	95.92	4.0%	7.3%
IDACORP, Inc.	IDA	2.04	77.51	4.0%	6.7%
NorthWestern Corporation	NWE	2.00	61.25	4.0%	7.3%
Otter Tail Corporation	OTTR	1.25	32.42	4.0%	7.9%
Pinnacle West Capital Corporation	PNW	2.50	78.53	4.0%	7.2%
PNM Resources, Inc.	PNM	0.88	34.39	4.0%	6.6%
Portland General Electric Company	POR	1.28	43.04	4.0%	7.0%
SCANA Corporation	SCG	2.30	72.88	4.0%	7.2%
Xcel Energy Inc.	XEL	1.36	43.38	4.0%	7.2%
Average					**7.2%**

As shown in this figure, if we use a realistic growth rate in Mr. Hevert's DCF Model, we see a realistic cost of equity estimation. While the actual long-term growth rates for each of the proxy companies may be slightly different, there is one thing we can be sure of: none of them will exceed U.S. nominal GDP growth, which is about 4%.

[54] *See also* Direct Exhibit DG 1-20.

Q. Were the results of your DCF Model consistent with the results of your CAPM?

A. Yes, although the financial models are based on different inputs, the results were consistent. The DCF Model yielded a cost of equity of 7.6%. The CAPM yielded a cost of equity of 7.1%, as discussed in the following section.

VIII. 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.[55] The CAPM estimates this required return.

Q. What assumptions are 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;
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;

[55] William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963); *see also* Graham, Smart & Megginson *supra* n. 20, at 208.

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.[56]

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. Is the CAPM approach consistent with the legal standards set forth by the U.S. Supreme Court?

A. Yes. Our courts have recognized that "the amount of risk in the business is a most important factor" in determining the allowed rate of return,[57] and that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."[58] The CAPM is a useful model because it directly considers the amount of risk inherent in a business. It is arguably the strongest of the models usually presented in rate cases because unlike the DCF Model, the CAPM directly measures the most important component of a fair rate of return analysis: Risk.

Q. Describe the CAPM equation.

A. The basic CAPM equation is expressed as follows:

[56] *See id.*

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

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

Equation 6:
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 equity 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.

A. The Risk-Free Rate

$$\left[K = \boldsymbol{R_F} + \beta_i(R_M - R_F)\right]$$

Q. Explain 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. Is it 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.[59] 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 2.79%.[60]

B. The Beta Coefficient

$$\left[K = R_F + \boldsymbol{\beta_i}(R_M - R_F)\right]$$

Q. How is the beta coefficient used in this model?

A. As discussed above, beta represents the sensitivity of a given security to movements in the overall market. 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:[61]

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[59] *See* Morin *supra* n. 2, at 150.

[60] Direct Exhibit DG 1-8.

[61] Graham, Smart & Megginson *supra* n. 26, at 180-81.

Equation 7:
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.[62] 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. Also as discussed above, 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%, a stock with a beta of 1.5 will, on average, increase (decrease) by 1.5%. 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%, a stock with a beta of 0.5 will, on average, only increase (decrease) by 0.5%.

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

Q. Describe the source for the betas you used in your CAPM analysis.

A. I used betas recently published by Value Line Investment Survey. The beta for each proxy company is less than 1.0. Thus, we have an objective measure to prove the well-known concept that utility stocks are less risky than the average stock in the market.

Q. Did Mr. Hevert also consider betas published by Value Line?

A. Yes. Although we relied on different proxy groups, Mr. Hevert and I both considered betas published by Value Line. As with my proxy group, the beta for each company in Mr. Hevert's proxy group is less than 1.0.

C. The Equity Risk Premium

$$\left[K = R_F + \beta_i\left(\boldsymbol{R_M} - \boldsymbol{R_F}\right)\right]$$

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."[63] Likewise, the ERP is arguably the single most important factor in estimating the cost of capital in this matter. There are three basic methods that can be used to estimate the ERP: (1) calculating a historical

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

average; (2) taking a survey of experts; and (3) calculating the implied ERP. I will discuss each method in turn, noting advantages and disadvantages of these methods.

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. Many practitioners rely on the historical ERP as an estimate for the forward-looking ERP because it is easy to obtain. However, there are disadvantages to relying on the historical ERP.

Q. What are the limitations of relying solely on a historical average to estimate the current or 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 current and forward-looking risk premium.[64] 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, *Triumph of the Optimists*, the authors suggest through extensive empirical research that the prospective ERP is lower than the historical ERP.[65] This is due in large part to what is known as "survivorship bias" or "success bias" – a tendency for failed companies to be

[64] Graham, Smart & Megginson *supra* n. 26, at 330.

[65] Dimson, Marsh & Staunton *supra* n. 63, at 194.

excluded from historical indices.[66] 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.[67]

Indeed, these results are lower than many reported historical risk premiums. Other noted experts agree:

> 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%.[68]

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."[69]

Q. Did you rely on the historical ERP as part of your CAPM analysis in this case?

A. No. Due to the limitations of this approach, I relied on the ERP reported in expert surveys and the implied ERP method discussed below.

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[66] *Id*. at 34.

[67] *Id*. at 194.

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

[69] Graham, Smart & Megginson *supra* n. 26, 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 including professors, analysts, chief financial officers and other executives around the country and asking them what they think the ERP is. Graham and Harvey have performed such a survey every year since 1996. In their 2016 survey, they found that experts around the country believe that the current risk premium is only 4.0%.[70] The IESE Business School conducts a similar expert survey. Their expert survey reported an average ERP of only 5.3%.[71]

3. IMPLIED EQUITY RISK PREMIUM

Q. Describe the implied equity risk premium approach.

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:[72]

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[70] John R. Graham and Campbell R. Harvey, *The Equity Risk Premium in 2016*, at 3 (Fuqua School of Business, Duke University 2014), copy available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2611793.

[71] Pablo Fernandez, Pablo Linares & Isabel F. Acin, *Market Risk Premium used in 171 Countries in 2016: A Survey with 6,932 Answers*, at 3 (IESE Business School 2015), copy available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2598104. IESE Business School is the graduate business school of the University of Navarra. IESE offers Master of Business Administration (MBA), Executive MBA and Executive Education programs. IESE is consistently ranked among the leading business schools in the world.

[72] 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 8:
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 each denominator is 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.[73]

Equation 9:
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 10:
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 six years, I calculated the dividend yield, buyback yield, and gross cash yield for each year. I also calculated the compound annual growth rate (g) from

[73] *See* Direct Exhibit DG 1-10 for detailed calculation.

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 8.09%. I subtracted the risk-free rate to arrive at the implied equity risk premium of 5.3%. Dr. Damodaran, one of the world's leading experts on the ERP, promotes the implied ERP method discussed above. He calculates monthly and annual implied ERPs with this method and publishes his results. Dr. Damodaran's highest ERP estimate for December 2016 was only 6.14%.[74]

Q. What are the results of your final ERP estimate?

A. For the final ERP estimate I used in my CAPM analysis, I averaged the results of the ERP surveys along with the implied ERP calculations and the ERP reported by Duff & Phelps.[75] The results are presented in the following figure:

Figure 7:
Equity Risk Premium Results

IESE Business School Survey	5.3%
Graham & Harvey Survey	4.0%
Duff & Phelps Report	5.5%
Damodaran	6.1%
Garrett	5.3%
Average	**5.3%**

[74] http://pages.stern.nyu.edu/~adamodar/

[75] *See also* Direct Exhibit DG 1-11.

While it would be reasonable to select any one of these ERP estimates, or the average of these estimates, I selected the highest ERP estimate of 6.1% to use in my CAPM in the interest of conservatism. However, this means that the final results of my CAPM are at the higher end of a reasonable range.

Q. Please explain 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. Using the same CAPM equation presented above, the results of my CAPM analysis are expressed as follows:[76]

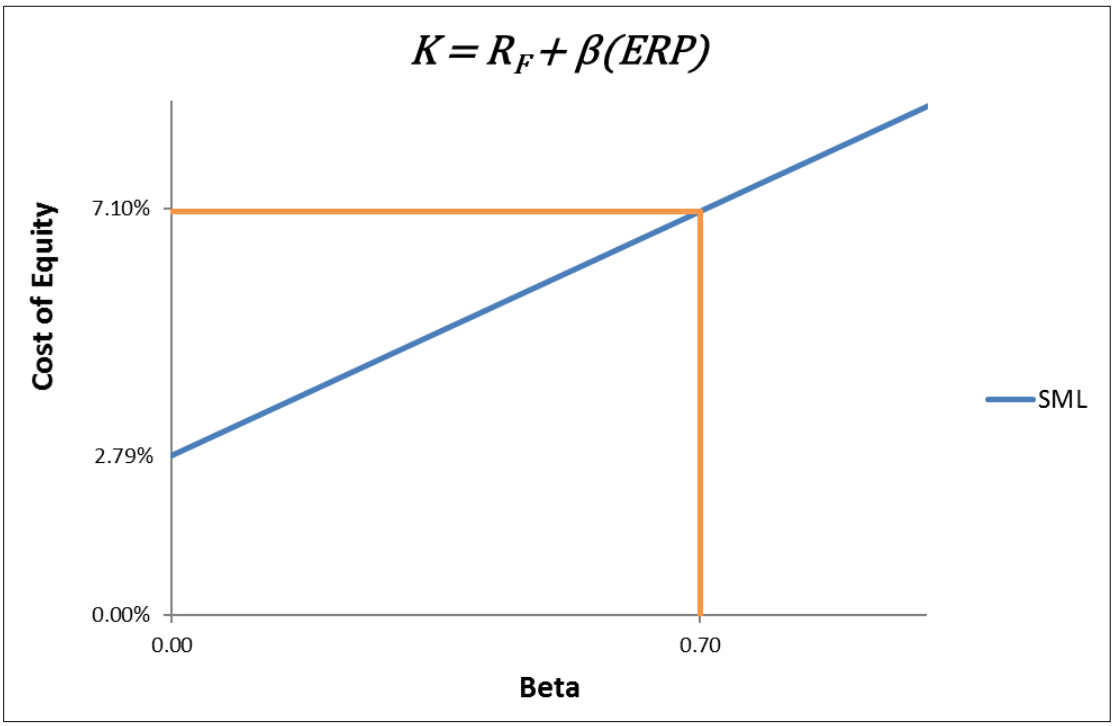
Equation 11:
CAPM Results

$$\mathbf{7.1}\% = 2.79\% + 0.7(6.1\%)$$

The CAPM suggests that OG&E's cost of equity capital is about 7.1%. 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 intercepts the y-axis at the level of the risk-free rate. The slope of the SML is the equity risk premium.

