BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

Complainant,

v.

CASCADIA WATER, LLC

Respondent.

DOCKET UW-240151

RESPONSE TESTIMONY OF DAVID J. GARRETT ON BEHALF OF THE WASHINGTON STATE OFFICE OF THE ATTORNEY GENERAL PUBLIC COUNSEL UNIT

EXHIBIT DJG-1T

November 20, 2024

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EXHIBITS LIST

I. INTRODUCTION & SUMMARY

Q. Please state your name and business address.

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. My business address is 101 Park Ave., Suite 1125, Oklahoma City, Oklahoma 73131.

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 commission, I worked in the Office of General Counsel in regulatory proceedings. In 2012, I began working for the Public Utility Division as a regulatory analyst providing testimony in regulatory proceedings. After leaving the commission, I formed Resolve Utility Consulting PLLC, where I have represented various consumer groups and state agencies in utility regulatory proceedings, primarily in the areas of cost of capital and depreciation. I am a Certified Depreciation Professional 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] *See* David J. Garrett, Exh. DJG-2 (Curriculum Vitae of David J. Garrett).

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

A. I am testifying on behalf of the Public Counsel Unit of the Washington Attorney General's Office (Public Counsel).

Q. Describe the purpose and scope of your testimony in this proceeding.

A. My testimony addresses the proposed rate of return (ROR) of Cascadia Water LLC (Cascadia or the Company) in response to the direct testimony of Company witness Matthew Rowell.

Q. What exhibits are you sponsoring in this proceeding?

A. I am sponsoring the following exhibits:

- Exhibit DJG-2 Curriculum Vitae
- Exhibit DJG-3 Proxy Group Summary
- Exhibit DJG-4 DCF – Stock and Index Prices
- Exhibit DJG-5 DCF – Dividend Yields
- Exhibit DJG-6 DCF – Terminal Growth Determinants
- Exhibit DJG-7 DCF – Final Results
- Exhibit DJG-8 CAPM – Risk-Free Rate Estimate
- Exhibit DJG-9 CAPM – Beta Coefficients
- Exhibit DJG-10 CAPM – Implied ERP Estimate
- Exhibit DJG-11 CAPM – Equity Risk Premium Results
- Exhibit DJG-12 CAPM – Final Results
- Exhibit DJG-13 Cost of Equity Summary
- Exhibit DJG-14 Proxy Group Debt Ratios
- Exhibit DJG-15 Competitive Industry Debt Ratios
- Exhibit DJG-16 Hamada Model Results

II. EXECUTIVE SUMMARY

Q. Please describe Cascadia's position regarding the awarded ROR in this case.

A. In this case, Mr. Rowell supports Cascadia's request for an authorized return on equity (ROE) for Cascadia of 10.9 percent. Mr. Rowell also supports Cascadia's proposed capital structure for ratemaking purposes consisting of 34 percent debt and 66 percent equity. Mr. Rowell relies on the Discounted Cash Flow (DCF)

Model, the Capital Asset Pricing Model (CAPM), and other models.

Q. Please summarize your analyses and conclusions regarding Cascadia's cost of equity.

A. A utility's awarded ROE should be based on an objective estimate of its market-based cost of equity. In estimating Cascadia's cost of equity, I analyzed a proxy group of utility companies with relatively similar risk profiles. Based on this proxy group, I evaluated the results of the two most widely used and widely accepted financial models for calculating cost of equity in utility rate proceedings: the CAPM and DCF Model. My model results are shown in the figure below.

Figure 1
Cost of Equity Model Results

Model	Cost of Equity
CAPM (at Proxy Debt Ratio)	8.6%
Hamada CAPM (at Company-Proposed Debt Ratio)	7.9%
DCF Model (Analyst Growth)	9.0%
DCF Model (Sustainable Growth)	6.4%
Model Average	**8.0%**

Q. Please provide more explanation regarding your cost of equity modeling results.

A. In this case, the cost of equity models I employed indicate a cost of equity range for Cascadia of 6.4–9.0 percent. However, the unadjusted CAPM result of 9.0 percent is not accurate without further adjustment because this result is inextricably connected to the capital structures of the proxy group on which the model was performed. The average debt ratio of the proxy group of 46 percent is

notably higher than Cascadia's debt ratio of only 34 percent. Thus, Cascadia has less financial risk than the proxy group, and this fact must be mathematically accounted for in the results of the CAPM. This can be done using the Hamada Model. According to this model, once the discrepancy between Cascadia's low-risk capital structure and the proxy group's capital structure are aligned, Cascadia's mathematically correct CAPM result is only 7.9 percent.

III. REGULATORY STANDARDS

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 Supreme Court first addressed the meaning of a fair ROR for public utilities.[2] The Court found that "the amount of risk in the business is a most important factor" in determining the appropriate allowed ROR.[3] Later, in two landmark cases, the Court set forth the standards by which utilities are allowed to earn a return on capital investments. In *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*,[4] the Court held:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public . . . but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.[5]

[2] *Wilcox v. Consolidated Gas Co. of N.Y.*, 212 U.S. 19 (1909).
[3] *Id*. at 48.
[4] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n of W Va.*, 262 U.S. 679 (1923).
[5] *Id.* at 692–93.

In *Federal Power Commission v. Hope Natural Gas Company*,[6] the Court expanded on the guidelines set forth in *Bluefield* and stated:

> From the investor or company point of view it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock. By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.[7]

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

Q. Should 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. Moreover, the awarded return must also be fair, just, and reasonable under the circumstances of each case. 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:

[6] *Federal Power Comm'n v. Hope Natl. Gas Co*., 320 U.S. 591 (1944).
[7] *Id.* at 603 (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.[8]

The models I have employed in this case closely estimate the Company's market-based cost of equity. If the Washington Utilities and Transportation Commission (Commission) sets the awarded return based on my lower, and more reasonable, ROR, 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 ROR *higher* than the true cost of capital, it arguably results in an inappropriate transfer of wealth from ratepayers to shareholders.

Q. What does this legal standard mean for determining the awarded return and the cost of capital?

A. 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 reflects 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 factors other than objective market drivers. The cost of capital, on the other hand, should be evaluated objectively and be closely tied to economic

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

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. 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 customers to Company shareholders. Moreover, establishing an awarded return that far exceeds the 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 market-based 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.

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 DCF Model and the CAPM. The specific inputs and calculations for these models are described in more detail below.

Q. Please explain why multiple models are used to estimate the cost of equity.

A. The models used to estimate the cost of equity attempt to measure the ROE 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 analyses 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 utility proxy group that Mr. Rowell used for his analyses. Thus, the differences in my modeling results compared with Mr. Rowell's results are due to the assumptions and inputs of our models rather than the composition of the proxy group.

V. RISK AND RETURN CONCEPTS

Q. Please discuss the general relationship between risk and return.

A. As discussed above, risk is the most important factor for the Commission to consider when determining the allowed return. There is a direct relationship between risk and return: the more (or less) risk an investor assumes, the larger (or smaller) return the investor will demand. There are two primary types of risk:

firm-specific risk and market risk. Firm-specific risk affects individual companies, while market risk affects all companies in the market to varying degrees.

