STATE OF INDIANA

INDIANA UTILITY REGULATORY COMMISSION

PETITION OF INDIANA MICHIGAN POWER COMPANY, AN INDIANA CORPORATION, FOR AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC UTILITY SERVICE THROUGH A PHASE IN RATE ADJUSTMENT; AND FOR APPROVAL OF RELATED RELIEF INCLUDING: (1) REVISED DEPRECIATION RATES; (2) ACCOUNTING RELIEF; (3) INCLUSION IN RATE BASE OF QUALIFIED POLLUTION CONTROL PROPERTY AND CLEAN ENERGY PROJECT; (4) ENHANCEMENTS TO THE DRY SORBENT INJECTION SYSTEM; (5) ADVANCED METERING INFRASTRUCTURE; (6) RATE ADJUSTMENT MECHANISM PROPOSALS; AND (7) NEW SCHEDULES OF RATES, RULES AND REGULATIONS.	**CAUSE NO. 45235**

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

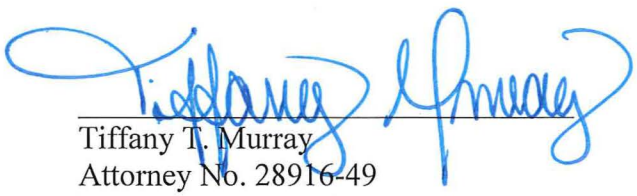
PUBLIC'S EXHIBIT NO. 11 (Part I)

TESTIMONY OF OUCC WITNESS

DAVID J. GARRETT

August 20, 2019

Respectfully submitted,



Tiffany T. Murray
Attorney No. 28916-49
Deputy Consumer Counselor

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OUCC PREFILED TESTIMONY

OF

DAVID J. GARRETT

PART I – RATE OF RETURN

PUBLIC'S EXHIBIT NO. 11

ON BEHALF OF THE

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR

AUGUST 20, 2019

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LIST OF ATTACHMENTS

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 Oklahoma Commission, I formed Resolve Utility Consulting, PLLC, where I have represented various consumer groups, state agencies, and municipalities in utility regulatory proceedings, primarily in the areas of cost of capital and depreciation. I am a Certified Depreciation Professional with the Society of Depreciation Professionals. I am also a Certified Rate of Return Analyst with the Society of Utility and Regulatory Financial Analysts. A more complete description of my qualifications and regulatory experience is included in my curriculum vitae.[1]

[1] Attachment DJG-1-1.

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

A. I am testifying on behalf of the Indiana Office of Utility Consumer Counselor ("OUCC").

Q. Describe the scope and organization of your testimony.

A. My direct testimony in this case addresses the rate of return and depreciation issues regarding the present application of Indiana Michigan Power Company ("I&M" or the "Company"). Collectively, my testimony on these separate issues is voluminous, so I have filed two separate direct testimony documents – Part I and Part II. Part I of my direct testimony (this document) addresses rate of return and related issues in response to the direct testimony of Company witness Robert B. Hevert. Part II of my direct testimony addresses depreciation rates and related issues in response to the direct testimony of Company witness Jason A. Cash. The attachments to Part I of my testimony have a prefix of "DJG-1," and the attachments to Part II of my testimony have a prefix of "DJG-2."

II. EXECUTIVE SUMMARY

A. Overview

Q. Explain the concept of the "weighted average cost of capital."

A. The term "cost of capital" refers to the weighted average cost of all types of components 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. In contrast, determining the cost of equity is more complex. Unlike the known contractual cost of debt, there is no explicit "cost" of equity; thus, the cost of

equity must be estimated through various financial models. 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:

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 include the following:

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 ("ROE"), earned ROE, and awarded ROE.

A. While "cost of equity," "required ROE," "earned ROE," and "awarded ROE" are interrelated factors and concepts, they are all technically different from each other. The

financial models presented in this case were created as tools for estimating the "cost of equity," which is synonymous to the "required ROE" that investors expect based on the amount of risk inherent in the equity investment. In other words, the cost of equity from the company's perspective equals the required ROE 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. For example, an investor who invests in a risky company may *require* a return on investment of 10%. If the company 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 of only 7%, this does not mean that the investor required only 7%, 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.

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 could be summarized in the following sentence: If the awarded ROE reflects a utility's cost of equity, then it should allow the utility to achieve an earned ROE that is sufficient to satisfy the required return of its equity investors. Thus, the "required" or "expected" return from an investor's standpoint is not simply what the investor wishes he could get. Likewise, the expected return of a utility investor has nothing to do with what the investor "expects" the

ROE awarded by a regulatory commission to be. Rather, the expected return / cost of equity is estimated through objective, mathematical financial modeling based on risk.

Q. Describe the Company's position regarding its cost of capital in this case.

A. In this case, the Company proposes an awarded return on equity of 10.5%.[2] Mr. Hevert relies on the Discounted Cash Flow ("DCF") Model, the Capital Asset Pricing Model ("CAPM"), and other models in making his recommendation.

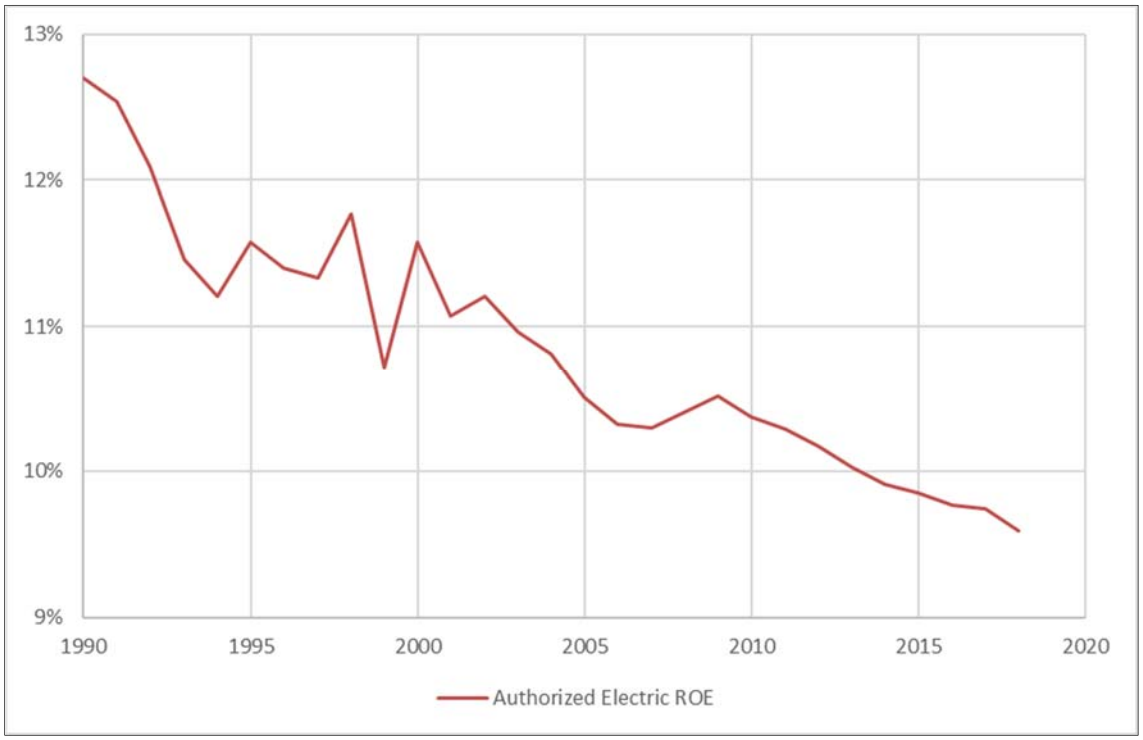
Q. Please discuss the Company's ROE proposal in the context of historic trends in awarded ROEs for electric utilities.

A. Over the past thirty years, capital costs for all companies have generally declined. This is due in large part to generally declining interest rates over the same period. Likewise, awarded ROEs for electric utilities have also decreased since 1990. The graph below shows a trend in the annual awarded returns for electric utilities from 1990 to 2018.[3]

[2] Direct Testimony of Robert B. Hevert, p. 2, lines 16-21.

[3] *See also* Attachment DJG-1-15. Data from RRA Regulatory Focus: Major Rate Decisions, S&P Global.

Figure 1:
Historic Awarded ROEs for Electric Utilities



As shown in the graph above, awarded ROEs for electric utilities have generally declined over the past 30 years.[4] To the extent the Commission is inclined to consider the awarded ROEs of other utilities in making its decision in this case, the Commission should also consider this downward trend in awarded ROEs.

Q. Are you suggesting that regulators should simply set ROEs according to a national average of awarded ROEs?

A. No. As illustrated further in my testimony, there is strong evidence suggesting that regulators consistently award ROEs that are notably higher than utilities' actual cost of

[4] *See also* Attachment DJG-1-14. Data from *RRA Regulatory Focus: Major Rate Case Decisions*.

equity. This is likely due to the fact that over the past 30 years, interest rates and cost of capital have declined at a faster rate than regulators' willingness to decrease awarded ROEs. In other words, awarded ROEs have appropriately been decreasing in accordance with declining capital costs; however, they have not decreased quickly enough to keep pace. To the extent regulators have been persuaded to conform to a national average of awarded ROEs when making their decisions in a particular case, it has contributed to this "lag" in awarded returns, which have effectively failed to track with declining interest rates over the same time period. In other words, whether objective market indicators influencing cost of equity are rising or falling, simply reverting to a national mean of awarded ROEs will effectively prevent those ROEs from properly rising and falling with the market indicators, such as interest rates. In today's economic environment, if a regulator awards an ROE that is equivalent to the national average, that awarded ROE will be above the market-based cost of equity for a regulated utility. Therefore, to suggest that the Commission simply set the Company's awarded ROE based on a national average would not result in a fair return, and it would promote the perpetuation of a national phenomenon of artificially inflated ROEs for regulated utilities.

Q. Summarize your analyses and conclusions regarding the Company's cost of equity.

A. Analysis of an appropriate awarded ROE for a utility should begin with a reasonable estimation of the utility's cost of equity capital. In estimating the Company's cost of equity, I performed a cost of equity analysis on a proxy group of utility companies with relatively similar risk profiles. Based on this proxy group, I evaluated the results of the two most common financial models for calculating cost of equity in utility rate

proceedings: the CAPM and DCF Model. Applying reasonable inputs and assumptions to these models indicates that the Company's estimated cost of equity is about 6.5%.[5]

B. Recommendation

Q. Summarize your recommendation to the Commission.

A. Pursuant to the legal and technical standards guiding this issue, the awarded ROE should be based on, or reflective of, the utility's cost of equity. As I explain in more detail below, the Company's estimated cost of equity is about 6.5%. However, these legal standards do not mandate the awarded ROE be set exactly equal to the cost of equity. Rather, in *Federal Power Commission v. Hope Natural Gas Co*., the U.S. 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.[6] If the Commission were to award a return equal to the Company's estimated cost of equity of 6.5%, it would be accurate from a technical standpoint, and it would also significantly reduce the excess wealth transfer from ratepayers to shareholders that would otherwise occur if the Company's proposal were adopted. I recommend, however, the Commission award an ROE that is higher than the Company's actual cost of equity in this case. Specifically, I recommend an awarded ROE of 9.1%, which is within a reasonable range of 9.0% – 9.5%.

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[5] *See* Attachment DJG-1-12.

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

The ratemaking concept of "gradualism," though usually applied from the customer's standpoint to minimize rate shock, could also be applied to shareholders. An awarded return as low as 6.5% in any current rate proceeding would represent a substantial change from the "status quo," which as I prove later in the testimony, involves awarded ROEs that clearly exceed market-based cost of equity for utilities. However, while generally reducing awarded ROEs for utilities would move awarded returns closer to market-based costs and reduce part of the excess transfer of wealth from ratepayers to shareholders, I believe it is advisable to do so gradually. One of the primary reasons the Company's cost of equity is so low is because the Company is a very low-risk asset. In general, utility stocks are low-risk investments because movements in their stock prices are relatively involatile. If the Commission were to make a significant, sudden change in the awarded ROE anticipated by regulatory stakeholders, it could have the undesirable effect of notably increasing the Company's risk profile and would arguably be at odds with the *Hope* Court's "end result" doctrine. An awarded ROE of 9.1% represents a good balance between the Supreme Court's indications that awarded ROEs should be based on cost, while also recognizing that the end result must be reasonable under the circumstances. An awarded ROE of 9.1% also represents a gradual move toward the Company's market-based cost of equity, and it would be fair to the Company's shareholders because 9.1% is nearly 200 basis points above the Company's market-based cost of equity. Nonetheless, it is clear that the Company's proposed ROE of 10.5% is excessive and unreasonable.

Q. Are the results of any of Mr. Hevert's cost of equity models within your recommended range for the Company's awarded ROE?

A. Yes. Mr. Hevert conducted several versions of the DCF Model using various growth rates and lengths of time for average stock prices.[7] Mr. Hevert's lowest DCF result was 7.88%, which is relatively close to my DCF Model result of 7.0% and the result closest to I&M's actual cost of equity. The results of several of Mr. Hevert's DCF Models fell within my recommended range for the awarded ROE, including results of 9.03%, 9.07%, and 9.21%.[8] Although, as later discussed in my testimony, Mr. Hevert and I have different opinions regarding the various inputs of the DCF Model, if the Commission were to award I&M an ROE equating to any of these DCF results, it would be reasonable in my opinion.

C. Response to Mr. Hevert's Testimony

Q. Please provide an overview of the problems you have identified with Mr. Hevert's testimony regarding cost of equity and the awarded ROE.

A. Mr. Hevert proposes a return on equity of 10.5%.[9] Mr. Hevert's recommendations are based on the CAPM, DCF Model, and other models. However, several of his key assumptions and inputs to these models violate fundamental, widely-accepted tenants in finance and valuation, while other assumptions and inputs are simply unrealistic. The key areas of concern are summarized as follows:

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[7] Attachment RBH-2.

[8] *See Id.*

[9] Direct Testimony of Robert B. Hevert, p. 3, lines 1-2.

1. Terminal Growth Rate

In his DCF Model, Mr. Hevert's average long-term growth rate applied to the Company exceeds the long-term growth rate for the entire U.S. economy. In fact, Mr. Hevert's projected growth rates for his proxy companies are as high as 12.0%,[10] which is about three times greater than projected U.S. GDP growth. It is a fundamental concept in finance that, in the long run, a company cannot fundamentally 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. Thus, the results of Mr. Hevert's DCF Model are upwardly biased and are not reflective of current market conditions.

2. Equity Risk Premium

Mr. Hevert's estimate for the equity risk premium ("ERP"), the single most important factor in estimating the cost of equity and a key input to the CAPM, is significantly higher than the estimates reported by thousands of experts across the country. In direct contradiction to Mr. Hevert's assertion that his risk premium analyses are "forward-looking,"[11] Mr. Hevert incorporates ERP data nearly 40 years old into some of his risk premium analyses.[12] Moreover, in estimating the ERP, Mr. Hevert did not follow conventional approaches, but rather conducted a DCF analysis on a sample of the entire market. This decision is especially problematic because Mr. Hevert used long-term growth

[10] *See* Attachment RBH-2.

[11] *See e.g.* Direct Testimony of Robert B. Hevert, p. 8, lines 11-12.

[12] Attachment RBH-6.

rates as high as 96% in his analysis.[13] Specifically, Mr. Hevert estimated a long-term growth rate of 96% for Helmerich & Payne Inc. ("Helmerich"). In 2018, Pioneer reported earnings of $478 million.[14] If we apply Mr. Hevert's 96% annual growth rate to Helmerich's 2018 earnings, in only 20 years Helmerich's earnings would be $334 trillion, which would dwarf the GDP of the entire planet. Many of Mr. Hevert's other long-term growth estimates are similarly too high to be considered realistic. This example highlights why it is important not to overestimate long-term growth rates in the DCF Model. As a result, Mr. Hevert's estimate of the most important factor in the CAPM is more than twice as high as the results estimated and reported by thousands of survey respondents and other experts. Thus, Mr. Hevert's CAPM cost of equity estimate is overstated and unreasonable.