[76] Direct Exhibit DG 1-12.

Figure 8:
CAPM Graph



The SML provides the required rate of return that will compensate investors for the beta risk of that investment. Thus, at an average beta of 0.7 for the proxy group, the estimated cost of equity for OG&E is 7.1%.

Q. Mr. Hevert's CAPM analysis yields considerably higher results. Did you find specific problems with Mr. Hevert's CAPM assumptions and inputs?

A. Yes. Mr. Hevert's CAPM cost of equity results are as high as 11%. The main problem with Mr. Hevert's CAPM analysis is his input for the equity risk premium.

Q. Did Mr. Hevert rely on a realistic measure for the equity risk premium?

A. No. Mr. Hevert's used an input as high as 11.35% for the equity risk premium ("ERP").[77] The ERP is one of three inputs in the CAPM equation, and it is one of the most single important factors for estimating the cost of equity in this case. As discussed above, I used two widely-accepted methods for estimating the ERP, including consulting expert surveys and calculating the implied ERP based on aggregate market data. In contrast, Mr. Hevert essentially conducted a DCF analysis on every single company in the S&P 500. This means that Mr. Hevert made 500 separate growth rate inputs for each company in his market portfolio. If his growth inputs were reasonable, then the model could theoretically produce reasonable results. Instead, however, many of Mr. Hevert's growth rate inputs were not realistic. For example, Mr. Hevert estimated a long-term growth rate for Amazon of 47%.[78] Recall that, as a general rule, the long-term growth rate for any U.S. company cannot exceed long-term growth in GDP, which is projected at about 4%. This means that Mr. Hevert's long-term growth estimate for this company is over 10 times anything that could be considered realistic.

Q. Can you prove that Mr. Hevert has previously testified to unrealistically high long-term growth rates?

A. Yes. One aspect of growth rate projections is that they may be tested for accuracy in the future. In OG&E's 2011 Oklahoma rate case, Mr. Hevert used projected growth rate estimates to arrive at an extremely high ERP, just as he is in this case. A review of Mr.

[77] Direct Exhibit RBH-5.

[78] Direct Exhibit RBH-3, p. 1.

Hevert's prior growth rate estimates reveal 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.[79]

Figure 9:
Mr. Hevert's Previous Overestimations of Growth

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%

There are significant concerns with Mr. Hevert's growth rate estimates. Mr. Hevert cites Bloomberg for the source of these growth rates. However, these type of growth rate estimates are not *long-term* growth rate estimates, but rather estimates for growth over the next few years. Thus, referring to the table above, Bloomberg apparently projected that Wynn Resort's earnings would grow by 50% over some short-term period of time. Mr.

[79] Direct Exhibit DG 1-22. *See also* Direct Testimony of Robert B. Hevert, Exhibit RBH-4 in Cause No. PUD 201100087, long-term growth estimates.

Hevert, however, entered these growth rate estimates in his DCF Model as *long-term* growth rate estimates.

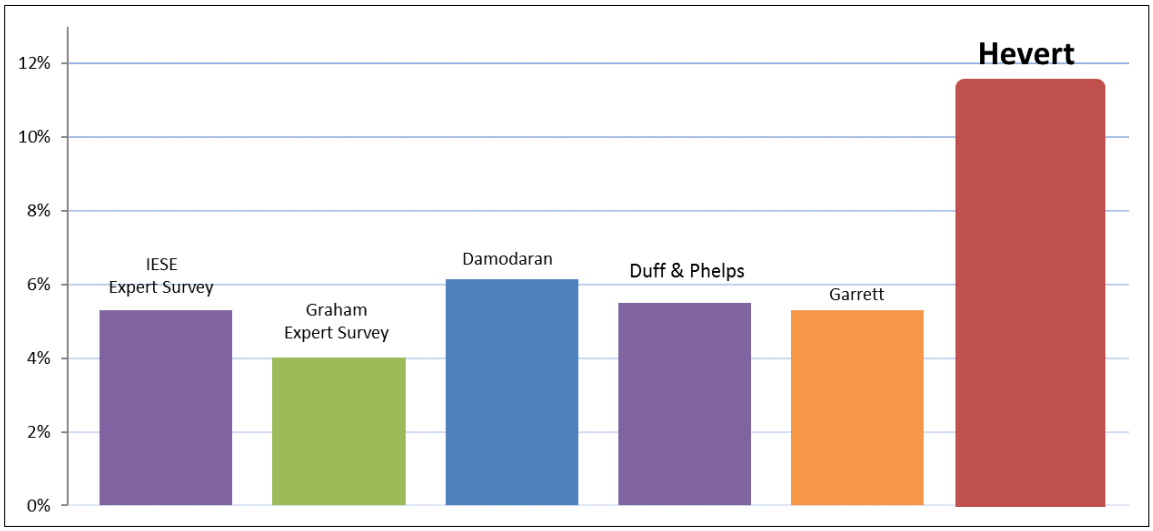
Mr. Hevert's decision to do this is troubling. This is because Mr. Hevert is taking an analyst's estimated growth rate for the next few years and then extrapolating it into a long-term growth estimate. Thus, it is important for the Commission to understand that Mr. Hevert's long-term growth rate inputs are not reported by Bloomberg as long-term growth rate estimates. In other words, Mr. Hevert's equity risk premium estimate in this case is based on a *long-term* growth rate assumption for Amazon of 47% (per year, every year, forever); and this assumption is not supported by Bloomberg (or any other analyst). Moreover, long-term growth rates as high as 50% are simply not possible. As stated above, we should not expect the long-term growth rate for any U.S. company to exceed long-term GDP growth, which is projected at about 4%.

Q. What is the impact of Mr. Hevert's flawed ERP estimate?

A. Mr. Hevert's overestimated ERP is considerably higher than the range of ERPs utilized by firms and analysts across the country. Because the ERP is not firm-specific, there are fairly standardized ERP levels that are widely recognized by several prominent national expert surveys. For example, as discussed above, Graham and Harvey's 2016 expert survey reports an average ERP of 4.0%. The IESE Business School expert survey reports an average ERP of 5.3%. Similarly, Duff & Phelps estimates an ERP of 5.5% for 2016. The

following chart illustrates that Mr. Hevert's ERP estimate is far out of line with industry norms:[80]

Figure 10:
Equity Risk Premium Comparison



When compared with these well-established ERP benchmarks, it is clear that Mr. Hevert's ERP estimate is not within the range of reasonableness. As a result, his CAPM cost of equity estimates similarly reach overstated and unrealistic results.

Q. Did you also review Mr. Hevert's Bond Yield Plus Risk Premium Model?

A. Yes. Before I discuss Mr. Hevert's risk premium model, I will reiterate that the CAPM itself is a "risk premium" model. In short, it takes the bare minimum return any investor would require for buying a stock (the risk-free rate), then adds a *premium* to compensate the investor for the extra risk he or she assumes by buying a stock rather than a riskless U.S. Treasury security. The CAPM has been utilized by companies around the world for

[80] The ERP estimated by Dr. Damodaran is the highest of his several ERP estimates under various assumptions.

decades for the same purpose we are using it in this case – to estimate cost of equity. When reasonable inputs are used in the CAPM, this model tends to produce cost of equity results for utility companies that are much lower than the excessive awarded returns requested by utility executives. Thus, utility witnesses often downplay or completely distort the Nobel-Prize-winning CAPM and instead promote their own various risk premium models.

In stark contrast to the CAPM, the risk premium models relied upon by utility witnesses are not market-based, and therefore have no value in helping us estimate the market-based cost of equity. Unlike the CAPM, which is found in almost every comprehensive financial textbook, the risk premium models used by utility witnesses are typically only found in texts written by other utility witnesses. Specifically, these risk premium models attempt to create an inappropriate link between market-based factors, such as interest rates, with awarded returns on equity. Inevitably, this type of model is used to justify a cost of equity that is much higher than one that would be dictated by market forces.

In this case, Mr. Hevert's risk premium model is no different. Mr. Hevert's version of the risk premium model looked at the difference between awarded returns and Treasury bonds over a period of time.[81] This necessarily suggests that the awarded ROE should be somehow based on the current interest rate. In some aspects this is correct, though not for the reasons implied in Mr. Hevert's model. Indeed, the legal standards governing this issue direct that the awarded return on equity should be based on the cost of equity. In turn, the cost of equity, as estimated through the CAPM, is driven by interest rates. Thus, the idea

[81] Direct Testimony of Robert Hevert, p. 38:10-19.

that the awarded ROE should be based on interest rates is already built into the CAPM, but only if regulators base the awarded ROE on the true cost of equity, which is approximately 7.5% in this case. Unfortunately, it is clear that for many years, awarded returns for utilities have escalated far above market-based cost of equity computations. Giving undue consideration to Mr. Hevert's "risk premium" model would only serve to perpetuate this trend, which has resulted in a significant excess wealth transfer from ratepayers to shareholders for many years.

Q. Describe the proper way to consider risk premiums when estimating the cost of equity.

A. The CAPM already has a built-in risk premium factor known as the equity risk premium ("ERP"). Not only is the ERP a crucial factor in the CAPM, but many would agree that the ERP is "the single most important variable for making investment decisions. . . ."[82] Specifically, the ERP is the expected return on the market less the risk-free rate. In other words, the ERP is a function of market-driven forces. Unlike the risk premium presented in Mr. Hevert's testimony, the ERP 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 demonstrated 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

[82] Dimson, Marsh & Staunton *supra* n. 63, at 4.

estimate, it is not surprising that they make no mention of commission-awarded returns.[83] 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 inappropriate to consider commission-awarded returns in any risk premium analysis.