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

A. Firm-specific risk affects individual companies, rather than the entire market. For example, a competitive firm might overestimate customer demand for a new product, resulting in reduced sales revenue. This is an example of a firm-specific risk called "project risk."[9] 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.[10]

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 for bankruptcy at the end of the year. If an investor's portfolio had held only Enron stock at the beginning of

[9] Aswath Damodaran, *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, 62–63 (3rd ed., John Wiley & Sons, 2012).
[10] *See,* Zvi Bodie, et al, *Essentials of Investments*, 149 (9th ed., McGraw-Hill/Irwin, 2013).

2001, this irrational investor would have lost the entire investment by the end of the year due to assuming the full exposure of Enron's firm-specific risk (in that case, imprudent management). On the other hand, a rational, diversified investor who invested the same amount of capital in a portfolio holding every stock in the S&P 500 would have had a much different result that year. The rational investor would have been relatively unaffected by the fall of Enron because their portfolio included 499 other stocks. Each of those stocks, however, would have been affected by various *market* risk factors that occurred that year, including the terrorist attacks on September 11th, 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 minimize firm-specific risk through portfolio diversification?

A. Yes. A fundamental concept in finance is that firm-specific risk can be minimized through diversification.[11] If someone irrationally invested all their funds in one firm (such as Enron), 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 essentially 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

[11] *See,* John R. Graham, et al, *Corporate Finance: Linking Theory to What Companies Do*, at 179–80 (3rd ed., South Western Cengage Learning 2010).

the overall portfolio than it would in a portfolio of just one or a few stocks. Thus, any firm-specific action that changes the stock price of one stock in the diversified portfolio will have only a small impact on the entire portfolio.[12]

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

Q. Do investors expect an additional return for assuming firm-specific risks?

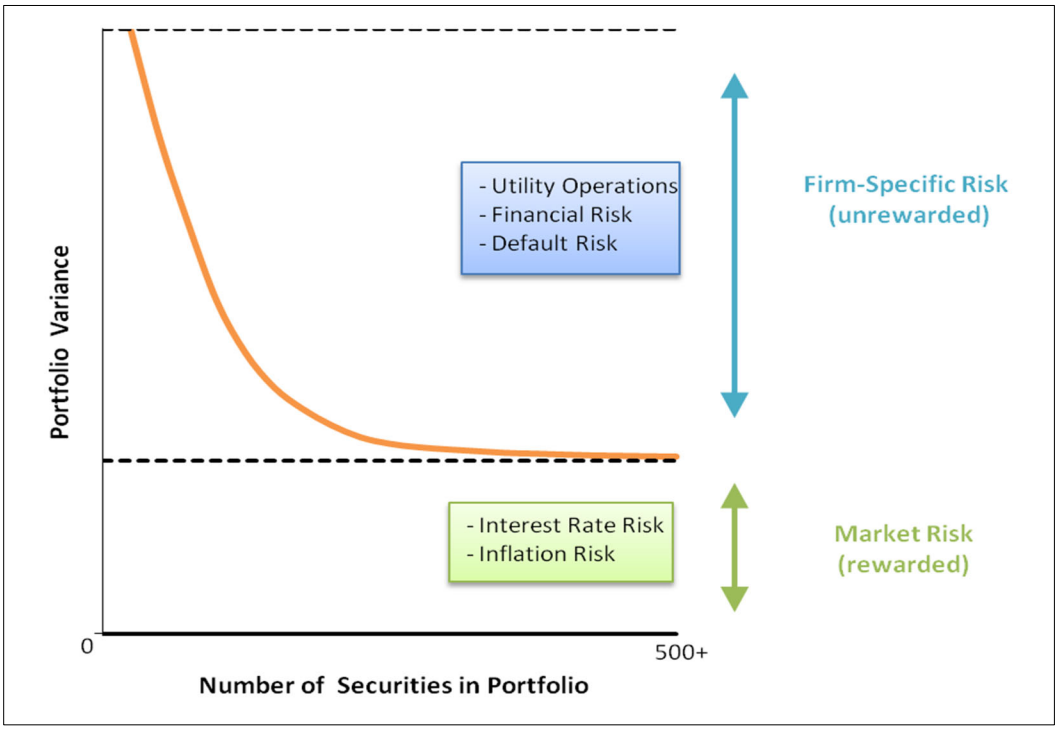
A. No. Because investors eliminate firm-specific risk through diversification, they know they cannot expect a higher return for assuming the firm-specific risk in any one company. Thus, the risks associated with an individual firm's operations are not rewarded by the market. In fact, firm-specific risk 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:

[12] *See* Damodaran, *supra* note 9, at 64.
[13] *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).[14]

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

Figure 2
Effects of Portfolio Diversification



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

[14] *See* Graham, *supra* note 11, at 180.

Commission should consider when determining the allowed return for the utilities it regulates.

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."[15] Beta represents the sensitivity of a given security to the market as a whole. The market portfolio of all stocks has a beta equal to one. Stocks with betas greater than one are relatively more sensitive to market risk than the average stock. For example, if the market increases (decreases) by 1.0 percent, a stock with a beta of 1.5 will, on average, increase (decrease) by 1.5 percent. In contrast, stocks with betas of less than one are less sensitive to market risk, such that if the market increases (decreases) by 1.0 percent, a stock with a beta of 0.5 will, on average, only increase (decrease) by 0.5 percent. Thus, stocks with low betas are relatively insulated from market conditions. The beta term is used in the CAPM to estimate the cost of equity, which is discussed in more detail later.[16]

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

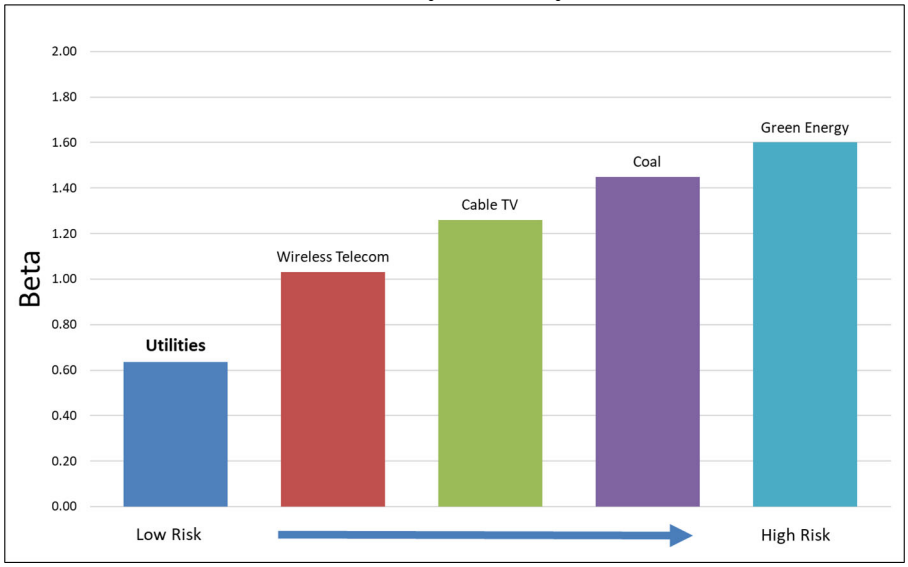
A. Yes. Although market risk affects all firms in the market, it affects different firms to varying degrees. Firms with high betas are affected more than firms with low

[15] *Id*. at 180–81.