4. Bond Yield Plus Risk Premium Model

Mr. Hevert's own risk premium model is not market-based in that it considers awarded ROEs dating back to 1980[15] – a contradiction to Mr. Hevert's claim that his cost of equity models are "forward-looking."[16] As discussed in this testimony, awarded ROEs are consistently higher than market-based cost of equity for utility companies. Unlike the CAPM, which is a Nobel-prize-winning risk premium model found in nearly every fundamental textbook on finance and investments, the type of risk premium analysis offered by Mr. Hevert and other utility ROE witnesses are almost exclusively seen in the

[13] Attachment RBH-3.

[14] https://finance.yahoo.com/quote/HP/financials?p=HP

[15] Attachment RBH-6.

[16] Direct Testimony of Robert B. Hevert, p. 13, lines 4-7.

testimonies of utility ROE witnesses, and it results in cost of equity estimates unreflective of current market conditions. Given the reality that awarded ROEs have consistently exceeded utility market-based cost of equity for decades, any model that attempts to leverage the unbalanced relationship between awarded ROEs and any market-based factor (such as U.S. Treasury bonds in this case), will only serve to perpetuate the unfortunate discrepancy between awarded ROEs and utility cost of equity. Our purpose here should be to use objective, market-based models (the DCF and CAPM) to estimate the cost of equity so we can then use that estimate to help determine a fair awarded ROE. In contrast, Mr. Hevert's risk premium analysis relies on nothing more than an echo chamber of outdated awarded ROEs that have no bearing on the Company's current, market-based cost of equity.

4. Capital Market Environment

Mr. Hevert's includes a discussion of the current capital market in support of his recommendations.[17] For example, Mr. Hevert states that "increasing interest rates may be seen as an indication of expanding macroeconomic growth, in which case we reasonably could expect the growth rate component of the Discounted Cash Flow model to increase."[18] This statement alone raises four important issues, which are summarized as follows: (1) perpetual "bullish" projections call into question the accuracy and sincerity of such projections; (2) the Federal Reserve (the "Fed") has already lowered its benchmark rate

[17] *Id*. at pp. 11 – 20.

[18] *Id*. at p. 12, lines 11-13.

since Mr. Hevert filed his testimony, and increases are not likely to occur in the near future; (3) projections of economic growth contradict I&M's own testimony; and (4) Mr. Hevert's growth rate projections for I&M already exceed the projected growth of the entire U.S. economy and are about 55 times greater than I&M own projections for customer and retail sales growth. These four issues are further discussed below.

First, Mr. Hevert's discussion of current market conditions as support for his unrealistically high ROE proposal strikes me as disingenuous. I have reviewed ROE testimony from many utility witnesses, including Mr. Hevert, dating back decades in time. I cannot recall even one time seeing a utility ROE witness describe current or projected macroeconomic conditions as potentially having a decreasing effect on their client's awarded ROE. Based on this experience, I do not give much consideration to utility ROE witnesses' perpetually-bullish outlooks on growth and interest rates, while simultaneously talking about increased volatility and risk.[19] The fact of the matter this – even if the Fed announced tomorrow that it will be significantly increasing the benchmark rate, it would still not change the fact that I&M will be receiving an awarded ROE in this case that is undoubtedly higher than its market-based cost of capital and higher than the expected return on the entire market (even if the Commission adopts my position).

Second, on August 1, 2019 (after Mr. Hevert filed his testimony in this case) the Fed lowered its benchmark rate by 25 basis points to a range of 2.0% - 2.25%.[20] The

[19] See e.g., Id. at p. 15, lines 9-10.

[20] Federal Reserve Press Release, July 31, 2019.

Federal Open Market Committee cited "muted inflation pressures" in making its decision.[21] Moreover, some economists now see the likelihood of three quarter-point reductions before the end of the year.[22] According to Mr. Hevert, "the salient issue is whether investors see the likelihood of increased interest rates during the period in which the rates set in this proceeding will be in effect."[23] If that is indeed the "salient issue," the Fed's recent decrease in the benchmark rate provides a strong answer to this question.

Third, to the extent Mr. Hevert is suggesting a forecast of economic growth, such forecast would contradict I&M's own testimony in this case. According to Company witness Chad M. Burnett: "Moody's Analytics is predicting the end of the current business cycle and the start of the next recession in the year 2020. . . ."[24] In fact, a recent survey of business economists completed in December of 2018 indicated that 80% of respondents have lowered their outlook for 2019 and a growing number of economists are now predicting the US economy will be in recession by 2020 or 2021."[25] In my opinion, Mr. Burnett's economic outlook is more objective and reasonable than Mr. Hevert's outlook.

Finally, Mr. Hevert suggests that macroeconomic growth should have an increasing effect on the growth rate input used in the DCF Model.[26] Despite the evidence presented

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[21] *Id*.

[22] Jeff Cox, "Wall Street Sees Even More Fed Rate Cuts Ahead with Morgan Stanley Predicting a Return to Zero," CNBC (Aug. 2019) https://www.cnbc.com/2019/08/12/fed-interest-rate-forecast-wall-street-sees-return-to-near-zero.html.

[23] Direct Testimony of Robert B. Hevert, p. 13, lines 4-7.

[24] Direct Testimony of Chad M. Burnett, p. 13, lines 20-21.

[25] *Id*. at p. 14, lines 4-7.

[26] Direct Testimony of Robert B. Hevert, p. 12, lines 11-13.

above that economic growth is unlikely, Mr. Hevert's statement is nonetheless problematic. As discussed later in my testimony, long-term growth rate projections for any firm should be limited by the projected growth rate of the aggregate economy in which it operates; in our case this is measured by U.S. GDP. Reasonable projections of long-term GDP growth do not exceed 4.0% per year; however, Mr. Hevert uses growth rates as high as 12% for his proxy group, with a median growth rate of about 5.5%.[27] Moreover, I&M's own projections for customer and retail sales growth (of just 0.01%) could be rounded down to zero.[28] It is not reasonable to assume that I&M will qualitatively grow by 5.5% per year when that figure exceeds the projected growth rate of the entire U.S. economy and is 55 times greater than I&M's own projections of customer and retails sales growth.

Q. Describe the harmful impact to customers and the state's economy if the Commission were to adopt the Company'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. This excess outflow of funds from Indiana's economy would not benefit its businesses or citizens, nor would it result in better utility service. Instead, Indiana businesses in the Company's service territory would be less competitive with businesses in surrounding states, and individual ratepayers would receive inflated costs for basic goods and services, along with higher utility bills.

[27] See Attachment RBH-2.

[28] Indiana Michigan Power 2018-19 IRP Public Summary, p. 2.

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 ("Court" or "Supreme Court") first addressed the meaning of a fair rate of return for public utilities.[29] The Court found that "the amount of risk in the business is a most important factor" in determining the appropriate allowed rate of return.[30] 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.[31]

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

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

[30] *Id*. at 48.

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

> 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.[32]

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

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

A. Yes. The *Hope* Court 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 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:

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

> 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.[33]

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 U.S. 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. As Dr. Morin notes:

> [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.[34]

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

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[33] 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).

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

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 by 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 U.S. 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 the Company's actual cost of capital based on objective market data. When the awarded ROE is set far above the cost of equity, it runs the risk of violating the U.S. Supreme Court's standards that the awarded return should be *based on the cost of capital*. If the Commission were to adopt the Company's position in this case, it would be permitting an excess transfer of wealth from Indiana customers to Company shareholders. 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 since 1990.

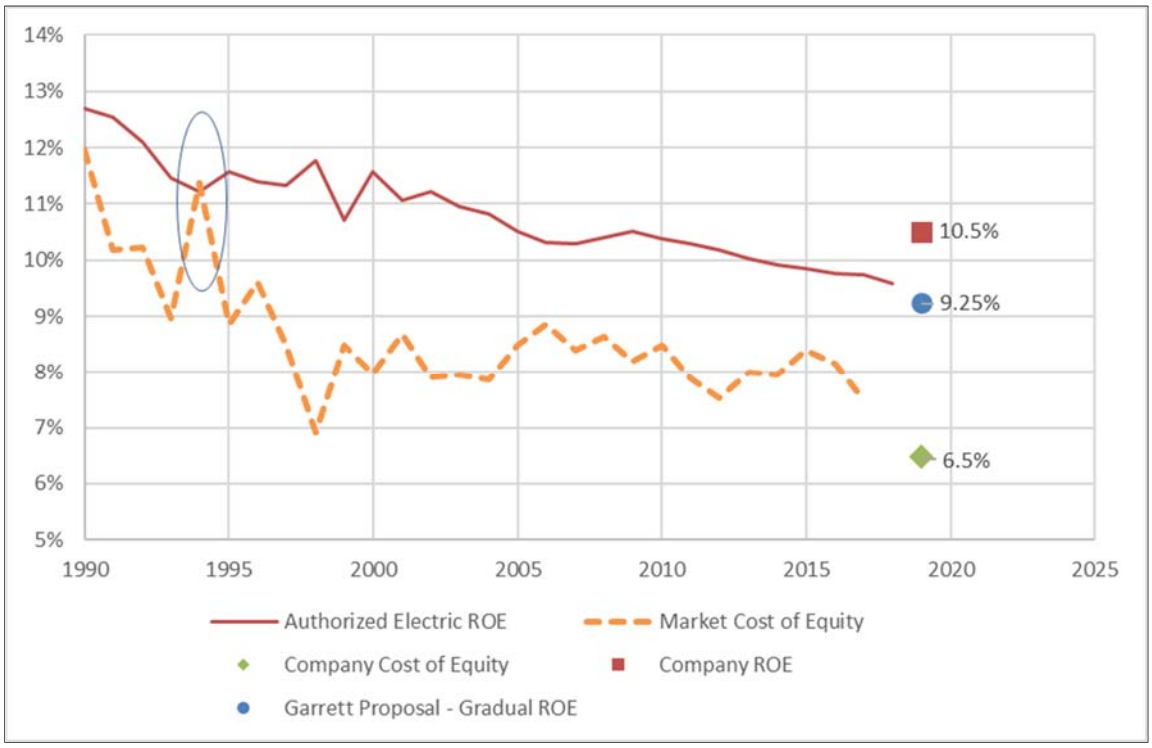
Q. Illustrate and compare the relationship between awarded utility returns and market cost of equity since 1990.

A. As shown in the figure below, awarded returns for public utilities have been above the average required market return since 1990.[35] Because utility stocks are consistently far less risky than the average stock in the marketplace, the cost of equity for utility companies is *less* than the market cost of equity. This is a fact, not an opinion. The graph below shows two trend lines. The top line is the average annual awarded returns since 1990 for U.S. regulated utilities. The bottom line is the required market return over the same period. As discussed in more detail later in my 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

[35] *See* Attachment DJG-1-14.

equity.[36] Thus, awarded returns (the solid line) should generally be below the market cost of equity (the dotted line), since awarded returns are supposed to be based on true cost of equity.

Figure 2:
Awarded ROEs vs. Market Cost of Equity



Because utility stocks are less risky than the average stock in the market, utility cost of equity is below market cost of equity (the dotted line in this graph). However, as shown in this graph, awarded ROEs have been consistently above the market cost of equity for many years. As shown in the graph, since 1990 there was only one year in which the average awarded ROE was below the market cost of equity – 1994. In other words, 1994 was the

[36] This fact can be objectively measured through a term called "beta," as discussed later in the testimony. Utility betas are less than one, which means utility stocks are less risky than the "average" stock in the market.

year that regulators awarded ROEs that were the closest to utilities' market-based cost of equity. In my opinion, when awarded ROEs for utilities are below the market cost of equity, they more closely conform to the standards set forth by *Hope* and *Bluefield* and minimize the excess wealth transfer from ratepayers to shareholders. The graph also shows the current discrepancy between awarded ROEs and market cost of equity along with the various positions in this case. In this case, Mr. Hevert's proposal of a 10.5% ROE is about 400 basis points above the Company's cost of equity of about 6.5%. As discussed previously, my recommended ROE of 9.1% represents a gradual move towards actual cost, is reasonable under the circumstances, and is in accord with the decisions of the U.S. Supreme Court.

Q. Have other analysts commented on this national phenomenon of awarded ROEs exceeding the market-based cost equity for utilities?

A. Yes. In his article published in Public Utilities Fortnightly in 2016, Steve Huntoon observed that even though utility stocks are less risky than the stocks of competitive industries, utility stocks have nonetheless outperformed the broader market.[37] Specifically, Huntoon notes the following three points which lead to a problematic conclusion:

> 1. Jack Bogle, the founder of Vanguard Group and a Wall Street legend, provides rigorous analysis that the long-term total return for the broader market will be around 7 percent going forward. Another Wall Street legend, Professor Burton Malkiel, corroborates that 7 percent in the latest edition of his seminal work, *A Random Walk Down Wall Street*.

[37] Steve Huntoon, "Nice Work If you can Get It," Public Utilities Fortnightly (Aug. 2016).

> 2. Institutions like pension funds are validating [the first point] by piling on risky investments to try and get to a 7.5 percent total return, as reported by the Wall Street Journal.
>
> 3. Utilities are being granted returns on equity around 10 percent.[38]

In a follow-up article analyzing and agreeing with Mr. Huntoon's findings, Leonard Hyman and William Tilles found that utility equity investors expect about a 7.5% annual return.[39]

Other scholars have also observed that awarded ROEs have not appropriately tracked with declining interest rates over the years, and that excessive awarded ROEs have negative economic impacts. In a 2017 white paper, Charles S. Griffey stated:

> The "risk premium" being granted to utility shareholders is now higher than it has ever been over the last 35 years. Excessive utility ROEs are detrimental to utility customers and the economy as a whole. From a societal standpoint, granting ROEs that are higher than necessary to attract investment creates an inefficient allocation of capital, diverting available funds away from more efficient investments. From the utility customer perspective, if a utility's awarded and/or achieved ROE is higher than necessary to attract capital, customers pay higher rates without receiving any corresponding benefit.[40]

It is interesting that both Mr. Huntoon and Mr. Griffey use the word "sticky" in their articles to describe the fact that awarded ROEs have declined at a much slower rate than interest rates and other economic factors resulting in a decline in capital costs and expected returns on the market. It is not hard to see why this phenomenon of sticky ROEs has occurred.

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[38] *Id*.

[39] Leonard Hyman & William Tilles, "Don't Cry for Utility Shareholders, America," Public Utilities Fortnightly (October 2016).

[40] Charles S. Griffey, "When 'What Goes Up' Does Not Come Down: Recent Trends in Utility Returns," White Paper (February 2017).

Because awarded ROEs are often based primarily on a comparison with other awarded ROEs around the country, the average awarded returns effectively fail to adapt to true market conditions, and regulators seem reluctant to deviate from the average. Once utilities 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, and thus, awarded ROEs should be less than the expected return on the market. However, that is rarely the case. "Sooner or later, regulators may see the gap between allowed returns and cost of capital."[41]

Q. Summarize the legal standards governing the awarded ROE issue.

A. 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,

[41] Leonard Hyman & William Tilles, "Don't Cry for Utility Shareholders, America," Public Utilities Fortnightly (October 2016).

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 the Company 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 despite management inefficiencies. 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.

IV. GENERAL CONCEPTS AND METHODOLOGY

Q. Discuss your approach to 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 the two most widely used and accepted in regulatory

proceedings for many years. These models are the Discounted Cash Flow Model ("DCF Model") and the 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 return on equity required by investors by estimating several different inputs. It is preferable to use multiple models because the results of any one model may contain a degree of imprecision, 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.

Q. Please discuss 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 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 in this case.

A. In this case, I chose to use the same proxy group used by Mr. Hevert. 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.[42] By using the same proxy group, we can remove a relatively insignificant variable from the equation and focus on the primary factors driving the Company's cost of equity estimate in this case.

V. 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. Thus, 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.

[42] *See* Attachment DJG-1-2.

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."[43] There are several other types of firm-specific risks, including: (1) "financial risk" – the risk that equity investors of leveraged firms face as residual claimants on earnings; (2) "default risk" – the risk that a firm will default on its debt securities; and (3) "business risk" – which encompasses all other operating and managerial factors that may result in investors realizing less than their expected return in that particular company. While firm-specific risk affects individual companies, market risk affects all companies in the market to varying degrees. Examples of market risk include interest rate risk, inflation risk, and the risk of major socio-economic events. When there are changes in these risk factors, they affect all firms in the market to some extent.[44]

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,

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

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

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 about 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, which affected all stocks in the market. 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 minimize firm-specific risk?