IX. OTHER COST OF EQUITY ISSUES

Q. Are there any other issues raised in Mr. Hevert's testimony to which you would like to respond?

A. Yes. In his testimony, Mr. Hevert suggests that certain firm-specific risks and other factors should have an increasing effect on the cost of equity, beyond that which is indicated by the CAPM and DCF Models. These issues include cost recovery, capital expenditures, flotation costs, and rate mechanisms.[84] As discussed and illustrated above however, it is a well-known concept in finance that firm-specific risks are unrewarded by the market. Therefore, the Company's firm-specific business risks, while perhaps relevant to other issues in the rate case, have no meaningful effect on the cost of equity estimate. Rather, it is market risk that is rewarded by the market, and this concept is thoroughly addressed in my CAPM analysis discussed above. Even Mr. Hevert acknowledges this concept in his direct testimony.[85] The foundation of Mr. Hevert's entire discussion of firm-specific risks is based on the premise that the award-winning CAPM and DCF Model, which have been

[83] 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.

[84] *See* Direct Testimony of Robert Hevert pp. 41-55.

[85] *Id*. at 34:10-14.

used around the world for decades to estimate cost of equity, now curiously underestimate the cost of equity in this case for OG&E.[86] While I disagree with the underlying premise of Mr. Hevert's discussion of firm-specific risks, I will address them below.

A. Capital Expenditures and Cost Recovery

Q. Describe Mr. Hevert's position on this issue.

A. Mr. Hevert suggests that the timely recovery of OG&E's capital expenditures might have an increasing effect on its cost of equity. Additionally, pursuant to the "DuPont" formula, Mr. Hevert suggests that OG&E's increase in capital expenditures will have a decreasing effect on its earned ROE.

Q. Do you agree with Mr. Hevert on this issue?

A. No. There are several problems with Mr. Hevert's theories. First, OG&E's situation is not unique with regard to these issues when compared to other utilities in general. In general, all utilities must make capital investments and desire the timely recovery of those investments. If these factors truly had an increasing effect on the risk profiles of utilities, we would have observed it in utility betas. Instead, utility betas are still among the lowest in the entire country, which means they are still among the least risky companies in the entire country.

Second, even when applying the highest reasonable inputs and assumptions to the CAPM and DCF Model, the models indicate that OG&E's cost of equity is approximately 7.5%, as discussed above. Even if OG&E's capital expenditure plans had an increasing

[86] See Direct Testimony of Robert B. Hevert, p. 41:1-10.

effect on its cost of equity, it would be very slight. The awarded return I am recommending in this case is 9.0%, which is far above OG&E's actual cost of equity, even if it were slightly adjusted above the high level of 7.5%.

Finally, Mr. Hevert suggests through the DuPont formula that OG&E's capital expenditures could affect the earned ROE of its parent company, OGE Energy Corp. ("OGE"). OGE's earned ROE for 2015 was 10%, which is over 200 basis points above its cost of equity. Even if OG&E's capital expenditure program had a slight effect on OGE's earned ROE, the earned ROE would still be far above OGE's cost of equity, all else held constant. Thus, it is inappropriate to take an excessively high cost of equity estimate and suggest that the awarded ROE should be even higher because the Company is planning on making capital investments.

B. Flotation Costs

Q. Describe Mr. Hevert's opinion on this issue.

A. Mr. Hevert suggests that flotation costs should have an increasing effect on the cost of equity. Mr. Hevert stated that he modified his DCF calculation to derive a dividend yield that would reimburse investors for flotation costs.[87]

Q. Do you agree with Mr. Hevert's theory?

A. No. 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

[87] *See* Direct Testimony of Robert B. Hevert p. 45:14-18.

offering. The Commission should not allow recovery of flotation costs in this case for the following three reasons:

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."[88] 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.[89] Another reason it is misleading to suggest that OG&E experienced out-of-pocket flotation costs is that OG&E is a wholly-owned subsidiary of OGE Energy Corp. This means that OG&E does not issue securities to the public and thus would have no need to retain an underwriter. Therefore, OG&E has not actually 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, 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

[88] *Id*. at 50:6.

[89] *See* Graham, Smart & Megginson *supra* n. 26, at 509.

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.[90] Thus, 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 at the expense of its ratepayers.

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. OG&E is asking this Commission to award it a cost of equity that is well over 200 basis points

[90] *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.

above its true cost of equity. Under these circumstances, it is especially inappropriate to suggest that the effect of flotation costs should be considered in any way.

C. Rate Mechanisms and Formula Rates

Q. Describe Mr. Hevert's opinion on rate mechanisms.

A. Mr. Hevert suggests that rate mechanisms should not have a decreasing effect on OG&E's cost of equity.[91]

Q. Do you agree with Mr. Hevert's opinion?

A. I partially agree with Mr. Hevert on this issue, but perhaps based on different reasoning. Mr. Hevert suggests 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 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. Under the circumstances, however, it is fair to say that OG&E's riders do not have a

[91] *See generally* Direct Testimony of Robert B. Hevert, pp. 53-55.

material effect 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 factors that might affect firm-specific risks, such as riders.

X. COST OF EQUITY SUMMARY

Q. Summarize the results of the DCF and CAPM cost of equity models presented above.

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

Figure 11:
Cost of Equity Summary

Model	Cost of Equity
Discounted Cash Flow Model	7.6%
Capital Asset Pricing Model	7.1%
Average	**7.3%**

The average cost of equity result of the DCF Model and the CAPM is 7.3%. Furthermore, it is noteworthy that these two models produced comparable results, especially considering the fact that the inputs for the two models are completely different. Again, the DCF Model considers stock price, dividends, and a long-term growth rate. The CAPM considers the risk-free rate, beta, and the equity risk premium. These inputs are relatively unrelated to

each other, and yet the models produced similar results.[92] This fact further highlights the validity of these two models, which have been relied upon by executives, analysts, academics, and regulators for decades to value companies and estimate cost of equity.

Q. Is there a market indicator that you can use to test the reasonableness of your cost of equity estimate?

A. Yes. The CAPM is a risk premium model based on the fact that all investors will require, at a minimum, a return equal to the risk-free rate when investing in equity securities. Of course, the investors will also require a premium on top of the risk-free rate to compensate them for the risk they have assumed. If an investor bought every stock in the market portfolio, he would require the risk-free rate, plus the equity risk premium ("ERP") discussed above. Recall that the risk-free rate plus the equity risk premium is called the required return on the market portfolio. This could also be called the market cost of equity. It is undisputed that the cost of equity of utility stocks must be less than the total market cost of equity. This is because utility stocks are less risky than the average stock in the market. (We proved this above by showing that utility betas were less than one). Therefore, once we determine the market cost of equity, it gives us a "ceiling" below which OG&E's actual cost of equity must lie.

[92] These results also highlight the fact that the growth rate used in my DCF Model, nominal U.S. GDP growth, is a relatively high growth rate estimate for a utility company. Using a growth rate closer to the risk-free rate or OG&E's projected load growth would have made the results of the DCF Model even closer to the CAPM.

Q. Describe how you estimated the market cost of equity.

A. The methods used to estimate the market cost of equity are necessarily related to the methods used to estimate the ERP discussed above. In fact, the ERP is calculated by taking the market cost of equity less the risk-free rate. Therefore, in estimating the market cost of equity, I relied on the same methods discussed above to estimate the ERP: (1) consulting expert surveys; and (2) calculating the implied ERP. The results of my market cost of equity analysis are presented in the following table:

Figure 12:
Market Cost of Equity Summary

Source	Estimate
Graham Harvey Survey	7.2%
IESE Survey	8.3%
Damodaran	7.9%
Garrett	8.1%
Average	7.9%

As shown in this table, the average market cost of equity from these sources is only 7.9%. Therefore, it is not surprising that the CAPM and DCF Model indicate a cost of equity for OG&E of only 7.3%. In other words, any cost of equity estimate for OG&E (or any regulated utility) that is above the market cost of equity (which is about 7.9%) should be

viewed as unreasonable, at best. In this case, Mr. Hevert suggests a cost of equity for OG&E as high as 11.4%, which is over 300 basis points above the "ceiling."[93]

Q. What do you recommend for the awarded return on equity?

A. The Commission should strive to award a return on equity that reflects, or is based upon the market-based cost of equity. However, the awarded return must also consider broader ratemaking principles and be reasonable under the circumstances. The results of the financial models presented in this case indicate a cost of equity estimate of approximately 7.5%. The Company's current authorized return on equity is 9.95%.[94] In the interest of avoiding a volatile move in the awarded return, I recommend the Commission adopt an awarded return on equity of 9.0%, which is the highest point in a reasonable range of 7.5% - 9.0%. This recommendation not only complies with the *Hope* Court's recognition that the awarded return be based on the actual cost of equity, but it also complies with the Court's acknowledgment that the "end result" be just and reasonable under the circumstances.

XI. COST OF DEBT

Q. Describe OG&E's position regarding long-term debt financing.

A. OG&E had $2.8 billion of long-term debt capital at the end of the pro forma year at a cost of 5.47%, which is the cost of debt proposed by the Company as part of its weighted

[93] Direct Exhibit RBH-5.

[94] Pursuant to Order No. 6 entered by the Commission in Docket No. 10-076-U, which approved a unanimous settlement agreement among the parties.

average cost of capital proposal.[95] I do not recommend any adjustments to the Company's proposed cost of debt.