[16] Though it will be discussed in more detail later, Garrett Exh DJG-9 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.

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."[17] 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."[18] 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.[19]

Figure 3
Beta by Industry



[17] *See,* Bodie, *supra* note 10, at 382.
[18] *Id*. at 383.
[19] *See,* Betas by Sector (US) (2018) available at http://pages.stern.nyu.edu/~adamodar/. (After clicking the link, click "Data" then "Current Data" then "Risk / Discount Rate" from the drop down menu, then "Total Beta by Industry Sector"). 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.

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 efficient management. Likewise, utility investors can be confident that utility stock prices will not widely fluctuate. So, while it is recognized and accepted 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 Analysis (DCF) Model.

A. The 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.[20] 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.

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.

[20] Present value (PV) is the current value of a future sum of money or stream of cash flows given a specified rate of return. Present value takes the future value and applies a discount rate or the interest rate that could be earned if invested.

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.[21] Analysts sometimes rely on average stock prices for longer periods (*e.g.*, 60, 90, or 180 days). According to the efficient market hypothesis, however, markets reflect all relevant information available at a particular time, and prices adjust instantaneously to the arrival of new information.[22] 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 between when an application is filed and when 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

[21] *See* Garrett, Exh DJG-4 (DCF – Stock and Index Prices).

[22] *See* Eugene F. Fama, *Efficient Capital Markets: A Review of Theory and Empirical Work*, Vol. 25, No. 2 Journal of Fin., at 383 (1970); *see also* Graham, *supra* note 11, at 357. The efficient market hypothesis was formally presented by Eugene Fama in 1970 and is a cornerstone of modern financial theory and practice.

ultimately used to set rates for several years, especially if a stock is experiencing some volatility. Thus, it is preferable to use a short-term average of stock prices, which represents a good balance between adhering to well-established principles of market efficiency while avoiding any unnecessary contentions that may arise from using a single stock price on a given day. The stock prices I used in my DCF analysis are based on 30-day averages of adjusted closing stock prices for each company in the proxy group.[23]

B. Dividend

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

A. The dividend term in the DCF Model represents dividends per share (d_0). I used forward-looking annualized dividends published by Yahoo! Finance for the dividend input to my constant growth DCF Model.[24] Dividing these dividends by the stock prices for each proxy company results in the dividend yield for each company.[25]

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. Rowell, 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

[23] *See* Garrett, Exh DJG-4 (DCF – Stock and Index Prices). 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.
[24] *See* Garrett, Exh. DJG-5 (DCF – Dividend Yields).
[25] *Id*.

are well-suited to be conducted on utilities. The differences between my DCF Model and Mr. Rowell's DCF Model are primarily driven by differences in our growth rate estimates, which are further discussed below.

C. Growth Rate

Q. Please 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 (g) must be estimated. As a result, the growth rate is often the most contentious issue related to DCF model inputs in utility rate cases. The DCF model used in this case is based on the sustainable 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 sustainable 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 sustainable rate forever. 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 sustainable growth rate is more transparent. The growth term of the DCF Model is one of the most important, yet least understood, aspects of cost of equity estimations in utility regulatory proceedings. I provide a more detailed explanation on the various determinants of growth below.

Q. Describe the various determinants of growth that can be considered for the growth rate input in the DCF Model.

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 a long-term growth rate in dividends. This is also known as a "sustainable" growth rate, since this is the growth rate assumed for the company's dividends in perpetuity. That is not to say that these growth determinants cannot be considered when estimating sustainable growth; however, as discussed below, sustainable 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 sources 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 a 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.

2. Analyst Growth Rates

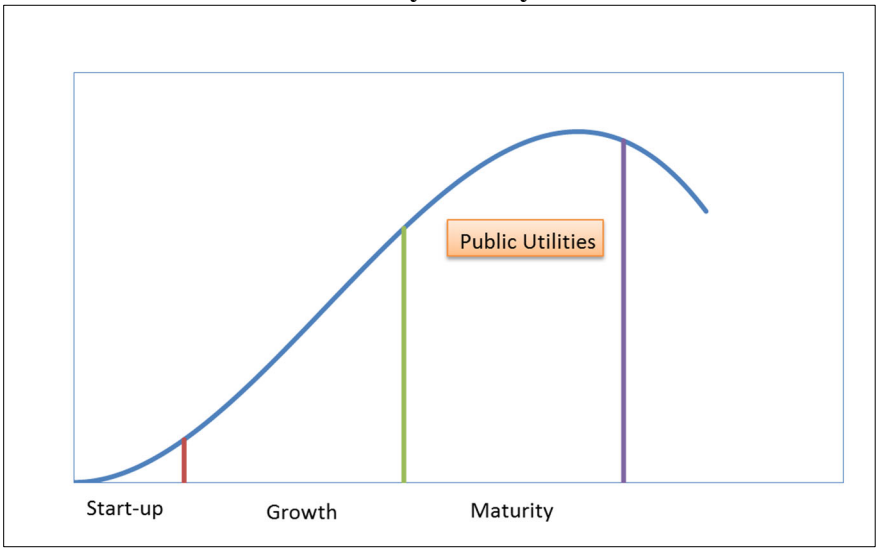
Analyst growth rates refer to short-term projections of earnings growth published by institutional research analysts such as Value Line and Bloomberg.

Analyst growth rates, including the limitations with using them in the DCF Model to estimate utility cost of equity, are discussed in more detail below.

3. Sustainable Growth Rates

In order to make the DCF Model 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 sustainable. 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 "sustainable," low growth stage. Unlike most competitive firms, the growth of regulated utilities is constrained by physical service territories and limited primarily by ratepayer and load growth within those territories. The Figure below illustrates the well-known business/industry life-cycle pattern.

Figure 4
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 sustainable growth rate.

Q. Can the aggregate growth rate of the economy be considered as a limiting factor for the terminal growth rate in the DCF Model?

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.[26] 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: "[i]f 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."[27]

In fact, it is reasonable to assume that a regulated utility would grow at a rate that is <u>less</u> than the U.S. economic growth rate. Unlike competitive firms, which might increase their growth by launching a new product line, franchising,

[26] *See* Damodaran, *supra* note 9, at 306.
[27] *Id*.

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 3.8 percent, which includes an inflation rate of 1.7 percent.[28] 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.