A. Yes. A fundamental concept in finance is that firm-specific risk can be eliminated through diversification.[45] If someone irrationally invested all their funds in one firm, they would be exposed to all 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 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.

[45] *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).

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.[46]

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.[47] 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, the market does not reward such risk 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 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, or "systematic risk," is the only type of risk for which investors expect a return for bearing:

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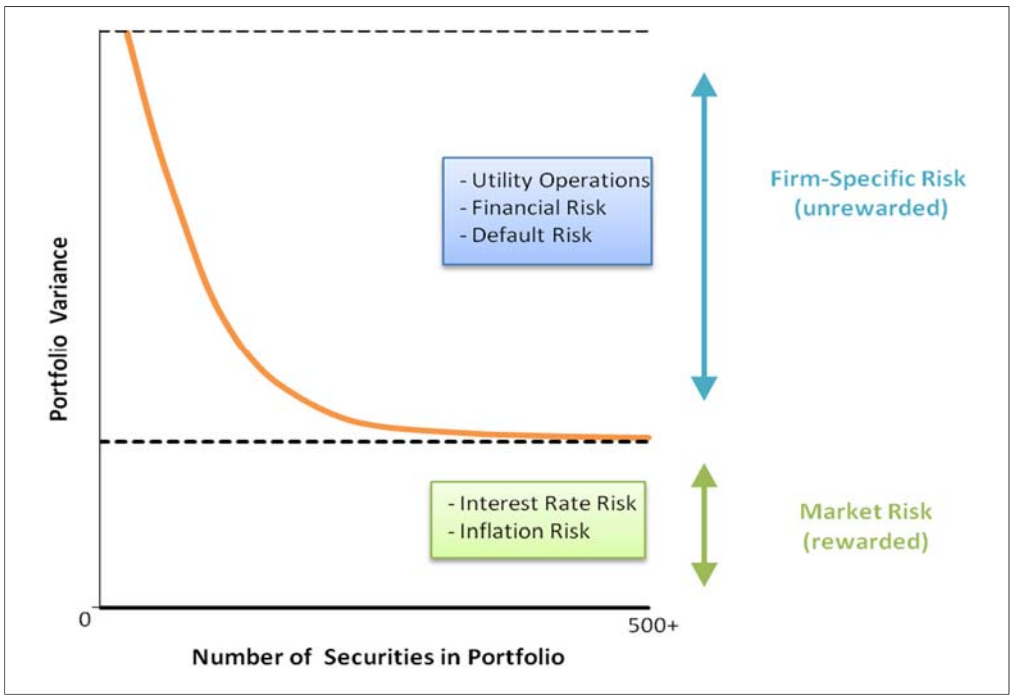
[46] *See* Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 64 (3rd ed., John Wiley & Sons, Inc. 2012).

[47] *Id*.

> 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).[48]

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



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

[48] *See* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 180 (3rd ed., South Western Cengage Learning 2010).

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."[49] 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 CAPM to estimate the cost of equity, which is discussed in more detail later.[50]

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

[50] Though it will be discussed in more detail later, Attachment DJG-1-8 shows that the average beta of the proxy group was less than 1.0. This confirms the well-known concept that utilities are relatively low-risk firms.

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."[51] Thus, cyclical firms are exposed to a greater level of market risk. Securities with betas less than one, on 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."[52] 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.[53]

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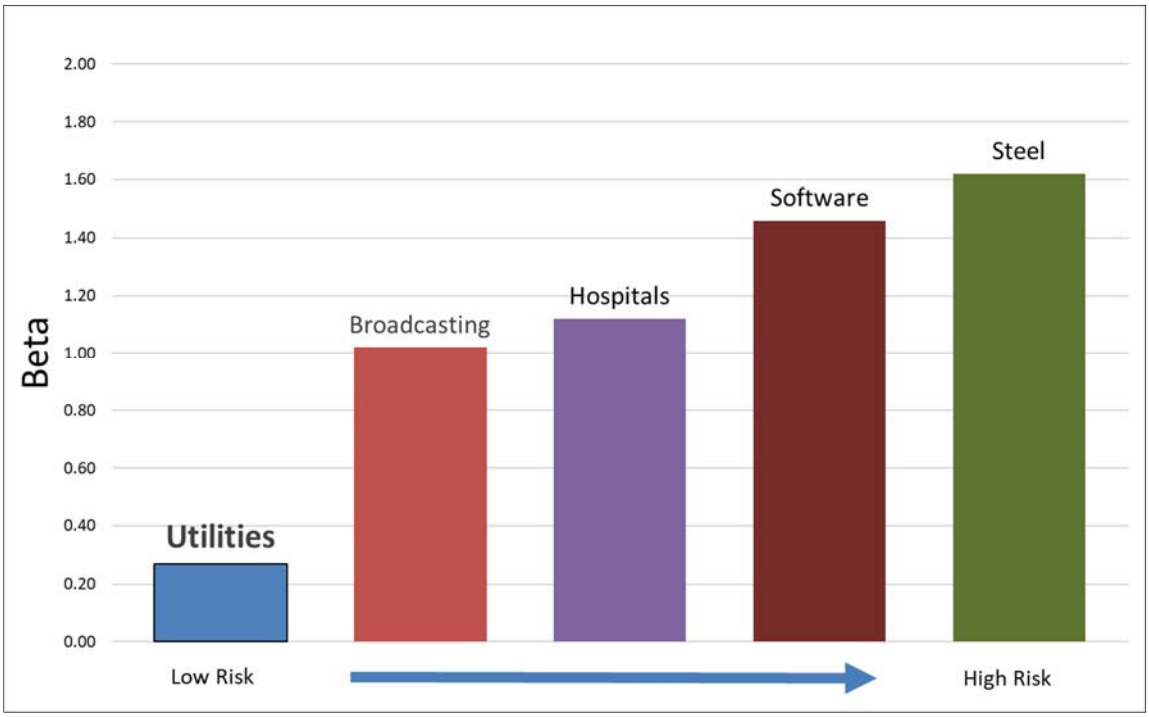
[51] *See* Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 382 (9th ed., McGraw-Hill/Irwin 2013).

[52] *Id*. at 383.

[53] *See* Betas by Sector (US) at http://pages.stern.nyu.edu/~adamodar/ (2018). 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 Company's awarded return.

VI. 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. These versions, along with other formulas and theories related to the DCF Model are discussed in more detail in Appendix A. For this case, I chose to use the Quarterly Approximation DCF Model.

Q. Describe the inputs to the DCF Model.

A. There are three primary inputs in the DCF Model: (1) stock price; (2) dividend; and (3) the long-term growth rate. The stock prices and dividends are known inputs based on recorded data, while the growth rate projection must be estimated. I discuss each of these inputs separately below.

A. Stock Price

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.[54] 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

[54] *See* Attachment DJG-1-3.

reflect all relevant information available at a particular time, and prices adjust instantaneously to the arrival of new information.[55] 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 length of time from when an application is filed, and testimony is due. Choosing a current stock price for one particular day 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

[55] *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* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 357 (3rd ed., South Western Cengage Learning 2010). The efficient market hypothesis was formally presented by Eugene Fama in 1970 and is a cornerstone of modern financial theory and practice.

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.[56]

B. Dividend

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 most recent quarterly dividend paid for each proxy company.[57] The Quarterly Approximation DCF Model assumes that the company increases its dividend payments each quarter. Thus, the model assumes that each quarterly dividend is greater than the previous one by $(1 + g)^{0.25}$. This expression could be 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 in this case relative to other DCF Models, all else held constant?

A. Yes. The DCF Model I employed in this case results in a higher DCF cost of equity estimate than the annual or semi-annual DCF Models due to the quarterly compounding of dividends inherent in the model. In essence, the Quarterly Compounding DCF Model I used results in the highest cost of equity estimate, all else held constant.

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[56] Attachment DJG-1-3. 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.

[57] Attachment DJG-1-4. Nasdaq Dividend History, http://www.nasdaq.com/quotes/dividend-history.aspx.

Q. Are the stock price and dividend inputs for each proxy company a significant issue in this case?

A. No. Although my stock price and dividend inputs are more recent than those used by Mr. Hevert, there is not a statistically significant difference between them because utility stock prices and dividends are generally quite stable. This is another reason that cost of capital models such as the CAPM and the DCF Model are well-suited to be conducted on utilities. The differences between my DCF Model and Mr. Hevert's DCF Model are primarily driven by differences in our growth rate estimates, which are further discussed below.

C. Growth Rate

Q. Summarize 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 input 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. Under this model, a stock is valued by the present value of its future cash flows in the form of dividends. Before future cash flows are discounted by the cost of equity, however, they must be "grown" into the future by a long-term growth rate. As stated above, one of the inherent assumptions of this model is that these cash flows in the form of 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, and may require the use of multi-stage growth models. For mature, low-growth firms such as utilities, however, estimating the terminal

growth rate is more transparent. The growth term of the DCF Model is one of the most important, yet apparently most misunderstood aspects of cost of equity estimations in utility regulatory proceedings. Therefore, I have devoted a more detailed explanation of this issue in the following sections, which are organized as follows:

(1) The Various Determinants of Growth

(2) Reasonable Estimates for Long-Term Growth

(3) Quantitative vs. Qualitative Determinants of Utility Growth: Circular References, "Flatworm" Growth, and the Problem with Analysts' Growth Rates

(4) Growth Rate Recommendation

1. The Various Determinants of Growth

Q. Describe the various determinants of growth.

A. Although the DCF Model directly considers the growth of dividends, there are a variety of growth determinants that should be considered when estimating growth rates. It should be noted that these various growth determinants are used primarily to determine the short-term growth rates in multi-stage DCF models. For utility companies, it is necessary to focus primarily on long-term growth rates, which are discussed in the following section. That is not to say that these growth determinants cannot be considered when estimating long-term growth; however, as discussed below, long-term growth must be constrained much more than short-term growth, especially for young firms with high growth opportunities. Additionally, I briefly discuss these growth determinants here because it may reveal some of the source of confusion in this area.

1. Historical Growth

Looking at a firm's actual historical experience may theoretically provide a good starting point for estimating short-term growth. However, past growth is not always a good indicator of future growth. Some metrics that might be considered here are historical growth in revenues, operating income, and net income. Since dividends are paid from earnings, estimating historical earnings growth may provide an indication of future earnings and dividend growth. In general, however, revenue growth tends to be more consistent and predictable than earnings growth because it is less likely to be influenced by accounting adjustments.[58]

2. Analyst Growth Rates

Analyst growth rates refer to short-term projections of earnings growth published by institutional research analysts such as Value Line and Bloomberg. A more detailed discussion of analyst growth rates, including the problems with using them in the DCF Model to estimate utility cost of equity, is provided in a later section.

3. Fundamental Determinants of Growth

Fundamental growth determinants refer to firm-specific financial metrics that arguably provide better indications of near-term sustainable growth. One such metric for fundamental growth considers the return on equity and the retention ratio. The idea behind this metric is that firms with high ROEs and retention ratios should have higher opportunities for growth.[59]

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[58] *See generally* Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 271-303 (3rd ed., John Wiley & Sons, Inc. 2012).

[59] *See generally* Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 271-303 (3rd ed., John Wiley & Sons, Inc. 2012).

Q. Did you use any of these growth determinants in your DCF Model?

A. No. Primarily, these growth determinants discussed above would provide better indications of short to mid-term growth for firms with average to high growth opportunities. Utilities, however, are mature, low-growth firms. While it may not be unreasonable on its face to use any of these growth determinants for the growth input in the DCF Model, we must keep in mind that the stable growth DCF Model considers only long-term growth rates, which are constrained by certain economic factors, as discussed further below.

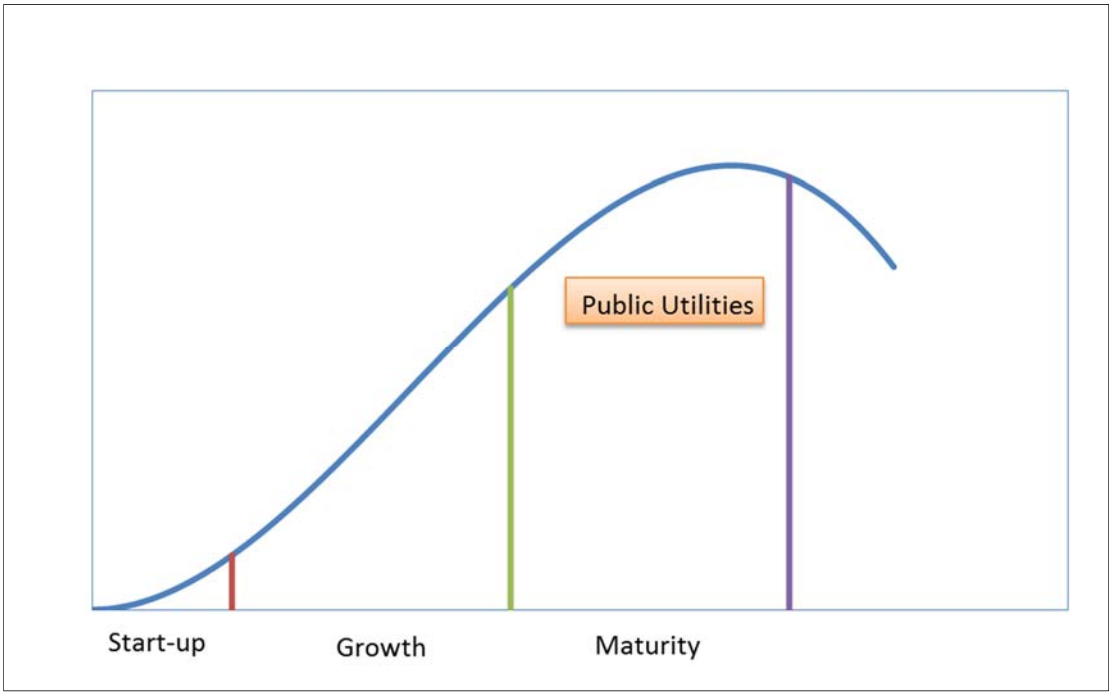
2. Reasonable Estimates for Long-Term Growth

Q. Describe what is meant by long-term growth.

A. In order to make the DCF a viable, practical model, an infinite stream of future cash flows must be estimated and then discounted back to the present. Otherwise, each annual cash flow would have to be estimated separately. Some analysts use "multi-stage" DCF Models to estimate the value of high-growth firms through two or more stages of growth, with the final stage of growth being constant. However, it is not necessary to use multi-stage DCF Models to analyze the cost of equity of regulated utility companies. This is because regulated utilities are already in their "terminal," low growth stage. Unlike most competitive firms, the growth of regulated utilities is constrained by physical service

territories and limited primarily by the customer and load growth within those territories. The figure below illustrates the well-known business / industry life-cycle pattern.

Figure 5:
Industry Life Cycle



In an industry's early stages, there are ample opportunities for growth and profitable reinvestment. In the maturity stage however, growth opportunities diminish, and firms choose to pay out a larger portion of their earnings in the form of dividends instead of reinvesting them in operations to pursue further growth opportunities. Once a firm is in the maturity stage, it is not necessary to consider higher short-term growth metrics in multi-stage DCF Models; rather, it is sufficient to analyze the cost of equity using a stable growth DCF Model with one terminal, long-term growth rate. Because utilities are in their maturity stage, their real growth opportunities are primarily limited to the population growth within their defined service territories, which is usually less than 2%.

Q. What is I&M's projected annual customer growth over the next 20 years?

A. In I&M's 2018-19 Integrated Resource Plan ("IRP"), the Company projects a customer count growth of only 0.1% per year over the next 20 years.[60] Over that same period, I&M projects retail sales growth of only 0.1% per year.[61] These figures are starkly at odds with Mr. Hevert's annual earnings growth projections for the proxy group, which are as high as 12% per year over the long term.[62] Even Mr. Hevert's median growth rates for the proxy group are too high. Mr. Hevert's median growth rate for the proxy group is about 5.5%,[63] which is 55 times greater than I&M's own projections for customer growth and retail sales growth. The massive discrepancy between these figures cannot be objectively reconciled.