XII. CAPITAL STRUCTURE

Q. Describe in general the concept of a company's "capital structure."

A. "Capital structure" refers to the way a company 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.

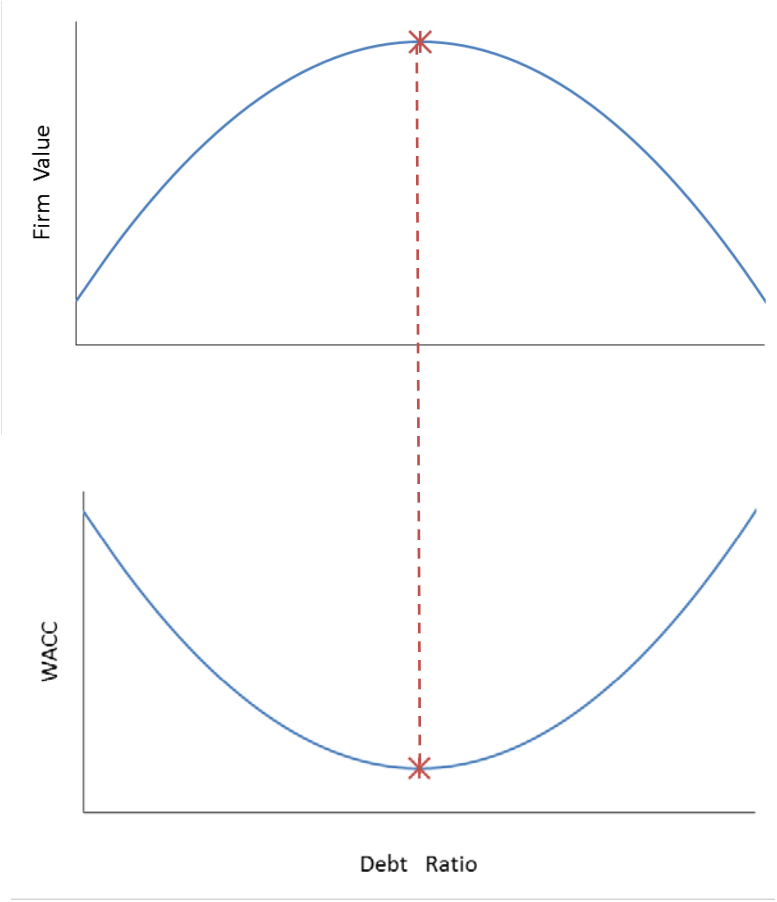
Q. Is it true that by increasing debt, competitive firms can add value and reduce their WACC?

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

[95] Company schedule D-1.3.

increases. This increases the risk of non-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 figure illustrates these concepts.

Figure 13:
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 higher returns for the additional risk they have assumed.[96]

Q. Does the rate base rate of return model effectively incentivize utilities to operate at the optimal capital structure?

A. No. While it is true that competitive firms 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 higher rates, all else held constant. The basic revenue requirement equation is as follows:

Equation 12:
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. Thus, because there is no incentive for a regulated utility to minimize its WACC, a Commission standing in the place of competition must ensure that the regulated utility is operating at the lowest reasonable WACC.

[96] *See* Graham, Smart & Megginson *supra* n. 26, at 440-41.

Q. Do you believe that, generally speaking, 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 relatively 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.[97]

Note that the author explicitly contrasts utilities with firms that have high underlying business risk. Because utilities have low levels of 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 methods available to estimate the optimal capital structure, as discussed further below.

Q. Is it appropriate to solely consider the capital structures of the proxy group in assessing a prudent capital structure?

A. No. Utility witnesses often argue that regulators should primarily consider the capital structures of other regulated utilities in assessing the proper capital structure. This type of analysis is oversimplified and insufficient for three important reasons:

[97] Damodaran *supra* n. 24, at 196 (emphasis added).

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; in fact, they have a financial incentive to do the opposite. Competitive firms, in contrast, can maximize their value by minimizing their cost of capital. Competitive firms minimize their cost of capital by including a sufficient amount of debt in their capital structures. Simply comparing the debt ratios of other regulated utilities will not indicate an appropriate capital structure for the Company. Rather, it is likely to justify debt ratios that are far too low. It is the Commission's role to act as a surrogate for competition and thereby ensure that the capital structure of a regulated monopoly is similar to what would be appropriate in a competitive environment, not a regulated environment. This cannot be accomplished by simply looking at the capital structures of other regulated utilities or the target utility's test-year capital structure.

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

As discussed further below, the optimal capital structure for a firm is dependent on several unique financial metrics for *that* firm. The other companies in the proxy group have different financial metrics than the target utility, 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. That is, a utility's management has the discretion to choose the relative proportions of debt and equity used to finance the utility's operations. Regulatory commissions, however, have a duty to examine those decisions, and 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 is insufficient to determine a prudent capital structure.

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 effects 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 14:
Bond Rating Spreads

Ratings Table			
Coverage Ratio	Bond Rating	Spread	Interest Rate
> 8.5	Aaa/AAA	0.75%	3.54%
6.5 - 8.49	Aa2/AA	1.00%	3.79%
5.5 - 6.49	A1/A+	1.10%	3.89%
4.25 - 5.49	A2/A	1.25%	4.04%
3.0 - 4.24	A3/A-	1.75%	4.54%
2.5 - 2.99	Baa2/BBB	2.25%	5.04%
2.25 - 2.49	Ba1/BB+	3.25%	6.04%
2.0 - 2.249	Ba2/BB	4.25%	7.04%
1.75 - 1.99	B1/B+	5.50%	8.29%
1.5 - 1.74	B2/B	6.50%	9.29%
1.25 - 1.49	B3/B-	7.50%	10.29%
0.8 - 1.249	Caa/CCC	9.00%	11.79%

As shown in this table, the spreads over the risk-free rate gradually increase as bond ratings fall.[98] The spread is added to the risk-free rate to obtain the interest rates shown in the far 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 the "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 interest expense from its available earnings before interest and

[98] 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.

taxes ("EBIT"). (Likewise, the mortgage lender would consider the borrower's personal income-debt ratio). The formula for the interest coverage ratio is as follows:

Equation 13:
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:[99]

[99] Damodaran *supra* n. 24, at 197. This formula was originally developed by Hamada in 1972 – *see* Robert S. Hamada, *The Effect of the Firm's Capital Structure on the Systematic Risk of Common Stocks*, Vol. 27, No. 2 The Journal of Finance (1972).

Equation 14:
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 OG&E'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 OG&E's weighted average cost of capital ("WACC") based on increasing debt ratios.

Figure 15:
OG&E's WACC at Various Debt Ratios

Debt Ratio	Levered Beta	True Cost of Equity	Awarded ROE	Coverage Ratio	Cost of Debt	Optimal WACC	WACC at 9% ROE
0%	0.445	5.10%	9.00%	∞	2.30%	5.10%	9.00%
40%	0.637	6.10%	9.00%	3.72	2.95%	4.84%	6.58%
47%	0.701	6.43%	9.00%	3.17	2.95%	4.80%	6.16%
50%	0.734	6.60%	9.00%	2.98	3.28%	4.94%	6.14%
55%	0.798	6.93%	9.00%	2.70	3.28%	4.92%	5.85%
56%	0.813	7.01%	9.00%	2.66	3.28%	4.92%	5.79%
58%	0.844	7.17%	9.00%	2.57	3.28%	4.91%	5.68%
60%	0.878	7.35%	9.00%	2.48	3.93%	5.30%	5.96%
65%	0.982	7.89%	9.00%	2.29	3.93%	5.31%	5.70%
70%	1.119	8.60%	9.00%	2.13	4.58%	5.78%	5.90%

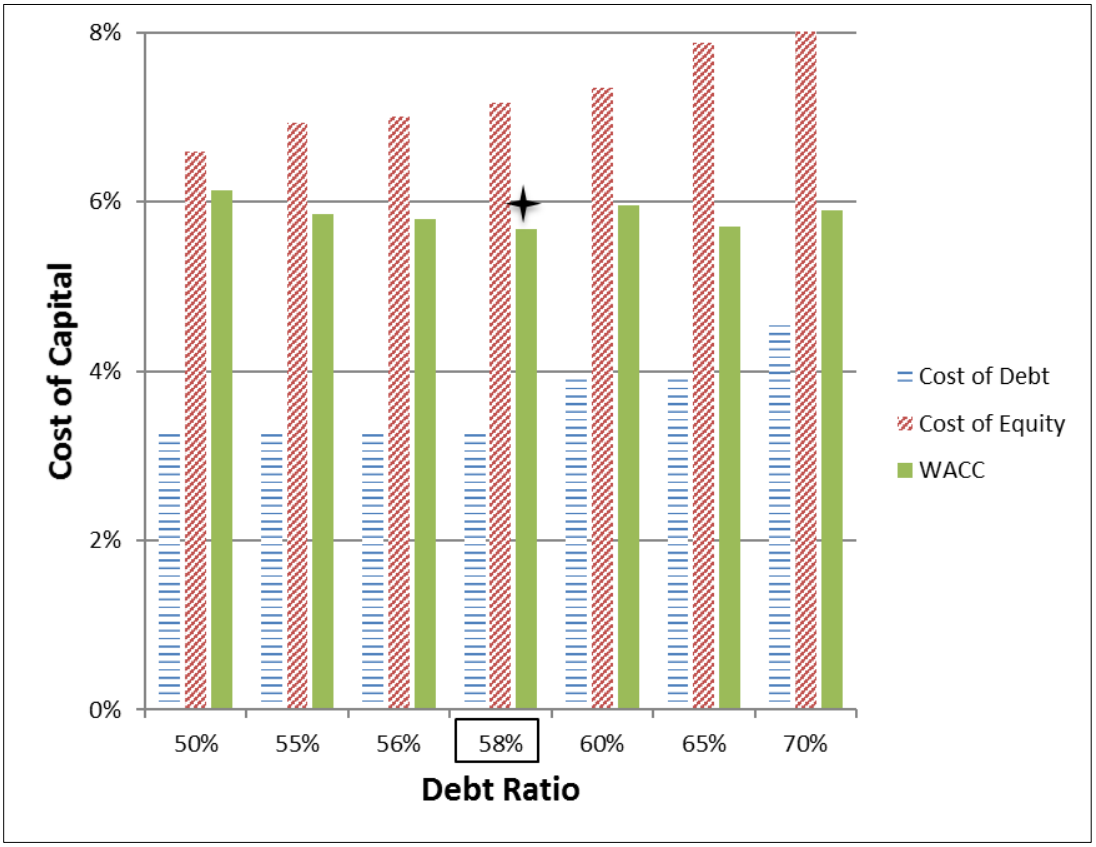
Utilities routinely offer the following narrative: "If we issue more debt, our risk will increase which will raise our cost of debt and also raise our cost of equity." While this statement is technically true, it is very misleading for one important reason: It fails to acknowledge that the only cost that matters here is the weighted average cost of capital, not the cost of individual components of capital. In the figure above, the column on the far left shows increasing levels of debt ratios. At a debt ratio of 0%, the utility's beta is completely unlevered, its true cost of equity is only 5.1%, its cost of debt is only 2.3%, and its optimal WACC is only 5.1%. As the debt ratio is increased to 40% in the far left column, notice that both the cost of equity and the cost of debt increase (6.15% and 2.95% respectively). However, notice that the weighted average cost (the Optimal WACC column) actually decreases from 5.1% to 4.8%. This occurs as result of the basic weighted average cost of capital formula:

Weighted Average Cost of Capital = (Debt Ratio x Cost of Debt) + (Equity Ratio x Cost of Equity)

As the debt ratio increases, both the cost of debt and the cost of equity rise, however, the equity ratio also falls. This means the firm is replacing the higher-cost equity with the

lower-cost debt as it increases the debt ratio. As shown in the figure above, at a debt ratio as high as 58%, the utility's WACC is actually much lower than it was at a debt ratio of 0%, even though the costs of debt and equity both increased. In the figure above I have also estimated OG&E's optimal WACC at my recommended ROE of 9%, which is considerably higher than the Company's true cost of equity. At a 9% ROE, OG&E's WACC (far right column) is minimized at a debt ratio of 58%. These results are displayed in the following chart.