Q. Did you also consider a variation of the DCF Model that incorporates analysts' growth rate projections?

A. Yes. Despite the potential flaws in this variation of the DCF Model, I conducted this model because it is often presented in rate cases and considered by regulators.

Q. Please describe the results of your DCF Models?

A. For my DCF Models, I considered two variations: one using analysts' growth rates and one using a sustainable growth rate. The results of these models are 9.0 percent and 6.4 percent, respectively.

D. Response to Mr. Rowell's DCF Model

Q. Please summarize the results of Mr. Rowell's DCF analyses.

A. Mr. Rowell's DCF Models produced result of 10.14 percent.[29]

[28] Cong. Budget Off., *The 2023 Long-Term Budget Outlook* (June 28, 2023) https://www.cbo.gov/publication/59014.
[29] *See* Matthew J. Rowell, Exh MJR-10.

Q. Do you believe Mr. Rowell's DCF results indicate a reasonable cost of equity estimate for Cascadia?

A. No. Mr. Rowell's DCF result is unreasonably high because he relied on unsustainably high growth rates for his proxy group. Mr. Rowell used an average of five-year historical growth rates in earnings per share, dividends per share, and book value per share.[30] The growth rates are as high as 10.7 percent, with an average growth rate of 7.57 percent for the proxy group.[31] The projected annual long-term growth rate of the entire U.S. economy (as measured in GDP) is less than 4.0 percent, which mean Mr. Rowell is assuming long-term growth rates that are twice as high as the U.S. economic growth rate. Moreover, it is important to note that the historical growth rates Mr. Rowell have used occurred over a short period of time (the past five years). However, in the constant growth DCF Model both Mr. Rowell and I use, the terminal growth rate is assumed to occur in perpetuity. This means, for example, that Mr. Rowell is assuming that American Water Works can sustain an annual growth rate in dividends of 10.7 percent year after year in perpetuity. This is not a reasonable assumption. Growth rates this high are simply not sustainable over the long run. As a result, Mr. Rowell's DCF cost of equity estimate is grossly overstated.

[30] Direct Test. of Matthew J. Rowell, Exh. MJR-1T at. 32:11–19.
[31] Rowell, Exh. MJR-10.

VII. CAPITAL ASSET PRICING MODEL ANALYSIS

Q. Please describe the CAPM.

A. The CAPM is a market-based model founded on the principle that investors expect higher returns for incurring additional risk.[32] The CAPM estimates this expected return. The various assumptions, theories, and equations involved in the CAPM are discussed in more detail in my appendices.[33] 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,[34] and that "the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding *risks*."[35] The CAPM is a useful model because it directly considers the amount of risk inherent in a business and directly measures the most important component of a fair ROR 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.

[32] William F. Sharpe, *A Simplified Model for Portfolio Analysis*, 277–93 (Mgmt. Sci. IX 1963); *see also* Graham, *supra* note 11, at 208.
[33] *See* Appendix B.
[34] *Wilcox*, 212 U.S. at 48 (emphasis added).
[35] *Hope Natural Gas Co*., 320 U.S. at 603 (emphasis added).

A. The Risk-Free Rate

Q. Please 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 devoid of risk, investors often use U.S. Treasury securities to represent the risk-free rate because they accept that those securities essentially contain no default risk. The Treasury issues securities with different maturities, including short-term Treasury Bills, intermediate-term Treasury Notes, and long-term Treasury Bonds.

Q. Is it preferable to use the yield on long-term Treasury bonds for the risk-free rate in the CAPM?

A. Yes. In valuing an asset, investors estimate cash flows over long periods of time. Common stock is viewed as a long-term investment, and the cash flows from dividends are assumed to last indefinitely. As a result, 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 4.36 percent.[36]

[36] *See* Garrett, Exh DJG-8 (CAPM – Risk-Free Rate Estimate).

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 than 1.0 is riskier than the market portfolio. Conversely, a security with a beta less than one is 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 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. 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. In contrast, stocks with betas of less than one are less sensitive to market risk.

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 average beta for the total proxy group is 0.84.[37] 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

[37] *See* Garrett, Exh DJG-9 (CAPM – Beta Coefficients).

thus overestimate the CAPM), I used the betas published by Value Line in the interest of reasonableness.[38]

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 agree that "the single most important variable for making investment decisions is the equity risk premium."[39] 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.

[38] *See* Appendix B for a more detailed discussion of raw beta calculations and adjustments.
[39] Elroy Dimson et al., *Triumph of the Optimists: 101 Years of Global Investment Returns*, at 4 (Princeton Uni. Press 2002).

Q. What are the limitations of relying solely on a historical average to estimate the current or forward-looking ERP?

A. Some investors may rely on the historic ERP because it is convenient and easy to calculate. But what matters in the CAPM model is the current and forward-looking risk premium.[40] 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.[41] 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.[42] 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 % and an arithmetic mean risk premium . . . that falls within a range from a little below 4 to a little above 5 %.[43]

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

[40] Graham, *supra* note 11, at 330.
[41] Dimson, *supra* note 39, at 34.
[42] *Id*. at 194.
[43] *Id*.

> 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%.[44]

Regardless of the variations in historic ERP estimates, many leading 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."[45]

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 primarily 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. The IESE Business School conducts such a survey each year. Its 2024 expert survey reported an average ERP of 5.5 percent.[46]

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[44] Damodaran, *Equity Risk Premiums: Determinants, Estimation and Implications – The 2015 Edition*, at 17 (N.Y. Uni. 2015).
[45] Graham, *supra* note 11, at 330.
[46] Pablo Fernandez, et al., *Survey: Market Risk Premium and Risk-Free Rate used for 96 countries in 2024* (IESE Bus. School 2024) Available at https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID4754347_code12696.pdf?abstractid=4754347&mirid=1. (IESE Business School is the graduate business school of the University of Navarra).

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 that has been widely used in finance for many years.[47] 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 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

[47] Myron J. Gordon & Eli Shapiro, *Capital Equipment Analysis: The Required Rate of Profit* at 102–10, Mgmt. Sci. Vol. 3, No. 1 (Oct. 1956).

denominator is the risk-free rate (R_F) plus the discount rate (K). Equation one below 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.[48]

Equation 1
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 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 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 as shown in the following equation.

Equation 2
Implied Equity Risk Premium

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

[48] *See* Garrett, Exh. DJG-10 (CAPM – Implied ERP Estimate) for a detailed calculation.