Q. Is it true 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.[64] 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:

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[60] Indiana Michigan Power 2018-19 IRP Public Summary, p. 2.

[61] *Id*.

[62] Attachment RBH-2.

[63] *Id*.

[64] *See generally* Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 306 (3rd ed., John Wiley & Sons, Inc. 2012).

> "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."[65]

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, utility operating companies with defined service territories 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 3.9%, which includes an inflation rate of 2%.[66] 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, the Company's terminal growth rate is realistically between 2% and 4%.

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 sometimes use the risk-free rate for the terminal growth

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[65] *Id*.

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

rate value in the DCF model.[67] I discuss the risk-free rate in further detail later in this testimony.

Q. Please summarize the various long-term growth rate estimates that can be used as the terminal growth rate in the DCF Model.

A. The reasonable long-term growth rate determinants are summarized as follows:

1. Nominal GDP Growth
2. Inflation
4. Current Risk-Free Rate

Any of the foregoing growth determinants could provide a reasonable input for the terminal growth rate in the DCF Model for a utility company, including the Company. In general, we should expect that utilities will, at the very least, grow at the rate of projected inflation. However, the long-term growth rate of any U.S. company, especially utilities, will be constrained by nominal U.S. GDP growth.

3. Qualitative Growth: The Problem with Analysts' Growth Rates

Q. Describe the differences between "quantitative" and "qualitative" growth determinants.

A. Assessing "quantitative" growth simply involves mathematically calculating a historic metric for growth (such as revenues or earnings) or calculating various fundamental growth determinants using various figures from a firm's financial statements (such as ROE and the retention ratio). However, any thorough assessment of company growth should be

[67] Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 307 (3rd ed., John Wiley & Sons, Inc. 2012).

based upon a "qualitative" analysis. Such an analysis would consider specific strategies that company management will implement to achieve a sustainable growth in earnings. Therefore, it is important to begin the analysis of the Company's growth rate with this simple, qualitative question: How is this regulated utility going to achieve a sustained growth in earnings? If this question were asked of a competitive firm, there could be several answers depending on the type of business model, such as launching a new product line, franchising, rebranding to target a new demographic, or expanding into a developing market. Regulated utilities, however, cannot engage in these potential growth opportunities.

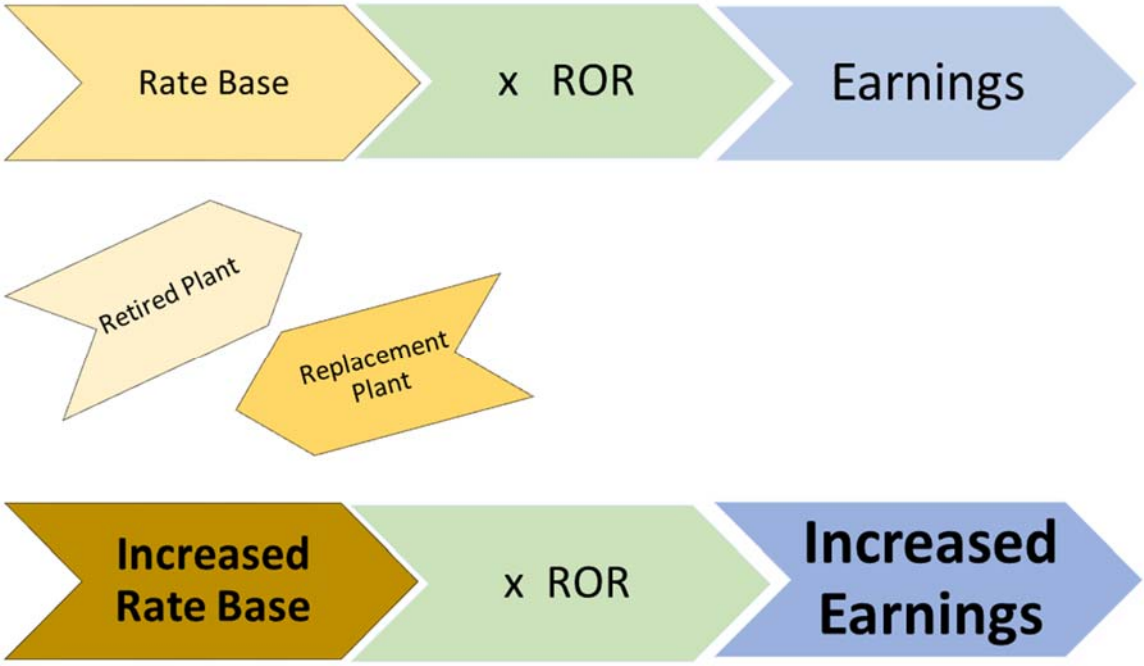
Q. Why is it especially important to emphasize real, qualitative growth determinants when analyzing the growth rates of regulated utilities?

A. While qualitative growth analysis is important regardless of the entity being analyzed, it is especially important in the context of utility ratemaking. This is because the rate base rate of return model inherently possesses two factors that can contribute to distorted views of utility growth when considered exclusively from a quantitative perspective. These two factors are (1) rate base and (2) the awarded ROE. I will discuss each factor further below. It is important to keep in mind that the ultimate objective of this analysis is to provide a foundation upon which to base the fair rate of return for the utility. Thus, we should strive to ensure that each individual component of the financial models used to estimate the cost of equity are also "fair." If we consider only quantitative growth determinants, it may lead to projected growth rates that are overstated and ultimately unfair, because they result in inflated cost of equity estimates.

Q. How does rate base relate to growth determinants for utilities?

A. Under the rate base rate of return model, a utility's rate base is multiplied by its awarded rate of return to produce the required level of operating income. Therefore, increases to rate base generally result in increased earnings. Thus, utilities have a natural financial incentive to increase rate base. In short, utilities have a financial incentive to increase rate base regardless of whether such increases are driven by a corresponding increase in demand. Under these circumstances, utilities have been able to increase their rate bases by a far greater extent than what any concurrent increase in demand would have required. In other words, utilities "grew" their earnings by simply retiring old assets and replacing them with new assets. If the tail of a flatworm is removed and regenerated, it does not mean the flatworm actually grew. Likewise, if a competitive, unregulated firm announced plans to close production plants and replace them with new plants, it would not be considered a real determinant of growth unless analysts believed this decision would directly result in increased market share for the company and a real opportunity for sustained increases in revenues and earnings. In the case of utilities, the mere replacement of old plant with new plant does not increase market share, attract new customers, create franchising opportunities, or allow utilities to penetrate developing markets, but may result in short-term, quantitative earnings growth. This "flatworm growth" in earnings was merely the quantitative byproduct of the rate base rate of return model, and not an indication of real, fair, or qualitative growth. The following diagram illustrates this concept.

Figure 6:
Analysts' Earnings Growth Projections: The "Flatworm Growth" Problem



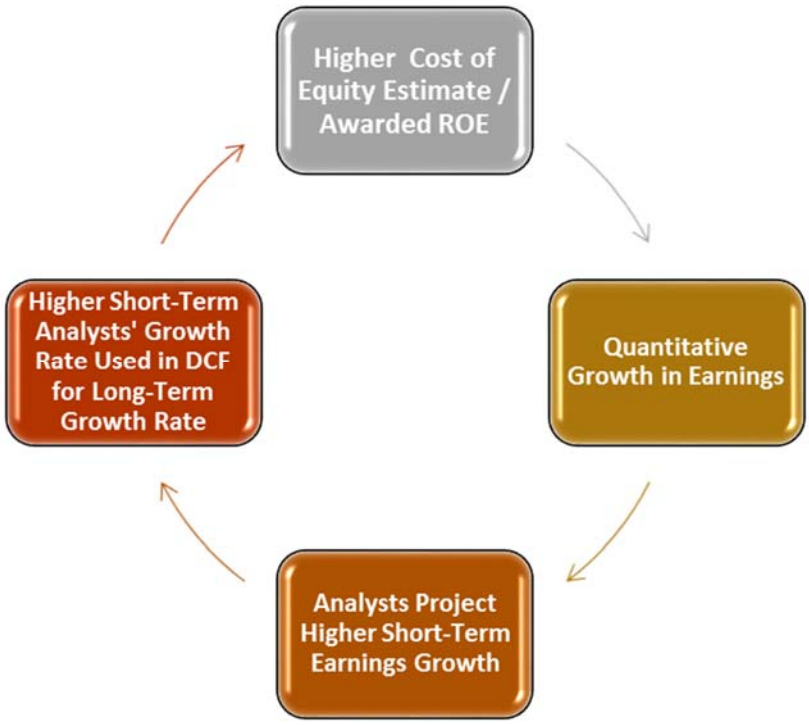
Of course, utilities might sometimes add new plant to meet a modest growth in customer demand. However, as the foregoing discussion demonstrates, it would be more appropriate to consider load growth projections and other qualitative indicators, rather than mere increases to rate base or earnings, to attain a fair assessment of growth.

Q. Please discuss the other way in which analysts' earnings growth projections do not provide indications of fair, qualitative growth for regulated utilities.

A. If we give undue weight to analysts' projections for utilities' earnings growth, it will not provide an accurate reflection of real, qualitative growth because a utility's earnings are heavily influenced by the ultimate figure that all this analysis is supposed to help us estimate: the awarded return on equity. This creates a circular reference problem or

feedback loop. In other words, if a regulator awards an ROE that is above market-based cost of capital (which is often the case, as discussed above), this could lead to higher short-term growth rate projections from analysts. If these same inflated, short-term growth rate estimates are used in the DCF Model (and they often are by utility witnesses), it could lead to higher awarded ROEs; and the cycle continues, as illustrated in the following figure:

Figure 7:
Analysts' Earnings Growth Projections: The "Circular Reference" Problem



Therefore, it is not advisable to simply consider the quantitative growth projections published by analysts, as this practice will not necessarily provide fair indications of real utility growth.

Q. Are there any other problems with relying on analysts' growth projections?

A. Yes. While the foregoing discussion shows two reasons why we cannot rely on analysts' growth rate projections to provide fair, qualitative indicators of utility growth in a stable growth DCF Model, the third reason is perhaps the most obvious and undisputable. Various institutional analysts, such as Zacks, Value Line, and Bloomberg, publish estimated projections of earnings growth for utilities. These estimates, however, are short-term growth rate projections, ranging from 3 – 10 years. Many utility ROE analysts, however, inappropriately insert these short-term growth projections into the DCF Model as *long-term* growth rate projections. For example, assume that an analyst at Bloomberg estimates that a utility's earnings will grow by 7% per year over the next 3 years. This analyst may have based this short-term forecast on a utility's plans to replace depreciated rate base (i.e., "flatworm" growth) or on an anticipated awarded return that is above market-based cost of equity (i.e., "circular reference" problem). When a utility witness uses this figure in a DCF Model, however, it is the *witness*, not the Bloomberg analyst, that is testifying to the regulator that the utility's earnings will qualitatively grow by 7% per year over the *long-term*, which is an unrealistic assumption.

4. Long-Term Growth Rate Recommendation

Q. Describe the growth rate input used in your DCF Model.

A. I considered various qualitative determinants of growth for the Company, along with the maximum allowed growth rate under basic principles of finance and economics. The

following chart shows the various long-term growth determinants discussed in this section.[68]

Figure 8:
Terminal Growth Rate Determinants

Terminal Growth Determinants	Rate
Nominal GDP	3.9%
Inflation	2.0%
I&M Customer Growth (to 2038)	0.1%
Risk Free Rate	2.3%
Highest	**3.9%**

For the long-term growth rate in my DCF model, I selected the maximum, reasonable long-term growth rate of 3.90%, which means my model assumes that the Company's qualitative growth in earnings will match the nominal growth rate of the entire U.S. economy over the long run.

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

A. I used the Quarterly Approximation DCF Model discussed above to estimate the Company'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 the Company. My DCF cost of equity estimate for the Company is 7.0%.[69] As noted above,

[68] *See* Attachment DJG-1-6.

[69] *See* Attachment DJG-1-6.

this estimate is likely at the higher end of the reasonable range due to my relatively high estimate for the long-term growth rate. That is, my long-term growth rate input assumes the Company's earnings will qualitatively grow at the same rate as the U.S. economy over the long-run – a very gratuitous assumption.

D. Response to Mr. Hevert's DCF Model

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

A. Yes, I found several errors. Mr. Hevert's DCF Model produced cost of equity results as high as 10.17%.[70] The results of Mr. Hevert's DCF Model are overstated primarily because of a fundamental error regarding his growth rate inputs.

1. Long-Term Growth Rates

Q. Describe the problems with Mr. Hevert's long-term growth input.

A. Mr. Hevert used long-term growth rates in his proxy group as high as 12.0%,[71] which is about three times as high as projected, long-term nominal U.S. GDP growth (about 4.0%). This means Mr. Hevert's growth rate 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. Furthermore, Mr. Hevert used short-term, quantitative growth estimates published by analysts. As discussed above, these analysts' estimates are inappropriate to use in the DCF Model as

[70] Attachment RBH-2.

[71] *Id.*

long-term growth rates because they are estimates for short-term growth. For example, Mr. Hevert incorporated a 12.0% long-term growth rate for Avangrid, Inc., which was reported by Value Line.[72] This means that an analyst from Value Line apparently thinks that Avangrid's earnings will quantitatively increase by 12.0% each year over the next several years. However, it is *Mr. Hevert*, not the Value Line analyst, who is suggesting to the Commission that Avangrid's earnings will grow by three times the amount of U.S. GDP growth every year for many decades into the future.[73] This assumption is simply not realistic, and it contradicts fundamental concepts of long-term growth. The growth rate assumptions used by Mr. Hevert for the other proxy companies suffer from the same unrealistic assumptions.[74]

2. Flotation Costs

Q. What additional errors did you find in Mr. Hevert's DCF analysis?

A. A proper DCF analysis considers the market-based stock price of a firm for the stock price input of the model. In this case, Mr. Hevert inappropriately considered flotation costs when making his awarded return recommendation. When companies issue equity securities, they typically hire at least one investment bank as an underwriter for the securities. "Flotation

[72] *Id.*

[73] *Id.* Technically, the constant growth rate in the DCF Model grows dividends each year to "infinity." Yet even if we assumed that the growth rate applied to only a few decades, the annual growth rate would still be too high to be considered realistic.

[74] *Id.*

costs" generally refer to the underwriter's compensation for the services it provides in connection with the securities offering.

Q. Do you agree with Mr. Hevert's flotation cost allowance?

A. No, I do not. Mr. Hevert's flotation cost allowance is inappropriate for several reasons, as discussed further below.

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

The Company has not experienced any out-of-pocket costs for flotation. Underwriters 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.[75] Furthermore, I&M is not a publicly traded company, which means it does not issue securities to the public and thus would have no need to retain an underwriter. Accordingly, the Company has not experienced any out-of-pocket flotation costs, and if it has, those costs should be included in the Company's expense schedules.

2. The market already accounts for flotation costs.

When an underwriter markets a firm's securities to investors, the investors are well aware of the underwriter's fees. In other words, the investors know that a portion of the price they are paying for the shares does not go directly to the company, but instead goes

[75] *See* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 509 (3rd ed., South Western Cengage Learning 2010).

to compensate the underwriter for its services. In fact, federal law requires that the underwriter's compensation be disclosed on the front page of the prospectus.[76] Thus, investors have already considered and accounted for flotation costs when making their decision to purchase shares at the quoted price. As a result, 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 completed to reimburse them for the realtor's fees. Likewise, investors of competitive firms do not expect additional compensation for flotation costs. Thus, it would not be appropriate for a commission standing in the place of competition to award a utility's investors with this additional compensation.

3. The DCF Model itself does not include a flotation cost adjustment.

The DCF Model that has been used to estimate cost of equity in utility rate case is derived from the Gordon Growth Model, a highly regarded valuation model which was first proposed in 1956.[77] In Gordon's original publication, there is no mention of flotation

[76] *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.