Figure 16:
Optimal Debt Ratio



Stakeholders in the regulatory process have likely become familiar with idea of utility debt ratios being around 50%. To that extent, proposed debt ratios near 60% may appear to be

high. In fact, however, debt ratios this high are very common among many industries across the country.

Q. Describe the debt ratios of highly-leveraged U.S. industries.

A. There are currently about 1,000 firms across the country with debt ratios of 60% or greater, with an average debt ratio of 68%, as shown in the following figure:[100]

Figure 17:
Industries with High Debt Ratios

Industry	Number of Fimrs	Debt Ratio
Advertising	44	73%
Air Transport	20	57%
Auto & Truck	19	74%
Bank (Money Center)	9	67%
Beverage (Soft)	43	64%
Broadcasting	29	68%
Brokerage & Investment Banking	42	77%
Cable TV	19	69%
Coal & Related Energy	38	69%
Hospitals/Healthcare Facilities	58	66%
Hotel/Gaming	73	61%
Office Equipment & Services	24	67%
Packaging & Container	25	63%
Paper/Forest Products	20	74%
R.E.I.T.	221	64%
Restaurant/Dining	83	61%
Retail (Automotive)	26	70%
Retail (Building Supply)	5	67%
Retail (Distributors)	83	60%
Telecom (Wireless)	19	61%
Telecom. Services	65	65%
Tobacco	20	85%
Trucking	26	74%
Total / Average	**1011**	**68%**

[100] *See* Direct Exhibit DG 1-18.

Many of the industries shown here, like public utilities, are generally well-established industries with large amounts of capital assets. The shareholders of these industries demand higher debt ratios in order to maximize their profits. There are several notable industries that are relatively comparable to public utilities in some ways. For example, the Cable TV industry has an average debt ratio of 69%. Likewise, the telecommunication services industry has a debt ratio of 65%. Yet utility witnesses often lead regulators to believe that operating at debt ratios above 50% would be detrimental. This is simply not accurate based on the market data.

Q. Describe the debt ratios of the proxy group you selected.

A. Although, as discussed above, it is not necessarily appropriate to solely consider the capital structures of other regulated utilities when assessing the proper capital structure of the target utility, I have conducted an analysis of the proxy companies' debt ratios. The average debt ratio of the proxy companies is 52%, which is considerably higher than OG&E's debt ratio of only 47%.[101]

Q. Summarize your conclusions with regard to capital structure.

A. All of the evidence presented here with regard to capital structure clearly indicates that OG&E's debt ratio is far below one that could be considered reasonable. When this occurs, a Commission standing in the place of competition should impute a debt ratio that would exist in a competitive environment, and at least partially limit the inappropriate transfer of excess wealth from Arkansas ratepayers to Company shareholders and the IRS. Even

[101] Direct Exhibit DG 1-19.

though the evidence indicates that OG&E's optimal debt ratio could be as high as 60%, I recommend that the Commission impute a debt ratio of 52%. This debt ratio conforms to the debt ratios of the proxy group; moreover, it is supported by the objective analysis presented above.

XIII. CONCLUSION AND RECOMMENDATION

Q. Summarize the key points of your testimony.

A. The key points of my testimony are summarized as follows:

1. The legal standards governing this issue are clear that the awarded rate of return should be based on the Company's actual cost of capital.

2. The legal standards also indicate that the "end result" regarding the awarded ROE can be reasonable under the circumstances, such that the awarded return may exceed the cost of equity if there is good reason to do so.

3. The models I used in this case indicate the Company's cost of equity is approximately 7.5%. However, under prudent ratemaking principles, the Commission should award OG&E's shareholders with a return on equity of 9.0%, which is the highest point in a reasonable range of 7.5% - 9.0%. Although we must move awarded returns toward true cost of equity, we should also ensure that we do not impose too much market risk to utilities in the process.

4. When assessing the proper capital structure, it is not appropriate to merely consider the capital structures of other regulated utilities or the Company's test-year capital structure; OG&E's optimal capital structure consists of approximately 60% debt and 40% equity. In this case, however, I recommend an imputed debt ratio of 52%.

Q. What is your recommendation to the Commission?

A. ARVEC and Wal-Mart respectfully request that the Commission adopt the following recommendations with regard to the issues presented in this testimony:

1. The Commission should adopt an awarded return on equity of 9.0%, and although this awarded return on equity is higher than OG&E's actual cost of equity, it is nonetheless based on the Company's cost of equity, and is fair under the circumstances.

2. The Commission should adopt OG&E's proposed cost of debt;

3. The Commission should adopt a capital structure consisting of 52% debt and 48% equity.

Q. Does this conclude your testimony?

A. Yes, including any exhibits, appendices, and other items attached hereto. I reserve the right to supplement this testimony as needed with any additional information that has been requested from the Company but not yet provided.

Respectfully Submitted,

David J. Garrett
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CERTIFICATE OF SERVICE

I, Thomas P. Schroedter, do hereby certify that a copy of the foregoing has been served upon all parties of record by forwarding the same by electronic mail this 31st day of January 2017.

Thomas P. Schroedter

APSC FILED Time: 1/31/2017 10:46:41 AM: Recvd 1/31/2017 10:46:11 AM: Docket 16-052-U-Doc. 137

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DAVID J. GARRETT

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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

Resolve Utility Consulting PLLC — Oklahoma City, OK
Managing Member — 2016 – Present
Provide expert analysis and testimony specializing in depreciation and cost of capital issues for clients in utility regulatory proceedings.

Oklahoma Corporation Commission — Oklahoma City, OK
Public Utility Regulatory Analyst — 2012 – 2016
Assistant General Counsel — 2011 – 2012
Represented commission staff in utility regulatory proceedings and provided legal opinions to commissioners. Provided expert analysis and testimony in depreciation, cost of capital, incentive compensation, payroll and other issues.

Perebus Counsel, PLLC — Oklahoma City, OK
Managing Member — 2009 – 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 — 2007 – 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 – Present
Adjunct Instructor – "Ethics in Leadership"

Rose State College — Midwest City, OK
Adjunct Instructor – "Legal Research" — 2013 – 2015
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 – President 2017
Participate in management of operations, attend meetings, review performance, organize presentation agenda.

Society of Utility Regulatory Financial Analysts 2014 – Present

SELECTED CONTINUING PROFESSIONAL EDUCATION

Society of Depreciation Professionals Austin, TX
"Life and Net Salvage Analysis" 2015
Extensive instruction on utility depreciation, including actuarial and simulation life analysis modes, gross salvage, cost of removal, life cycle analysis, and technology forecasting.

Society of Depreciation Professionals New Orleans, LA
"Introduction to Depreciation" and "Extended Training" 2014
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.

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. **Idaho Power Company, 2016** (Idaho, IPC-E-16-23; IPC-E-16-24) – Filing testimony on depreciation rates and cost recovery of North Valmy plant.

2. **Southwestern Electric Power Company, 2016** (Texas, PUC 46449) – Filing testimony on depreciation rates.

3. **Empire District Electric Company, 2016** (Oklahoma, PUD 16-468) – Filing testimony on cost of capital and depreciation rates.

4. **CenterPoint Energy Resources, 2016** (Texas, GUD 10567) – Filing testimony on depreciation rates.

5. **Oklahoma Gas and Electric Company, 2016** (Arkansas, 16-052-U) – Filing testimony on cost of capital; filing testimony on depreciation rates.

6. **Peoples Gas System, 2016** (Florida, 160-159-GU) – Filed report on depreciation rates.

7. **Arizona Public Service Company, 2016** (Arizona, E-01345A-16-0036) – Testified on depreciation rates.

8. **Sierra Pacific Power Company, 2016** (Nevada, 16-06008) – Testified on depreciation rates.

9. **Oklahoma Gas and Electric Company, 2016** (Oklahoma, PUD 15-273) – Testified on cost of capital and depreciation rates.

10. **Public Service Company of Oklahoma, 2015** (Oklahoma, PUD 15-208) – Testified on cost of capital and depreciation rates.

11. **Oklahoma Natural Gas Company, 2015** (Oklahoma, PUD 15-213) – Testified on cost of capital and depreciation rates.

12. **Oak Hills Water System, Inc.** (Oklahoma, PUD 15-123) – Testified on cost of capital and depreciation rates.

13. **CenterPoint Energy Oklahoma Gas, 2014** (Oklahoma, PUD 14-227) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

14. **Public Service Company of Oklahoma, 2014** (Oklahoma, PUD 14-233) – Testified on PSO's application for a certificate of authority to issue new debt securities.

15. **Empire District Electric Company, 2014** (Oklahoma, PUD 14-226) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

16. **Fort Cobb Fuel Authority, 2014** (Oklahoma, PUD 14-219) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

17. **Fort Cobb Fuel Authority, 2014** (Oklahoma, 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.

18. **Public Service Company of Oklahoma, 2013** (Oklahoma, 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.