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 required return on the U.S. equity market of 9.8 percent. I subtracted the risk-free rate to arrive at the implied equity risk premium of 5.1 percent.[49] 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 May 2024 using several implied ERP variations was 4.6 percent.[50]

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 estimated ERP calculated by Dr. Damodaran, and the implied ERP based on my calculations.[51] In addition, I also considered a recent ERP estimate published by Kroll (formerly Duff & Phelps), which is 5.0 percent.[52] The results are presented in the following figure:

[49] *Id*.
[50] Damodaran, *Implied Equity Risk Premium Update,* Damodaran Online http://pages.stern.nyu.edu/~adamodar/ (last visited Nov 18, 2024).
[51] *See also* Garrett, Exh DJG-11 (CAPM – Equity Risk Premium Results).
[52] Kroll, *Cost of Capital Recommendations and Potential Upcoming Changes – February 8, 2024 Update* https://wwwkroll.com/-/media/kroll-images/pdfs/cost-of-capital-recommendations-upcoming-changes-feb-2024.pdf (last visited June 11, 2024).

Figure 5
Equity Risk Premium Results

IESE Business School Survey	5.5%
Kroll (Duff & Phelps) Report	5.0%
Damodaran (average)	4.5%
Garrett	5.2%
Average	**5.0%**

I used the average ERP of 5.0 percent from these sources in my CAPM.

Q. Please explain the final results of your CAPM analysis.

A. Using the inputs for the risk-free rate, beta, and equity risk premium discussed above, I estimate that the Company's CAPM cost of equity is 8.6 percent, but only if the proxy group average debt ratio is assumed; otherwise, the Company's CAPM cost of equity estimate is only 7.9 percent.[53] The CAPM can be displayed graphically through what is known as the Security Market Line (SML). The figure below 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.

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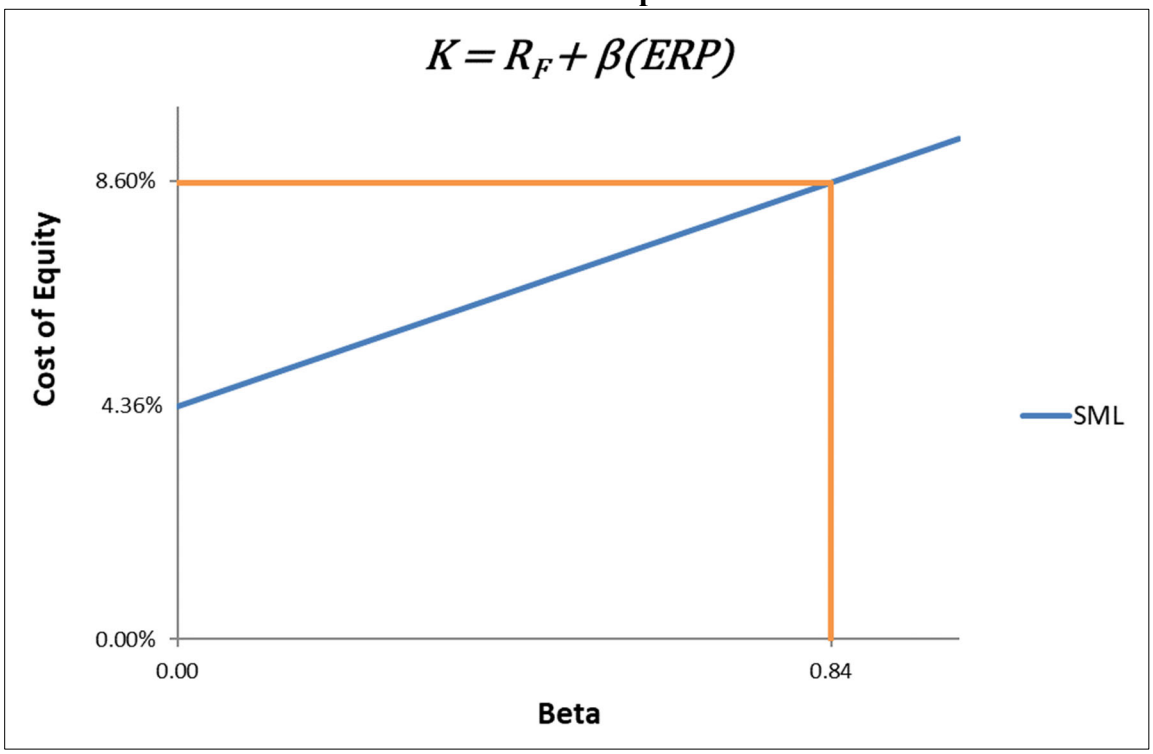
[53] *See* Garrett, Exh DJG-12 (CAPM-Final Results); Exh DJG-13 (Cost of Equity Summary).

Figure 6
CAPM Graph



The SML provides the rate of return that will compensate investors for the beta risk of that investment. Thus, at an average beta of 0.84 for the proxy group, and assuming the proxy group's average capital structure is used, the CAPM result is 8.6 percent. However, as discussed below in more detail, the CAPM results as applied to Cascadia must be adjusted to account for the differences between Cascadia's low-risk capital structure relative to the proxy group.

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

Q. Please summarize the results of Mr. Rowell's CAPM analysis.

A. Mr. Rowell's CAPM produced a result of 10.83 percent.[54]

[54] Rowell, Exh. MJR-10.

Q. Do the results of Mr. Rowell's CAPM indicate a reasonable cost of equity estimate for Cascadia?

A. No. Mr. Rowell's CAPM cost of equity is overstated due to his overestimation of the ERP. In this section, I also address Mr. Rowell's comparable earnings model, and his claims that Cascadia's small size should have an impact on its cost of equity. These issues are discussed further below.

1. Equity Risk Premium

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

A. No, he did not. Mr. Rowell used an input of 8.02 percent for the ERP.[55] The ERP is one of three inputs in the CAPM equation, and it is one of the most 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.

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

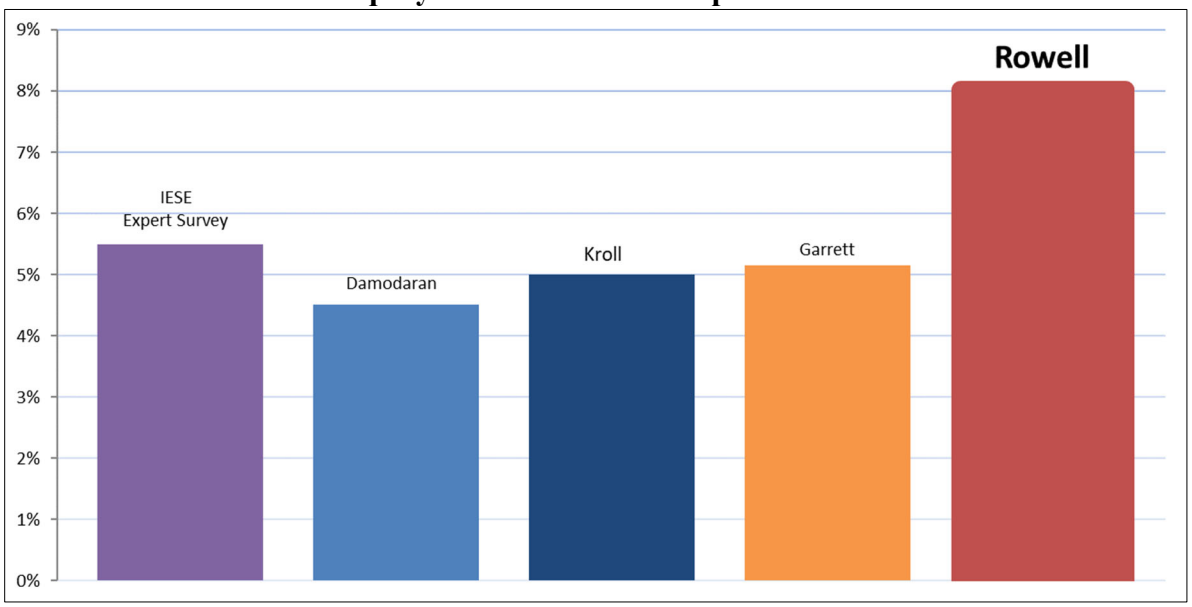
A. The 2024 IESE Business School expert survey reports an average ERP of 5.5 percent. In addition, Kroll (formerly Duff & Phelps) recently estimated an ERP of 5.0 percent. Dr. Damodaran, one of the leading experts on the ERP, recently estimated an ERP of only 4.5 percent.[56] The chart in the following figure