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

costs. Likewise, when the model is presented in objective financial textbooks, there is no additional factor or "adjustment" for flotation costs that I have seen; the model is simply presented with essentially three variables: stock price, dividends, and growth rate. For a model that has been used for decades by companies, analysts, investors, and academics around the world to analyze the value of stocks and cost of capital as a part of crucial decision-making processes, it is curious that apparently nobody (except for utility ROE witnesses) has thought to add an adjustment to the model to account for flotation costs.

4. It is inappropriate to add any additional basis points to an awarded ROE proposal that is already far above the Company's cost of equity.

For the reasons discussed above, flotation costs should be disallowed from a technical standpoint; they should also be disallowed from a practical standpoint. The Company is asking this Commission to award it a cost of equity that is about 400 basis points above its market-based cost of equity. Under these circumstances, it is especially inappropriate to suggest that flotation costs should be considered in any way to increase an already inflated ROE proposal.

VII. 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 expect higher returns for incurring additional risk.[78] The CAPM

[78] William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963); *see also* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 208 (3rd ed., South Western Cengage Learning 2010).

estimates this expected return. The various assumptions, theories, and equations involved in the CAPM are discussed further in Appendix B. Using the CAPM to estimate the cost of equity of a regulated utility is consistent with the legal standards governing the fair rate of return. The U.S. Supreme Court has recognized that "the amount of risk in the business is a most important factor" in determining the allowed rate of return,[79] and that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."[80] The CAPM is a useful model because it directly considers the amount of risk inherent in a business. The CAPM directly measures the most important component of a fair rate of return analysis: Risk.

Q. Describe the inputs for the CAPM.

A. The basic CAPM equation requires only three inputs to estimate the cost of equity: (1) the risk-free rate; (2) the beta coefficient; and (3) the equity risk premium. Each input is discussed separately below.

A. The Risk-Free Rate

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

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

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

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 thus can lead to unreliable estimates. Instead, long-term Treasury bonds are usually used to represent the risk-free rate in the CAPM. 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 2.52%.[81]

B. The Beta Coefficient

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. An index such as the S&P 500 Index is used as a proxy for the market portfolio. The historical betas for publicly

[81] Attachment DJG-1-7.

traded firms are published by various institutional analysts. 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. As discussed above, beta also 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%.

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, and the average beta for the proxy group is only 0.59.[82] 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. While there is evidence suggesting that betas published by sources such as Value Line may actually overestimate the risk of utilities (and thus overestimate the CAPM), I used the betas published by Value Line in the interest of reasonableness.[83]

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[82] Attachment DJG-1-8.

[83] *See* Appendix B for a more detailed discussion of raw beta calculations and adjustments.

C. The Equity Risk Premium

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."[84] 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 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.

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

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.[85] Some investors may think that a historic ERP provides some indication of what the prospective risk premium is; however, 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.[86] This is due in large part to what is known as "survivorship bias" or "success bias" – a tendency for failed companies to be excluded from historical indices.[87] 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.[88]

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

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[85] John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 330 (3rd ed., South Western Cengage Learning 2010).

[86] Elroy Dimson, Paul Marsh & Mike Staunton, Triumph of the Optimists: 101 Years of Global Investment Returns 194 (Princeton University Press 2002).

[87] *Id*. at 34.

[88] *Id*. at 194.

> 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%.[89]

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."[90]

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.

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 2018 survey, they found that experts around the country believe the current ERP is only 4.4%.[91] The IESE

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

[90] John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 330 (3rd ed., South Western Cengage Learning 2010).

[91] John R. Graham and Campbell R. Harvey, *The Equity Risk Premium in 2018*, at 3 (Fuqua School of Business, Duke University 2014), copy available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3151162.

Business School conducts a similar expert survey. Their 2019 expert survey reported an average ERP of 5.6%.[92]

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.[93] This model is a mathematical derivation of the DCF Model. 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

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[92] Pablo Fernandez, Pablo Linares & Isabel F. Acin, *Market Risk Premium used in 59 Countries in 2018: A Survey*, at 3 (IESE Business School 2018), copy available at http://www.valumonics.com/wp-content/uploads/2017/06/Discount-rate-Pablo-Fern%C3%A1ndez.pdf. 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.

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

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.[94]

Equation 2:
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; or in other words, based on the current value of all stocks (the index price), and the projected value of future cash flows, the market is telling us the return expected by investors for

[94] *See* Attachment DJG-1-9 for detailed calculation.

investing in the market portfolio. After solving for the implied market return (K), we simply subtract the risk-free rate from it to arrive at the implied ERP.

Equation 3:
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 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 8.46%.[95] I subtracted the risk-free rate to arrive at the implied equity risk premium of 5.9%.[96] 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 average ERP estimate for August 2019 using several implied ERP variations was 5.0%.[97]

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[95] *Id*.

[96] *Id*.

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

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

A. For the final ERP estimate I used in my CAPM analysis, I considered the results of the ERP surveys, the implied ERP calculations discussed above, and the estimated ERP reported by Duff & Phelps.[98] The results are presented in the following figure:

Figure 9:
Equity Risk Premium Results

IESE Business School Survey	5.6%
Graham & Harvey Survey	4.4%
Duff & Phelps Report	5.5%
Damodaran	5.0%
Garrett	5.9%
Average	**5.3%**
Highest	**5.9%**

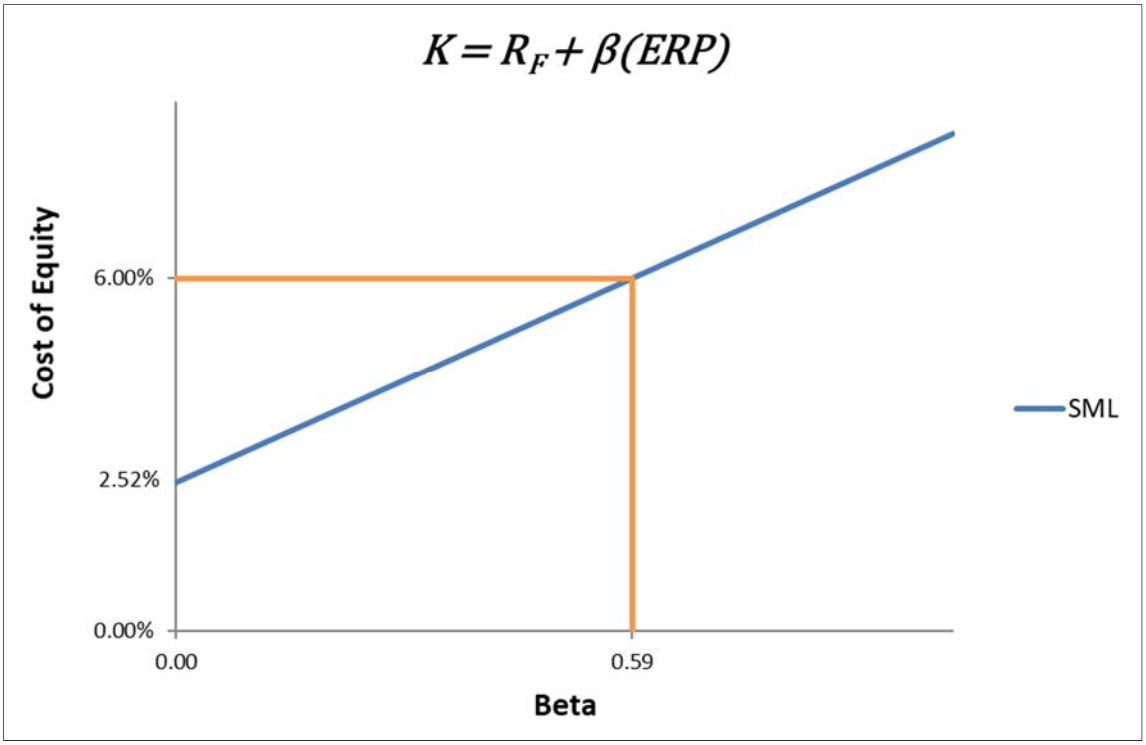
While it would be reasonable to select any one of these ERP estimates to use in the CAPM, I conservatively selected the highest ERP estimate of 5.9% to use in my CAPM analysis. All else held constant, a higher ERP used in the CAPM will result in a higher cost of equity estimate.

[98] *See also* Attachment DJG-1-10.

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 estimate that the Company's CAPM cost of equity is 6.0%.[99] The CAPM can 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.

Figure 10:
CAPM Graph



[99] Attachment DJG-1-11.

The SML provides the rate of return that will compensate investors for the beta risk of that investment. Thus, at an average beta of 0.59 for the proxy group, the estimated CAPM cost of equity for the Company is 6.0%.

D. Response to Mr. Hevert's CAPM Analysis and Other Issues

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, I did. The results of Mr. Hevert's various CAPMs are as high as 11.40%,[100] which is considerably higher than my estimate. The primary problem with Mr. Hevert's CAPM cost of equity result stems primarily from his estimate of the equity risk premium ("ERP").

1. Equity Risk Premium

Q. Did Mr. Hevert rely on a reasonable measure for the ERP?

A. No, he did not. Mr. Hevert estimates an ERP as high as 13.72%.[101] 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 three widely accepted methods for estimating the ERP, including consulting expert surveys, calculating the implied ERP based on aggregate market data, and considering the ERPs published by reputable analysts. The highest ERP found from my research and analysis is only 5.9%.[102] This means that Mr. Hevert's ERP estimate of 14.23% is more than twice as high as the

[100] Attachment RBH-5.

[101] Attachment RBH-5.

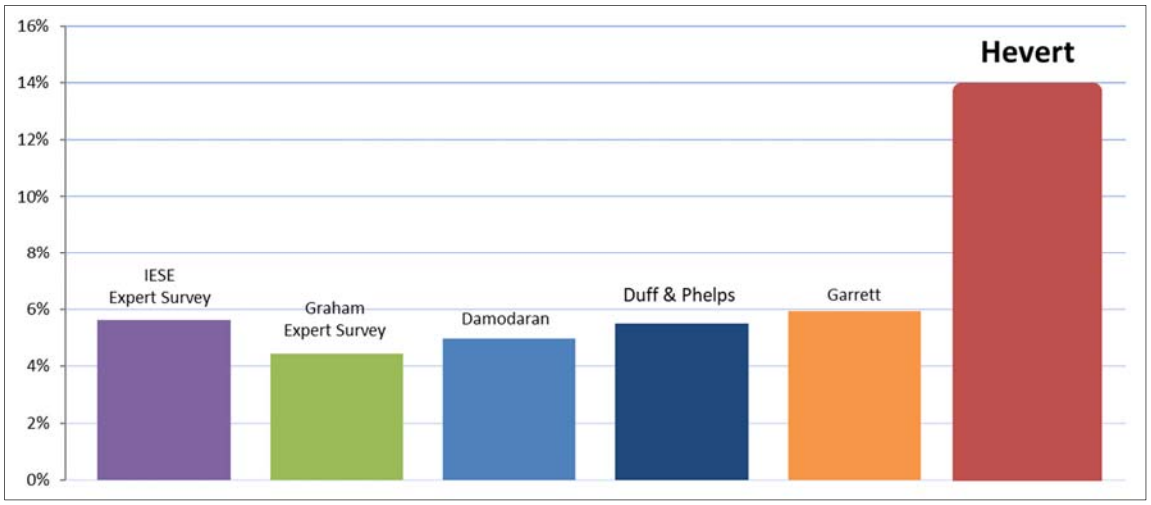
[102] Attachment DJG-1-10.

highest reasonable ERP I could find or calculate, and more than double the average ERP reported by thousands of firms and analysts across the country.[103]

Q. Please discuss and illustrate how Mr. Hevert's ERP compares with other estimates for the ERP.

A. As discussed above, Graham and Harvey's 2018 expert survey reports an average ERP of 4.4%. The 2019 IESE Business School expert survey reports an average ERP of 5.6%. Similarly, Duff & Phelps recently estimated an ERP of 5.5%. The following chart illustrates that Mr. Hevert's ERP estimate is far out of line with industry norms[104].

Figure 11:
Equity Risk Premium Comparison



[103] *Id.*

[104] The ERP estimated by Dr. Damodaran is the average of several ERP estimates under slightly differing assumptions.

When compared with other independent sources for the ERP (as well as my estimate), which do not have a wide variance, Mr. Hevert's ERP estimate is clearly not within the range of reasonableness. As a result, his CAPM cost of equity estimate is overstated.

2. Other Risk Premium Analyses

Q. Did you review Mr. Hevert's other risk premium analyses?

A. Yes. I am addressing Mr. Hevert's other risk premium analyses in this section because the CAPM itself is a risk premium model. In this case, Mr. Hevert conducted what he calls a "bond yield plus risk premium" analysis.[105] Many utility ROE witnesses conduct what they call a "historical risk premium analysis," "bond yield plus risk premium analysis" or "allowed return premium analysis." In short, these types of analyses simply compare the difference between awarded ROEs in the past with bond yields.

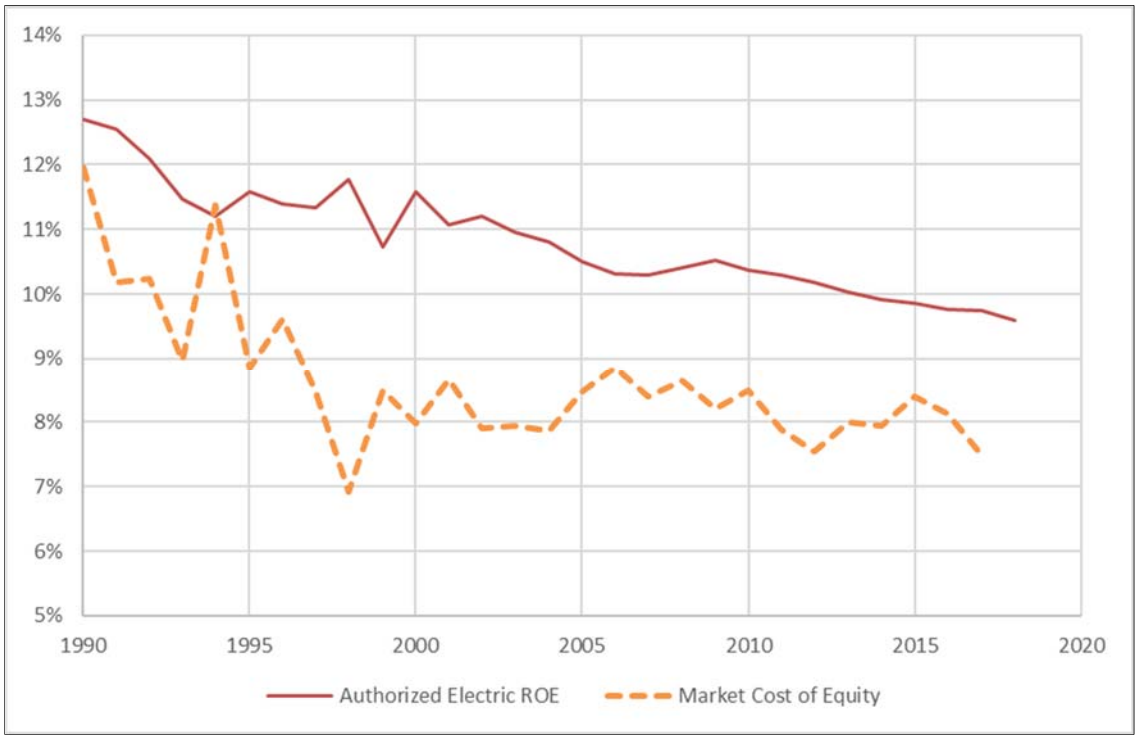
Q. Do you agree with the results of Mr. Hevert's risk premium analysis?

A. No. I disagree with the entire premise of the analysis. First, Mr. Hevert looked at awarded ROEs dating back to 1980 – a direct contradiction to Mr. Hevert's claim that the cost of equity is a "forward-looking" concept.[106] As discussed earlier in this testimony, it is clear that awarded ROEs are consistently higher than market-based cost of equity, and they have been for many years. Thus, these types of risk premium "models" are merely clever devices used to perpetuate the discrepancy between awarded ROEs and market-based cost

[105] Direct Testimony of Robert B. Hevert, p. 35, lines 9-18.