19. **Public Service Company of Oklahoma, 2013** (Oklahoma, PUD 13-201) – Testified in PSO's application for authorization of a standby and supplemental service tariff.

20. **Fort Cobb Fuel Authority, 2013** (Oklahoma, PUD 13-134) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

21. **Empire District Electric Company, 2013** (Oklahoma, PUD 13-131) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

22. **CenterPoint Energy Oklahoma Gas, 2013** (Oklahoma, PUD 13-127) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

23. **Oklahoma Gas & Electric Company, 2012** (Oklahoma, PUD 12-185) – Testified in OG&E's application for extension of a gas transportation contract.

24. **Empire District Electric Company, 2012** (Oklahoma, PUD 12-170) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

25. **Oklahoma Gas & Electric Company, 2012** (Oklahoma, PUD 12-169) – Testified on prudence of fuel-related costs and process in annual fuel audit and prudence review.

Weighted Average
Awarded Return Recommendation

Source	Capital Structure	Cost Rates	Weighted Cost
Long-term Debt	52.0%	5.68%	2.95%
Common Equity	48.0%	9.00% (7.50% – 9.00%)	4.32% (3.60% – 4.32%)

Proxy Group Summary

Company	Ticker	[1] Market Cap. ($ millions)	[2] Market Category	[3] S&P Bond Rating	[4] Value Line Safety Rank	[5] Financial Strength	[6] Value Line Region
Alliant Energy	LNT	7,128	Mid Cap	A-	2	A	Central
Ameren Corp.	AEE	10,638	Large Cap	BBB+	2	A	Central
CenterPoint Energy	CNP	7,766	Mid Cap	A-	3	B+	Central
CMS Energy Corp.	CMS	10,003	Large Cap	BBB+	2	B++	Central
Consol. Edison	ED	17,485	Large Cap	A-	1	A+	East
DTE Energy	DTE	14,360	Large Cap	BBB+	2	B++	Central
Edison Int'l	EIX	19,666	Large Cap	BBB+	2	A	West
Entergy Corp.	ETR	12,271	Large Cap	BBB	3	B++	Central
G't Plains Energy	GXP	4,234	Mid Cap	BBB+	3	B+	Central
IDACORP Inc.	IDA	3,465	Mid Cap	BBB	2	B++	West
Portland General	POR	3,239	Mid Cap	BBB	2	B++	West
Public Serv. Enterprise	PEG	19,536	Large Cap	BBB+	1	A++	East
SCANA Corp.	SCG	8,746	Mid Cap	BBB+	2	B++	East
Sempra Energy	SRE	23,962	Large Cap	BBB+	2	A	West
Vectren Corp.	VVC	3,542	Mid Cap	A-	2	A	Central
Westar Energy	WR	6,032	Mid Cap	BBB+	2	B++	Central
Xcel Energy Inc.	XEL	18,186	Large Cap	A-	1	A	West

[1], [4], [5], [6] Value Line Investment Survey

[2] Large Cap > $10 billion; Mid Cap > $2 billion; Small Cap > $200 million

[3] S&P bond ratings

Stock and Index Prices

Ticker	^GSPC	LNT	AEE	CNP	CMS	ED	DTE	EIX	ETR	GXP	IDA	POR	PEG	SCG	SRE	VVC	WR	XEL
30-day Average	2160	36.58	49.20	23.06	40.63	71.63	93.44	70.31	69.91	27.19	76.18	42.18	41.11	70.88	101.20	48.70	56.94	39.82
Standard Deviation	37.0	0.85	0.88	0.67	0.78	1.74	1.47	1.42	1.72	0.53	1.18	0.73	0.72	1.13	3.28	0.91	0.23	0.93
12/02/16	2192	35.99	49.66	24.10	39.94	69.69	95.13	69.40	69.28	26.31	76.64	41.33	41.25	70.92	99.90	49.68	56.41	38.74
12/01/16	2191	35.51	48.91	23.80	39.69	69.47	93.61	68.56	68.88	26.20	75.80	41.06	41.04	70.10	99.35	48.87	56.75	38.54
11/30/16	2199	35.92	49.12	23.86	40.22	69.77	93.09	68.77	68.73	26.39	76.15	41.60	41.31	70.53	99.80	49.08	56.96	39.01
11/29/16	2205	37.25	50.93	24.09	41.84	72.65	95.80	71.15	71.40	27.15	79.03	43.15	42.84	72.45	101.27	51.15	57.11	40.49
11/28/16	2202	37.09	51.08	24.17	41.52	72.65	95.80	71.27	70.58	27.23	78.72	43.35	42.80	72.49	101.25	50.54	57.18	40.32
11/25/16	2213	36.35	49.99	23.95	40.60	70.66	94.03	69.76	69.53	26.79	77.99	42.52	41.45	71.01	99.46	49.55	57.08	39.52
11/23/16	2205	35.75	49.07	23.61	39.72	69.55	92.66	68.99	68.12	26.43	76.66	41.86	40.74	69.87	98.68	48.56	56.98	38.77
11/22/16	2203	36.13	49.43	23.62	40.53	70.32	93.83	69.73	68.41	26.66	77.42	42.24	41.25	71.00	100.19	49.26	57.00	39.29
11/21/16	2198	35.83	48.84	23.52	40.18	70.10	92.28	69.28	68.42	26.97	76.08	42.24	41.00	70.38	99.71	48.25	57.12	39.34
11/18/16	2182	35.64	48.48	23.34	39.72	69.53	91.22	68.45	67.83	26.68	75.41	41.74	40.34	69.65	99.82	47.74	57.01	38.87
11/17/16	2187	35.81	48.51	23.22	39.77	70.04	91.68	68.69	68.18	26.93	75.09	41.57	40.72	69.88	99.53	47.90	56.71	39.00
11/16/16	2177	35.78	48.47	23.22	39.92	69.84	91.96	68.84	68.12	26.88	74.95	41.42	40.68	69.62	98.31	48.00	56.73	39.01
11/15/16	2180	36.02	49.27	23.27	39.99	70.57	93.39	69.44	68.63	27.09	75.43	41.74	41.33	70.61	97.05	48.36	56.90	39.25
11/14/16	2164	35.51	48.62	22.96	39.49	69.55	91.38	68.34	68.03	26.91	75.09	41.24	39.97	69.42	94.74	48.22	56.81	38.51
11/11/16	2164	35.36	47.77	22.66	39.75	69.82	90.97	68.85	67.41	26.98	76.49	41.90	39.57	69.14	95.69	47.43	56.67	38.84
11/10/16	2167	35.49	47.80	22.86	39.49	70.02	91.28	68.76	67.87	27.12	75.29	42.10	40.04	68.93	97.24	47.22	56.35	38.68
11/09/16	2163	36.81	49.05	22.95	40.34	71.57	92.37	70.17	68.85	27.50	76.06	42.80	40.63	69.97	99.67	48.67	56.74	39.58
11/08/16	2140	38.50	51.21	23.43	41.98	74.61	96.15	72.26	71.73	28.31	77.85	43.77	42.05	73.26	104.38	49.87	57.06	41.52
11/07/16	2132	37.93	50.81	23.35	41.71	73.83	95.29	71.57	70.64	27.76	77.34	43.09	41.88	72.24	104.07	49.40	57.17	41.15
11/04/16	2085	36.83	49.36	22.67	40.78	73.05	93.09	70.31	69.96	27.31	75.37	42.38	40.90	71.01	102.10	47.69	56.60	40.36
11/03/16	2089	37.09	49.07	22.29	41.16	73.17	93.27	71.05	70.52	27.40	75.55	42.51	40.97	71.01	100.98	47.98	57.05	40.62
11/02/16	2098	36.98	48.65	21.86	40.87	73.12	93.18	70.70	70.55	27.30	75.45	42.37	40.80	71.10	99.36	47.84	57.03	40.46
11/01/16	2112	37.42	49.17	22.25	41.22	73.35	94.29	72.50	71.05	27.58	76.02	42.56	41.35	71.72	104.85	48.66	57.05	40.86
10/31/16	2126	38.05	49.95	22.54	41.84	74.83	96.01	73.48	72.78	28.15	77.82	43.64	42.08	73.36	107.10	49.88	57.32	41.55
10/28/16	2126	37.23	48.87	22.28	40.99	73.29	93.94	71.88	71.48	27.72	76.12	42.94	41.03	71.55	105.10	48.65	57.04	40.68
10/27/16	2133	37.02	48.74	22.32	41.05	72.77	93.69	71.41	71.01	27.72	75.28	41.86	41.21	71.13	104.57	48.64	57.07	40.44
10/26/16	2139	37.19	49.10	22.40	41.34	73.18	93.90	71.76	71.40	27.78	75.43	41.65	41.22	71.48	105.35	48.77	57.06	40.60
10/25/16	2143	37.10	49.03	22.41	41.30	72.95	93.99	71.62	71.60	27.56	75.20	41.75	41.17	71.28	106.41	48.89	57.08	40.48
10/24/16	2151	37.03	48.65	22.30	41.07	72.47	93.14	71.26	73.17	27.50	74.98	41.69	40.86	70.81	105.21	48.34	57.16	40.20
10/21/16	2141	36.78	48.47	22.46	40.85	72.47	92.75	70.90	73.27	27.28	74.72	41.32	40.95	70.41	104.85	48.01	56.92	39.95

All prices are adjusted closing prices reported by Yahoo! Finance, http://finance.yahoo.com

DCF Final Results

Company	Ticker	[1] Dividend	[2] Stock Price	[3] Dividend Yield
Alliant Energy	LNT	0.29	36.58	0.80%
Ameren Corp.	AEE	0.44	49.20	0.89%
CenterPoint Energy	CNP	0.26	23.06	1.11%
CMS Energy Corp.	CMS	0.31	40.63	0.76%
Consol. Edison	ED	0.67	71.63	0.94%
DTE Energy	DTE	0.77	93.44	0.82%
Edison Int'l	EIX	0.48	70.31	0.68%
Entergy Corp.	ETR	0.87	69.91	1.24%
G't Plains Energy	GXP	0.28	27.19	1.01%
IDACORP Inc.	IDA	0.55	76.18	0.72%
Portland General	POR	0.32	42.18	0.76%
Public Serv. Enterprise	PEG	0.41	41.11	1.00%
SCANA Corp.	SCG	0.58	70.88	0.81%
Sempra Energy	SRE	0.76	101.20	0.75%
Vectren Corp.	VVC	0.42	48.70	0.86%
Westar Energy	WR	0.38	56.94	0.67%
Xcel Energy Inc.	XEL	0.34	39.82	0.85%
Average		**$0.48**	**$56.41**	**0.86%**

[1] Fourth quarter 2016 reported dividends per share. Nasdaq.com

[2] Average stock price from stock price exhibit.