[55] *Id*.

[56] Damodaran, *Implied Equity Risk Premium Update*, Damodaran Online, http://pages.stern.nyu.edu/~adamodar/. Dr. Damodaran estimates several ERPs using various assumptions.

illustrates that Mr. Rowell's ERP estimate is far out of line with other reasonable, objective estimates for the ERP.[57]

Figure 7
Equity Risk Premium Comparison



When compared with other independent sources for the ERP, as well as my estimate, Mr. Rowell's ERP estimate is clearly not within the range of reasonableness. As a result, his CAPM cost of equity estimate is overstated.

2. Size Effect

Q. Please summarize Mr. Mr. Rowell's claims regarding Cascadia's size and the impact to its authorized ROE.

A. Mr. Rowell claims that because Cascadia is smaller in size than the proxy group companies, it is riskier than the proxy group.[58] According to Mr. Rowell, "Cascadia Water is considerably smaller than the utilities in the sample and it

[57] The ERP estimated by Dr. Damodaran is the highest of several ERP estimates under slightly differing assumptions.
[58] Rowell, at 38-40.

faces considerably greater risk as a result of its extremely small size and its need for capital investment."[59]

Q. Do you agree with Mr. Rowell's claims regarding Cascadia's size?

A. No. In essentially every case in which a regulated utility is seeking an authorized ROE, the proxy group used to estimate its cost of equity will involve much larger companies. This is because it is often necessary to analyze the parent-holding companies rather than the operating subsidiaries of those companies in order to properly conduct the CAPM and DCF Models. Thus, in every case in which I can recall, the utility-applicant in a case is smaller in size than the average company in the proxy group which was used to analyze its cost of equity. Accordingly, it is nonsensical to conclude that all utility operating subsidiaries are inherently riskier than their parent holding companies, and thus have higher costs of equity, simply because they are smaller.

In addition, Mr. Rowell's suggestion that Cascadia is riskier due to its need for capital investment is unfounded. In one of Cascadia's recent water system acquisition cases, Cascadia highlighted the benefits of the capital that its ultimate parent company, Northwest Natural Holding Co, would be able to provide:

> NW Holdings, the ultimate parent of Cascadia Water, is a publicly owned company with a market cap of approximately $1.9 billion, and it has a revolving credit facilities totaling approximately $200 million in the aggregate. Cascadia Water, through its parent companies, will be able to provide this investment over time, therefor benefitting Northwest Water Services' customers.[60]

[59] *Id*. at 38:18–20.
[60] Transfer of Property Acquisition Application, ¶ 14, *Wash. Utils. & Transp. Comm'n v. Cascadia Water, LLC*, Docket UW-220425 (filed June 8, 2022).

In other words, in its acquisition case, the Company highlighted the benefits of the capital investment it can readily access through its parent company, whereas in this case, Mr. Rowell is suggesting Cascadia is riskier because of its need for capital investment. Mr. Rowell's arguments in this regard are unfounded in my opinion, and the Commission should not view Cascadia as a relatively riskier company due to its size or apparent need for capital investment.

Q. Even if one were to entertain the concept that a smaller size company should necessarily have a higher cost of equity than larger companies simply due to its size, are you aware of evidence rebutting that concept?

A. Yes. The idea that smaller companies are riskier than larger companies due to size alone originates from the "size effect" phenomenon arose from a 1981 study conducted by Banz. This study found that "in the 1936–1975 period, the common stock of small firms had, on average, higher risk-adjusted returns than the common stock of large firms."[61] According to Ibbotson, Banz's size effect study was "[o]ne of the most remarkable discoveries of modern finance."[62] Perhaps there was some merit to this idea at the time, but the size effect phenomenon was short lived. Banz's 1981 publication generated much interest in the size effect and spurred the launch of significant new small cap investment funds. However, this "honeymoon period lasted for approximately two years."[63] After 1983, U.S. small-cap stocks actually underperformed relative to large cap stocks. In other words, the size effect essentially reversed. In *Triumph of the Optimists*, the

[61] Rolf W. Banz, *The Relationship Between Return and Market Value of Common Stocks* 3-18 (J. Fin. Econ 9 (1981)).
[62] 2015 Ibbotson Stocks, Bonds, Bills, and Inflation Classic Yearbook 99, Morningstar (2015).
[63] Dimson, *supra* note 39, at 131.

authors conducted an extensive empirical study of the size effect phenomenon around the world. They found that after the size effect phenomenon was discovered in 1981, it disappeared within a few years:

> It is clear . . . that there was a global reversal of the size effect in virtually every country, with the size premium not just disappearing but going into reverse. Researchers around the world universally fell victim to Murphy's Law, with the very effect they were documenting – and inventing explanations for – promptly reversing itself shortly after their studies were published.[64]

In other words, the authors assert that the very discovery of the size effect phenomenon likely caused its own demise. The authors ultimately concluded that it is "inappropriate to use the term 'size effect' to imply that we should automatically expect there to be a small-cap premium," yet, this is exactly what utility witnesses often do in attempting to artificially inflate the cost of equity with a size premium. Other prominent sources have agreed that the size premium is a dead phenomenon. According to Ibbotson:

> The unpredictability of small-cap returns has given rise to another argument against the existence of a size premium: that markets have changed so that the size premium no longer exists. As evidence, one might observe the last 20 years of market data to see that the performance of large-cap stocks was basically equal to that of small cap stocks. In fact, large-cap stocks have outperformed small-cap stocks in five of the last 10 years.[65]

In addition to the studies discussed above, other scholars have concluded similar results. According to Kalesnik and Beck:

[64] *Id*. at 133.
[65] 2015 Ibbotson Stocks, Bonds, Bills, and Inflation Classic Yearbook 112, Morningstar (2015).