[106] Direct Testimony of Robert B. Hevert, p. 13, lines 4-7.

of equity. In other words, since awarded ROEs are consistently higher than market-based cost, a model that simply compares the discrepancy between awarded ROEs and any market-based factor (such as bond yields) will simply ensure that discrepancy continues. The following graph shows the clear disconnect between awarded ROEs and utility cost of equity.[107]



Since it is indisputable that utility stocks are <u>less risky</u> than average stock in the market (with a beta equal to 1.0), utility cost of equity is <u>below</u> the market cost of equity (the dotted line in the graph above). The gap between the market cost of equity and inflated ROEs represents an excess transfer of wealth from customers to shareholders.

[107] *See also* Attachment DJG-1-14.

Furthermore, the risk premium analysis offered by Mr. Hevert is completely unnecessary when we already have a real risk premium model to use: the CAPM. The CAPM itself is a "risk premium" model; 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 decades for the same purpose we are using it in this case – to estimate cost of equity.

In stark contrast to the Nobel-prize-winning CAPM, the risk premium models relied upon by utility ROE 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 almost exclusively found in the texts and testimonies of such 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.

VIII. OTHER COST OF CAPITAL ISSUES

Q. Do you have any comments on some of the other issues raised in Mr. Hevert's testimony?

A. Yes. I have a response to Mr. Hevert's testimony regarding business risk and his general criticisms of the CAPM and DCF Model.

A. Firm-Specific Business Risks

Q. Describe Mr. Hevert's testimony regarding business risks.

A. In his direct testimony, Mr. Hevert suggests that various firm-specific risk factors should have an increasing effect on I&M's cost of equity, including the risks associated with the Company's generation portfolio and related environmental regulations, the risk associated with customer concentration, and the Company's planned capital expenditures among other factors.[108]

Q. Do you agree with Mr. Hevert that these firm-specific risk factors should influence I&M's cost of equity or awarded ROE?

A. No. The Commission should not consider these firm-specific business risk factors in making their decision on a fair awarded ROE for I&M. As discussed above, it is a well-known concept in finance that firm-specific risks are unrewarded by the market. Scholars widely recognize the fact that market risk, or "systematic risk," is the only type of risk for which investors expect a return for bearing.[109] This important concept is illustrated again in the figure below.

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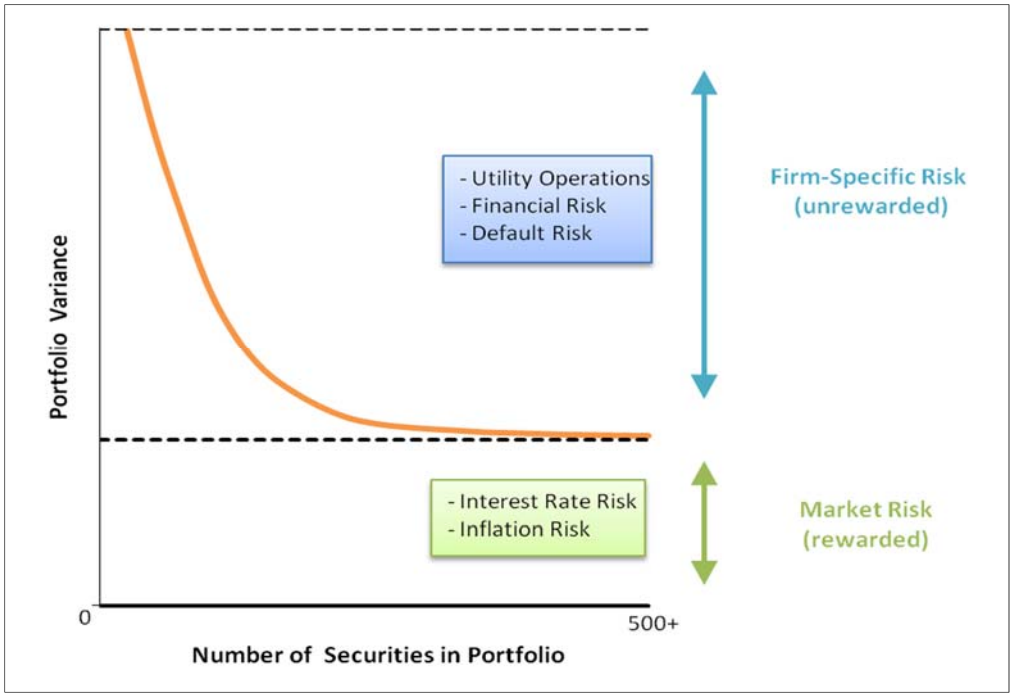
[108] Direct Testimony of Robert B. Hevert, p. 41, lines 8-11.

[109] *See* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 180 (3rd ed., South Western Cengage Learning 2010).



Unlike interest rate risk, inflation risk, and other market risks that affect all companies in the stock market, the risk factors discussed by Mr. Hevert are merely business risks specific to I&M. Investors do not require additional compensation for assuming these firm-specific business risk. Another way to consider this issue is to look at the CAPM and DCF Model. Did the creators of these highly regarded cost of equity models, which have been relied upon for decades by companies and investors to make crucial business decisions, simply neglect to add an input for business risks? Of course not. 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. Neither model includes an input for business risks due to the well-known fact that investors do not expect a return for such risks. 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.

B. Mr. Hevert's Criticisms of the CAPM and DCF Model

Q. Did Mr. Hevert make any general criticism of the DCF Model and CAPM?

A. Yes. According to Mr. Hevert, the low and high ends of the range of results of his CAPM and DCF Models are not likely to be reasonable estimates of the Company's cost of equity.[110] In support of this assertion Mr. Hevert simply relies on "the returns recently authorized in other jurisdictions."[111]

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

A. No (although I would agree that the high ends of the range of results from Mr. Hevert's cost of equity models are unreasonably high). First, numerous ROE experts representing utilities, customers, and commission staffs have been relying on the CAPM and DCF Model for decades to estimate utility cost of equity. Likewise, investors, company managers, financial analysts, and academics have been using the same models to estimate the cost of equity of competitive firms for decades. These models have stood the test of time and are generally considered to be valuable models among the financial community. They are discussed in nearly every textbook on finance and valuation.

As discussed and illustrated above, interest rates and capital costs have generally declined over the past 30 years. Likewise, authorized ROEs have also generally declined

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[110] Direct Testimony of Robert B. Hevert, p. 4, lines17-23.

[111] *Id.*

over the same period, though not at a sufficient pace to keep track with declining capital costs (note the "sticky" ROE phenomenon discussed above). It is no surprise that any objective application of either the CAPM or DCF Model would produce results that are lower than the ROEs that have typically been awarded to utility shareholders in the past. Now that capital costs are at historic lows, it is disingenuous to suddenly criticize the CAPM and DCF Model for producing lower results. In other words, the CAPM and DCF Models have not changed over the years – they have been just as reliable and accurate as they always have been. Now that capital costs are at historic lows, it is inappropriate (though completely predictable) that utility ROE witnesses suddenly have a problem with the same models they have been using for decades to estimate utility cost of equity. As discussed further below, there are other objective measures to assess the accuracy of the CAPM and DCF results. The fact that these models indicate the market-based cost of equity for a very low-risk utility company is about 6.5% should not surprise anyone.

IX. COST OF EQUITY SUMMARY

Q. Please summarize the results of the CAPM and DCF Model discussed above.

A. The following table shows the cost of equity results from each model I employed in this case.[112]

[112] *See* Attachment DJG-1-12.

Figure 12:
Cost of Equity Summary

Model	Cost of Equity
Discounted Cash Flow Model	7.0%
Capital Asset Pricing Model	6.0%
Average	**6.5%**

The cost of equity indicated by the results of the DCF Model and the CAPM is about 6.5%.

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

A. Yes, there is. 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 ERP discussed above. Recall that the risk-free rate plus the ERP 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 the Company's actual cost of equity must lie.

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:[113]

Figure 13:
Market Cost of Equity Summary

Source	Estimate
IESE Survey	8.1%
Graham Harvey Survey	6.9%
Damodaran	7.5%
Garrett	8.5%
Average	7.7%

As shown in this table, the average market cost of equity from these sources is only 7.7%. Therefore, it is not surprising that the CAPM and DCF Model indicate a cost of equity for the Company of only 6.5%. In other words, any cost of equity estimates for the Company (or any regulated utility) that is above the market cost of equity should be viewed as unreasonable.

[113] *See* Attachment DJG-1-13.

X. CONCLUSION AND RECOMMENDATION

Q. Summarize the key points of your cost of capital testimony and recommendation.

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. When the awarded rate of return exceeds the actual cost of capital, it results in an inappropriate transfer of excess wealth from customers to shareholders.

3. The Commission should reject Mr. Hevert's proposed ROE of 10.5%. The models I used in this case indicate the Company's cost of equity is about 6.5%. However, the Commission should gradually reduce the Company's awarded return toward current market-based levels, consistent with the *Hope* Court's *end result* doctrine. I recommend an awarded ROE of 9.1%, which is within a reasonable range of 9.0% – 9.5%. As discussed in my testimony, it is undisputable that utility stocks, including every stock in the proxy group, are less risky than the market portfolio as a whole. Thus, I am recommending an ROE towards the bottom end of the reasonable range.

Q. Does this conclude Part I of your testimony?

A. Yes.

APPENDIX A:

DISCOUNTED CASH FLOW MODEL THEORY

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:[114]

Equation 4:
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.

The DCF Models rely on the following four assumptions:

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

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

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[114] *See* Zvi Bodie, Alex Kane & Alan J. Marcus, *Essentials of Investments* 410 (9th ed., McGraw-Hill/Irwin 2013).

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.

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 5:
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.

In addition to the four assumptions listed above, the Constant Growth DCF Model relies on four additional assumptions as follows:[115]

[115] *Id.* at 254-56.

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.

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.[116]

Equation 6:
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*

[116] *Id*. at 348.

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 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.

APPENDIX B:

CAPITAL ASSET PRICING MODEL THEORY

The Capital Asset Pricing Model ("CAPM") is a market-based model founded on the principle that investors demand higher returns for incurring additional risk.[117] The CAPM estimates this required return. 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 based on risk and return. Return is measured by the mean returns expected from a portfolio of assets; risk is measured by the variance of these portfolio returns;
3. Investors have homogenous expectations of risk and return;
4. Investors have identical time horizons;
5. Information is freely and simultaneously available to investors.
6. There is a risk-free asset, and investors can borrow and lend unlimited amounts at the risk-free rate;
7. There are no taxes, transaction costs, restrictions on selling short, or other market imperfections; and,
8. Total asset quality is fixed, and all assets are marketable and divisible.[118]

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.

The basic CAPM equation is expressed as follows:

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[117] William F. Sharpe, *A Simplified Model for Portfolio Analysis* 277-93 (Management Science IX 1963); *see also* John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 208 (3rd ed., South Western Cengage Learning 2010).

[118] *Id.*

Equation 7:
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.

Raw Beta Calculations and Adjustments

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:[119]

Equation 8:
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*

Betas that are published by various research firms are typically calculated through a regression analysis that considers the movements in price of an individual stock and movements in the price of the overall market portfolio. The betas produced by this regression analysis are considered "raw" betas. There is empirical evidence that raw betas should be adjusted to account

[119] John R. Graham, Scott B. Smart & William L. Megginson, *Corporate Finance: Linking Theory to What Companies Do* 180-81 (3rd ed., South Western Cengage Learning 2010).

for beta's natural tendency to revert to an underlying mean.[120] Some analysts use an adjustment method proposed by Blume, which adjusts raw betas toward the market mean of one.[121] While the Blume adjustment method is popular due to its simplicity, it is arguably arbitrary, and some would say not useful at all. According to Dr. Damodaran: "While we agree with the notion that betas move toward 1.0 over time, the [Blume adjustment] strikes us as arbitrary and not particularly useful."[122] The Blume adjustment method is especially arbitrary when applied to industries with consistently low betas, such as the utility industry. For industries with consistently low betas, it is better to employ an adjustment method that adjusts raw betas toward an industry average, rather than the market average. Vasicek proposed such a method, which is preferable to the Blume adjustment method because it allows raw betas to be adjusted toward an industry average, and also accounts for the statistical accuracy of the raw beta calculation.[123] In other words, "[t]he Vasicek adjustment seeks to overcome one weakness of the Blume model by not applying the same adjustment to every security; rather, a security-specific adjustment is made depending on the statistical quality of the regression."[124] The Vasicek beta adjustment equation is expressed as follows:

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

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

[122] *See* Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* 187 (3rd ed., John Wiley & Sons, Inc. 2012).

[123] Oldrich A. Vasicek, *A Note on Using Cross-Sectional Information in Bayesian Estimation of Security Betas* 1233-1239 (Journal of Finance, Vol. 28, No. 5, December 1973).

[124] 2012 Ibbotson Stocks, Bonds, Bills, and Inflation Valuation Yearbook 77-78 (Morningstar 2012).

Equation 9:
Vasicek Beta Adjustment

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

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

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

> While the Vasicek formula looks intimidating, it is really quite simple. The adjusted beta for a company is a weighted average of the company's historical beta and the beta of the market, industry, or peer group. How much weight is given to the company and historical beta depends on the statistical significance of the company beta statistic. If a company beta has a low standard error, then it will have a higher weighting in the Vasicek formula. If a company beta has a high standard error, then it will have lower weighting in the Vasicek formula. An advantage of this adjustment methodology is that it does not force an adjustment to the market as a whole. Instead, the adjustment can be toward an industry or some other peer group. <u>This is most useful in looking at companies in industries that on average have high or low betas</u>.[125]

Thus, the Vasicek adjustment method is statistically more accurate, and is the preferred method to use when analyzing companies in an industry that has inherently low betas, such as the utility industry. The Vasicek method was also confirmed by Gombola, who conducted a study

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

specifically related to utility companies. Gombola concluded that "[t]he strong evidence of auto-regressive tendencies in utility betas lends support to the application of adjustment procedures such as the . . . adjustment procedure presented by Vasicek."[126] Gombola also concluded that adjusting raw betas toward the market mean of 1.0 is too high, and that "[i]nstead, they should be adjusted toward a value that is less than one."[127] In conducting the Vasicek adjustment on betas in previous cases, it reveals that utility betas are even lower than those published by Value Line.[128] Gombola's findings are particular important here, because his study was conducted specifically on utility companies. This evidence indicates that using Value Line's betas in a CAPM cost of equity estimate for a utility company may lead to overestimated results. Regardless, adjusting betas to a level that is higher than Value Line's betas is not reasonable, and it would produce CAPM cost of equity results that are too high.

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

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

[128] *See e.g.* Responsive Testimony of David J. Garrett, filed March 21, 2016 in Cause No. PUD 201500273 before the Corporation Commission of Oklahoma (the Company's 2015 rate case), at pp. 56 – 59.

101 Park Avenue, Suite 1125
Oklahoma City, OK 73102

DAVID J. GARRETT

405.249.1050
dgarrett@resolveuc.com

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 – 2018
Participate in management of operations, attend meetings, review performance, compensation, and financial records. Assist in fundraising events.

Group Facilitator & Fundraiser — 2014 – 2018
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.

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.