[3] = [1] / [2]

Terminal Growth Determinants

Growth Determinants	Rate	
Real GDP	2.10%	[1]
Nominal GDP	4.10%	[2]
Inflation	2.00%	[3]
AR Law Revenue Max	4.00%	[4]
Total Load	0.94%	[5]
Hevert's Growth Estimate	5.50%	[6]

[1], [2], [3] Congressional Budget Office 2016 - 2046

[4] House Bill 1655, 23-4-1207(d)(2)

[5] OG&E 2015 IRP Appendix A

[6] Exhibit RBH-1

Final DCF Result

[1]	[2]	[3]	[4]
Dividend (d_0)	Stock Price (P_0)	Growth Rate (g)	**DCF Result**
$0.48	$56.41	4.00%	**7.6%**

[1] Average quarterly dividend from dividend yield exhibit

[2] Average stock price from stock price exhibit

[3] Highest growth rate estimate from growth rate exhibit

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

Risk-Free Rate

APSC FILED Time: 1/31/2017 10:46:41 AM: Recvd 1/31/2017 10:46:11 AM: Docket 16-052-U-Doc. 137

Date	Rate
10/20/16	2.50
10/21/16	2.48
10/24/16	2.52
10/25/16	2.50
10/26/16	2.53
10/27/16	2.60
10/28/16	2.62
10/31/16	2.58
11/01/16	2.58
11/02/16	2.56
11/03/16	2.60
11/04/16	2.56
11/07/16	2.60
11/08/16	2.63
11/09/16	2.88
11/10/16	2.94
11/14/16	2.99
11/15/16	2.97
11/16/16	2.92
11/17/16	3.01
11/18/16	3.01
11/21/16	3.00
11/22/16	3.00
11/23/16	3.02
11/25/16	3.01
11/28/16	2.99
11/29/16	2.95
11/30/16	3.02
12/01/16	3.10
12/02/16	3.08
Average	**2.79%**

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

Beta Results

Company	Ticker	Beta
Alliant Energy	LNT	0.75
Ameren Corp.	AEE	0.70
CenterPoint Energy	CNP	0.80
CMS Energy Corp.	CMS	0.65
Consol. Edison	ED	0.55
DTE Energy	DTE	0.70
Edison Int'l	EIX	0.65
Entergy Corp.	ETR	0.65
G't Plains Energy	GXP	0.75
IDACORP Inc.	IDA	0.75
Portland General	POR	0.70
Public Serv. Enterprise	PEG	0.70
SCANA Corp.	SCG	0.70
Sempra Energy	SRE	0.80
Vectren Corp.	VVC	0.75
Westar Energy	WR	0.70
Xcel Energy Inc.	XEL	0.60
Average		0.70

*Betas from Value Line Investment Survey

Implied Equity Risk Premium

	[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	759	206	299	6.64%	1.80%	2.61%	4.42%
2011	11,385	877	240	405	7.70%	2.11%	3.56%	5.67%
2012	12,742	870	281	399	6.83%	2.20%	3.13%	5.33%
2013	16,495	956	312	476	5.80%	1.89%	2.88%	4.77%
2014	18,245	1,004	350	553	5.50%	1.92%	3.03%	4.95%
2015	17,900	885	382	572	4.95%	2.14%	3.20%	5.33%

Cash Yield	5.08%	[9]
Growth Rate	3.14%	[10]
Risk-free Rate	2.79%	[11]
Current Index Value	2,160	[12]

	[13]	[14]	[15]	[16]	[17]
Year	1	2	3	4	5
Expected Dividends	113	117	120	124	128
Expected Terminal Value					2483
Present Value	105	100	95	91	1769

Intrinsic Index Value	2160	[18]
Required Return on Market	8.09%	[19]
Implied Equity Risk Premium	**5.30%**	[20]

[1-4] S&P Quarterly Press Releases, data found at www.spdji.com/indices/equity/sp-500 (additional info tab) (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)$^{1/4}$-1
[11] Risk-free rate calculated in DG 1-8
[12] 30-day average of closing index prices from DG 1-4
[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])^{n}
[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

IESE Business School Survey	5.3%	[1]
Graham & Harvey Survey	4.0%	[2]
Duff & Phelps Report	5.5%	[3]
Damodaran	6.1%	[4]
Garrett	5.3%	[5]
Average	**5.3%**	

[1] IESE Business School Survey

[2] Graham and Harvey Survey

[3] Duff & Phelps Client Alert 2016

[4] Highest ERP est., http://pages.stern.nyu.edu/~adamodar/

[5] From implied ERP exhibit

CAPM Final Results

		[1]	[2]	[3]	[4]
Company	Ticker	Risk-Free Rate	Value Line Beta	Risk Premium	CAPM Results
Alliant Energy	LNT	2.79%	0.750	6.10%	7.4%
Ameren Corp.	AEE	2.79%	0.700	6.10%	7.1%
CenterPoint Energy	CNP	2.79%	0.800	6.10%	7.7%
CMS Energy Corp.	CMS	2.79%	0.650	6.10%	6.8%
Consol. Edison	ED	2.79%	0.550	6.10%	6.1%
DTE Energy	DTE	2.79%	0.700	6.10%	7.1%
Edison Int'l	EIX	2.79%	0.650	6.10%	6.8%
Entergy Corp.	ETR	2.79%	0.650	6.10%	6.8%
G't Plains Energy	GXP	2.79%	0.750	6.10%	7.4%
IDACORP Inc.	IDA	2.79%	0.750	6.10%	7.4%
Portland General	POR	2.79%	0.700	6.10%	7.1%
Public Serv. Enterprise	PEG	2.79%	0.700	6.10%	7.1%
SCANA Corp.	SCG	2.79%	0.700	6.10%	7.1%
Sempra Energy	SRE	2.79%	0.800	6.10%	7.7%
Vectren Corp.	VVC	2.79%	0.750	6.10%	7.4%
Westar Energy	WR	2.79%	0.700	6.10%	7.1%
Xcel Energy Inc.	XEL	2.79%	0.600	6.10%	6.5%
Average			0.700		**7.1%**

[1] From risk-free rate exhibit
[2] Value Line Investment Survey
[3] From beta exhibit
[6] = [1] + [2] * [3]

Cost of Equity Summary

Model	Cost of Equity
Discounted Cash Flow Model	7.6%
Capital Asset Pricing Model	7.1%
Average	**7.3%**

Source	Estimate	
Graham Harvey Survey	7.2%	[1]
IESE Survey	8.3%	[2]
Damodaran	7.9%	[3]
Garrett	8.1%	[4]
Average	7.9%	

[1] Average reported ERP + Company's highest riskfree rate est

[2] Average reported ERP + Company's highest riskfree rate est

[3] An average of 3 ERP est. for 12-16 + T-bond rate

[4] From implied ERP exhibit herein

Awarded Returns vs. Market Cost of Equity (2005 - 2016)

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%
2015.1	10	10.37%
2015.2	21	9.73%
2015.3	6	9.40%
2015.4	11	9.62%
2016.1	14	10.26%
2016.2	27	9.57%
2016.3	11	9.76%
2016.4		

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	13.25%
2015	1.38%
2016	11.74%

Average		
Arithmetic	8.89%	[4]
Geometric	7.39%	[5]
Average Return on All Stocks	**8.1%**	[6]
Average Utility Awarded ROE	**10.2%**	[7]

[8]

Year	Market Cost of Equity
2005	8.47%
2006	8.86%
2007	8.39%
2008	8.64%
2009	8.20%
2010	8.49%
2011	7.89%
2012	7.54%
2013	8.00%
2014	7.95%
2015	8.39%
2016	8.14%
Average	**8.25%**

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

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

[3] Historical stock returns. NYU Stern School of Business. http://pages.stern.nyu.edu/~adamodar/.

[4] = Average of [3]

[5] = Geometric mean of [3]

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

[7] = Average of [2]

[8] Annual required market returns. NYU Stern School of Business. http://pages.stern.nyu.edu/~adamodar/ (adding risk-free rate to implied ERP)

Competitive Returns on Equity

Industry	No. of Firms	Average Beta	Return on Equity
Farming/Agriculture	37	1.2	10%
Electronics (General)	167	1.0	10%
Healthcare Products	254	1.0	10%
Business & Consumer Services	159	1.2	10%
Hospitals/Healthcare Facilities	58	0.8	10%
Bank (Money Center)	9	1.1	10%
Banks (Regional)	644	0.5	9%
Software (Internet)	308	1.3	9%
Insurance (Life)	25	1.3	9%
Power	73	0.8	9%
Oilfield Svcs/Equip.	143	1.7	8%
Environmental & Waste Services	97	1.1	8%
Brokerage & Investment Banking	42	1.3	8%
Oil/Gas Distribution	79	1.2	8%
R.E.I.T.	221	0.8	7%
Reinsurance	3	1.0	7%
Paper/Forest Products	20	1.5	6%
Semiconductor Equip	46	1.4	6%
Oil/Gas (Integrated)	7	1.5	6%
Diversified	26	1.0	6%
Insurance (General)	20	1.0	5%
Publshing & Newspapers	39	1.4	4%
Engineering/Construction	51	1.3	2%
Real Estate (General/Diversified)	12	1.2	2%
Education	40	1.1	1%
Rubber& Tires	4	1.7	0%
Real Estate (Development)	21	1.4	-1%
Telecom (Wireless)	19	1.5	-3%
Green & Renewable Energy	28	1.6	-4%
Precious Metals	113	1.3	-4%
Chemical (Basic)	42	1.2	-6%
Steel	36	1.4	-14%
Tobacco	20	1.9	-17%
Metals & Mining	114	1.6	-23%
Oil/Gas (Production and Exploration)	351	1.6	-28%
Coal & Related Energy	38	1.5	-31%
Total / Aveage	**3,366**	**1.3**	**1.3%**