> Today, more than 30 years after the initial publication of Banz's paper, the empirical evidence is extremely weak even before adjusting for possible biases. . . . The U.S. long-term size premium is driven by the extreme outliers, which occurred three-quarters of a century ago. . . . Finally, adjusting for biases . . . makes the size premium vanish. If the size premium were discovered today, rather than in the 1980s, it would be challenging to even publish a paper documenting that small stocks outperform large ones.[66]

For all of these reasons, the Commission should reject Mr. Rowell's size premium.

3. Comparable Earnings

Q. Please describe Mr. Rowell's comparable earnings model.

A. Mr. Rowell conducted a model that considers the historical and projected earned ROEs of the proxy group, and produces an ultimate result of 10.6 percent.[67]

Q. Do you believe the results of Mr. Rowell's comparable earnings model indicate a reasonable cost of equity estimate for Cascadia?

A. No. The most obvious reason that that Mr. Rowell's comparable earnings model does not equate to a reasonable cost of equity estimate for Cascadia is because the model is specifically not measuring the cost of equity, but rather earned ROEs. His model includes results as high as 13 percent for individual proxy companies.[68] Earned returns on equity (whether historical or projected) are a different concept than cost of equity. The cost of equity is a forward-looking concept that examines an investor's comparable return on an asset given the level of risk in the investment. If an investor estimates a cost of equity of 20 percent in XYZ Corp (a

[66] Vitali Kalesnik & Noah Beck, *Busting the Myth About Size* (Research Affiliates 2014), available at https://www.researchaffiliates.com/Ourpercent20Ideas/Insights/Fundamentals/Pages/284_Busting_the_Myth_About_Size.aspx (emphasis added).
[67] Rowell, Exh. MJR-10.
[68] *Id*.

very risky company), but the Company only reports a five percent return for a given year, this does not mean that the investor should have only "expected" a low five percent return for a relatively risky investment. Furthermore, analyzing earned returns in this context contributes to a feedback loop which (especially if Mr. Rowell's model is given any weight) will result in inflated ROEs. We are using cost of equity models (i.e., the CAPM and DCF Model) to determine a fair awarded ROE (which would give Cascadia the opportunity to earn that ROE). It makes no sense to consider earned ROEs for the purpose of setting an authorized ROE. For all these reasons, the Commission should reject Mr. Rowell's expected earnings model.

VIII. CAPITAL STRUCTURE

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

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

because interest expense is deductible, increasing debt also adds value to the firm by reducing the firm's tax obligation.

Q. Please explain the concept of the "weighted average cost of capital."

A. The term "cost of capital" refers to the weighted average cost of all the components of a company's capital structure, including debt and equity. Determining the cost of debt is relatively straightforward. Interest payments on bonds are contractual, "embedded costs" that are generally calculated by dividing total interest payments by the book value of outstanding debt. Determining the cost of equity, on the other hand, is more complex. Unlike the known, contractual cost of debt, there is no explicit "cost" of equity; the cost of equity must be estimated through various financial models. Thus, the overall 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 3
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. Is it true that, by increasing debt, competitive firms can add value and reduce their WACC?

A. Yes, it is. A competitive firm can add value by increasing debt. After a certain point, however, the marginal cost of additional debt outweighs its marginal benefit. This is because the more debt the firm uses, the higher interest expense it must pay, and the likelihood of loss increases. This also increases the risk of non-recovery for both bondholders and shareholders, causing both groups of investors to demand a greater return on their investment. Thus, if debt financing is too high, the firm's WACC will increase instead of decrease. The following Figure illustrates these concepts.

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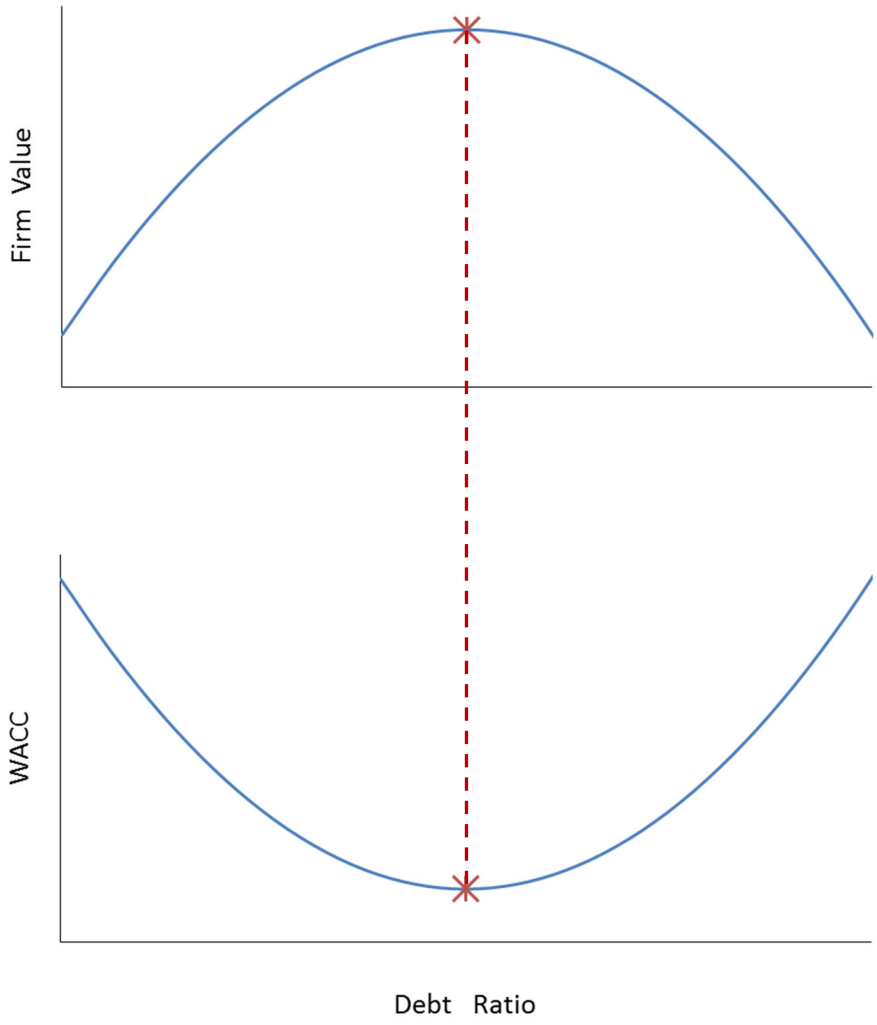
Figure *8*
Optimal Debt Ratio



As shown in this figure, a competitive firm's value is maximized when the WACC is minimized. In both graphs, the debt ratio is shown on the x-axis. By increasing its debt ratio, a competitive firm can minimize its WACC and maximize its value. At a certain point, however, the benefits of increasing debt do not outweigh the costs.