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Public Utilities Commission of the State of California	Pacific Gas & Electric Company	18-12-009	Depreciation rates, service lives, net salvage	The Utility Reform Network
Oklahoma Corporation Commission	The Empire District Electric Company	PUD 201800133	Cost of capital, authorized ROE, depreciation rates	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Arkansas Public Service Commission	Southwestern Electric Power Company	19-008-U	Cost of capital, depreciation rates, net salvage	Western Arkansas Large Energy Consumers
Public Utility Commission of Texas	CenterPoint Energy Houston Electric	PUC 49421	Depreciation rates, service lives, net salvage	Texas Coast Utilities Coalition
Massachusetts Department of Public Utilities	Massachusetts Electric Company and Nantucket Electric Company	D.P.U. 18-150	Depreciation rates, service lives, net salvage	Massachusetts Office of the Attorney General, Office of Ratepayer Advocacy
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 201800140	Cost of capital, authorized ROE, depreciation rates	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	D2018.9.60	Depreciation rates, service lives, net salvage	Montana Consumer Counsel and Denbury Onshore
Indiana Utility Regulatory Commission	Northern Indiana Public Service Company	45159	Depreciation rates, grouping procedure, demolition costs	Indiana Office of Utility Consumer Counselor
Public Service Commission of the State of Montana	NorthWestern Energy	D2018.2.12	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Oklahoma Corporation Commission	Public Service Company of Oklahoma	PUD 201800097	Depreciation rates, service lives, net salvage	Oklahoma Industrial Energy Consumers and Wal-Mart
Nevada Public Utilities Commission	Southwest Gas Corporation	18-05031	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	Texas-New Mexico Power Company	PUC 48401	Depreciation rates, service lives, net salvage	Alliance of Texas-New Mexico Power Municipalities
Oklahoma Corporation Commission	Oklahoma Gas & Electric Company	PUD 201700496	Depreciation rates, service lives, net salvage	Oklahoma Industrial Energy Consumers and Oklahoma Energy Results
Maryland Public Service Commission	Washington Gas Light Company	9481	Depreciation rates, service lives, net salvage	Maryland Office of People's Counsel
Indiana Utility Regulatory Commission	Citizens Energy Group	45039	Depreciation rates, service lives, net salvage	Indiana Office of Utility Consumer Counselor
Public Utility Commission of Texas	Entergy Texas, Inc.	PUC 48371	Depreciation rates, decommissioning costs	Texas Municipal Group
Washington Utilities & Transportation Commission	Avista Corporation	UE-180167	Depreciation rates, service lives, net salvage	Washington Office of Attorney General

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
New Mexico Public Regulation Commission	Southwestern Public Service Company	17-00255-UT	Cost of capital and authorized rate of return	HollyFrontier Navajo Refining; Occidental Permian
Public Utility Commission of Texas	Southwestern Public Service Company	PUC 47527	Depreciation rates, plant service lives	Alliance of Xcel Municipalities
Public Service Commission of the State of Montana	Montana-Dakota Utilities Company	D2017.9.79	Depreciation rates, service lives, net salvage	Montana Consumer Counsel
Florida Public Service Commission	Florida City Gas	20170179-GU	Cost of capital, depreciation rates	Florida Office of Public Counsel
Washington Utilities & Transportation Commission	Avista Corporation	UE-170485	Cost of capital and authorized rate of return	Washington Office of Attorney General
Wyoming Public Service Commission	Powder River Energy Corporation	10014-182-CA-17	Credit analysis, cost of capital	Private customer
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201700151	Depreciation, terminal salvage, risk analysis	Oklahoma Industrial Energy Consumers
Public Utility Commission of Texas	Oncor Electric Delivery Company	PUC 46957	Depreciation rates, simulated analysis	Alliance of Oncor Cities
Nevada Public Utilities Commission	Nevada Power Company	17-06004	Depreciation rates, service lives, net salvage	Nevada Bureau of Consumer Protection
Public Utility Commission of Texas	El Paso Electric Company	PUC 46831	Depreciation rates, interim retirements	City of El Paso
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-24	Accelerated depreciation of North Valmy plant	Micron Technology, Inc.
Idaho Public Utilities Commission	Idaho Power Company	IPC-E-16-23	Depreciation rates, service lives, net salvage	Micron Technology, Inc.
Public Utility Commission of Texas	Southwestern Electric Power Company	PUC 46449	Depreciation rates, decommissioning costs	Cities Advocating Reasonable Deregulation
Massachusetts Department of Public Utilities	Eversource Energy	D.P.U. 17-05	Cost of capital, capital structure, and rate of return	Sunrun Inc.; Energy Freedom Coalition of America
Railroad Commission of Texas	Atmos Pipeline - Texas	GUD 10580	Depreciation rates, grouping procedure	City of Dallas
Public Utility Commission of Texas	Sharyland Utility Company	PUC 45414	Depreciation rates, simulated analysis	City of Mission
Oklahoma Corporation Commission	Empire District Electric Company	PUD 201600468	Cost of capital, depreciation rates	Oklahoma Industrial Energy Consumers

Utility Regulatory Proceedings

Regulatory Agency	Utility Applicant	Docket Number	Issues Addressed	Parties Represented
Railroad Commission of Texas	CenterPoint Energy Texas Gas	GUD 10567	Depreciation rates, simulated plant analysis	Texas Coast Utilities Coalition
Arkansas Public Service Commission	Oklahoma Gas & Electric Company	160-159-GU	Cost of capital, depreciation rates, terminal salvage	Arkansas River Valley Energy Consumers; Wal-Mart
Florida Public Service Commission	Peoples Gas	160-159-GU	Depreciation rates, service lives, net salvage	Florida Office of Public Counsel
Arizona Corporation Commission	Arizona Public Service Company	E-01345A-16-0036	Cost of capital, depreciation rates, terminal salvage	Energy Freedom Coalition of America
Nevada Public Utilities Commission	Sierra Pacific Power Company	16-06008	Depreciation rates, net salvage, theoretical reserve	Northern Nevada Utility Customers
Oklahoma Corporation Commission	Oklahoma Gas & Electric Co.	PUD 201500273	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Public Service Co. of Oklahoma	PUD 201500208	Cost of capital, depreciation rates, terminal salvage	Public Utility Division
Oklahoma Corporation Commission	Oklahoma Natural Gas Company	PUD 201500213	Cost of capital, depreciation rates, net salvage	Public Utility Division

Proxy Group Summary

Company	Ticker	[1] Market Cap. ($ millions)	[2] Market Category	[3] Value Line Safety Rank	[4] Financial Strength
ALLETE, Inc.	ALE	4,300	Mid Cap	2	A
Alliant Energy Corporation	LNT	11,400	Large Cap	2	A
Ameren Corporation	AEE	18,000	Large Cap	2	A
Avangrid, Inc.	AGR	15,000	Large Cap	2	B++
Black Hills Corporation	BKH	4,800	Mid Cap	2	A
CMS Energy Corporation	CMS	16,000	Large Cap	2	B++
DTE Energy Company	DTE	23,000	Large Cap	2	B++
Duke Energy Corporation	DUK	65,000	Large Cap	2	A
El Paso Electric	EE	2,700	Mid Cap	2	B++
Evergy, Inc	EVRG	14,000	Large Cap	2	B++
Hawaiian Electric Industries, Inc.	HE	4,800	Mid Cap	2	A
NextEra Energy, Inc.	NEE	91,000	Large Cap	1	A+
NorthWestern Corporation	NWE	3,700	Mid Cap	2	B++
OGE Energy Corp.	OGE	8,500	Mid Cap	2	A
Otter Tail Corporation	OTTR	2,000	Mid Cap	2	A
Pinnacle West Capital Corporation	PNW	10,000	Large Cap	1	A+
PNM Resources, Inc.	PNM	3,900	Mid Cap	3	B+
Portland General Electric Company	POR	4,900	Mid Cap	2	B++
Southern Company	SO	55,000	Large Cap	2	A
WEC Energy Group, Inc.	WEC	26,000	Large Cap	1	A+
Xcel Energy Inc.	XEL	31,000	Large Cap	1	A+

[1], [3], [4] Value Line Investment Survey

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

DCF Stock and Index Prices

Attachment DJG-1-3

Ticker	^GSPC	ALE	LNT	AEE	AGR	BKH	CMS	DTE	DUK	EE	EVRG	HE	NEE	NWE	OGE	OTTR	PNW	PNM	POR	SO	WEC	XEL
30-day Average	2974	85.84	49.68	76.11	50.05	79.12	58.28	129.23	88.49	66.12	60.94	44.32	209.11	71.50	42.83	52.54	92.90	49.89	54.89	56.09	86.08	60.58
Standard Deviation	44.5	1.27	0.58	0.63	0.82	1.08	0.60	1.42	1.02	0.34	0.47	0.48	2.38	1.58	0.43	0.57	1.23	0.63	0.48	0.77	1.43	0.65
06/27/19	2925	82.12	48.58	74.65	50.28	77.80	57.13	127.56	88.55	65.58	60.07	43.22	204.55	71.86	41.78	52.04	92.99	50.56	53.91	55.08	83.08	59.28
06/28/19	2942	83.21	48.73	75.11	50.50	78.17	57.53	127.88	88.24	65.40	60.15	43.55	204.86	72.15	42.20	52.81	93.33	50.61	54.17	55.28	83.37	59.49
07/01/19	2964	82.99	48.64	75.21	50.41	78.06	57.28	128.28	88.01	65.29	60.16	43.50	204.02	71.83	42.30	52.23	93.17	50.59	53.94	54.84	83.13	59.43
07/02/19	2973	84.60	49.34	75.90	50.87	79.28	57.85	129.84	89.14	65.57	60.65	43.82	207.66	72.73	42.82	52.41	94.23	50.56	54.49	55.86	84.25	60.15
07/03/19	2996	86.02	49.82	76.52	50.90	79.66	58.59	131.09	90.10	65.80	61.36	44.22	208.73	73.39	43.24	52.79	94.86	50.95	55.14	56.31	85.13	60.71
07/05/19	2990	86.07	49.60	76.45	51.09	79.39	58.33	130.87	89.68	66.16	61.53	44.35	208.11	73.38	43.28	52.75	94.53	50.76	55.01	56.36	85.02	60.69
07/08/19	2976	86.31	49.58	76.47	51.07	79.41	58.49	131.03	89.66	66.00	61.29	44.37	209.13	73.23	43.17	52.84	94.59	50.34	55.02	56.31	85.29	60.85
07/09/19	2980	86.22	49.76	76.61	50.80	79.88	58.49	131.22	89.40	65.81	61.45	44.30	208.16	73.18	43.16	52.98	94.75	50.36	55.54	56.56	85.70	60.89
07/10/19	2993	86.43	50.01	76.65	51.20	80.21	58.53	131.56	89.63	66.03	61.69	44.46	209.48	73.25	43.05	52.87	94.69	50.31	55.44	56.91	86.13	61.17
07/11/19	3000	86.99	49.93	76.68	51.05	80.58	58.61	131.62	89.45	66.10	61.55	44.62	210.40	73.29	43.37	52.43	93.95	50.10	55.21	56.49	86.12	61.19
07/12/19	3014	86.86	49.50	76.16	49.93	79.97	58.19	130.40	88.70	66.05	61.14	44.58	208.73	72.69	43.17	52.22	92.76	49.22	54.52	55.67	85.47	60.80
07/15/19	3014	86.88	49.65	76.29	49.60	79.77	58.23	129.99	89.38	66.05	60.98	44.57	208.85	72.53	43.10	52.07	93.02	49.01	54.82	56.11	86.35	61.18
07/16/19	3004	86.73	49.60	76.23	49.40	79.96	58.02	129.55	89.03	66.20	61.06	44.51	207.88	72.85	43.03	52.54	92.55	49.12	55.30	55.66	86.14	61.00
07/17/19	2984	86.53	49.91	76.74	49.56	80.41	58.28	130.08	89.14	66.15	61.02	44.62	209.91	72.82	43.13	52.47	93.29	49.50	55.27	55.79	86.90	61.28
07/18/19	2995	87.38	50.49	77.16	49.78	81.12	58.74	131.36	89.79	66.29	61.51	45.08	212.36	73.27	43.54	52.74	94.39	50.01	55.72	56.13	87.85	61.93
07/19/19	2977	85.92	49.58	75.98	49.17	79.56	57.88	128.79	88.45	66.32	60.79	44.31	209.73	71.59	42.74	51.92	92.84	49.33	54.61	55.27	86.31	60.77
07/22/19	2985	85.56	49.54	76.28	48.85	79.29	57.91	128.61	88.15	66.09	60.58	44.26	209.36	71.13	42.66	51.68	92.61	49.46	54.43	55.48	86.28	60.71
07/23/19	3005	85.56	49.24	76.23	48.50	78.74	57.89	128.17	87.68	66.09	60.67	44.15	207.30	70.81	42.57	51.82	92.09	49.65	54.66	55.42	85.76	60.41
07/24/19	3020	85.83	49.16	76.43	48.59	78.28	57.63	127.71	87.18	66.12	60.73	44.39	210.06	71.30	42.65	52.39	91.06	49.87	54.84	55.64	85.80	60.46
07/25/19	3004	85.52	49.04	76.25	48.98	78.47	57.58	128.06	86.49	66.10	60.58	44.35	207.63	70.71	42.31	52.27	90.33	49.71	54.65	55.36	85.86	60.19
07/26/19	3026	86.59	49.44	76.59	48.97	79.52	58.30	129.37	86.91	66.31	60.72	44.56	209.17	71.17	42.56	53.21	91.28	50.20	55.08	55.74	86.66	60.51
07/29/19	3021	87.24	49.80	76.85	49.62	80.11	58.79	128.98	87.79	66.21	61.20	44.96	211.38	70.99	43.05	53.24	92.37	50.21	55.34	56.11	87.50	60.98
07/30/19	3013	87.10	49.67	76.21	50.31	79.24	58.17	127.95	87.74	66.43	60.82	44.73	209.39	70.19	43.01	53.51	91.19	50.02	55.21	55.29	86.66	60.59
07/31/19	2980	86.95	49.54	75.69	50.55	79.15	57.84	127.11	86.72	66.26	60.49	44.80	207.17	69.92	42.95	53.38	91.22	49.38	54.85	56.20	85.46	59.61
08/01/19	2954	86.55	49.98	76.64	51.02	79.93	58.99	129.05	87.50	66.60	60.57	44.61	210.26	69.92	43.16	53.51	91.97	50.17	55.40	56.98	87.18	60.76
08/02/19	2932	85.11	50.13	75.74	50.17	78.59	58.70	128.66	88.12	66.56	60.83	44.36	211.41	69.46	43.10	53.03	92.49	48.85	54.40	57.36	86.56	59.82
08/05/19	2845	85.00	49.75	75.05	49.22	77.08	58.22	126.92	86.96	66.54	60.41	43.32	208.05	68.21	41.96	51.28	91.55	48.62	54.30	55.93	87.03	59.63
08/06/19	2882	85.10	50.44	75.00	50.37	76.67	58.90	127.82	88.92	66.42	61.12	43.78	211.40	68.44	42.49	51.67	93.02	49.04	54.70	56.94	87.89	60.43
08/07/19	2884	85.21	50.69	75.22	50.08	77.35	59.11	128.18	88.84	66.53	61.01	44.06	212.87	68.96	42.36	52.14	93.01	49.52	54.99	57.45	88.25	60.79
08/08/19	2938	86.51	51.34	76.32	50.79	78.03	60.07	129.29	89.31	66.58	61.93	45.05	215.22	69.83	42.99	52.99	92.78	50.53	55.60	58.19	89.30	61.64

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

DCF Dividend Yields

Company	Ticker	[1] Dividend	[2] Stock Price	[3] Dividend Yield
ALLETE, Inc.	ALE	0.587	85.84	0.68%
Alliant Energy Corporation	LNT	0.355	49.68	0.71%
Ameren Corporation	AEE	0.475	76.11	0.62%
Avangrid, Inc.	AGR	0.440	50.05	0.88%
Black Hills Corporation	BKH	0.505	79.12	0.64%
CMS Energy Corporation	CMS	0.382	58.28	0.66%
DTE Energy Company	DTE	0.945	129.23	0.73%
Duke Energy Corporation	DUK	0.945	88.49	1.07%
El Paso Electric	EE	0.385	66.12	0.58%
Evergy, Inc	EVRG	0.475	60.94	0.78%
Hawaiian Electric Industries, Inc.	HE	0.320	44.32	0.72%
NextEra Energy, Inc.	NEE	1.250	209.11	0.60%
NorthWestern Corporation	NWE	0.575	71.50	0.80%
OGE Energy Corp.	OGE	0.365	42.83	0.85%
Otter Tail Corporation	OTTR	0.350	52.54	0.67%
Pinnacle West Capital Corporation	PNW	0.738	92.90	0.79%
PNM Resources, Inc.	PNM	0.290	49.89	0.58%
Portland General Electric Company	POR	0.385	54.89	0.70%
Southern Company	SO	0.620	56.09	1.11%
WEC Energy Group, Inc.	WEC	0.590	86.08	0.69%
Xcel Energy Inc.	XEL	0.405	60.58	0.67%
Average		**$0.54**	**$74.50**	**0.74%**

[1] Most recent reported quarterly dividends per share. Nasdaq.com

[2] Average stock price from DJG stock price exhibit.