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

Optimal Capital Structure

			[14]	[15]	[16]	[17]
Inputs			**Ratings Table**			
			Coverage Ratio	Bond Rating	Spread	Interest Rate
EBIT	500,400	[1]	> 8.5	Aaa/AAA	0.75%	3.54%
Interest Expense	146,700	[2]	6.5 - 8.49	Aa2/AA	1.00%	3.79%
Book Debt	2,883,270	[3]	5.5 - 6.49	A1/A+	1.10%	3.89%
Book Equity	3,265,774	[4]	4.25 - 5.49	A2/A	1.25%	4.04%
Debt / Capital	46.89%	[5]	3.0 - 4.24	A3/A-	1.75%	4.54%
Debt / Equity	88%	[6]	2.5 - 2.99	Baa2/BBB	2.25%	5.04%
Debt Cost	5.47%	[7]	2.25 - 2.49	Ba1/BB+	3.25%	6.04%
Tax Rate	35%	[8]	2.0 - 2.249	Ba2/BB	4.25%	7.04%
Unlevered Beta	0.44	[9]	1.75 - 1.99	B1/B+	5.50%	8.29%
Risk-free Rate	2.79%	[10]	1.5 - 1.74	B2/B	6.50%	9.29%
Equity Risk Premium	5.25%	[11]	1.25 - 1.49	B3/B-	7.50%	10.29%
Coverage Ratio	3.41	[12]	0.8 - 1.249	Caa/CCC	9.00%	11.79%
Bond Rating	A1	[13]				

[18] [19] [20] [21] [22] [23] [24] [25] [26] [27] [28] [29]

Optimal Capital Structure Calculation

Debt Ratio	D/E Ratio	Levered Beta	True Cost of Equity	Awarded ROE	Debt Level	Interest Expense	Coverage Ratio	Pre-tax Debt Cost	After-tax Debt Cost	Optimal WACC	WACC at 9% ROE
0%	0%	0.445	5.13%	9.00%	0	0	∞	3.54%	2.30%	5.13%	9.00%
40%	67%	0.637	6.14%	9.00%	2,459,617	134,541	3.72	4.54%	2.95%	4.86%	6.58%
47%	89%	0.701	6.47%	9.00%	2,890,050	158,086	3.17	4.54%	2.95%	4.82%	6.16%
50%	100%	0.734	6.65%	9.00%	3,074,522	168,176	2.98	5.04%	3.28%	4.96%	6.14%
55%	122%	0.798	6.98%	9.00%	3,381,974	184,994	2.70	5.04%	3.28%	4.94%	5.85%
56%	127%	0.813	7.06%	9.00%	3,443,464	188,357	2.66	5.04%	3.28%	4.94%	5.79%
58%	138%	0.844	7.22%	9.00%	3,566,445	195,085	2.57	5.04%	3.28%	4.93%	5.68%
60%	150%	0.878	7.41%	9.00%	3,689,426	201,812	2.48	6.04%	3.93%	5.32%	5.96%
65%	186%	0.982	7.95%	9.00%	3,996,878	218,629	2.29	6.04%	3.93%	5.33%	5.70%
70%	233%	1.119	8.67%	9.00%	4,304,330	235,447	2.13	7.04%	4.58%	5.80%	5.90%

[1], [2] OGE 10-K (000's)

[3], [4] Company Schedule D-1.3 (000's)

[5] = [3] / ([3] + [4])

[6] = [3] / [4]

[7] Company schedules

[8] Estimated corporate tax rate

[9] Average beta / (1+(1 - [8])*[6])

[10] From risk-free rate exhibit

[11] From ERP exhibit

[12] = [1] / [2]

[13] Company bond rating

[14] Ranges of coverage ratios

[15] Moody's / S&P bond ratings

[16] NYU spread over risk-free rate

[17] = [16] + [10] = est. debt cost

[18] = debt / total capital

[19] = [18] / (1 - [18])

[20] = [9] * (1 + (1 - [8]) * [6]

[21] = [10] + [20] * [11]

[22] Recommended awarded ROE

[23] = [18] * ([3] + [4]); (000's)

[24] = [22] * [7]; (000's)

[25] = [1] / [23]

[26] Debt cost given coverage ratio per Ratings Table

[27] = [25] * (1 - [8])

[28] = ([18] * [26]) + ((1 - [18]) * [21])

[29] = ([18] * [26]) + ((1 - [18]) * [22])

Competitive Industry Debt Ratios

Industry	Number of Fimrs	Debt Ratio
Advertising	44	73%
Air Transport	20	57%
Auto & Truck	19	74%
Bank (Money Center)	9	67%
Beverage (Soft)	43	64%
Broadcasting	29	68%
Brokerage & Investment Banking	42	77%
Cable TV	19	69%
Coal & Related Energy	38	69%
Hospitals/Healthcare Facilities	58	66%
Hotel/Gaming	73	61%
Office Equipment & Services	24	67%
Packaging & Container	25	63%
Paper/Forest Products	20	74%
R.E.I.T.	221	64%
Restaurant/Dining	83	61%
Retail (Automotive)	26	70%
Retail (Building Supply)	5	67%
Retail (Distributors)	83	60%
Telecom (Wireless)	19	61%
Telecom. Services	65	65%
Tobacco	20	85%
Trucking	26	74%
Total / Average	**1011**	**68%**

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

Proxy Group Debt Ratios

Company	Ticker	Debt Ratio
Alliant Energy	LNT	49%
Ameren Corp.	AEE	49%
CenterPoint Energy	CNP	70%
CMS Energy Corp.	CMS	68%
Consol. Edison	ED	48%
DTE Energy	DTE	50%
Edison Int'l	EIX	45%
Entergy Corp.	ETR	58%
G't Plains Energy	GXP	50%
IDACORP Inc.	IDA	46%
Portland General	POR	48%
Public Serv. Enterprise	PEG	40%
SCANA Corp.	SCG	52%
Sempra Energy	SRE	53%
Vectren Corp.	VVC	51%
Westar Energy	WR	48%
Xcel Energy Inc.	XEL	54%
Average		52%

Debt ratios from Value Line Investment Survey

Mr. Hevert's Corrected DCF Model

Hevert's Proxy Group	Ticker	[1] Hevert's Dividend	[2] Hevert's Stock Price	[3] Maximum Growth Rate	[4] DCF Results
ALLETE, Inc.	ALE	2.08	62.26	4.0%	7.4%
Alliant Energy Corporation	LNT	1.18	39.38	4.0%	7.1%
Ameren Corporation	AEE	1.70	51.80	4.0%	7.3%
American Electric Power Company, Inc.	AEP	2.24	68.11	4.0%	7.4%
Avista Corporation	AVA	1.37	43.03	4.0%	7.2%
CMS Energy Corporation	CMS	1.24	44.28	4.0%	6.9%
DTE Energy Company	DTE	3.08	95.92	4.0%	7.3%
IDACORP, Inc.	IDA	2.04	77.51	4.0%	6.7%
NorthWestern Corporation	NWE	2.00	61.25	4.0%	7.3%
Otter Tail Corporation	OTTR	1.25	32.42	4.0%	7.9%
Pinnacle West Capital Corporation	PNW	2.50	78.53	4.0%	7.2%
PNM Resources, Inc.	PNM	0.88	34.39	4.0%	6.6%
Portland General Electric Company	POR	1.28	43.04	4.0%	7.0%
SCANA Corporation	SCG	2.30	72.88	4.0%	7.2%
Xcel Energy Inc.	XEL	1.36	43.38	4.0%	7.2%
Average					**7.2%**

[1], [2] From Mr. Hevert's Exhibit RBH-1

[3] Projected long-term growth in nominal U.S. GDP reported by the Congressional Budget Office; the "maximum" growth rate refers to the fact that a regulated utility cannot grow at a faster rate than the U.S. economy in the long-run

[4] = ([1] / [2]) * (1 + 0.5 * [3]) + [3] = Semi-Annual DCF as calculated in Exhibit RBH-1

Mr. Hevert's Corrected CAPM

Direct Exhibit DG 1-21

Hevert's Proxy Group	Ticker	[1] Hevert's Highest Riskfree Rate	[2] Hevert's Highest Beta	[3] Highest Risk Premium	[4] CAPM Results
ALLETE, Inc.	ALE	3.00%	0.750	6.10%	7.6%
Alliant Energy Corporation	LNT	3.00%	0.750	6.10%	7.6%
Ameren Corporation	AEE	3.00%	0.750	6.10%	7.6%
American Electric Power Company, Inc.	AEP	3.00%	0.700	6.10%	7.3%
Avista Corporation	AVA	3.00%	0.750	6.10%	7.6%
CMS Energy Corporation	CMS	3.00%	0.700	6.10%	7.3%
DTE Energy Company	DTE	3.00%	0.700	6.10%	7.3%
IDACORP, Inc.	IDA	3.00%	0.800	6.10%	7.9%
NorthWestern Corporation	NWE	3.00%	0.700	6.10%	7.3%
Otter Tail Corporation	OTTR	3.00%	0.800	6.10%	7.9%
Pinnacle West Capital Corporation	PNW	3.00%	0.750	6.10%	7.6%
PNM Resources, Inc.	PNM	3.00%	0.800	6.10%	7.9%
Portland General Electric Company	POR	3.00%	0.800	6.10%	7.9%
SCANA Corporation	SCG	3.00%	0.700	6.10%	7.3%
Xcel Energy Inc.	XEL	3.00%	0.650	6.10%	7.0%
Average			0.740		**7.5%**

[1] From Exhibit RBH-5

[2] From Exhibit RBH-4

[3] From Exhibit DG 1-11 (highest reasonable ERP estimate)

[4] = [1] + [2] * [3]

Mr. Hevert's Prior Growth Rate Estimates

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 same period.

[3] = [1] - [2]