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

A. No. While it is true that competitive firms maximize their value by minimizing their WACC, this is not the case for regulated utilities. Under the rate base rate of return model, a higher WACC results in higher rates, all else held constant. The basic revenue requirement equation is as follows:

Equation 4
Revenue Requirement for Regulated Utilities

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

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

As shown in this equation, utilities can increase their revenue requirement by *increasing* their WACC, not by minimizing it. Thus, because there is no incentive for a regulated utility to minimize its WACC, a commission standing in the place of competition must ensure that the regulated utility is operating at the lowest reasonable WACC. Left unrestrained, utilities will increase their equity and decrease their debt to unreasonably increase their profits that flow through to shareholders.

Q. Can utilities generally afford to have higher debt levels than other industries?

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

> Since financial leverage multiplies the underlying business risk, it stands to reason that firms that have high business risk should be reluctant to take on financial leverage. It also stands to reason that firms that operate in stable businesses should be much more willing to take on financial leverage. *Utilities*, for instance, have historically had high debt ratios but have not had high betas, mostly because their underlying businesses have been stable and fairly predictable.[69]

Note that Dr. Damodaran explicitly contrasts utilities with firms that have high underlying business risk. Because utilities have low levels of risk and operate a stable business, they should generally operate with relatively high levels of debt to achieve their optimal capital structure.

A. Proxy and Industry Debt Ratios

Q. Please describe the debt ratios of the proxy group.

A. According to the debt ratios recently reported in Value Line for the utility proxy group, the average debt ratio of the proxy group is 46 percent.[70] This debt ratio is notably higher than Cascadia's proposed debt ratio of only 34 percent. More importantly, this means that Cascadia has a lower level of financial risk relative to the proxy group–a discrepancy that can be mathematically accounted for in terms of cost of equity estimation through the Hamada Model, which is discussed in more detail below.

Q. Please describe the debt ratios recently observed in competitive U.S. industries.

[69] *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*, at 196 (emphasis added).
[70] *See* Garrett, Exh. DJG-14 (Proxy Group Debt Ratios).

A. There are nearly 2,000 firms in U.S. industries with higher debt ratios than 50 percent, and with an average debt ratio of about 61 percent.[71] The following figure shows a sample of these industries with debt ratios higher than 56 percent.

Figure 9
Industries with Debt Ratios Greater than 56 Percent

Industry	# Firms	Debt Ratio
Air Transport	21	84%
Hotel/Gaming	69	82%
Hospitals/Healthcare Facilities	34	82%
Retail (Automotive)	30	78%
Brokerage & Investment Banking	30	76%
Computers/Peripherals	42	71%
Bank (Money Center)	7	68%
Cable TV	10	68%
Food Wholesalers	14	67%
Advertising	58	67%
Oil/Gas Distribution	23	66%
Rubber& Tires	3	65%
Transportation (Railroads)	4	65%
Real Estate (Operations & Services)	60	64%
Retail (Grocery and Food)	13	64%
Retail (Special Lines)	78	64%
Recreation	57	62%
Insurance (Life)	27	61%
Trucking	35	61%
Packaging & Container	25	61%
Power	48	60%
Telecom. Services	49	60%
Telecom (Wireless)	16	60%
R.E.I.T.	223	60%
Auto & Truck	31	59%
Utility (General)	15	59%
Household Products	127	58%
Office Equipment & Services	16	58%
Environmental & Waste Services	62	57%
Utility (Water)	16	57%
Retail (Distributors)	69	57%
Transportation	18	57%
Green & Renewable Energy	19	57%
Total / Average	**1,349**	**65%**

[71] *See* Garrett, Exh-DJG 15 (Competitive Industry Debt Ratios).

Many of the industries shown here, like public utilities, are generally well-established industries with large amounts of capital assets. The shareholders of these industries generally prefer these higher debt ratios in order to maximize their profits. There are several notable industries that are relatively comparable to public utilities. For example, the Cable TV, Telecom, Power, and Water Utility industries all have an average debt ratio of about 60 percent.

Q. Based on the foregoing evidence, should Cascadia make a direct adjustment to its ratemaking capital structure in this case?

A. No. Cascadia does not need to establish an imputed capital structure; however, this does not mean that no adjustment should be made to account for the discrepancy in financial risk between Cascadia and the proxy group. In order for the CAPM to be applied correctly, a mathematical adjustment should be made to the CAPM results effectively align Cascadia's capital structure to the proxy group's capital structure. Such an adjustment can be made using the Hamada Model, which is discussed further below.

B. <u>The Hamada Model: Capital Structure's Effect on ROE</u>

Q. Have you considered the impact that your capital structure framework could have on the Company's indicated cost of equity?

A. Yes. I assessed the impact of my capital structure proposal on the Company's cost of equity estimate by using the Hamada model.

Q. What is the premise of the Hamada model?

A. The Hamada formula can be used to analyze changes in a firm's cost of capital as it adds or reduces financial leverage, or debt, in its capital structure by starting with an "unlevered" beta and then "relevering" the beta at different debt ratios. As

leverage increases, equity investors bear increasing amounts of risk, leading to higher betas. Before the effects of financial leverage can be accounted for, however, the effects of leverage must first be removed, which is accomplished through the Hamada formula. The Hamada formula for unlevering beta is stated as follows:[72]

Equation 5
Hamada Formula

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

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

Using this equation, the beta for the firm can be unlevered, and then "relevered" based on various debt ratios (by rearranging this equation to solve for β_L).

Q. Please summarize the results of the Hamada formula based on your capital structure framework.

A. The average capital structure of the proxy group consists of 46 percent debt and 45 percent equity. Because Cascadia's debt ratio is notably lower than that of the proxy group, when Cascadia is "relevered" to match the proxy group, it results in a lower ROE than if Cascadia had been operating with a capital structure equal to that of the proxy group. This makes sense because Cascadia has less financial risk relative to the proxy group due to the lower amount of debt in its capital structure. The results of my Hamada model are presented in the following figure.

[72] Damodaran, *supra* note 22, at 197. This formula was originally developed by Hamada in 1972.

Figure 10
Hamada Model ROE

Unlevering Beta		
Proxy Debt Ratio	46%	[1]
Proxy Equity Ratio	54%	[2]
Proxy Debt / Equity Ratio	0.9	[3]
Tax Rate	21%	[4]
Equity Risk Premium	5.0%	[5]
Risk-free Rate	4.4%	[6]
Proxy Group Beta	0.84	[7]
Unlevered Beta	0.50	[8]

[9]	[10]	[11]	[12]
Relevered Betas and Cost of Equity Estimates			
Debt Ratio	D/E Ratio	Levered Beta	Cost of Equity
0%	0.0	0.50	6.9%
20%	0.3	0.60	7.4%
25%	0.3	0.63	7.5%
30%	0.4	0.67	7.7%
34%	0.5	0.70	7.9%
46%	0.9	0.84	8.6%
60%	1.5	1.09	9.9%

According to the results of the Hamada model, if the Commission were to adopt the Company's proposed capital structure, its indicated cost of equity estimate (under the CAPM) would be 7.9 percent.

Q. Does this conclude your testimony?

A. Yes.