[3] = [1] / [2] (quarterly)

DCF Terminal Growth Rate Determinants

Terminal Growth Determinants	Rate	
Nominal GDP	3.9%	[1]
Inflation	2.0%	[2]
I&M Customer Growth (to 2038)	0.1%	[3]
Risk Free Rate	2.3%	[4]
Highest	**3.9%**	

[1], [2] CBO Long-Term Budget Outlook 2019 - 2049 (p. 30)

[3] I&M 2018-19 IRP Public Summary, p. 2.

[4] From DJG risk-free rate exhibit

DCF Final Results

[1]	[2]	[3]	[4]
Dividend (d_0)	Stock Price (P_0)	Growth Rate (g)	**DCF Result**
$0.54	$74.50	3.90%	**7.0%**

[1] Average proxy dividend from DJG dividend exhibit

[2] Average proxy stock price from DJG dividend exhibit

[3] Highest growth rate from DJG growth determinant exhibit

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

CAPM Risk-Free Rate

Date	Rate
06/27/19	2.52%
06/28/19	2.52%
07/01/19	2.55%
07/02/19	2.51%
07/03/19	2.47%
07/05/19	2.54%
07/08/19	2.53%
07/09/19	2.54%
07/10/19	2.57%
07/11/19	2.65%
07/12/19	2.64%
07/15/19	2.61%
07/16/19	2.63%
07/17/19	2.57%
07/18/19	2.56%
07/19/19	2.57%
07/22/19	2.58%
07/23/19	2.61%
07/24/19	2.58%
07/25/19	2.60%
07/26/19	2.59%
07/29/19	2.59%
07/30/19	2.58%
07/31/19	2.53%
08/01/19	2.44%
08/02/19	2.39%
08/05/19	2.30%
08/06/19	2.25%
08/07/19	2.22%
08/08/19	2.25%
Average	**2.52%**

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

CAPM Beta Coefficient

Company	Ticker	Beta
ALLETE, Inc.	ALE	0.65
Alliant Energy Corporation	LNT	0.60
Ameren Corporation	AEE	0.60
Avangrid, Inc.	AGR	0.40
Black Hills Corporation	BKH	0.75
CMS Energy Corporation	CMS	0.55
DTE Energy Company	DTE	0.55
Duke Energy Corporation	DUK	0.50
El Paso Electric	EE	0.70
Evergy, Inc	EVRG	0.52
Hawaiian Electric Industries, Inc.	HE	0.55
NextEra Energy, Inc.	NEE	0.60
NorthWestern Corporation	NWE	0.60
OGE Energy Corp.	OGE	0.80
Otter Tail Corporation	OTTR	0.70
Pinnacle West Capital Corporation	PNW	0.55
PNM Resources, Inc.	PNM	0.60
Portland General Electric Company	POR	0.60
Southern Company	SO	0.50
WEC Energy Group, Inc.	WEC	0.50
Xcel Energy Inc.	XEL	0.50
Average		0.59

Betas from Value Line Investment Survey

CAPM Implied Equity Risk Premium Estimate

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Year	Market Value	Operating Earnings	Dividends	Buybacks	Earnings Yield	Dividend Yield	Buyback Yield	Gross Cash Yield
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%
2016	19,268	920	397	536	4.77%	2.06%	2.78%	4.85%
2017	22,821	1,066	420	519	4.67%	1.84%	2.28%	4.12%
2018	21,033	1,282	456	806	6.09%	2.17%	3.83%	6.00%

Cash Yield	4.98%	[9]
Growth Rate	6.04%	[10]
Risk-free Rate	2.52%	[11]
Current Index Value	2,974	[12]

	[13]	[14]	[15]	[16]	[17]
Year	1	2	3	4	5
Expected Dividends	157	166	176	187	198
Expected Terminal Value					3425
Present Value	145	141	138	135	2414
Intrinsic Index Value	2974	[18]			
Required Return on Market	8.46%	[19]			
Implied Equity Risk Premium	**5.9%**	[20]			

[1-4] S&P Quarterly Press Releases, data found at https://us.spindices.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 from DJG risk-free rate exhibit
[12] 30-day average of closing index prices from DJG stock price exhibit
[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

CAPM Equity Risk Premium Results

IESE Business School Survey	5.6%	[1]
Graham & Harvey Survey	4.4%	[2]
Duff & Phelps Report	5.5%	[3]
Damodaran	5.0%	[4]
Garrett	5.9%	[5]
Average	**5.3%**	
Highest	**5.9%**	

[1] IESE Business School Survey 2019

[2] Graham and Harvey Survey 2018

[3] Duff & Phelps 2018

[4] Avg ERP, http://pages.stern.nyu.edu/~adamodar/ , 6-1-19

[5] From DJG implied ERP exhibit

CAPM Final Results

Company	Ticker	[1] Risk-Free Rate	[2] Value Line Beta	[3] Risk Premium	[4] CAPM Results
ALLETE, Inc.	ALE	2.52%	0.650	5.94%	6.4%
Alliant Energy Corporation	LNT	2.52%	0.600	5.94%	6.1%
Ameren Corporation	AEE	2.52%	0.600	5.94%	6.1%
Avangrid, Inc.	AGR	2.52%	0.400	5.94%	4.9%
Black Hills Corporation	BKH	2.52%	0.750	5.94%	7.0%
CMS Energy Corporation	CMS	2.52%	0.550	5.94%	5.8%
DTE Energy Company	DTE	2.52%	0.550	5.94%	5.8%
Duke Energy Corporation	DUK	2.52%	0.500	5.94%	5.5%
El Paso Electric	EE	2.52%	0.700	5.94%	6.7%
Evergy, Inc	EVRG	2.52%	0.523	5.94%	5.6%
Hawaiian Electric Industries, Inc.	HE	2.52%	0.550	5.94%	5.8%
NextEra Energy, Inc.	NEE	2.52%	0.600	5.94%	6.1%
NorthWestern Corporation	NWE	2.52%	0.600	5.94%	6.1%
OGE Energy Corp.	OGE	2.52%	0.800	5.94%	7.3%
Otter Tail Corporation	OTTR	2.52%	0.700	5.94%	6.7%
Pinnacle West Capital Corporation	PNW	2.52%	0.550	5.94%	5.8%
PNM Resources, Inc.	PNM	2.52%	0.600	5.94%	6.1%
Portland General Electric Company	POR	2.52%	0.600	5.94%	6.1%
Southern Company	SO	2.52%	0.500	5.94%	5.5%
WEC Energy Group, Inc.	WEC	2.52%	0.500	5.94%	5.5%
Xcel Energy Inc.	XEL	2.52%	0.500	5.94%	5.5%
Average			0.587		**6.0%**

[1] From DJG risk-free rate exhibit

[2] From DJG beta exhibit

[3] From DJG equity risk premium exhibit

[6] = [1] + [2] * [3]

Cost of Equity Summary

Model	Cost of Equity
Discounted Cash Flow Model	7.0%
Capital Asset Pricing Model	6.0%
Average	**6.5%**

Market Cost of Equity

Source	Estimate	
IESE Survey	8.1%	[1]
Graham Harvey Survey	6.9%	[2]
Damodaran	7.5%	[3]
Garrett	8.5%	[4]
Average	7.7%	

[1] Average reported ERP + riskfree rate

[2] Average reported ERP + risk-free rate

[3] Recent highest reported ERP + risk-free rate

[4] From Implied ERP exhibit

Market Cost of Equity vs. Awarded Returns

Attachment DJG-1-14

	[1]		[2]		[3]		[4]	[5]	[6]	[7]
	Electric Utilities		Gas Utilities		Total Utilities		S&P 500	T-Bond	Risk	Market
Year	ROE	#	ROE	#	ROE	#	Returns	Rate	Premium	COE
1990	12.70%	38	12.68%	33	12.69%	71	-3.06%	8.07%	3.89%	11.96%
1991	12.54%	42	12.45%	31	12.50%	73	30.23%	6.70%	3.48%	10.18%
1992	12.09%	45	12.02%	28	12.06%	73	7.49%	6.68%	3.55%	10.23%
1993	11.46%	28	11.37%	40	11.41%	68	9.97%	5.79%	3.17%	8.96%
1994	11.21%	28	11.24%	24	11.22%	52	1.33%	7.82%	3.55%	11.37%
1995	11.58%	28	11.44%	13	11.54%	41	37.20%	5.57%	3.29%	8.86%
1996	11.40%	18	11.12%	17	11.26%	35	22.68%	6.41%	3.20%	9.61%
1997	11.33%	10	11.30%	12	11.31%	22	33.10%	5.74%	2.73%	8.47%
1998	11.77%	10	11.51%	10	11.64%	20	28.34%	4.65%	2.26%	6.91%
1999	10.72%	6	10.74%	6	10.73%	12	20.89%	6.44%	2.05%	8.49%
2000	11.58%	9	11.34%	13	11.44%	22	-9.03%	5.11%	2.87%	7.98%
2001	11.07%	15	10.96%	5	11.04%	20	-11.85%	5.05%	3.62%	8.67%
2002	11.21%	14	11.17%	19	11.19%	33	-21.97%	3.81%	4.10%	7.91%
2003	10.96%	20	10.99%	25	10.98%	45	28.36%	4.25%	3.69%	7.94%
2004	10.81%	21	10.63%	22	10.72%	43	10.74%	4.22%	3.65%	7.87%
2005	10.51%	24	10.41%	26	10.46%	50	4.83%	4.39%	4.08%	8.47%
2006	10.32%	26	10.40%	15	10.35%	41	15.61%	4.70%	4.16%	8.86%
2007	10.30%	38	10.22%	35	10.26%	73	5.48%	4.02%	4.37%	8.39%
2008	10.41%	37	10.39%	32	10.40%	69	-36.55%	2.21%	6.43%	8.64%
2009	10.52%	40	10.22%	30	10.39%	70	25.94%	3.84%	4.36%	8.20%
2010	10.37%	61	10.15%	39	10.28%	100	14.82%	3.29%	5.20%	8.49%
2011	10.29%	42	9.92%	16	10.19%	58	2.10%	1.88%	6.01%	7.89%
2012	10.17%	58	9.94%	35	10.08%	93	15.89%	1.76%	5.78%	7.54%
2013	10.03%	49	9.68%	21	9.93%	70	32.15%	3.04%	4.96%	8.00%
2014	9.91%	38	9.78%	26	9.86%	64	13.52%	2.17%	5.78%	7.95%
2015	9.85%	30	9.60%	16	9.76%	46	1.38%	2.27%	6.12%	8.39%
2016	9.77%	42	9.54%	26	9.68%	68	11.77%	2.45%	5.69%	8.14%
2017	9.74%	53	9.72%	24	9.73%	77	21.64%	2.41%	5.08%	7.49%
2018	9.59%	48	9.59%	41	9.59%	89	-4.23%	2.68%	5.96%	8.64%

[1], [2], [3] Average annual authorized ROE for electric and gas utilities, RRA Regulatory Focus: Major Rate Case Decisions

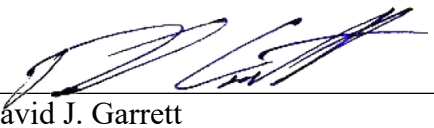
[3] = [1] + [2]

[4], [5], [6] Annual S&P 500 return, 10-year T-bond Rate, and equity risk premium published by NYU Stern School of Business

[7] = [5] + [6] ; Market cost of equity represents the required return for investing in all stocks in the market for a given year

AFFIRMATION

I affirm, under the penalties for perjury, that the foregoing representations are true.

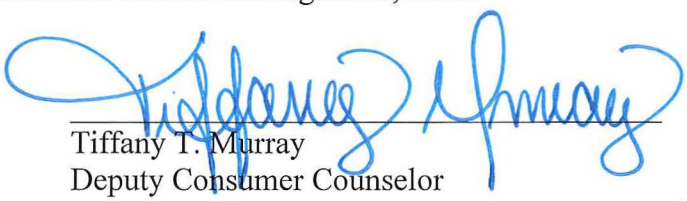


David J. Garrett
Resolve Utility Consulting, Inc.
Indiana Office of Utility Consumer Counselor
Cause No. 45235
Indiana Michigan Power Company

8-19-19
Date

CERTIFICATE OF SERVICE

Indiana Office of Utility Consumer Counselor Public's Exhibit No. 11 (Part I) Testimony of OUCC Witness David J. Garrett has been served upon the following parties of record in the captioned proceeding by electronic service on August 20, 2019.



Tiffany T. Murray
Deputy Consumer Counselor

INDIANA OFFICE OF UTILITY CONSUMER COUNSELOR
115 West Washington Street
Suite 1500 South
Indianapolis, IN 46204
infomgt@oucc.in.gov
317/232-2494 – Phone
317/232-5923 – Facsimile

45235 IN-MI Service List

I&M
Teresa Morton Nyhart
Jeffrey M. Peabody
BARNES & THORNBURG LLP
tnyhart@btlaw.com
jpeabody@btlaw.com

Matthew S. McKenzie
AMERICAN ELECTRIC POWER SERVICE CORP.
msmckenzie@aep.com

CAC and INCAA
Jennifer A. Washburn
Margo Tucker
CITIZENS ACTION COALITION
jwashburn@citact.org
mtucker@citact.org

City of Marion
J. Christopher Janak
Kristina Kern Wheeler
BOSE MCKINNEY & EVANS LLP
cjanak@boselaw.com
kwheeler@boselaw.com

SDI
Robert K. Johnson
RK JOHNSON, ATTORNEY-AT-LAW, INC.
rjohnson@utilitylaw.us

WVPA
Randolph G. Holt
Jeremy L. Fetty
Liane K. Steffes
PARR RICHEY
r_holt@wvpa.com
jfetty@parrlaw.com
lsteffes@parrlaw.com

City of South Bend, Indiana
Robert Glennon & Assoc., P.C.
robertglennonlaw@gmail.com

39 North Conservancy District
Shaw Friedman
FRIEDMAN & ASSOCIATES
sfriedman.associates@frontier.com

Keith Beall
BEALL & BEALL
kbeall@indy.rr.com

Kroger
Kurt J. Boehm
Jody Kyler Cohn
BOEHM, KURTZ & LOWRY
kboehm@bkllawfirm.com
jkylercohn@bkllawfirm.com

Kevin Higgins
ENERGY STRATEGIES, LLC
khiggins@energystrat.com

John P. Cook
JOHN P. COOK & ASSOCIATES
john.cookassociates@earthlink.net

Industrial Group
Bette J. Dodd
Joseph P. Rompala
Anne E. Becker
Amanda Tyler
Ellen Tenant
LEWIS & KAPPES P.C.
bdodd@lewis-kappes.com
jrompala@lewis-kappes.com
abecker@lewis-kappes.com
atyler@lewis-kappes.com
etennant@lewis-kappes.com

City of Fort Wayne, Indiana
Brian C. Bosma
Kevin D. Koons
Ted W. Nolting
KROGER GARDIS & REGAS, LLP
bcb@kgrlaw.com
kdk@kgrlaw.com
twn@kgrlaw.com

Walmart, Inc.
Eric E. Kinder
Barry A. Naum
SPILMAN, THOMAS & BATTLE, PLLC
ekinder@spilmanlaw.com
bnaum@spilmanlw.com

ICC
Jeffrey Earl
BOSE MCKINNEY & EVANS LLP
jearl@boselaw.com

City of Auburn
W. Erik Weber
MEFFORD WEBER AND BLYTHE ATTORNEY AT LAW
erik@lawmwb.com

Mark W. Cooper
Attorney at Law
attymcooper@indy.rr.com

OUCC Consultants
GARRETT GROUP CONSULTING, INC.
Heather A. Garrett
garrett@wgokc.com

Edwin Farrar
edfarrarcpa@yahoo.com

Garry Garrett
ggarrett@garrettgroupllc.com

Mark E. Garrett
mgarrett@garrettgroupllc.com

RESOLVE UTILITY CONSULTING PLLC
David J. Garrett
dgarrett@resolveuc.com

TECHNICAL ASSOCIATES, INC.
Glenn A. Watkins
Jennifer R. Dolen
watkinsg@tai-econ.com
jenny.dolen@tai-econ.com